

LARs

LEBANESE AVIATION REGULATIONS

Part IV
PERSONNEL LICENSING

Subpart 400
GENERAL

Republic of Lebanon 

UNDP / ICAO PROJECT LEB / 95 / 001
Civil Aviation Technical Training and Safety Oversight Programme



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PART IV

PERSONNEL LICENSING

Subpart 0 - General

400.01 Interpretation

1. In this Part,

"aerobatic maneuver" - means a maneuver where a change in the attitude of an aircraft results in a bank angle greater than 60 degrees, an abnormal attitude or an abnormal acceleration not incidental to normal flying;

"aeroplane" - does not include an ultra-light aeroplane;

"balloon" - includes any lighter-than-air aircraft;

"examination" - means any written examination or written practical qualifications examination required by the personnel licensing standards for the issuance of a licence or for the endorsement of a licence with a rating;

"foreign licence validation certificate" - means a certificate issued by the Authority pursuant to subsection 401.08;

"glider" - includes a powered glider;

"ground school instruction" - means classroom-type or computer based instruction generally given to one or more persons and covering an organized program of lectures, homework and self-paced study programs following an approved training program;

"invigilator" - means a person who is designated by the Authority to supervise a written examination;

"main base" - means a location at which a flight training organization has personnel, aircraft and facilities for the operation of a flight training service and that is established as the principal place of business of the flight training organization;

"instrument ground time" - means time during which a pilot is practicing, on the ground, simulated instrument flight in a synthetic flight trainer approved by the Authority.

"instrument flight time" - means time during which a pilot is piloting an aircraft solely by reference to instruments and without external reference points.

"instrument time" - means instrument flight time or instrument ground time.

"minimum flight crew document" - means a document such as a type certificate or a flight authority, issued by the Authority, the civil aviation authority of a contracting state or an aircraft manufacturer, that relates to an aircraft and that specifies the number of pilots required to operate the aircraft, but does not include an air operator certificate;

"operational control" - in respect of a flight, means the exercise of authority over the initiation, continuation, diversion or termination of the flight;

"operations specifications" - in respect of a flight training organization, means the operations specifications set out in a flight training organization operator certificate, and includes any amendment to the conditions of operation;

"pre-flight briefing" - means a one-to-one practical briefing that is conducted just prior to a training flight for the purpose of ensuring that the trainee understands exactly what will take place during the flight;

"preparatory ground instruction" - means classroom-type instruction, generally on a one-to-one basis but not excluding group instruction, that is based on lesson plans contained in or developed from the applicable flight instructor guide;

"satellite base" - means a location at which a flight training organization has personnel, aircraft and facilities for the operation of a flight training service on a temporary basis;

"training flight" - means a dual instruction flight or a solo practice flight that is conducted under the direction and supervision of a flight instructor;

"ultra-light aeroplane" - includes a powered parachute and a powered para-glider.

2. Any reference in this Part to a licence, rating or foreign licence validation certificate is a reference to a valid Lebanese licence, rating or foreign licence validation certificate.

400.02 Examination Rules

1. Except as authorized by an invigilator, no person shall, or shall attempt to, in respect of a written examination,
 - a) copy or remove from any place all or any portion of the text of the examination;
 - b) give to or accept from any person a copy of all or any portion of the text of the examination;
 - c) give help to or accept help from any person during the examination;
 - d) complete all or any portion of the examination on behalf of any other person; or
 - e) use any aid or written material during the examination.
2. A person who does any act that is prohibited by subsection (1) is, for one year after the date of the act or for such lesser period as may be determined by the Authority, ineligible to take an examination required for the issuance of a permit or licence or for the endorsement of a licence with a rating.

3. A person who uses a hand-held calculator during an examination shall use a hand-held calculator whose memory is cleared before and after the examination in the presence of the invigilator.
4. A person who uses a hand-held electronic computer during an examination shall use a hand-held electronic computer:
 - a) that has been specifically designed for flight operations;
 - b) that has been approved by the Authority for examination purposes; and
 - c) whose memory is cleared before and after the examination in the presence of the invigilator.

400.03 Time Limits

1. Tests, skill letters and examinations, including all Sections of a sectionalized examination, that are required for the issuance of a licence or for the endorsement of a licence with a rating shall be completed during the 18-month period immediately preceding the date of issue of the licence or rating.
2. Subsection (1) does not apply in respect of the written examinations that are required for the issuance of a student pilot licence.

400.04 Re-sitting of Examinations

1. 1. Subject to subsection (2), a person who fails an examination or a Section of a sectionalized examination required for the issuance of a flight crew licence, rating or foreign licence validation certificate is ineligible to re-sit the examination or the failed Section for a period of:
 - a) in the case of a first failure, 30 days;
 - b) in the case of a second or subsequent failure, 90 days.
2. A person who fails the Student Pilot Pre Solo examination is eligible to rewrite the examination at any time after notice of the failure has been received and the weak knowledge areas have been reviewed.
3. A person who passes a sectionalized examination but fails one or more Sections of that examination shall rewrite the failed Section or Sections in one sitting.
4. Where a person requests to rewrite an examination, the Authority shall inform the person in the most practical manner, of the date on which the person may rewrite the examination and whether the person is required to provide evidence of further study or instruction before rewriting the examination.

400.05 Extension of Validity Period

1. The Authority shall grant an extension, of not more than 90 days, of the validity period of a licence, rating or a medical certificate where:
 - a) the application is made while the document is valid; and
 - b) the applicant can demonstrate, to the satisfaction of the Authority, that there has been no reasonable opportunity to meet the renewal requirements before the expiration date of the document.

400.06 Granting of Temporary Privileges

The Authority may grant temporary licence privileges to an applicant for purposes such as training and testing, where it can be demonstrated, to the satisfaction of the Authority, that safety of flight will not be compromised.

400.07 Replacement of Lost or Destroyed Licences and Certificates

The Authority shall replace a lost or destroyed licence or certificate upon receipt of declaration explaining the circumstances of the loss or destruction of the document, and payment of the prescribed fee.

400.08 Falsification or Alteration of Documents

1. The Authority may suspend or revoke and refuse to renew a licence or rating issued under this Part where it has been determined that the holder of, or applicant for, a document made or caused to be made:
 - a) a fraudulent or intentional false statement on an application for a licence or rating or replacement thereof;
 - b) a fraudulent or intentional false statement during an aviation safety investigation,
 - c) a fraudulent or intentional false entry in a logbook, record or report required to show compliance with, or the requirements for, issue of a licence or rating; or
 - d) a fraudulent alteration to a document issued under this Part.

LARs

LEBANESE AVIATION REGULATIONS

Part IV
PERSONNEL LICENSING

Subpart 401
FLIGHT CREW LICENSING

Republic of Lebanon 

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PART IV

PERSONNEL LICENSING

Subpart 1 - Flight Crew Licensing

401.01 Interpretation

Any reference in this Part to the personnel licensing standards is a reference to the *Personnel Licensing Standards Respecting Flight Crew Licensing*, and where so noted, the related provisions contained in the current edition of the Federal Aviation Regulations (FARs) and related Circulars, published by the government of the United States of America, and the Joint Aviation Regulations (JARs) published by the Joint Aviation Authorities (JAA) of the European Civil Aviation Conference (ECAC) .

401.02 Application

This Sub-part applies to:

- a) persons who hold or apply for the issuance or renewal of any flight crew licences and ratings referred to in this Sub-part, namely,
 - i) Student Pilot Licence,
 - ii) Private Pilot Licence - Aeroplanes,
 - iii) Private Pilot Licence - Helicopters,
 - iv) Commercial Pilot Licence - Aeroplanes,
 - v) Commercial Pilot Licence - Helicopter,
 - vi) Airline Transport Pilot Licence - Aeroplanes,
 - vii) Airline Transport Pilot Licence - Helicopter,
 - viii) Glider Pilot Licence,
 - ix) Free Balloon Pilot Licence,
 - x) Ultra-light Pilot Licence - Aeroplanes,
 - xi) Flight Engineer Licence,
 - xii) aeroplane class rating,
 - xiii) aircraft type rating,
 - xiv) night rating,
 - xv) instrument rating, and
 - xvi) flight instructor rating,
- b) arrangements for training or testing for the issuance of any of the flight crew licences or ratings,
- c) the use of synthetic training devices mentioned in the personnel licensing standards as substituting for an aircraft for training or testing purposes, and
- d) persons who apply for the validation of a foreign flight crew licence and ratings.

401.03 Authority to Act as a Flight Crew Member of an Aircraft Registered in Lebanon

No person shall fly or attempt to fly as a flight crew member of an aircraft registered in Lebanon or exercise the privileges of a flight crew licences or rating, unless that person holds and can produce while so acting:

- a) a valid licence and rating, when required, complying with the requirements of this Sub-part and appropriate to the capacity in which the person is acting,
- b) a valid foreign licence or equivalent document, that has been validated under this Sub-part., or
- c) an authorization as set out in Section 400.06..

401.04 Flight Crew Members of Aircraft Registered in Contracting States Other Than Lebanon

No person shall act as a flight crew member or exercise the privileges of a flight crew licence in Lebanon in an aircraft registered in a contracting state other than Lebanon, unless the person holds and can produce while so acting or while exercising such privileges,

- a) a flight crew licence issued under this Part, or
- b) a flight crew licence, or a document equivalent to a foreign licence validation certificate, that is issued under the laws of the contracting state in which the aircraft is registered.

401.05 Composition of Aircraft Crew

No person shall operate an aircraft or act as a flight crew member, unless the crew is composed of at least the minimum crew as identified in the minimum flight crew document.

401.06 Recency Requirements

1. No holder of a flight crew licence or rating, other than a flight engineer licence, shall act as a flight crew member of an aircraft where a passenger is being carried, unless that person has completed in an aircraft of the same category and class, or a Level C or higher, simulator approved by the Authority, of the same type as the aircraft:
 - a) by day within the preceding 90 days, three take-offs and three landings as the sole manipulator of the controls of the aircraft, or
 - b) by night has completed the requirement of (a) by night.
2. The requirements of paragraph (1) do not apply where the only passenger is an approved flight test examiner, and the flight is for the purpose of testing the licence holder.

401.07 Issuance and Endorsement of Flight Crew Licences

Subject to Article 70 of the Civil Aviation Safety Act, the Authority shall, on receipt of an application submitted in the form and manner specified in the personnel licensing standards, issue a flight crew

licence to the applicant or endorse the applicant's flight crew licence with a rating, if the applicant provides documentation that establishes to the satisfaction of the Authority:

- a) the applicant's citizenship;
- b) the required fees have been paid, and
- c) that the applicant meets the applicable requirements set out in the personnel licensing standards in respect of:
 - i) minimum age,
 - ii) medical fitness,
 - iii) knowledge,
 - iv) experience,
 - v) skill, and
 - vi) English language proficiency.

401.08 Validation of Foreign Licences

Subject to Article 70 of the Civil Aviation Safety Act, where the holder of a foreign flight crew licence issued by a contracting state other than Lebanon, provides documentary evidence that, to the satisfaction of the Authority, the applicant meets the applicable requirements set out in Annex 1 to the Convention, the Authority shall, on receipt of an application submitted in the form and manner set out in those standards, issue a foreign licence validation certificate.

The Authority shall, in accordance with the personnel licensing standards, specify in a foreign licence validation certificate, the privileges that may be exercised by the holder of the certificate or licence, any restrictions to those privileges and the validity period thereof.

401.09 Issuance of a Licence Based on a Foreign Licence

1. Subject to Article 70 of the Civil Aviation Safety Act, where the holder of a foreign flight crew licence issued by a contracting state, other than Lebanon, meets the applicable requirements set out in the personnel licensing standards, the Authority shall, on receipt of an application submitted in the form and manner set out in those standards, issue a licence based on the foreign licence.
2. The Authority shall, in accordance with the personnel licensing standards, endorse on a licence issued based on a foreign licence, the ratings the licence holder is entitled to hold and the validity period thereof.

401.10 Credits Towards Requirements for a Flight Crew Licence or Rating

The Authority shall, in accordance with the personnel licensing standards, credit the experience, knowledge and skill acquired by a person in acting as a flight crew member towards the issuance of the person's flight crew licence or the endorsement of the person's flight crew licence with a rating.

401.11 Personal Logs

1. Every applicant for, and every holder of, a flight crew licence or rating shall maintain a personal log in accordance with subsection (2) and with the personnel licensing standards for the documentation of:
 - a) experience accumulated in respect of issue or renewal of a flight crew licence or rating; and
 - b) recency.
2. Every flight crew member shall maintain a logbook as issued or otherwise acceptable to the Authority. The logbook shall be maintained accurately and as soon as practicable after a flight or series of flights, that contains at least the following information in respect of each flight:
 - a) the date of the flight;
 - b) the type of aircraft and its registration mark;
 - a) the flight crew position in which the holder acted;
 - b) the nature of the flight conditions with respect to day, night, VFR and IFR;
 - c) in the case of a flight in an aeroplane or helicopter, the place of departure and the place of arrival;
 - d) in the case of a flight in an aeroplane, all of the intermediate take-offs and landings;
 - e) the flight time;
 - f) in the case of a flight in a glider, the method of launch used for the flight; and
 - g) in the case of a flight in a balloon, the method of inflation used for the flight
3. A personal log book shall be certified periodically, at least annually, by the owner or operator of the aircraft flown, or his duly appointed representative.
4. No person shall make an entry in a personal log unless the person:
 - a) is the holder of the log; or
 - b) has been authorized to make the entry by the holder of the log.
5. Logging of pilot-in-command time.
 - a) The holder of a Private or Commercial pilot licence may log pilot-in-command time only for that flight time during which that pilot:
 - i) is the sole manipulator of the controls of an aircraft for which the person holds a valid class and/or type rating;
 - ii) is the sole occupant of the aircraft; or
 - iii) is acting as pilot-in-command of an aircraft for which more than one pilot is required by the flight authority of the aircraft or the regulations under which the aircraft is operated.
 - b) The holder of an Airline Transport Pilot Licence may log as pilot-in-command time all of the flight time while acting as pilot-in-command of an aircraft required to be operated by more than one pilot.
 - c) The holder of a Flight Instructor Rating may log as pilot-in-command all flight time while acting as a flight instructor.
 - d) A student pilot may log pilot-in-command time only when the student pilot:

- i) is the sole occupant of the aircraft or is performing the duties of pilot in command of an aircraft requiring more than one pilot;
 - ii) has been authorized for solo flight by the supervising flight instructor; and
 - iii) is undergoing training for a pilot licence or rating.
- 6. Logging of second-in-command flight time. A pilot may log second-in-command time only for that flight time during which that pilot is acting as a flight crew member of an aircraft required to be operated by more than one pilot and for which the person holds a valid class and/or type rating.
- 7. Logging of instrument flight time.
 - a) A pilot may log instrument flight time only for that flight time when the pilot is piloting an aircraft solely by reference to instruments and without external reference. Such time shall be logged as actual or simulated instrument flight time.
 - b) The holder of a flight instructor rating may log instrument time when conducting instrument flight instruction in actual instrument flight conditions.
 - c) An approved flight simulator or flight training device may be used by a pilot to log instrument time, provided the holder of a flight instructor rating is present and supervises the simulated flight, or the simulated flight is conducted under the provisions of an Operating Certificate.

401.12 Crediting of Flight Time by a Co-pilot

No person shall record in a personal log the flight time acquired by a co-pilot while acting as pilot-in-command under supervision unless the flight time:

- a) was acquired in accordance with an airline transport pilot licence training program approved by the Authority and carried out in accordance with the personnel licensing standards; and
- b) is recorded in the personal log in accordance with the personnel licensing standards.

401.13 Airline Transport Pilot Licence Training Program

The Authority shall approve an airline transport pilot training program if it meets the requirements of the personnel licensing standard.

401.14 Validity of Licences and Ratings

- 1. No person shall exercise the privileges granted by any licence or rating issued by the Authority unless the holder maintains competency by meeting the relevant requirements of this Part.
- 2. The validity of the licence is determined by the validity of the ratings contained therein and the medical certificate.
- 3. The licence will be issued for an indefinite period and will be re-issued:

- a) for the purpose of initial issue of a rating or re-instatement of an expired rating;
 - b) when a part or a paragraph of the licence is filled and no further spaces remain;
 - c) for any administrative reason; or
 - d) at the discretion of the Authority when a rating is renewed.
4. When a licence is re-issued, valid ratings will be transferred to the new licence document by the Authority.

401.15 Examination Prerequisites

Prior to taking a written examination, an applicant for a flight crew licence or rating shall meet the examination prerequisites for the examination set out in the personnel licensing standards.

401.16 Flight Test Prerequisites

Prior to taking a flight test, an applicant for a flight crew licence or rating shall meet the flight test prerequisites for the test set out in the personnel licensing standards.

401.17 Conduct of a Flight Test

1. No person shall conduct a flight test required for the issuance or renewal of a flight crew licence, or the endorsement of a flight crew licence with a rating, unless:
 - a) the person is designated by the Authority to conduct the flight test; and
 - b) the flight test is conducted in accordance with the personnel licensing standards and the appropriate flight test standard.
2. The Authority shall maintain a record of each flight test required for the issuance or renewal of a flight crew licence for an aeroplane or helicopter or the endorsement of such a licence with a rating.

401.18 Failure of a Flight Test

Where an applicant has failed a flight test, the applicant shall complete the remedial requirements specified in the personnel licensing standards prior to being re-tested.

401.19 Failure of a Flight Test for a Rating Renewal

Where, during a flight test, the holder of a rating fails to meet the requirements specified in the personnel licensing standards for that rating, the Authority shall suspend the rating.

401.20 Examiner's Endorsement of Personal Log – Gliders, Balloons and Ultra-light Aircraft

1. Where the applicant for a glider pilot licence successfully completes the flight test required for the licence, the authorized instructor shall so endorse the applicant's personal log, recording therein the method of launch that was used for the flight test and any other information specified in the personnel licensing standards.
2. Where the holder of a glider pilot licence demonstrates, in accordance with the personnel licensing standards, additional methods of launch to an authorized flight instructor, the instructor shall so endorse the holder's personal log, recording therein the additional methods of launch used.
3. Where an applicant for a free balloon pilot licence successfully completes the flight test required for the licence, the authorized instructor shall so endorse the applicant's personal log, recording therein the method of inflation that was used for the flight test and any other information specified in the personnel licensing standards.
4. Where the holder of a free balloon pilot licence demonstrates, in accordance with the personnel licensing standards, additional methods of inflation to an authorized instructor, the instructor shall so endorse the holder's personal log, recording therein the additional methods of inflation used.
5. Where the holder of a glider, free balloon or ultra –light aeroplanes pilot licence demonstrates, in accordance with the personnel licensing standards, the knowledge experience and skill to instruct on that category of aircraft, the authorized instructor shall so endorse the holder's personal log book certifying that the applicant has reached the standard of skill to instruct on that category of aircraft.

401.21 Curtailment of Privileges of Licence Holders Aged 60 Years or More

The holder of a pilot licence who has attained the age of 60 years shall not act as a pilot of an aircraft engaged in commercial air transport operations.

401.22 - 24 reserved

401.25 Student Pilot Licence - Privileges

The holder of a Student Pilot Licence may, for the sole purpose of the holder's flight training or flight test, act as student pilot or pilot-in-command of an aircraft where:

- a) the flight is conducted in Lebanon, or elsewhere when approved by the Authority, under day VFR;
- b) in the case of flight training:
 - i) it is conducted under the direction and supervision of the holder of a flight instructor rating for that category of aircraft or a person who otherwise meets the requirements of this Part, and
 - ii) no passenger is carried on board; and

- c) in the case of a flight test,
 - i) it is conducted in accordance with Section 401.17, and
 - ii) no passenger other than the person referred to in paragraph 401.17(1)(a) is carried on board.

401.26 Private Pilot Aeroplanes - Privileges

The holder of a Private Pilot Licence - Aeroplanes may act, but not for remuneration, by day and if the licence is endorsed for night, by night, as:

- a) pilot-in-command or co-pilot of an aeroplane (including ultra-light), on non-revenue flights, of a class and type in respect of which the licence is endorsed with ratings; and
- b) pilot-in-command or co-pilot of any aircraft for the sole purpose of the holder's flight training or flight test where:
 - i) in the case of flight training,
 - A) it is conducted under the direction and supervision of the holder of a flight instructor rating for that category of aircraft who meets the requirements of this Part, or is conducted under the provisions of an Operator Certificate, and
 - B) no passenger is carried on board, and
 - ii) in the case of a flight test,
 - A) it is conducted in accordance with Section 401.17, and
 - B) no passenger other than the person referred to in paragraph 401.17 carried on board.

401.27 Private Pilot Helicopters - Privileges

The holder of a Private Pilot Licence - Helicopters may act, but not for remuneration, by day and if the licence is endorsed for night, by night, as:

- a) pilot-in-command or co-pilot of a helicopter, on non-revenue flights, of a type (including gyroplane), in respect of which the licence is endorsed with ratings; and
- b) pilot-in-command or co-pilot of any aircraft for the sole purpose of the holder's flight training or flight test where:
 - i) in the case of flight training,
 - A) it is conducted under the direction and supervision of the holder of a flight instructor rating for that category of aircraft who meets the requirements of this Part, or is conducted under the provisions of an Operator Certificate,, and
 - B) no passenger is carried on board, and
 - ii) in the case of a flight test,
 - A) it is conducted in accordance with Section 401.17, and
 - B) no passenger other than the person referred to in paragraph 401.17.1(a) is carried on board.

401.28 Commercial Pilot Licence Aeroplanes - Privileges

The holder of a Commercial Pilot Licence - Aeroplanes may:

- a) exercise the privileges of a Private Pilot Licence - Aeroplanes; and
- b) while engaged in providing a commercial air service by means of an aeroplane of a class and type in respect of which the licence is endorsed with ratings, act as:
 - i) pilot-in-command of the aeroplane, where the minimum flight crew document for the aeroplane specifies a minimum flight crew of one pilot, and
 - ii) co-pilot of the aeroplane.

401.29 Commercial Pilot Licence Helicopters - Privileges

The holder of a Commercial Pilot Licence - Helicopters may:

- a) exercise the privileges of a Private Pilot Licence - Helicopters; and
- b) while engaged in providing a commercial air service by means of a helicopter of a type for which the licence is endorsed with ratings, act as:
 - i) pilot-in-command of the helicopter, where the minimum flight crew document for the helicopter specifies a minimum flight crew of one pilot, and
 - ii) co-pilot of the helicopter.

401.30 Airline Transport Pilot Licence Aeroplanes - Privileges

The holder of an Airline Transport Pilot Licence - Aeroplanes may:

- a) exercise the privileges of :
 - i) a Private Pilot Licence - Aeroplanes;
 - ii) a Commercial Pilot Licence - Aeroplanes; and
 - iii) an instrument rating - aeroplanes; and
- b) while engaged in providing a commercial air service by means of an aeroplane of a class and type in respect of which the licence is endorsed with ratings, act as:
 - i) pilot-in-command of the aeroplane, where the minimum flight crew document for that aeroplane specifies a minimum flight crew of two pilots, and
 - ii) co-pilot of the aeroplane.

401.31 Airline Transport Pilot Licence Helicopters - Privileges

The holder of an Airline Transport Pilot Licence - Helicopters may:

- a) exercise the privileges of a Private Pilot Licence - Helicopters and a Commercial Pilot Licence - Helicopters; and
- b) while engaged in providing a commercial air service, act as pilot-in-command or co-pilot of any helicopter of a type for which the licence is endorsed with a rating.

401.32 Glider Pilot Licence - Privileges

The holder of a glider pilot licence may, under day VFR:

- a) act as pilot-in-command of a glider in which no passenger is carried on board;
- b) act as pilot-in-command of a glider in which passengers are carried on board where:
 - i) the glider is launched by a method of launch endorsed by an authorized flight instructor in the holder's personal log pursuant to subsection 401.20(1) or (2), and
 - ii) the method of launch has been used by the holder for not less than three previous solo flights;
- c) if the requirements specified in the personnel licensing standard are met:
 - i) conduct dual flight instruction in respect of the issuance of a glider pilot licence;
 - ii) conduct dual flight instruction in respect of the endorsement of a type rating on a glider pilot licence;
 - iii) authorize a trainee to conduct solo flight in a glider;
 - iv) conduct ground school instruction and flight training for a flight instructor glider authorization;
 - v) conduct a flight test and recommend a trainee for:
 - A) the issuance of a glider pilot licence, and
 - B) the endorsement of a glider pilot licence with a type rating.
 - vi) endorse the log book of the holder of a glider pilot licence authorizing glider pilot flight instruction privileges;
 - vii) certify the competency of the holder of a glider pilot licence to carry passengers in a glider; and
 - viii) endorse a trainee's personal log in respect of methods of launch: and
- d) act as pilot-in-command or co-pilot of any aircraft for the sole purpose of the holder's flight training or flight test where:
 - i) in the case of flight training,
 - A) it is conducted under the direction and supervision of an authorized flight instructor for that category of aircraft, and
 - B) no passenger is carried on board, and
 - ii) in the case of a flight test,
 - A) it is conducted in accordance with Section 401.17, and
 - B) no passenger other than the person referred to in paragraph 401.17(1)(a) is carried on board.

401.33 Free Balloon Pilot Licence - Privileges

The holder of free balloon pilot licence may by day and if the licence is endorsed for night, by night, under VFR:

- a) act as pilot-in-command or co-pilot of a balloon that is inflated by a method of inflation endorsed by the authorized flight instructor in the holder's personal log pursuant to subsection 401.20(3) or (4) and that is of a type for which the licence is endorsed with a rating;
- b) if the requirements specified in the personnel licensing standard are met,
 - i) conduct ground school instruction and flight training for a free balloon pilot licence;
 - ii) authorize a trainee to conduct solo flight in a balloon;
 - iii) conduct ground school instruction and flight training for a flight instructor free balloon authorization;
 - iv) conduct a flight test and recommend a trainee for the issuance of a free balloon pilot licence;
 - v) endorse the log book of the holder of a free balloon pilot licence authorizing free balloon pilot flight instructor privileges;
 - vi) recommend a trainee for the endorsement of a type rating on the trainee's free balloon pilot licence; and
 - vii) endorse a trainee's personal log in respect of methods of inflation.
- c) act as pilot-in-command or co-pilot of any aircraft for the sole purpose of the holder's flight training or flight test where:
 - i) in the case of flight training,
 - A) it is conducted under the direction and supervision of an authorized flight instructor for that category of aircraft, and
 - B) no passenger is carried on board, and
 - ii) in the case of a flight test,
 - A) it is conducted in accordance with Section 401.17, and
 - B) no passenger other than the person referred to in paragraph 401.17(1)(a) is carried on board; and

401.34 Flight Engineer Licence - Privileges

1. The holder of a flight engineer licence may:
 - a) act as flight engineer in an aircraft of the type for which the licence is endorsed with a rating;
 - b) act as flight engineer in any aircraft for the sole purpose of the holder's flight training or competency check where:
 - i) the flight training is under the direction of a training flight engineer, and
 - ii) the competency check is conducted by a designated flight engineer examiner.
2. The holder of a flight engineer licence who is designated by the Authority may conduct flight training and competency checks in respect of
 - a) the issuance of a flight engineer licence; and
 - b) the endorsement of the licence of a flight engineer with an aircraft type rating;

401.35 Ultra-light Pilot Licence – Aeroplanes – Privileges

The holder of an ultra-light pilot licence – aeroplanes may, under day VFR:

- a) act as pilot-in-command of an ultra-light aeroplane in which no passengers are carried on board.
- b) if the requirements specified in the personnel licensing standard are met:
 - i) conduct dual flight instruction in respect of the issuance of a ultra-light pilot licence - aeroplane;
 - ii) authorize a trainee to conduct solo flight in an ultra-light aeroplane;
 - iii) conduct ground school instruction and flight training for a flight instructor ultra-light aeroplanes authorization;
 - iv) conduct a flight test and recommend a trainee for the issuance of an ultra-light pilot licence - aeroplane,
 - v) endorse of the log book of the holder of an ultra-light pilot licence – aeroplanes authorizing ultra-light aeroplane flight instructor privileges;
- c) act as pilot-in-command or co-pilot of any aircraft for the sole purpose of the holder's flight training or flight test where:
 - i) in the case of flight training,
 - A) it is conducted under the direction and supervision of an authorized flight instructor for that category of aircraft, and
 - B) no passenger is carried on board, and
 - ii) in the case of a flight test,
 - A) it is conducted in accordance with Section 401.17, and
 - B) no passengers other than the persons referred to in paragraph 401.17 are carried on board.

401.36 - 37 Reserved

401.38 Aeroplane Class Ratings

1. The Authority shall endorse the following licences with an aeroplane class rating if the applicant for the rating meets the requirements specified in the personnel licensing standard:
 - a) Private Pilot Licence - Aeroplanes,
 - b) Commercial Pilot Licence - Aeroplanes; and
 - c) Airline Transport Pilot Licence - Aeroplanes.
2. The class ratings for single-pilot aeroplanes not requiring a type rating as shall be as specified in the personnel licensing standard. These classes shall be at least:
 - a) single-engine - land;
 - b) single-engine - sea;
 - c) multi-engine - land; and
 - d) multi-engine - sea.

401.39 Class and Individual Type Ratings

1. The Authority shall endorse the licences specified in the personnel licensing standards with an aircraft class rating or an individual type rating if the applicant for the rating meets the requirements referred to in Section 401.07.
2. The Authority may issue a class or type rating limiting the privileges to acting as co-pilot only, or to any other conditions or limitations the Authority may deem necessary. Such conditions or limitations shall be endorsed on the rating.
3. Class ratings shall be valid for 2 years.
4. Type ratings shall be valid for six months.

401.40 Night Rating

1. The Authority shall endorse the following licences with a night rating if the applicant for the rating meets the requirements referred to in Section 401.07:
 - a) Private Pilot Licence - Aeroplanes;
 - b) Private Pilot Licence - Helicopters; and
 - c) Free Balloon Pilot Licence.
2. The night rating is valid for an indefinite period.

401.41 Instrument Rating

1. No person shall act in any capacity as a pilot of an aeroplane under Instrument Flight Rules (IFR), except as a pilot undergoing skill testing or dual training, unless the holder has an instrument rating appropriate to the category and class of aircraft issued in accordance with the personnel licensing standard.
2. The Authority shall endorse the following licences with an instrument rating if the applicant for the rating meets the requirements referred to in Section 401.07:
 - a) pilot licence - aeroplanes; and
 - b) pilot licence - helicopter.
3. An instrument rating shall be valid for a period of one year.

401.42 Instrument Rating - Privileges

The holder of a licence endorsed with an instrument rating may exercise the privileges of the licence under IFR in respect of the category and class of aircraft endorsed on the licence.

401.43 Provision of Flight Instruction

1. No person shall conduct the flight instruction required for the issue of any flight crew licence or rating on an aircraft or a synthetic flight training device, unless:
 - a) that person is the holder of:
 - i) a flight crew licence endorsed with an instructor rating;
 - ii) a glider, free balloon or ultra-light aeroplane pilot licence and meets the requirements to provide pilot instruction, or
 - iii) a specific authorization granted by the Authority; or
 - b) the training is conducted under the provisions of an Operator Certificate.
2. All instructors shall hold at least the licence, rating and qualification for which instruction is being conducted (unless specified otherwise by the Authority) and shall be entitled to act as pilot-in-command of the aircraft during such training.

401.44 Flight Instructor Ratings - Aeroplanes and Helicopters

1. The Authority shall, if the applicant meets the requirements referred to in Section 401.07,
 - a) endorse a Commercial Pilot Licence - Aeroplanes or an Airline Transport Pilot Licence - Aeroplanes with a Flight Instructor Aeroplanes rating.
 - b) endorse a Commercial Pilot Licence - Helicopters or an Airline Transport Pilot Licence - Helicopters with a Flight Instructor Helicopters rating.
2. Flight instructor ratings shall be valid for a period of two years provided that during the second year of the period the holder has recommended at least two student for flight test in the previous six months.

401.45 Flight Instructor Rating Aeroplanes - Privileges

The holder of an unrestricted flight instructor-aeroplanes rating may conduct flight instruction for the issue of a PPL-A, night rating or a class ratings for single-engine aeroplanes, and provided the holder meets the requirements specified in the personnel licensing standard, conduct instruction for:

- a) the issue of a CPL-A;
- b) the issue of an instrument rating,;
- c) the issue of a single-pilot multi-engine class rating; and
- d) the issue of a flight instructor-aeroplanes rating.

401.46 Flight Instructor Rating Aeroplanes - Restricted Privileges Period

Until the requirements as specified in the personnel licensing standards have been met, the privileges of the holder of a flight instructor rating shall be restricted to conducting, under the supervision of a flight instructor-aeroplanes approved for this purpose:

- a) flight instruction for the issue of the PPL-A and class ratings for single-engine aeroplanes, excluding approval of first solo flights by day or by night and first solo navigation flights by day or by night; and
- b) night flying instruction.

401.47 Flight Instructor Rating Helicopters - Privileges

The holder of an unrestricted flight instructor-helicopters rating may conduct flight instruction for the issue of a PPL-H or night rating , and provided the holder meets the requirements specified in the personnel licensing standard, conduct instruction for:

- a) the issue of a CPL-H;
- b) the issue of a single-pilot, single-engine type rating;
- c) the issue of a single-pilot multi-engine type rating; and
- d) the issue of an instrument rating,;
- e) the issue of a flight instructor - helicopters rating.

401.48 Flight Instructor Rating Helicopters - Restricted Privileges Period

Until the requirements as specified in the personnel licensing standards have been met, the privileges of the holder of a flight instructor-helicopters rating shall be restricted to conducting, under the supervision of a flight instructor-helicopters approved for this purpose:

- a) flight instruction for the issue of the PPL-H and ratings for single-engine helicopters, excluding approval of first solo flights by day or by night and first solo navigation flights by day or by night; and
- b) night flying instruction.

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s401 - Personnel Licensing Standards Respecting Flight Crew Licensing

s401.07 Issue and Endorsement of Flight Crew Licences and Ratings

1. Proof of Citizenship

The following documents are acceptable as proof of citizenship:

- a) a Lebanese Identity Card;
- b) a valid passport; or
- c) an aviation personnel licence showing the citizenship of the holder and issued by the state of which the applicant is a citizen, plus a second legal document satisfactory to the Authority.

2. Proof of Age

The following documents are acceptable proof of the age of an applicant for a personnel licence or rating:

- a) a Lebanese Identity Card;
- b) a valid passport; or
- c) an aviation personnel licence showing the citizenship of the holder and issued by the state of which the applicant is a citizen, plus a second legal document satisfactory to the Authority.

3. English Language Proficiency

An applicant shall demonstrate to the satisfaction of the Authority, the ability to use the English language in the following circumstances:

- a) radio telephony relevant to all phases of flight, including emergency situations.
- b) use of all information relevant to the accomplishment of a flight, including
 - i) to be able to read and demonstrate an understanding of technical manuals written in English, such as an Operations Manual, or an Aeroplane Flight Manual,
 - ii) to carry out pre-flight planning, weather information collection, NOTAMs, ATC Flight Plan, etc.
 - iii) to use all aeronautical en-route, departure and approach charts and associated documents written in English.
- c) be able to communicate in English during all phases of flight, including flight preparation.

s401.08 Validation of Foreign Licences

1. Issue of Foreign Licence Validation Certificate.

- a) A Foreign Licence Validation Certificate shall be issued to an applicant who provides the following:
 - i) a foreign licence valid under the laws of a Contracting State and valid for the privileges requested; and
 - ii) a letter requesting issue of the Foreign Licence Validation Certificate and specifying the purpose for which the foreign licence is to be validated.

- b) The Foreign Licence Validation Certificate shall normally be issued for a period of one year from the date of issue and shall clearly indicate that its validity will be dependent on the validity of the foreign licence. A shorter period may be granted if the requirement is of short duration.
2. Purposes For Which Foreign Licence Validation Certificates May Be Issued
- a) for the holder to undergo a flight test;
 - b) for private recreational flying;
 - c) for ferry of an aircraft registered in Lebanon to or from a foreign country;
 - d) for the holder to give training on an aircraft registered in Lebanon to the registered owner, or to Lebanese flight crew employed by the registered owner;
 - e) for the holder to receive training in a Lebanese registered aircraft;
 - f) for operation of aircraft registered in a foreign state under the operating certificate of a Lebanese air operator provided that the privileges are limited to the specific aircraft or type of aircraft being operated;
 - g) for operation of aircraft on Lebanese commercial air services on a short term basis when no qualified Lebanese pilots are available;
 - h) for the operation of aircraft registered in Lebanon on lease to foreign carriers;
 - i) for reasons other than those mentioned above, the Authority is satisfied that it is in the national interest and is not likely to affect aviation safety.

s401.09 Issuance of a Licence Based on a Foreign Licence

- 1. A licence issued by a foreign state may be converted to a Lebanese licence provided that the Authority is satisfied that the training and testing requirements of the foreign state are equivalent to the Lebanese requirements. The Authority shall periodically review the licensing training and testing requirements and ICAO Oversight Reports, of states from which licence holders may request Lebanese licences.
- 2. Where the condition in para 1 have been met, the standard for the issue of the Lebanese licence is when the applicant has:
 - a) completed, as a flight test, the type or class rating revalidation requirements of this Part, relevant to the privileges of the licence held;
 - b) demonstrated to the satisfaction of the Authority that a knowledge of the relevant parts of the Lebanese Aviation Regulation has been acquired;
 - c) demonstrated a knowledge of English to the standards specified in this Part;
 - d) hold a valid Lebanese medical certificate of the Class appropriate to the licence; and
 - e) complied with the experience requirements for the requested Lebanese licence.
- 3. A licence issued on the basis of a foreign licence shall have an entry indicating the state upon which the licence is based.

s401.10 Credits Towards Requirements for a Flight Crew Licence or Rating

1. Credits of flight time towards a licence or rating shall be as specified in the standard for each licence or rating. The holder of a pilot licence, when acting as a co-pilot on an aircraft required to be operated with more than one pilot, may be credited not more than 50% of the co-pilot time towards the total flight time required for the issuance of a higher grade of pilot licence.
2. The holder of a pilot licence, when acting as pilot in command under supervision, under a training program as provided for in this Part, shall be entitled to be credited in full with this flight time towards the total flight time required for a higher grade of licence.
3. When an application for an Airline Transport Pilot Licence is based in part on pilot-in-command under supervision flight time, the applicant shall:
 - a) submit a personal log or other reliable record that contains a summary of the pilot-in-command under supervision flight time and the number of takeoffs and landings; and
 - b) enter a notation on the application form showing the portion of pilot-in-command flight time that was done under supervision.

s401.13 Airline Transport Pilot Licence Training Program

1. All air operators using large aeroplanes may institute programs of supervision to allow co-pilots to credit flight time as pilot-in-command time.
2. Air operators using small aeroplanes and air operators using helicopters, may institute a program of supervision referred to in subsection (1) provided that they have received authorization to do so from the Authority, based on the operator's ability to institute such a program in a safe and effective manner.
3. The training program shall be conducted in accordance with the following:
 - a) the operator shall ensure that the supervisory pilots are briefed on these procedures; and
 - b) the pilot-in-command under supervision flight time shall include:
 - A) with the exception of taxiing all the flight functions of a pilot-in-command including flight planning, takeoff, landing, en route flying and approach; and
 - B) a minimum of one takeoff and one landing for each ten hours of flight time.

s401.15 Examination Prerequisites

1. For admission to a written examination required for the issue of a licence or rating an applicant shall have met the medical standards for the issue of the licence or rating and shall produce proof of medical fitness in one of the following forms:
 - a) a Medical Certificate in the appropriate medical class; or
 - b) a Medical Examination Report assessed to the appropriate medical class by the Authority.

2. For admission to a written examination, proof of identification shall be required in the form of a licence or other official document bearing the signature and photograph of the candidate.
3. To be eligible to write the examination required for the issue of a licence or rating, the candidate shall produce the following:
 - a) an applicant for a Private Pilot Licence, or Commercial Pilot Licence shall provide a letter of recommendation from the Flight Training Organization stating that the applicant has completed the ground school instruction, and has reached a sufficient level of knowledge to write the examination;
 - b) an applicant for an Instructor Rating shall provide a letter of recommendation from the applicant's ground training instructor stating that the applicant has completed the ground school instruction, and has reached a sufficient level of knowledge to write the examination;
 - c) in the case of a military applicant, proof of having qualified to pilot wings standard;
 - d) in the case of an applicant holding a licence issued by a contracting state, the recommendation shall not be required provided the applicant is applying for the equivalent Lebanese licence.
4. To be eligible to write the examination required for the issue of a licence or rating, the candidate shall provide proof that the experience and training requirements set out below have been met:
 - a) an applicant for a Private Pilot Licence shall have completed 10 hours flight time in the same category of aircraft;
 - b) an applicant for an Instructor Rating shall have completed fifty percent (50%) of the flight training requirement, and all ground school requirements;
 - c) an applicant for an instrument rating shall have completed a minimum of 20 hours of instrument flight or instrument ground time;
 - d) all other applicants shall have a minimum of fifty percent (50%) of the total flight experience for the issue of the, licence, or rating.

Note: The pass mark for all written examinations under this Sub-part shall be 70% for multiple choice and 60% for essay type exams unless otherwise specified by the Authority.

s401.16 Flight Test Prerequisites

1. Prior to admittance to the flight test for a licence or rating the applicant shall have met the medical standards and hold a valid medical certificate appropriate to the licence or rating for which application is made.
2. For admission to a flight test, proof of identification shall be required in the form of a licence or other official document bearing the signature and photograph of the candidate.
3. Except as stated in paragraphs (d) and (e) below, for admission to a flight test required for the issue of a licence or rating, the candidate shall produce a recommendation, as follows:
 - a) in the case of an applicant for a Private Pilot Licence, a recommendation from a qualified flight instructor certifying that the applicant meets the competency standard for issue of the licence.

- b) in the case of an applicant for a Commercial Pilot Licence, a recommendation from a flight instructor certifying that the applicant meets the competency standard for issue of the Commercial Pilot Licence.
 - c) in the case of an applicant for a rating, a recommendation from the person that provided the training stating that the applicant meets the competency standards for the issue of the rating.
 - d) military applicants who are qualified to pilot wings standard shall not be required to submit the recommendation referred to in (a), (b) and (c) above.
 - e) holders of valid Private and Commercial Pilot Licences issued by a contracting state are not required to have the recommendation referred to in (a) and (b) above, provided that the flight test is for the purpose of obtaining the equivalent Lebanese licence.
4. To be eligible to attempt a flight test required for the issue of a licence or rating:
- a) an applicant for a Private Pilot Licence shall have completed at least 35 hours in the same category of aircraft.
 - b) an applicant for a licence, other than a Private Pilot Licence, shall have completed a minimum of 75% of the total flying experience required for that licence.
 - c) an applicant for an instrument or instructor rating flight test shall have met all the applicable knowledge and experience requirements for the rating prior to the flight test.
 - d) an applicant shall have completed at least 3 hours of the flight training required for the licence or rating within the previous 60 days.

s401.17 Conduct of a Flight Test

1. A person shall be considered to be designated by the Authority to conduct a flight test where:
 - a) the person is the holder of a licence or rating that includes the privileges to conduct the flight test;
 - b) the person is authorized pursuant to the Flight Test Examiner Program or Aircrew Designee Program, to conduct the flight test and meets the following qualifications:
or
 - c) the person is so designated by the Authority.

Type of Flight Test	Minimum Qualifications
1. PPL and Aircraft Class Rating	<ul style="list-style-type: none">holds a valid commercial or airline transport pilot licence for the category and class of aircraft;is qualified to act as PIC of the aircraft;has not less than 1000 hours flight time as pilot in the category of aircraft;not less than 100 hours flight time as pilot in the class of aircrafthas not less than 250 hours flight instructor time; andhas not less than 5 hours PIC on the aircraft type.
2. CPL	<ul style="list-style-type: none">holds a valid commercial or airline transport pilot licence for the category and class of aircraft;is qualified to act as PIC of the aircraft;

	<ul style="list-style-type: none"> • has not less than 2000 hours flight time as pilot in the category of aircraft; • has not less than 250 hours flight instructor time; and • has not less than 5 hours PIC on the aircraft type.
3. ATPL	<ul style="list-style-type: none"> • holds a valid airline transport pilot licence for the category and class of aircraft; • is qualified to act as PIC of the aircraft; • has not less than 2000 hours flight time as a pilot including not less than 250 IFR flight time; • has not less than 100 hours PIC of aircraft operated by two crew; and • has not less than 5 hours PIC on the aircraft type.
4. Aeroplane Type Rating	<ul style="list-style-type: none"> • holds a valid commercial or airline transport pilot licence for the category, class and type of aircraft; • is qualified to act as PIC of the aircraft; • has not less than 1500 hours flight time as a pilot of multi-pilot aeroplanes; • has at least 500 hours as PIC of the aircraft type. <p><i>Note The PIC time requirement may be reduced in situations where a new type is introduced into an aircraft fleet.</i></p>
5. Helicopter Type Rating	<ul style="list-style-type: none"> • holds a valid commercial or airline transport pilot licence for the category, class and type of aircraft; • is qualified to act as PIC of the aircraft; • has not less than 1500 hours flight time as a pilot of helicopters, of which at least 500 hours is as PIC; and • has not less than 5 hours PIC on the aircraft type.
6. Other Aircraft Type Rating	<ul style="list-style-type: none"> • holds a valid commercial or airline transport pilot licence for the category, class and type of aircraft; • is qualified to act as a flight instructor of the aircraft. • is qualified to act as PIC of the aircraft; and • has not less than 5 hours PIC on the aircraft type.
7. Instrument Rating	<ul style="list-style-type: none"> • holds a valid commercial or airline transport pilot licence for the category and class of aircraft with an Instrument Rating; and • has not less than 2000 hours flight time as a pilot including not less than 250 IFR flight time.
8. Flight Instructor Rating	<ul style="list-style-type: none"> • holds a commercial or airline transport pilot licence in the category of aircraft with an Instructor Rating; and • has not less than 2000 hours as a pilot of aircraft of the category, including not less than 100 hours flight time instructing applicants for a Flight Instructor Rating.

2. An Examiner serves as an agent of the Authority. The designation of an Examiner shall be valid for not more than three years and may be renewed at the discretion of the Authority.

3. A flight test conducted in an aeroplane or helicopter shall be conducted in accordance with the procedures and test tolerances as specified in Flight Test Examiner Guide. A record of each flight tests conducted in aeroplanes or helicopters shall be submitted to the Authority and shall contain the following information:
 - a) an assessment of the results for each flight test item;
 - b) the overall results; and
 - c) whether or not the candidate successfully completed the flight test.
4. An examiner's designation may be canceled by the Authority for just cause.
5. The Authority may monitor any flight test provided the aircraft can accommodate the additional person.

Note: In the case of an examiner who's appointment is through the Aircrew Designee program, the Air Operator Certificate holder shall be advised of the decision as soon as possible.

s401.18 Failure of a Flight Test

1. Where an applicant has failed a flight test, the applicant shall be provided with a copy of his/her flight test report and informed by the person conducting the flight test of the conditions to be met prior to the next attempt of the flight test, as set out in the Flight Test Examiner Guide.
2. Where an applicant has failed a flight test, prior to attempting a re-test the applicant shall obtain a written recommendation or certification from a person authorized in this Part to recommend or certify the applicant in respect of the licence or rating applied for, stating that the applicant has received the required training or met any other specified conditions and is considered competent to undertake a flight test

s401.25 Student Pilot Licence Requirements

1. The Student Pilot Licence is valid for the aeroplane, helicopter, glider, free balloon and ultra-light aeroplane categories.
2. Requirements for Issue of a Student Pilot Licence.
 - a) An applicant for a Student Pilot Licence shall meet the following requirements:
 - i) Citizenship:
Confirmation of citizenship shall be provided in accordance with subsection s401.07(1).
 - b) Age:
 - i) Confirmation of age shall be provided in accordance with subsection s401.07(2).
 - ii) An applicant shall be a minimum of eighteen years of age.
 - c) Medical Fitness and Validity:
 - i) An applicant for a Student Pilot Licence shall be in possession of one of Class 1 or 2 Medical Certificate.

- ii) The Medical Certificate for a Student Pilot Licence shall be valid for 24 months if the holder is under the age of 40 years and 12 months if the holder is 40 years of age or older.
- d) English Language Proficiency:
An applicant must be proficient in the English language and be able to converse fluently, in that language.
- e) Knowledge
Prior to solo flight, the Chief Flight Instructor of the Flight Training Organization, or an authorized flight instructor, shall endorse the Student Pilot Licence certifying that the holder has written and successfully passed, a pre-solo exam covering:
 - i) Air law,
 - ii) Air traffic rules and procedures,
 - iii) Communications,
 - iv) Basic aerodynamics applicable to the type of aircraft being used for the training,
 - v) Meteorological phenomena as applicable,
 - vi) Stall recognition and recovery procedures, and
 - vii) Applicable aircraft emergency procedures.
- f) Experience and Skill
The instructor shall be responsible for ensuring that the applicant has reached a satisfactory standard of experience and skill to complete solo flight before authorizing the first solo flight.

s401.26 Private Pilot Licence-Aeroplanes - Requirements

1. Age - An applicant shall be a minimum of eighteen years of age.
2. Medical Fitness and Validity:
 - a) an applicant shall hold a valid Class 1 or 2 Medical Certificate.
 - b) the medical validity period for the licence holder under 40 years of age is 24 months and for a licence holder 40 years of age or over, is 12 months.
 - c) the licence is maintained by a valid Class 1 or 2 Medical Certificate.
3. Knowledge - An applicant shall have completed an approved course that includes a minimum of 40 hours private pilot ground school that meets a standard equivalent to the ground training syllabus contained in Appendix A, and passed exams specified by the Authority, in:
 - a) Air law,
 - b) Aircraft general knowledge,
 - c) Principles of flight,
 - d) Flight performance and planning,
 - e) Navigation,
 - f) Meteorology,
 - g) Operational procedures,
 - h) Human performance and limitations, and
 - i) Communications.

4. Experience -
- a) An applicant shall have completed a minimum of 40 hours private pilot flight training in aeroplanes, at a certificated Flight Training Organization, in accordance with an approved Flight Training Program. A maximum 5 of the 40 hours may be conducted on an approved aeroplane simulator or flight training device.
 - b) The flight training program shall include a minimum of:
 - i) 15 hours of dual instruction flight time, including
 - a) 3 hours cross-country flight time; and
 - b) 5 hours instrument time, 3 of which may be ground instrument time; and
 - ii) 10 hours solo flight time, including 5 hours cross-country flight time with a flight of a minimum of 150 nautical miles, in the course of which full stop landings at two different aerodromes shall be made.
5. Skill - Within the 12 months preceding the date of application for the licence, an applicant shall have successfully completed a flight test to the standard specified in the Flight Test Examiner Guide.
6. Credits - Holders of pilot licences in another category of aircraft may be granted credit toward the knowledge and experience requirements as follows:.
- a) Knowledge
 - i) An applicant who holds a private or higher type pilot licence for helicopters may, when applying for the issue of Private Pilot Licence - Aeroplanes have the 40 hour ground instruction requirement reduced to 20 hours.
 - b) Experience
 - i) The total flight time must include a minimum of 30 hours in aeroplanes.
 - ii) Where an applicant holds a pilot licence in another aircraft category flight time credits shall be claimed as follows:
 - a) Helicopter
 - (1) a maximum of 10 hours towards the total flight time; and
 - (2) a maximum of 4 hours solo flight time, 2 hours of which shall be credited to solo cross-country flight time.
 - b) Glider
 - (1) A maximum of 5 hours pilot-in-command flight time towards the total flight time.
 - c) Three Axis Ultra-light Aeroplane
 - (1) A maximum of 10 hours pilot-in-command flight time towards the total flight time.

Credits for Military Applicants - Active and retired Lebanese Air Force personnel who have qualified to pilot wings standard on aeroplanes, and who have not been removed from flying status for lack of proficiency or because of disciplinary action involving aircraft operations, shall be deemed to have met the ground school instruction and flight training requirements, provided that:

- a) the applicant meets the experience requirements of which a minimum of 10 hours flight time in aeroplanes shall have been acquired in the 12 months preceding the date of application.

s401.27 Private Pilot Licence-Helicopter - Requirements

1. Age - An applicant shall be a minimum of seventeen years of age.
2. Medical Fitness and Validity
 - a) an applicant shall hold a valid Class 1 or 2 Medical Certificate.
 - b) the medical validity period for the licence holder under 40 years of age is 24 months and for a licence holder 40 years of age or over, is 12 months.
 - c) the licence is maintained by a valid Class 1 or 2 Medical Certificate.
3. Knowledge - An applicant shall have completed an approved course that includes a minimum of 40 hours private pilot ground school that meets a standard equivalent to the ground training syllabus contained in Appendix A, and passed exams specified by the Authority, in:
 - a) Air law,
 - b) Aircraft general knowledge,
 - c) Principles of flight,
 - d) Flight performance and planning ,
 - e) Navigation,
 - f) Meteorology,
 - g) Operational procedures,
 - h) Human performance and limitations, and
 - i) Communications.
4. Experience -
 - a) An applicant shall have completed a minimum of 40 hours private pilot flight training in helicopters, at a certificated Flight Training Organization, in accordance with an approved Flight Training Program. A maximum 5 of the 40 hours may be conducted on an approved aeroplane simulator or flight training device.
 - b) The flight training program shall include a minimum of:
 - i) 20 hours of dual instruction flight time, including 3 hours cross-country flight time; and
 - ii) 10 hours solo flight time, including 5 hours cross-country flight time with a flight of a minimum of 100 nautical miles, which shall include 2 landings at points other than the point of departure.
5. Skill - Within the 12 months preceding the date of application for the licence, an applicant shall have successfully completed a flight test to the standard specified in the Flight Test Examiner Guide..
6. Credits - Holders of pilot licences in another category of aircraft may be granted credit toward the knowledge and experience requirements as follows:
 - a) Knowledge
 - i) An applicant who holds a private or higher type pilot licence for aeroplanes may, when applying for the issue of Private Pilot Licence - Helicopters have the 40 hour ground instruction requirement reduced to 20 hours.
 - b) Experience
 - i) The total flight time must include a minimum of 30 hours in helicopters.

- ii) Where an applicant holds a pilot licence in another aircraft category flight time credits shall be claimed as follows:
 - A) Aeroplanes and Gyroplanes
 - (1) a maximum of 10 hours towards the total flight time; and
 - (2) a maximum of 4 hours solo flight time, 2 hours of which shall be credited to solo cross-country flight time.
 - B) Glider
 - (1) A maximum of 5 hours pilot-in-command flight time towards the total flight time.
 - C) Three Axis Ultra-light Aeroplane
 - (1) A maximum of 10 hours pilot-in-command flight time towards the total flight time.
- 7. Credits for Military Applicants - Active and retired Lebanese Air Force personnel who have qualified to pilot wings standard on helicopters, and who have not been removed from flying status for lack of proficiency or because of disciplinary action involving aircraft operations, shall be deemed to have met the ground school instruction and flight training requirements, provided that:
 - a) the applicant meets the experience requirements of which a minimum of 10 hours flight time in helicopters shall have been acquired in the 12 months preceding the date of application..

s401.28 Commercial Pilot-Aeroplanes - Requirements

- 1. Age - An applicant shall be a minimum of eighteen years of age.
- 2. Medical Fitness and Validity
 - a) an applicant shall hold a Class 1 Medical Certificate valid for a Commercial Pilot Licence - Aeroplanes.
 - b) The medical validity period for the licence holder under 40 years of age is 12 months and for a licence holder 40 years of age or over is 6 months.
 - c) The licence holder may exercise Private Pilot Licence - Aeroplanes privileges until the end of the medical period specified for the Private Pilot Licence.
 - d) The licence is maintained by a valid Class 1 Medical Certificate.
- 3. Knowledge - An applicant shall have completed an approved course that includes a minimum of 40 hours commercial pilot ground school that meets a standard equivalent to the ground training syllabus contained in Appendix B, and passed exams specified by the Authority, in:
 - a) Air law,
 - b) Aircraft general knowledge,
 - c) Principles of flight,
 - d) Flight performance and planning ,
 - e) Navigation,
 - f) Meteorology,
 - g) Operational procedures,
 - h) Human performance and limitations, and
 - i) Communications

4. Experience -
- a) An applicant for a shall have completed a minimum of 200 flight time hours in aeroplanes having a standard certificate of airworthiness, or 150 hours flight time in aeroplanes if the ground school course specified in para 3 and the flight training specified in para 4.b was completed at a certificated Flight Training Organization, in accordance with an approved Flight Training Program. A maximum of 10 of the required hours may be conducted on an approved aeroplane simulator or flight training device. The flight time shall include 100 hours pilot-in-command 20 of which shall be cross-country time.
 - b) The applicant shall have completed in aeroplanes, not less than:
 - i) 35 hours of dual instruction time, including:
 - A) 3 hours night, including a minimum of 1 hour cross-country flight time;
 - B) 5 hours cross-country flight time, which may include the cross-country experience from A) above; and
 - C) 10 hours instrument time in addition to the experience stated in A) and B) above. A maximum of 5 hours of the 10 hours may be conducted in an approved aeroplane simulator or flight training device.
 - ii) 30 hours supervised solo flight time, including:
 - A) 25 hours solo flight time emphasizing the improvement of general flying skills of the applicant which shall include a cross-country flight to a point of a minimum of 300 nautical miles from the point of departure, in the course of which full stop landings at two different aerodromes shall be made; and
 - B) 5 hours solo flight at night during which a minimum of 10 take-offs, circuits and landings were completed.
5. Skill - Within the 12 months preceding the date of application for the licence, an applicant shall have successfully completed a flight test to the standard specified in the Flight Test Examiner Guide.
6. Credits - Holders of pilot licences for other aircraft, may be granted credit toward the knowledge and experience requirements as follows:
- a) Knowledge
 - i) An applicant who holds a Commercial Pilot Licence - Helicopters, shall, when applying for the issue of a Commercial Pilot Licence - Aeroplanes have the 40 hour ground school instruction requirement reduced to 20 hours.
 - b) Experience

Where an applicant holds a pilot licence in another aircraft category, flight time credits may be claimed as follows:

 - i) Commercial Pilot Licence - Helicopters

Where an applicant holds a Commercial Pilot Licence - Helicopters, the 200 hours total flight time in aeroplanes required by paragraph (4)(a) above shall be deemed to have been met provided the applicant has completed a minimum of 100 hours pilot flight time in aeroplanes, including the 65 hours experience requirement demanded by paragraph (4)(b) above.
 - ii) Private Pilot Licence - Helicopters

Where an applicant holds a Private Pilot Licence - Helicopters

- A) a maximum of 50 hours flight time in helicopters shall be credited towards the 200 hours total flight time requirement, and
- B) a maximum of 25 hours of pilot-in-command flight time in helicopters shall be credited towards the 100 hours pilot-in-command flight time requirement.

iii) Pilot Licence - Glider

Where an applicant holds a Pilot Licence - Glider, a maximum of 50 hours flight time in gliders shall be credited towards the 200 hours total flight time requirement and this time shall not be credited towards the 100 hour pilot-in-command flight time.

iv) Three Axis Ultra-light Aeroplane

A maximum of 25 hours pilot-in-command flight time in three axis ultra-light aeroplanes shall be credited towards the 200 hours total flight time requirement and this time shall not be credited towards the 100 hour pilot-in-command flight time.

v) Instrument Flight Time

An applicant who holds a pilot licence - helicopter category shall be credited with instrument flight time acquired in helicopters towards meeting the instrument flight time experience requirements provided that the applicant has acquired a minimum of 10 hours of dual instrument flight time in aeroplanes.

vi) Night Flight Time

- A) Where an applicant holds a Private Pilot Licence - Aeroplanes with a night rating, the total dual and solo night flight time requirements shall be deemed to have been met provided that the 35 hours dual instruction flight time and 30 hours solo flight time requirements are met.
- B) Where an applicant holds a pilot licence - helicopter category valid for night privileges, the night flight time acquired in helicopters shall be credited towards the total dual and solo night flight time requirements provided that the applicant has acquired at night, in aeroplanes, a minimum of 1 hour dual instruction flight time and 1 hour solo flight time and the 35 hours dual instruction flight time and 30 hours solo flight time requirements are met.

7. Credits for Military Applicants - Active and retired Lebanese Air Force personnel who have qualified to pilot wings standard on aeroplanes, and who have not been removed from flying status for lack of proficiency or because of disciplinary action involving aircraft operations, shall be deemed to have met the ground school instruction and flight training requirements provided that:
- a) the applicant meets the experience requirements of which a minimum of 10 hours flight time in aeroplanes shall have been acquired in the 12 months preceding the date of application.

s401.29 Commercial Pilot-Helicopters - Requirements

- 1. Age - An applicant shall be a minimum of eighteen years of age.
- 2. Medical Fitness and Validity

- a) an applicant shall hold a Class 1 Medical Certificate valid for a Commercial Pilot Licence - Helicopters.
 - b) The medical validity period for the licence holder under 40 years of age is 12 months and for a licence holder 40 years of age or over is 6 months.
 - c) The licence holder may exercise Private Pilot Licence - Helicopters privileges until the end of the medical period specified for the Private Pilot Licence.
 - d) The licence is maintained by a valid Class 1 Medical Certificate.
3. Knowledge - An applicant shall have completed an approved course that includes a minimum of 40 hours commercial pilot ground school that meets a standard equivalent to the ground training syllabus contained in Appendix B, and passed exams specified by the Authority, in:
- a) Air law,
 - b) Aircraft general knowledge,
 - c) Principles of flight,
 - d) Flight performance and planning ,
 - e) Navigation,
 - f) Meteorology,
 - g) Operational procedures,
 - h) Human performance and limitations, and
 - i) Communications
4. Experience -
- a) An applicant for a shall have completed a minimum of 150 flight time hours in helicopters, or 100 hours flight time in helicopters if the ground school course specified in para 3 and the flight training specified in paras 4.b was completed at a certificated Flight Training Organization, in accordance with an approved Flight Training Program. A maximum of 10 of the required hours may be conducted on an approved helicopter simulator or flight training device. The flight time shall include not less than 35 hours pilot-in-command, 10 hours of which shall be cross-country time.
 - b) The applicant shall have completed in helicopters, not less than:
 - i) 35 hours of dual instruction time, including:
 - A) 3 hours night, including a minimum of 1 hour cross-country flight time; which may include the cross-county experience from a) above; and
 - B) 10 hours instrument time. A maximum of 5 hours of the 10 hours may be conducted in an approved aeroplane simulator or flight training device.
 - ii) 20 hours solo flight time, including:
 - A) 15 hours solo flight time emphasizing the improvement of general flying skills of the applicant which shall include a cross-country flight to a point of a minimum of 2 hours flight time from the point of departure and shall include a minimum of 3 landings at a points other than the point of departure; and
 - B) 5 hours solo flight at night during which a minimum of 5 take-offs, circuits and landings were completed.

5. Skill - Within the 12 months preceding the date of application for the licence, an applicant shall have successfully completed a flight test to the standard specified in the Flight Test Examiners Guide.
6. Credits - Holders of pilot licences for other aircraft, may be granted credit toward the knowledge and experience requirements as follows:
 - a) Knowledge
 - i) An applicant who holds a Commercial Pilot Licence - Aeroplanes, shall, when applying for the issue of a Commercial Pilot Licence - Helicopters have the 40 hour ground school instruction requirement reduced to 20 hours.
 - b) Experience

Where an applicant holds a pilot licence in another aircraft category, flight time credits may be claimed as follows:

 - i) Where an applicant holds a Commercial Pilot Licence - Aeroplanes, the 150 hours total flight time in helicopters required by paragraph (4)(a) above shall be deemed to have been met provided the applicant has completed a minimum of 60 hours pilot flight time in helicopters, including the experience requirement demanded by paragraph (4)(b) above.
 - ii) Instrument Flight Time

An applicant who holds a pilot licence - aeroplane category shall be credited with instrument flight time acquired in aeroplanes towards meeting the instrument flight time experience requirements provided that the applicant has acquired a minimum of 5 hours of dual instrument flight time in aeroplanes.
 - iii) Night Flight Time
 - A) Where an applicant holds a Private Pilot Licence - Helicopters with a night rating, the total dual and solo night flight time requirements shall be deemed to have been met provided that the 35 hours dual instruction flight time and 20 hours solo flight time requirements are met.
 - B) Where an applicant holds a pilot licence - aeroplanes category valid for night privileges, the night flight time acquired in aeroplanes shall be credited towards the total dual and solo night flight time requirements provided that the applicant has acquired at night, in helicopters, a minimum of 1 hour dual instruction flight time and 1 hour solo flight time and the 35 hours dual instruction flight time and 20 hours solo flight time requirements are met.
7. Credits for Military Applicants - Active and retired Lebanese Air Force personnel who have qualified to pilot wings standard on helicopters, and who have not been removed from flying status for lack of proficiency or because of disciplinary action involving aircraft operations, shall be deemed to have met the ground school instruction and flight training requirements provided that:
 - a) the applicant meets the experience requirements of which a minimum of 10 hours flight time in aeroplanes shall have been acquired in the 12 months preceding the date of application.

s401.30 Airline Transport Pilot Licence-Aeroplanes - Requirements

1. Age - An applicant shall be a minimum of twenty-one years of age.

2. Medical Fitness and Validity
 - a) An applicant shall hold a Class 1 Medical Certificate valid for an Airline Transport Pilot Licence - Aeroplanes.
 - b) The medical validity period for the licence holder under 40 years of age is 12 months and for a licence holder 40 years of age or over is 6 months.
 - c) The licence holder may exercise Private Pilot Licence - Aeroplanes privileges until the end of the medical period specified for the Private Pilot Licence.
 - d) The licence is maintained by a valid Class 1 Medical Certificate.
3. Knowledge - An applicant shall have passed exams, as specified by the Authority, in:
 - a) Air law:
 - i) rules and regulations relevant to the holder of an airline transport pilot licence - aeroplane; rules of the air; appropriate air traffic services practices and procedures;
 - b) Aircraft general knowledge:
 - i) general characteristics and limitations of electrical, hydraulic, pressurization and other aeroplane systems; flight control systems, including autopilot and stability augmentation;
 - ii) principles of operation, handling procedures and operating limitations of aeroplane powerplants; effects of atmospheric conditions on engine performance; relevant operational information from the flight manual or other appropriate document;
 - iii) operating procedures and limitations of appropriate aeroplanes; effects of atmospheric conditions on aeroplane performance;
 - iv) use and serviceability checks of equipment and systems of appropriate aeroplanes;
 - v) flight instruments; compasses, turning and acceleration errors; gyroscopic instruments, operational limits and precession effects; practices and procedures in the event of malfunctions of various flight instruments;
 - vi) maintenance procedures for airframes, systems and powerplants of appropriate aeroplanes;
 - c) Flight performance and planning:
 - i) effects of loading and mass distribution on aeroplane handling, flight characteristics and performance; mass and balance calculations;
 - ii) use and practical application of take-off, landing and other performance data, including procedures for cruise control;
 - iii) pre-flight and en-route operational flight planning; preparation and filing of air traffic services flight plans; appropriate air traffic services procedures; altimeter setting procedures;
 - d) Human performance and limitations:
 - i) human performance and limitations relevant to the airline transport pilot - aeroplane;
 - ii) Crew Resource Management;
 - e) Meteorology:
 - i) interpretation and application of aeronautical meteorological reports, charts and forecasts; codes and abbreviations; use of, and procedures for obtaining, meteorological information, pre-flight and in-flight; altimetry;
 - ii) aeronautical meteorology; climatology of relevant areas in respect of the elements having an effect upon aviation; the movement of pressure systems; the

- structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
 - iii) causes, recognition and effects of engine and airframe icing; frontal zone penetration procedures; hazardous weather avoidance;
 - iv) practical high altitude meteorology, including interpretation and use of weather reports, charts and forecasts; jetstreams;
 - f) Navigation:
 - i) air navigation, including the use of aeronautical charts, radio navigation aids and area navigation systems; specific navigation requirements for long-range flights;
 - ii) use, limitation and serviceability of avionics and instruments necessary for the control and navigation of aeroplanes;
 - iii) use, accuracy and reliability of navigation systems used in departure, en-route, approach and landing phases of flight; identification of radio navigation aids;
 - iv) principles and characteristics of self-contained and external-referenced navigation systems; operation of airborne equipment;
 - g) Operational procedures:
 - i) interpretation and use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations, and instrument procedure charts for departure, en-route, descent and approach;
 - ii) precautionary and emergency procedures; safety practices associated with flight under IFR;
 - iii) operational procedures for carriage of freight and dangerous goods;
 - iv) requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from aeroplanes;
 - h) Principles of flight:
 - i) principles of flight relating to aeroplanes; sub-sonic aerodynamics; compressibility effects, manoeuvre boundary limits, wing design characteristics, effects of supplementary lift and drag devices; relationships between lift, drag and thrust at various airspeeds and in different flight configurations;
 - i) Radiotelephony:
 - i) radiotelephony procedures and phraseology; action to be taken in case of communication failure.
- 4. Experience - An applicant shall have at least 1,500 hours of flight time of which a minimum of 900 hours shall be in aeroplanes. The remainder may be in helicopters provided the applicant hold at least a Commercial Pilot Licence - Helicopters, or may include flight time credits specified in s401.28. The total flight time shall include an minimum of:
 - a) 250 hours pilot-in-command flight time in aeroplanes which shall include where applicable, a maximum of 150 hours pilot-in-command under supervision flight time completed in accordance with s401.13;
 - b) 100 hours night flight time as pilot-in-command or as co-pilot of which a minimum of 30 hours shall have been acquired in aeroplanes;
 - c) 200 hours cross-country flight time as pilot, or as co-pilot in an aeroplane required to be operated with a co-pilot of which not less than 100 hours shall be as pilot-in-command or pilot-in-command under supervision in accordance with a401.13; and
 - d) 75 hours instrument time of which a maximum of 30 hours may be instrument ground time acquired in an approved flight training device and a maximum of 35 hours may have been acquired in helicopters.

- e) Instrument ground time shall not be applied toward the total 1500 hour flight time requirement.
 - f) A maximum of 100 hours may have been completed in an approved flight simulator.
5. Flight Instruction
- a) The applicant shall have received the dual flight instruction required for the issue of a commercial pilot licence - aeroplanes and for the issue of an instrument rating - aeroplanes.
6. Skill
- a) Within the 12 months preceding the date of application for the licence, an applicant shall have successfully completed a flight test to the standard specified in the Flight Test Examiners Guide. The applicant shall demonstrate the ability to perform as pilot-in-command in a multi-engine aeroplane required to be operated by a crew of at least two pilots operated under IFR or simulated IFR, conditions.
 - b) The ATPL-A skill test may serve at the same time as a skill test for the issue of the licence and a proficiency check for the revalidation of the type rating for the aeroplane used in the test and may be combined with the skill test for the issue of a type rating.
7. Other - A valid Instrument Rating is required for the exercise of the privileges of an Airline Transport Pilot Licence - Aeroplanes.
8. Credits - Holders of pilot licences or equivalent privileges for other aircraft may be granted credits as follows:
- a) Glider - a maximum of 50 hours flight time in gliders shall be credited towards the total 1500 hour flight time requirement.
 - b) Three Axis Ultra-light Aeroplanes - a maximum of 50 hours flight time in three axis ultra-light aeroplanes shall be credited towards the total 1500 hour flight time requirement.

s401.31 Airline Transport Pilot Licence-Helicopters - Requirements

1. Age - An applicant shall be a minimum of twenty-one years of age.
2. Medical Fitness and Validity
- a) An applicant shall hold a Class 1 Medical Certificate valid for an Airline Transport Pilot Licence - Helicopters.
 - b) The medical validity period for the licence holder under 40 years of age is 12 months and for a licence holder 40 years of age or over is 6 months.
 - c) The licence holder may exercise Private Pilot Licence - Helicopters privileges until the end of the medical period specified for the Private Pilot Licence.
 - d) The licence is maintained by a valid Class 1 Medical Certificate.
3. Knowledge - An applicant shall have passed exams, as specified by the Authority, in:
- a) Air law:

- i) rules and regulations relevant to the holder of an airline transport pilot licence - helicopter; rules of the air; appropriate air traffic services practices and procedures;
- b) Aircraft general knowledge:
 - i) general characteristics and limitations of electrical, hydraulic, and other helicopter systems; flight control systems, including autopilot and stability augmentation;
 - ii) principles of operation, handling procedures and operating limitations of helicopter powerplants; transmission (power-trains); effects of atmospheric conditions on engine performance; relevant operational information from the flight manual;
 - iii) operating procedures and limitations of appropriate helicopters; effects of atmospheric conditions on helicopter performance; relevant operational information from the flight manual;
 - iv) use and serviceability checks of equipment and systems of appropriate helicopters;
 - v) flight instruments; compasses, turning and acceleration errors; gyroscopic instruments, operational limits and precession effects; practices and procedures in the event of malfunctions of various flight instruments;
 - vi) maintenance procedures for airframes, systems and powerplants of appropriate helicopters;
- c) Flight performance and planning:
 - i) effects of loading and mass distribution, including external loads, on helicopter handling, flight characteristics and performance; mass and balance calculations;
 - ii) use and practical application of take-off, landing and other performance data, including procedures for cruise control;
 - iii) pre-flight and en-route operational flight planning; preparation and filing of air traffic services flight plans; appropriate air traffic services procedures; altimeter setting procedures;
- d) Human performance and limitations:
 - i) human performance and limitations relevant to the airline transport pilot - helicopter;
- e) Meteorology:
 - i) interpretation and application of aeronautical meteorological reports, charts and forecasts; codes and abbreviations; use of, and procedures for obtaining, meteorological information, pre-flight and in-flight; altimetry;
 - ii) aeronautical meteorology; climatology of relevant areas in respect of the elements having an effect upon aviation; the movement of pressure systems, the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
 - iii) causes, recognition and effects of engine, airframe and rotor icing; hazardous weather avoidance;
- f) Navigation:
 - i) air navigation, including the use of aeronautical charts, radio navigation aids and area navigation systems; specific navigation requirements for long-range flights;
 - ii) use, limitation and serviceability of avionics and instruments necessary for the control and navigation of helicopters;
 - iii) use, accuracy and reliability of navigation systems; identification of radio navigation aids;
 - iv) principles and characteristics of self-contained and external-referenced navigation systems; operation of airborne equipment;

- g) Operational procedures:
 - i) interpretation and use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
 - ii) precautionary and emergency procedures; settling with power, ground resonance, retreating blade stall, dynamic roll-over and other operating hazards; safety practices associated with flight under VFR;
 - iii) operational procedures for carriage of freight, including external loads, and dangerous goods;
 - iv) requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from helicopters;
 - h) Principles of flight:
 - i) principles of flight relating to helicopters;
 - i) Radiotelephony:
 - i) radiotelephony procedures and phraseology as applied to VFR operations; action to be taken in case of communication failure.
4. Experience - An applicant shall have at least 1,000 hours of flight time, of which a minimum of 600 hours shall have been completed in helicopters. The remainder may be in aeroplanes provided the applicant hold at least a Commercial Pilot Licence - Aeroplanes, or may include flight time credits specified in s401.29. The experience shall include :
- a) 250 hours pilot-in-command flight time in helicopters as pilot-in-command, which may include a maximum of 150 hours pilot-in-command under supervision flight time in accordance with s401.13;
 - b) 50 hours night flight time as pilot-in-command or as co-pilot of which a minimum of 15 hours shall have been acquired in helicopters;
 - c) 200 hours cross-country flight time in helicopters of which a minimum of 100 hours shall be as pilot-in-command or as pilot-in-command under supervision in accordance with Section s401.13;
 - d) 30 hours instrument time of which a maximum of 10 hours may be instrument ground time acquired in an approved flight training device and a maximum of 15 hours may have been acquired in aeroplanes.
 - e) Instrument ground time may not be applied toward the total 1000 hour flight time requirement.
 - f) A maximum of 15 hours of the total flight time may have been completed in gliders or ultra-light aircraft.
 - g) A maximum of 100 hours of the total flight time may have been completed in an approved flight simulator.
5. Flight Instruction
- a) The applicant shall have received the dual flight instruction required for the issue of a commercial pilot licence - helicopters and for the issue of an instrument rating - helicopters.
6. Skill
- a) Within the 12 months preceding the date of application for the licence, an applicant shall have successfully completed a flight test to the standard specified in the Flight Test Examiners Guide. The applicant shall demonstrate the ability to perform as pilot-in-command in a helicopter required to be operated by a crew of at least two pilots.

- b) The ATPL-H skill test may serve at the same time as a skill test for the issue of the licence and a proficiency check for the revalidation of the type rating for the helicopter used in the test and may be combined with the skill test for the issue of a type rating.

s401.32 Pilot Licence-Gliders - Requirements

1. Age - An applicant shall be a minimum of eighteen years of age.
2. Medical Fitness and Validity
 - a) An applicant shall hold a Class 2 Medical Certificate valid for a pilot licence – gliders.
 - b) The medical validity period for the licence holder under 40 years of age is 24 months and for a licence holder 40 years of age or over, 12 months.
 - c) The licence is maintained by a valid Class 1 or 2 Medical Certificate.:
3. Knowledge - An applicant shall have completed a course of glider pilot ground instruction of at least 15 hours in the following subjects:
 - a) Air law:
 - i) rules and regulations relevant to the holder of a glider pilot licence; rules of the air; appropriate air traffic services practices and procedures;
 - b) Aircraft general knowledge:
 - i) principles of operation of glider systems and instruments;
 - ii) operating limitations of gliders; relevant operational information from the flight manual or other appropriate document;
 - c) Flight performance and planning:
 - i) effects of loading and mass distribution on flight characteristics; mass and balance considerations;
 - ii) use and practical application of launching, landing and other performance data;
 - iii) pre-flight and en-route flight planning appropriate to operations under VFR; appropriate air traffic services procedures; altimeter setting procedures; operations in areas of high-density traffic;
 - d) Human performance and limitations:
 - i) human performance and limitations relevant to the glider pilot;
 - e) Meteorology:
 - i) application of elementary aeronautical meteorology; use of, and procedures for obtaining, meteorological information; altimetry;
 - f) Navigation:
 - i) practical aspects of air navigation and dead-reckoning techniques; use of aeronautical charts;
 - g) Operational procedures:
 - i) use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
 - ii) different launch methods and associated procedures;
 - iii) appropriate precautionary and emergency procedures, including action to be taken to avoid hazardous weather and wake turbulence and other operating hazards;
 - h) Principles of flight:
 - i) principles of flight relating to gliders.
 - i) Radiotelephony:
 - i) procedures and phraseology applicable to VFR operations and actions to be taken in case of communication failure; and
 - j) passed exams, as approved by the Authority.

4. Experience - An applicant shall have completed a minimum of 6 hours of glider pilot flight training, under the direction and supervision of a glider pilot, qualified, in accordance with this subpart, to provide glider pilot instruction. The flight training shall include:
 - a) a minimum of 1 hour dual instruction flight time, and
 - b) 2 hours solo flight time, including a minimum of 20 takeoffs and 20 landings,
 - c) The flight training shall include experience in the following areas.
 - i) pre-flight operations, including glider assembly and inspection;
 - ii) techniques and procedures for the launching method used, including appropriate airspeed limitations, emergency procedures and signals used;
 - iii) traffic pattern operations, collision avoidance precautions and procedures;
 - iv) control of the glider by external visual reference;
 - v) flight throughout the flight envelope;
 - vi) recognition of, and recovery from, incipient and full stalls and spiral dives;
 - vii) normal and cross-wind launches, approaches and landings;
 - viii) cross-country flying using visual reference and dead-reckoning;
 - ix) emergency procedures.
5. Skill - Within the 12 months preceding the date of application for the licence, an applicant shall demonstrate to a glider instructor, in flight and on the ground, familiarity with, and the ability to perform both normal and emergency manoeuvres appropriate to the glider used in the test and with a degree of competency such that the successful outcome of a procedure or maneuver is never in doubt.
6. Credits
 - a) Knowledge
 - i) An applicant who holds a pilot licence in any other category of aircraft shall be deemed to have met 10 of the 15 hours ground school instruction requirement.
 - ii) An applicant who holds a pilot licence - aeroplane may be deemed to have met the ground school instruction requirement.
 - iii) An applicant who holds a pilot licence - aeroplane shall be deemed to have met the written examination requirement.
 - b) Experience - An applicant who holds a pilot licence - aeroplane category shall have the total glider pilot flight training time reduced to a minimum of 3 hours, which shall include the minimum flight training specified.
7. Credits for Foreign Applicants - The holder of a licence or equivalent document in the glider category, issued by a Contracting State shall be deemed to have met the ground school instruction requirement, the written examination requirement and the skill requirement provided that the applicant:
 - a) meets the experience requirements;
 - b) has passed the Air Law written examination, and
 - c) has completed in gliders a minimum of 5 take-offs and landings within the 6 months preceding.

8. Instructor Qualifications - The standard to be met for the holder of a Pilot Licence-Gliders to provide glider pilot instruction is:
- a) Age - A minimum of eighteen years of age.
 - b) Knowledge and Experience -
 - i) shall have completed a course of instructional techniques which shall be a minimum of 10 hours and include the following:
 - a) the practical application of the basic principles of learning and techniques of instruction;
 - b) preparation and use of lesson plans;
 - c) flight preparatory instruction;
 - d) pre and post flight briefing procedures relative to air exercises and weather conditions; and
 - e) normal and emergency manoeuvres.
 - ii) Shall have completed in gliders a minimum of:
 - a) 20 hours flight time including a minimum of 125 flights of which no fewer than 10 flights have been completed in a two-seat glider; or
 - b) 10 hours flight time including a minimum of 200 flights of which no fewer than 10 flights have been completed in a two-seat glider.
 - c) Skill - Shall have a log book endorsement from the holder of a Pilot Licence-Gliders who meets the qualifications to provide glider pilot instruction, certifying that the applicant has reached a standard of skill to instruct in gliders.
 - d) Credits -
 - i) A person who holds a private or higher pilot licence - aeroplane shall have the total flight time and the total number of flights specified in the Experience Requirement above reduced by 25%.
 - ii) A person with aeroplane pilot experience in excess of 100 hours who holds a private or higher pilot licence - aeroplanes shall be issued a Flight Instructor Rating - Glider after completing a minimum of 10 hours flight time in gliders and at least 50 flights with no fewer than 10 of these flights in two-seat gliders.
 - iii) A person with a commercial or higher pilot licence - aeroplanes who holds a valid Flight Instructor Rating - Aeroplanes:
 - a) shall be issued a Flight Instructor Rating - Glider after completing a minimum of at least 25 flights in gliders with no fewer than 10 of these flights in two seat gliders.
 - b) the instructional techniques course specified under the Knowledge Requirement above shall also be deemed to have been met.

s401.33 Free Balloons Pilot Licence - Requirements

- 1. Age - An applicant shall be a minimum of eighteen years of age.
- 2. Medical Fitness and Validity
 - a) An applicant shall hold a Class 2 Medical Certificate valid for a free balloon pilot licence.
 - b) The medical validity period for the licence holder under 40 years of age is 24 months and for a licence holder 40 years of age or over, 12 months.
 - c) The licence is maintained by a valid Class 1 or 2 Medical Certificate.

3. Knowledge - An applicant shall have completed a course of free balloon pilot ground instruction of at least 10 hours in the following subjects:
- a) Air law:
 - i) rules and regulations relevant to the holder of a free balloon pilot licence; rules of the air; appropriate air traffic services practices and procedures;
 - b) Aircraft general knowledge:
 - i) principles of operation of free balloon systems and instruments;
 - ii) operating limitations of free balloons; relevant operational information from the flight manual or other appropriate document;
 - iii) physical properties and practical application of gases used in free balloons;
 - c) Flight performance and planning:
 - i) effects of loading on flight characteristics; mass calculations;
 - ii) use and practical application of launching, landing and other performance data, including the effect of temperature;
 - iii) pre-flight and en-route flight planning appropriate to operations under VFR; appropriate air traffic services procedures; altimeter setting procedures; operations in areas of high-density traffic;
 - d) Human performance and limitations:
 - i) human performance and limitations relevant to the free balloon pilot;
 - e) Meteorology:
 - i) application of elementary aeronautical meteorology; use of, and procedures for obtaining, meteorological information; altimetry;
 - f) Navigation:
 - i) practical aspects of air navigation and dead-reckoning techniques; use of aeronautical charts;
 - g) Operational procedures:
 - i) use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
 - ii) appropriate precautionary and emergency procedures, including action to be taken to avoid hazardous weather, wake turbulence and other operating hazards;
 - h) Principles of flight:
 - i) principles of flight relating to free balloons.
 - i) Radiotelephony:
 - i) procedures and phraseology applicable to VFR operations and actions to be taken in case of communication failure; and
 - j) passed exams, as approved by the Authority.
4. Experience - An applicant shall have completed a minimum of 16 hours balloon pilot flight time under the direction and supervision of the holder of a person qualified under this Subpart to provide free balloon pilot instruction. The flight time shall include a minimum of:
- a) 6 dual instruction flights of a minimum of 30 minutes each including 1 ascent to an altitude of a minimum of 5,000 feet above ground level; and
 - b) 2 flights as sole occupant of a minimum of 30 minutes each between takeoff and landing.
 - c) the instruction shall include:
 - i) pre-flight operations, including balloon assembly, rigging, inflation, mooring and inspection;

- ii) techniques and procedures for the launching and ascent, including appropriate limitations, emergency procedures and signals used;
 - iii) collision avoidance precautions;
 - iv) control of a free balloon by external visual reference;
 - v) recognition of, and recovery from, rapid descents;
 - vi) cross-country flying using visual reference and dead-reckoning;
 - vii) approaches and landings, including ground handling; and
 - viii) emergency procedures.
5. Skill - Within the 12 months preceding the date of application for the licence, an applicant shall demonstrate to a free balloon instructor, in flight and on the ground, familiarity with and the ability to perform both normal and emergency manoeuvres and procedures appropriate to the balloon used in the test and with a degree of competency such that the successful outcome of a procedure or an maneuver is never seriously in doubt.
6. Credits - Knowledge - An applicant who holds a pilot licence in any other category of aircraft shall be deemed to have met 5 of the 10 hours of ground school instruction requirement.
7. Credits for Foreign Applicants - The holder of a free balloon pilot licence, issued by a Contracting State shall be deemed to have met the ground school instruction requirement, the written examination requirement and the skill requirement provided that the applicant:
- a) meets the experience requirements;
 - b) has passed the written Air Law examination; and
 - c) has completed in balloons a minimum of 5 take-offs and landings within the previous 6 months.
8. Instructor Qualifications - The standard to be met for the holder of a Free Balloon Pilot Licence to provide free balloon pilot instruction is:
- a) Age - a minimum of eighteen years of age.
 - b) Knowledge and Experience -
 - i) shall have completed a course of instructional techniques which shall be a minimum of 10 hours and include the following:
 - A) the practical application of the basic principles of learning and techniques of instruction;
 - B) preparation and use of lesson plans;
 - C) flight preparatory instruction;
 - D) pre and post flight briefing procedures relative to air exercises and weather conditions; and
 - E) normal and emergency manoeuvres. and
 - ii) shall have completed a minimum of 50 hours of flight time in free balloons.
 - c) Skill - Shall have a log book endorsement from the holder of a Free Balloon Pilot Licence who meets the qualifications to provide free balloon pilot instruction, certifying that the person has reached a standard of skill to instruct in free balloons.
 - d) Credit - The instructional techniques course specified under the Knowledge Requirement above shall be deemed to have been met if the applicant holds, or has held within the preceding 24 months, a valid Commercial or higher pilot licence with flight instructor privileges.

s401.34 Flight Engineer Licence - Requirements

1. Age - An applicant shall be a minimum of eighteen years of age.
2. Medical Fitness and Validity.
 - a) An applicant shall hold a Class 1 Medical Certificate valid for a Flight Engineer Licence.
 - b) The medical validity period for the licence holder is 12 months.
 - c) The licence is maintained by a valid Class 1 Medical Certificate.
3. Knowledge -
 - a) An applicant shall have completed an approved course of training that includes the following:
 - i) Air law:
 - A) rules and regulations relevant to the holder of a flight engineer licence; rules and regulations governing the operation of civil aircraft pertinent to the duties of a flight engineer;
 - ii) Aircraft general knowledge:
 - A) basic principles of powerplants, gas turbines and/or piston engines; characteristics of fuels, fuel systems including fuel control; lubricants and lubrication systems; afterburners and injection systems, function and operation of engine ignition and starter systems;
 - B) principles of operation, handling procedures and operating limitations of aircraft powerplants; effects of atmospheric conditions on engine performance;
 - C) airframes, flight controls, structures, wheel assemblies, brakes and anti-skid units, corrosion and fatigue life; identification of structural damage and defects;
 - D) ice and rain protection systems;
 - E) pressurization and air-conditioning systems, oxygen systems;
 - F) hydraulic and pneumatic systems;
 - G) basic electrical theory, electric systems (AC and DC), aircraft wiring systems, bonding and screening;
 - H) principles of operation of instruments, compasses, auto-pilots, radio communication equipment, radio and radar navigation aids, flight management systems, displays and avionics;
 - I) limitations of appropriate aircraft;
 - J) fire protection, detection, suppression and extinguishing systems;
 - K) use and serviceability checks of equipment and systems of appropriate aircraft;
 - iii) Flight performance and planning:
 - A) effects of loading and mass distribution on aircraft handling, flight characteristics and performance; mass and balance calculations;
 - B) use and practical application of performance data including procedures for cruise control;
 - iv) Navigation:
 - A) fundamentals of navigation; principles and operation of self-contained systems
 - v) Meteorology:

- A) operational aspects of meteorology
 - vi) Human performance and limitations:
 - A) human performance and limitations relevant to the flight engineer;
 - B) Crew Resource Management;
 - vii) Operational procedures:
 - A) principles of maintenance, procedures for the maintenance of airworthiness, defect reporting, pre-flight inspections, precautionary procedures for fueling and use of external power; installed equipment and cabin systems;
 - B) normal, abnormal and emergency procedures;
 - C) operational procedures for carriage of freight and dangerous goods;
 - viii) Principles of flight:
 - A) fundamentals of aerodynamics;
 - ix) Radiotelephony:
 - A) radiotelephony procedures and phraseology;
 - b) passed exams, as specified by the Authority. and
 - c) completed, an approved course of training, and an examination including the aircraft performance, systems, and normal and emergency procedures with respect to the aircraft type to be endorsed on the licence.
4. Experience - An applicant shall have completed in the performance of the duties of a flight engineer:
- a) a minimum of 100 hours of experience, under the supervision of a flight endorsed for the aircraft type, of which a maximum of 50 hours aircraft type simulator time acquired during an approved course of training shall be credited towards the total experience; or
 - b) where the applicant is the holder a Commercial Pilot or higher licence - aeroplanes and has successfully completed the approved course of training, a minimum of 50 hours experience under the supervision of a flight engineer or second officer endorsed for the aircraft type. In this case a maximum of 25 hours aircraft type simulator time acquired during an approved course of training, may be credited towards the total experience.
 - c) the experience shall include experience in the normal, abnormal and emergency procedures as identified in Annex 1.
5. Skill - An applicant shall provide a letter certifying the applicant has, with respect to the aircraft type to be endorsed on the licence, demonstrated the ability through a flight test in an aircraft or approved flight simulator, to perform both normal and emergency procedures to a degree of competency appropriate to the privileges granted by the licence. The letter of certification shall be signed by one of the following persons:
- a) a training Flight Engineer whose Lebanese Flight Engineer Licence is valid and endorsed for the aircraft type;
 - b) the company Chief Pilot; or
 - c) a designated Authority Examiner.
6. Endorsement of Aircraft Types
- a) An aircraft type rating shall be issued concurrently with the initial issue of a Flight Engineer Licence.

- b) Additional aircraft types may be endorsed on a Flight Engineer Licence upon submission of a letter certifying that, with respect to the aircraft type, the applicant has met the skill requirement and has successfully completed an approved course of training.

7. Credits

- a) A Lebanese Air Force flight engineer qualified on the applicable aircraft type shall be deemed to have met the knowledge and experience requirements provided that the applicant:
 - i) submits the application for licence not later than 3 months following the date of retirement, discharge or termination of active reserve duty,
 - ii) has passed the written examination on Air Law and Operational Procedures, and
 - iii) has acquired 50 hours flight time in the performance of the duties of a flight engineer within the 12 months preceding the date of application for the licence.

s401.35 Ultra-light Pilot Licence – Aeroplanes – Requirements

- 1. Age - An applicant shall be a minimum of eighteen years of age.
- 2. Medical Fitness and Validity
 - a) An applicant shall hold a Class 2 Medical Certificate valid for an ultra-light pilot licence - aeroplanes.
 - b) The medical validity period for the licence holder under 40 years of age is 24 months and for a licence holder 40 years of age or over, 12 months.
 - c) The licence is maintained by a valid Class 1 or 2 Medical Certificate.
- 3. Knowledge - An applicant shall have completed a course of ultra-light pilot instruction of at least 15 hours on the following subjects:
 - a) Air law:
 - i) rules and regulations relevant to the holder of a ultra-light pilot licence - aeroplanes; rules of the air and appropriate air traffic services practices and procedures;
 - b) Aircraft general knowledge:
 - i) principles of operation of ultra-light aeroplane systems and instruments;
 - ii) operating limitations of ultra-light aeroplanes; relevant operational information from the flight manual or other appropriate document;
 - c) Flight performance and planning:
 - i) effects of loading and mass distribution on flight characteristics; mass and balance considerations;
 - ii) pre-flight and en-route flight planning appropriate to operations under VFR; appropriate air traffic services procedures; altimeter setting procedures; and operations in areas of high-density traffic;
 - d) Human performance and limitations:
 - i) human performance and limitations relevant to the ultra-light aeroplane pilot;
 - e) Meteorology:
 - i) application of elementary aeronautical meteorology; use of, and procedures for obtaining, meteorological information; altimetry;

- f) Navigation:
 - i) practical aspects of air navigation and dead-reckoning techniques; use of aeronautical charts;
 - g) Operational procedures:
 - i) use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
 - ii) appropriate precautionary and emergency procedures, including action to be taken to avoid hazardous weather and wake turbulence and other operating hazards;
 - h) Principles of flight:
 - i) principles of flight relating to ultra-light aeroplanes.
 - i) Radiotelephony:
 - i) procedures and phraseology applicable to VFR operations and actions to be taken in case of communication failure; and
 - j) passed exams, as approved by the Authority.
4. Experience - An applicant shall have acquired a minimum of 15 hours in ultra-light aeroplanes under the direction and supervision of an ultra-light pilot, qualified, in accordance with this subpart, to provide ultra-light aeroplane pilot instruction. The flight training shall include:
- a) a minimum of 5 hours dual instruction flight time and 5 hours solo flight time, and
 - b) a minimum of 30 takeoffs and landings, including 10 as the sole occupant of the aircraft;
 - c) the flight training shall include experience in the following areas:
 - i) pre-flight operations including aircraft inspection and servicing;
 - ii) control of the aircraft by external references,
 - iii) recognition of, and recovery from incipient and full stalls and spiral dives,
 - iv) normal and crosswind takeoff, and landing,
 - v) traffic pattern operations,
 - vi) cross country flying using visual reference and dead-reckoning, and
 - vii) emergency procedures.
5. Skill - Within the 12 months preceding the date of application for the permit, an applicant shall demonstrate to a ultra-light aeroplane instructor, in the air and on the ground, familiarity with and the ability to perform, both normal and emergency maneuvers appropriate to the ultra-light aeroplane used in the test with a degree of competency such that the successful outcome of a procedure or maneuver is never in doubt.
6. Credits
- a) Knowledge
 - i) An applicant who holds a pilot licence in any other category of aircraft shall be deemed to have met the written examination requirement.
 - ii) An applicant who holds a pilot licence - aeroplane shall be deemed to have met the knowledge requirements.
 - b) Experience - An applicant who is the holder of, or has held a pilot licence - aeroplanes within the preceding 5 years shall have the experience requirements reduced to a minimum of 5 hours of flight time in ultra-light aeroplanes. This shall include a minimum of 2 hours dual instruction flight time and a minimum of 2 hours

solo flight time. The flight time shall include a minimum of 20 takeoffs, full circuits and landings, including a minimum of 10 as sole occupant.

- c) Skill - An applicant who holds a pilot licence - aeroplanes shall be deemed to have met the skill requirements.

7. Instructor Qualifications - The standard to be met for the holder of a n Ultra-light Pilot Licence – Aeroplanes to provide ultra-light pilot instruction is:

- a) Age - a minimum of eighteen years of age.
- b) Knowledge and Experience -
 - i) shall have completed a course of instructional techniques which shall be a minimum of 10 hours and include the following:
 - A) the practical application of the basic principles of learning and techniques of instruction;
 - B) preparation and use of lesson plans;
 - C) flight preparatory instruction;
 - D) pre and post flight briefing procedures relative to air exercises and weather conditions; and
 - E) normal and emergency manoeuvres. and
 - ii) shall have completed a minimum of 50 hours of flight time ultra-light aircraft
- c) Skill - Shall have a log book endorsement from the holder of an Ultra-light Pilot Licence – Aeroplanes who meets the qualifications to provide ultra-light pilot instruction, certifying that the person has reached a standard of skill to instruct in ultra-light aeroplanes.
- a) Credits :
 - i) The instructional techniques course specified under the Knowledge and Experience requirement above shall be deemed to have been met if the applicant holds, or has held within the preceding 24 months, a valid Commercial or higher pilot licence with flight instructor privileges.
 - ii) A person who holds a private or higher pilot licence - aeroplane shall have the total flight time specified in the Knowledge and Experience requirement above reduced by 25%.
 - iii) A person with a commercial or higher pilot licence - aeroplanes who holds a valid Flight Instructor Rating – Aeroplanes shall be deemed to have met the Knowledge and Experience requirement after completing a minimum of 10 hours flight time in ultra-light aeroplanes.

s401.38 Aeroplane Class Rating - Requirements

1. The following are the classes of single-pilot aeroplanes that do not requiring a type rating:
 - a) single-engine - land;
 - b) single-engine - sea;
 - c) multi-engine - land; and
 - d) multi-engine - sea.
2. Seaplane Rating - Requirements
 - a) Experience

- i) An applicant for a seaplane rating shall have completed a course, given by the holder of a Flight Instructor rating, that includes a total of 7 hours of seaplane training, including:
 - A) a minimum of 5 hours dual instruction, and
 - B) a minimum of 5 takeoffs and landings as sole occupant of the aeroplane, except for two crew aircraft, in which case the takeoffs and landings shall be done as pilot at the controls.
- ii) The following exercises shall be included in the seaplane training:
 - A) taxiing,
 - B) sailing,
 - C) docking,
 - D) takeoff, and landing, and
 - E) as conditions exist, operations on glassy water, rough water and in crosswind conditions.
- b) Skill - An applicant shall complete a flight test to the standard specified in Flight Test Examiner Guide.
- c) Renewal -
 - i) A Class rating will be renewed when the holder provides to the Authority documentary evidence that the renewal requirements specified in s401.39(4) have been met.
 - ii) Renewal of a multi-engine seaplane Class rating will also renew a single engine seaplane Class rating.
- d) Credits for military Applicants - Active and retired personnel of the Lebanese Air Force who are qualified to the pilot aeroplane wings standard, shall be deemed to have satisfied the seaplane training requirements specified above, provided that the applicant:
 - i) has completed not less than 50 hours flight time as pilot-in-command in seaplanes during the 12 months preceding the date of application for the rating, and
 - ii) has met the prescribed standard of the Lebanese Air Force to act as pilot-in-command of seaplanes during the 24 months preceding the date of application for the rating. In such cases the rating issued will be valid for two years from the date that the prescribed standard was met.

3. Landplane Rating - Requirements

- a) Experience - An applicant for a landplane rating shall complete a course, given by the holder of a Flight Instructor rating, that includes the following:
 - i) a total of 3 hours of landplane flight training including:
 - A) a minimum of 2 hours dual instruction, and
 - B) a minimum of 5 takeoffs and five landings as sole occupant of the aeroplane.
 - ii) The following exercises shall be included in the landplane training:
 - A) taxiing,
 - B) landings, including crosswind landings, and
 - C) takeoffs.
- b) Skill - An applicant shall complete a flight test to the standard specified in Flight Test Examiner Guide.
- c) Renewal -

- i) A Class rating will be renewed when the holder provides to the Authority documentary evidence that the renewal requirements specified in s401.39(4) have been met.
 - ii) Renewal of a multi-engine landplane Class rating will also renew a single engine landplane Class rating.
- 4. Multi-engine Class Rating - Requirements (*NOTE: Includes center line thrust aeroplanes*)
 - a) Experience -
 - i) An applicant for a class rating for a single-pilot multi-engine aeroplane shall have completed at least 50 hours as pilot-in-command of aeroplanes, and
 - ii) An applicant shall have completed an approved course of training that meets a standard equivalent to the training syllabus contained in Appendix C, and that includes a minimum of:
 - A) 7 hours technical ground instruction, and
 - B) 5 hours dual flight instruction.
 - b) Skill - An applicant shall complete a flight test in a multi-engine aeroplane, other than a center line thrust aeroplane, to the standard specified in the Flight Test Examiner Guide.
 - c) Renewal - A Class rating will be renewed when the holder provides to the Authority documentary evidence that the renewal requirements specified in s401.39(4) have been met.

s401.39 Class and Individual Type Rating - Requirements

Where an applicant meets the applicable requirements for issue, the following licences may be endorsed with the class or type rating, as indicated:

Type of Licence	Class Rating	Individual Type Rating
Glider Pilot	All gliders	Medically restricted.
Free Balloon Pilot	All free balloons	Medically restricted.
Ultra-light Pilot - Aeroplanes	All ultra-light aeroplanes	Medically restricted.
Private Pilot – Aeroplanes	Single pilot aeroplanes <ul style="list-style-type: none"> • single engine - land • single engine - sea • multi engine - land • multi engine - sea 	Individual type aeroplanes requiring two or more pilots. Medically restricted.
Commercial Pilot – Aeroplanes	Single pilot aeroplanes <ul style="list-style-type: none"> • single engine - land • single engine - sea • multi engine - land • multi engine - sea 	Individual type aeroplanes requiring two or more pilots. Medically restricted.
Airline Transport Pilot – Aeroplanes	Single pilot aeroplanes <ul style="list-style-type: none"> • single engine - land • single engine - sea • multi engine - land • multi engine - sea 	Individual type aeroplanes requiring two or more pilots. Medically restricted.
Private Pilot – Helicopter	none	Each type of helicopter. Medically restricted
Commercial Pilot – Helicopter	none	Each type of helicopter. Medically restricted.
Airline Transport Pilot – Helicopter	none	Each type of helicopter. Medically restricted.
Flight Engineer	none	Individual type aeroplanes. Medically restricted.

1. Class Rating - The requirements for issue of an aeroplane class rating is as specified in section s401.38.
2. Individual Type Rating:
 - a) Aeroplanes types requiring two or more pilots, or as designated by the Authority, as identified in LAR - Personnel Licensing Circular _____ may be endorsed on an aeroplane pilot licence.
 - b) All individual types of helicopters, as identified in LAR - Personnel Licensing Circular _____ may be endorsed on a helicopter pilot licence.
 - c) All individual aircraft types certificated for a flight crew of three or more persons may be endorsed on a Flight Engineer licence.
 - d) Individual aircraft type ratings may be endorsed on certain medically restricted licences.
3. Individual Type Rating Requirements:
 - a) Aeroplane and Helicopter Two Crew

- i) Knowledge - An applicant for an individual aircraft type rating for aeroplanes or helicopters with a minimum flight crew requirement of at least two pilots shall have completed a program of ground and flight training on the aircraft type that has been approved by the Authority. Also for the endorsement of the rating on a Private or Commercial Pilot Licence, have passed the Airline Transport Pilot Licence or Two Crew Aircraft Knowledge written examinations within the 12 months preceding the application for the first endorsement of the rating.
 - ii) Experience - An applicant shall have completed flight training on the aeroplane type and have completed a minimum of 250 hours pilot flight time on aeroplanes for an aeroplane type rating and helicopters for a helicopter type rating.
 - iii) Skill - An applicant shall have passed the Airline Transport Pilot flight test as specified in the Flight Test Examiner Guide or a Pilot Proficiency Check as required by LAR Part VI or VII, on the aircraft type within the 2 months preceding the application for the rating.
 - b) Helicopter One Pilot
 - i) An applicant shall have passed a private or commercial pilot licence flight test on the helicopter type, or
 - ii) A Pilot Proficiency Check as required by LAR Part VI or VII on the aircraft type within the 2 months preceding the application for the rating.
 - c) Flight Engineer Type Rating requirements shall be as specified in s401.34.
- 4. Renewal of a Class Rating - The Authority will renew a class rating upon receipt of documentary evidence that the holder has in the category and class of aircraft:
 - a) during the period of validity, flown at least ten route sectors as pilot of the relevant type or class of aircraft and successfully completed a refresher program of one hour ground training and one hour flight training with the holder of a flight instructor rating for the category and class of aircraft. (A route sector is defined for this purpose as a flight comprising take-off, departure, cruise of not less than 15 minutes, arrival, approach and landing phases.) or
 - b) has completed a refresher program of 2 hours ground training and 2 hours flight training including at least one route sector.
 - c) Where a class rating has lapsed for more than 24 months, an applicant for renewal of a rating shall have:
 - i) completed the refresher program referred to in paragraph 4(b); and
 - ii) the flight test required for initial issue of the class rating.
 - d) Where a class rating has lapsed for more than 5 years, an applicant shall complete the knowledge and skill requirements for the licence held.
 - e) The renewal of a multi-engine class rating also satisfies the requirements for renewal of a single engine class rating.
- 5. Renewal of a Type Rating - The Authority will renew an individual type rating upon receipt of documentary evidence that the holder has:
 - a) successfully completed a flight test as specified for initial issue of the rating or a renewal process approved through an Air Operator Certificate issued under Part VI or Part VII.
 - b) A flight test for the renewal of a type rating may be conducted within the 90 day period prior to the valid to date of the existing rating. In this case, the renewed rating

shall be valid to the same date as if the flight test was done the date the rating was scheduled to expire.

- c) A Type Rating on a Flight Engineer Licence shall be renewed when the requirements of s401.34(5) have been met.
- d) Where an individual type rating has lapsed for more than 24 months, an applicant for renewal of a rating shall have:
 - i) met the Knowledge requirement specified in 3(a); and
 - ii) passed the flight test referred to in paragraph 3(c) of this section.
- e) The renewal of a type rating also satisfies the requirements for renewal of a class rating.

s401.40 Night Rating - Requirements

1. Private Pilot Licence - Aeroplanes

- a) Experience - An applicant for a night rating shall have acquired in aeroplanes a minimum of 20 hours of pilot flight time which shall include a minimum of:
 - i) 5 hours of night flight time including a minimum of:
 - A) 3 hours dual flight time, including 1 hour of cross-country flight time,
 - B) 2 hours solo flight time, including 5 takeoffs, and full stop landings, and
 - ii) 5 hours dual instrument time.
 - iii) The 2 of the 5 hours dual instrument time may be dual instrument ground time acquired in an approved flight simulator or flight training device, and shall be in addition to the 5 hours night flight time in subparagraph (a)(i) above.
- b) Skill - An applicant for a night rating shall have reached the level of skill specified in the Flight Instructor Guide.
- c) Credits - An applicant who holds a licence endorsed with a night rating in one of the other aircraft categories shall have the total 20 hour pilot flight time reduced to a minimum of 5 hours in aeroplanes including a minimum of:
 - i) 2 hours dual night flight time,
 - ii) 1 hour solo night flight time, and
 - iii) 1 hour dual instrument flight time which shall be in addition to the flight time of (i) and (ii).

2. Private Pilot Licence - Helicopters

- a) Experience - An applicant for a night rating shall have acquired in helicopters a minimum of 20 hours of pilot flight time which shall include a minimum of:
 - i) 5 hours of night flight time including a minimum of:
 - A) 3 hours dual flight time, including 2 hours of cross-country flight time,
 - B) 2 hours solo flight time, including 10 takeoffs and landings, and
 - ii) 5 hours dual instrument time.
 - iii) The 2 of the 5 hours dual instrument time may be dual instrument ground time acquired in an approved flight simulator or flight training device, and shall be in addition to the 5 hours night flight time in subparagraph (a)(i) above.

- b) Skill - An applicant for a night rating shall have reached the level of skill specified in the Flight Instructor Guide.
 - c) Credits - An applicant who holds a licence endorsed with a night rating in one of the other aircraft categories shall have the total 20 hour pilot flight time reduced to a minimum of 5 hours in helicopters including a minimum of:
 - i) 2 hours dual night flight time,
 - ii) 1 hour solo night flight time, and
 - iii) 1 hour dual instrument flight time which shall be in addition to the flight time of (i) and (ii).
3. Free Balloon Pilot Licence:
- An applicant shall have completed in free balloons a minimum of:
- a) One dual and one solo ascent by night, and
 - b) a minimum of 4 hours night flight time under the direction and supervision of the holder of a free balloon pilot licence that meets the requirements in this Sub-part to provide flight instruction and who's licence is endorsed for night.

s401.41 Instrument Rating - Requirements

1. General - An instrument rating is issued for the following aircraft groups:
 - a) Single Engine Aeroplanes - valid for multi-engine centre line thrust and single engine aeroplanes where the flight test was conducted in a multi-engine centre line thrust or single engine aeroplane,
 - b) Multi Engine Aeroplanes - valid for all aeroplanes where the flight test was conducted in a multi-engine aeroplane, or
 - c) Helicopters - valid for helicopters where the flight test was conducted in a helicopter.
2. Requirements
 - a) Medical - Applicants who hold a Class 2 Medical Certificate shall establish their hearing acuity on the basis of compliance with the hearing requirements for the issue of a Class 1 Medical Certificate.
 - b) Knowledge - An applicant shall have passed exams, as specified by the Authority, in:
 - i) Air law:
 - A) rules and regulations relevant to flight under IFR; related air traffic services practices and procedures;
 - ii) Aircraft general knowledge:
 - A) use, limitation and serviceability of avionics and instruments necessary for the control and navigation of aeroplanes under IFR and in instrument meteorological conditions; use and limitations of autopilot;
 - B) compasses, turning and acceleration errors; gyroscopic instruments, operational limits and precession effects; practices and procedures in the event of malfunctions of various flight instruments;
 - iii) Flight performance and planning:
 - A) pre-flight preparations and checks appropriate to flight under IFR;
 - B) operational flight planning; preparation and filing of air traffic services flight plans under IFR; altimeter setting procedures;
 - iv) Human performance and limitations:

- A) human performance and limitations relevant to instrument flight in aeroplanes;
- v) Meteorology:
 - A) application of aeronautical meteorology; interpretation and use of reports, charts and forecasts; codes and abbreviations; use of, and procedures for obtaining, meteorological information; altimetry;
 - B) causes, recognition and effects of engine and airframe icing; frontal zone penetration procedures; hazardous weather avoidance;
- vi) Navigation:
 - A) practical air navigation using radio navigation aids;
 - B) use, accuracy and reliability of navigation systems used in departure, en-route, approach and landing phases of flight; identification of radio navigation aids;
- vii) Operational procedures:
 - A) interpretation and use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations, and instrument procedure charts for departure, en-route, descent and approach;
 - B) precautionary and emergency procedures; safety practices associated with flight under IFR;
- viii) Radiotelephony:
 - A) radiotelephony procedures and phraseology as applied to aircraft operations under IFR; action to be taken in case of communication failure.
- c) Experience - An applicant shall have completed a minimum of:
 - i) 50 hours of cross-country flight as pilot-in-command in aeroplanes or helicopters of which 10 hours must be in the appropriate category; and
 - ii) 40 hours of instrument time of which a maximum of 20 hours may be instrument ground time in an approved flight training device or 30 hours if obtained in an approved flight simulator for which the applicant holds a category, class and type rating. The ground instrument time shall be obtained under the supervision of an approved flight instructor. The 40 hours instrument time shall include a minimum of:
 - A) 20 hours of dual instrument flight time acquired from the holder of a flight instructor rating,
 - B) 5 hours in aeroplanes where the applicant is applying for aeroplane instrument rating or in helicopters where the applicant is applying for helicopter instrument rating,
 - C) one dual cross-country flight under simulated or actual IMC conditions of a minimum of 100 nautical miles, the flight to be conducted in accordance with an IFR flight plan to include at, two different locations, an instrument approach to minima.
 - iii) The applicant shall have gained not less than 10 hours of the instrument flight time required in (ii)(A) while receiving dual instrument flight instruction in the category and class of aircraft from the holder of a flight instructor rating. The instructor shall ensure that the applicant has operational experience in at least the following areas to the level of performance required for the holder of an instrument rating:
 - A) pre-flight procedures, including the use of the flight manual or equivalent document, and appropriate air traffic services documents in the preparation of an IFR flight plan;
 - B) pre-flight inspection, use of checklists, taxiing and pre-take-off checks;

- C) procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least:
 - transition to instrument flight on take-off
 - standard instrument departures and arrivals
 - en-route IFR procedures
 - holding procedures
 - instrument approaches to specified minima
 - missed approach procedures
 - landings from instrument approaches
 - D) in-flight manoeuvres and particular flight characteristics.
 - iv) If the privileges of the instrument rating are to be exercised on multi-engine aircraft, the applicant shall have received dual instrument flight instruction in such an aircraft from an authorized flight instructor. The instructor shall ensure that the applicant has operational experience in the operation of the aircraft solely by reference to instruments with one engine inoperative or simulated inoperative.
 - d) Skill - An applicant shall complete a flight test to the standard specified in the Flight Test Examiner Guide.
 - e) Medical Fitness - The holder of a Private Pilot Licence shall meet the Medical Class 1 hearing requirements.
3. Renewal of Instrument Rating
- a) The Authority will renew an instrument rating upon receipt of documentary evidence that the holder has successfully completed a flight test to the standard specified in the Flight Test Examiner Guide. The instrument flight test may be combined with a type rating renewal skill and proficiency test.
 - b) A flight test for the renewal of an instrument rating may be conducted within the 60 day period prior to the valid to date of the existing rating. In this case, the renewed rating shall be valid to the same date as if the flight test was done the date the rating was scheduled to expire.
 - c) Where an instrument rating has lapsed for more than 24 months, an applicant for renewal of an instrument rating shall have:
 - i) passed the flight test referred to in paragraph 2(c); and
 - ii) passed the written examination described in the Knowledge Requirement above.
 - iii) Where the applicant has held, within the previous 24 months, a valid instrument rating issued by a contracting state, the knowledge requirement shall be considered to have been met.

s401.44 Flight Instructor Rating Aeroplanes and Helicopters - General Requirements

- 1. Age - An applicant for a flight instructor rating shall be a minimum of eighteen years of age.
- 2. Renewal of an Instructor Rating - An instructor rating will be renewed when the holder successfully completes a flight test to the standard specified in the Flight Test Examiner Guide or if within the validity period the applicant:
 - a) attended an approved Flight Instructor Refresher course; or
 - b) recommended at least 10 students for flight test, of which 70% attained a full pass.

3. The Authority may at their own discretion, require the holder of a Flight Instructor rating to pass a flight test for renewal of the rating.
4. Renewal of an expired rating - If a Flight Instructor rating has expired for more than two years the applicant, to be eligible to take a renewal flight test, shall present a recommendation from the holder of a Flight Instructor rating that is qualified to instruct flight instructors, certifying that the applicant meets the knowledge and skill requirements for the issue of a Flight Instructor Rating.

s401.45 Flight Instructor Rating Aeroplanes - Requirements

1. Age - An applicant for a flight instructor rating shall be a minimum of eighteen years of age.
2. Training Pre-requisite - Before being permitted to begin an approved course of ground training for a Flight Instructor-Aeroplanes rating an applicant shall hold a valid Commercial Pilot Licence - Aeroplanes or an Airline Transport Pilot Licence - Aeroplanes:
3. Knowledge -
 - a) An applicant shall have completed an approved technical course of training of at least 25 hours of instruction that includes:
 - i) practical application of the basic principles of learning and techniques of instruction;
 - ii) preparation and use of lesson plans;
 - iii) classroom instructional techniques;
 - iv) use of training aids;
 - v) assessment of student performance, evaluation and testing;
 - vi) procedures for planning and presenting preparatory ground instruction, pre-flight briefings, in-flight instruction, and post-flight debriefings;
 - vii) analysis and correction of student errors;
 - viii) theory of flight required to teach the air exercises;
 - ix) aircraft flight manuals and aircraft operating limits;
 - x) hazards involved in simulating system failures and malfunctions in the aircraft;
 - xi) presentation of pilot decision-making concepts; and
 - xii) the use of the Flight Instructor Guide, Flight Training Manual, Lebanese pilot licensing regulations and standards and the Flight Test Standards for Private and Commercial Pilot Licences - Aeroplanes Category.
 - b) An applicant shall pass the written examination Flight Instructor Rating - Aeroplanes, as specified by the Authority.
4. Experience - An applicant shall have successfully completed an approved course of a minimum of 25 hours dual flight training that includes:
 - a) instruction on overall pilot proficiency training,
 - b) the presentation of the exercises contained in the Flight Instructor's Guide, and
 - c) a minimum of 5 hours of training in the teaching of instrument flight skills.
 - d) a maximum of 5 of the 25 hours may be conducted on an approved aeroplane simulator or flight training device.

5. Skill - An applicant shall complete a flight test to the standard specified in the Flight Test Examiner Guide.
6. The holder of a FI-A rating may conduct instruction for the issue of licences and ratings provided the holder meets the following requirements:
 - a) for the issue of a CPL-A, provided that the FI-A has completed at least 500 hours of flight time as a pilot of aeroplanes including at least 200 hours of flight instruction;
 - b) the issue of an instrument rating, provided that the FI-A holds a valid instrument rating and has at least 150 hours flight time in accordance with instrument flight rules, of which up to 50 hours may be instrument ground time in an approved flight simulator; and
 - c) the issue of a single-pilot, single or multi-engine class rating, provided that the FI-A has
 - i) completed at least 500 hours flight time as a pilot of aeroplanes, and
 - ii) completed within the 12 months preceding the application at least 15 hours as pilot-in-command on the applicable class of aeroplane.
 - d) the issue of a FI-A rating, provided that the FI-A:
 - i) has completed at least 500 hours of instruction in aeroplanes; and
 - ii) has demonstrated to the Authority the ability to instruct a FI-A during a skill test as specified in the Flight Test Examiner Guide; and
 - iii) is authorized by the Authority for this purpose.
 - e) has flown within the last 12 months, at least 5 hours as pilot-in-command of the type of aircraft.

s401.46 Flight Instructor Rating Aeroplanes - Restricted Period Requirements

The restrictions specified in 401.45 will be removed by the Authority when:

- a) the holder of a FI-A rating has completed at least 100 hours flight instruction,
- b) has supervised at least 25 student solo flights, and
- c) the supervising FI-A recommends that the restrictions be removed.

s401.47 Flight Instructor Rating Helicopters - Requirements

1. Age - An applicant for a flight instructor rating shall be a minimum of eighteen years of age.
2. Training Pre-requisite - Before being permitted to begin an approved course of ground training for a Flight Instructor - Helicopters (FI-H) rating an applicant shall hold a valid Commercial Pilot Licence - Helicopters or an Airline Transport Pilot Licence - Helicopters:
3. Knowledge -
 - a) An applicant shall have completed an approved technical course of training of at least 25 hours of instruction that includes:
 - i) practical application of the basic principles of learning and techniques of instruction;
 - ii) preparation and use of lesson plans;
 - iii) classroom instructional techniques;

- iv) use of training aids;
 - v) assessment of student performance, evaluation and testing;
 - vi) procedures for planning and presenting preparatory ground instruction, pre-flight briefings, in-flight instruction, and post-flight debriefings;
 - vii) analysis and correction of student errors;
 - viii) theory of flight required to teach the air exercises;
 - ix) aircraft flight manuals and aircraft operating limits;
 - x) hazards involved in simulating system failures and malfunctions in the aircraft;
 - xi) presentation of pilot decision-making concepts; and
 - xii) the use of the Flight Instructor Guide, Flight Training Manual, Lebanese pilot licensing regulations and standards and the Flight Test Standards for Private and Commercial Pilot Licences - Helicopter Category.
- b) An applicant shall pass the written examination Flight Instructor Rating - Helicopters, as specified by the Authority.
4. Experience - An applicant shall have successfully completed an approved course of a minimum of 25 hours dual flight training that includes:
- a) instruction on overall pilot proficiency training,
 - b) the presentation of the exercises contained in the Flight Instructor's Guide, and
 - c) a minimum of 5 hours of training in the teaching of instrument flight skills.
 - d) a maximum of 5 of the 25 hours may be conducted on an approved helicopter flight simulator or flight training device.
5. Skill - An applicant shall complete a flight test to the standard specified in the Flight Examiner Guide.
6. The holder of a FI-H rating may conduct instruction for:
- a) the issue of licences and ratings the issue of a CPL-H, provided that the FI-H has completed at least 500 hours of flight time as a pilot of helicopters including at least 200 hours of flight instruction;
 - b) the issue of type ratings for single-pilot, single-engine helicopters, provided that the FI-H has completed not less than 15 hours on the relevant type in the preceding 12 months;
 - c) the issue of a single-pilot multi-engine type rating, provided that the FI-H has:
 - i) completed at least 1000 hours flight time as a pilot of helicopters, which includes at least 350 hours as a pilot of multi-engine helicopters;
 - ii) completed within the 12 months at least 15 hours flight time on the applicable helicopter type, or a similar type as agreed by the Authority, of which not more than 10 hours may be completed in an approved flight simulator;
 - d) the issue of an instrument rating, provided that the FI-H holds a valid instrument rating and has:
 - i) at least 150 hours flight time in accordance with instrument flight rules, of which up to 50 hours may be instrument ground time in a flight simulator
 - e) the issue of a FI-H rating, provided that the FI-H:
 - i) has completed at least 500 hours of instruction in helicopters; and

- ii) has demonstrated to the Authority the ability to instruct a FI-H during a skill test as specified in the Flight Test Examiner Guide; and
 - iii) is authorized by the Authority for this purpose.
- f) has flown within the last 12 months, at least 5 hours as pilot-in-command of the type of aircraft.

s401.48 Flight Instructor Rating-Helicopters - Restricted Period Requirements

The restrictions specified in 401.47 will be removed by the Authority when:

- a) the holder of a FI-H rating has completed at least 100 hours flight instruction,
- b) has supervised at least 25 student solo flights, and
- c) the supervising FI-H recommends that the restrictions be removed.

Appendix A - Private Pilot Ground School Training Syllabus

This Appendix contains a Private Pilot ground training syllabus that meets the requirement so this Sub-part. Flight Training Organizations may request approval of a customized syllabus that meets an equivalent standard. The form of the syllabus may vary, but it should always be in the form of an abstract or digest of the course of training. It also should consist of the blocks of learning so that the course is completed in the most efficient manner.

There are many tried and proven syllabi available that may be used. These are found in various training manuals, approved school syllabi, and in publications available from other state civil aviation authorities and pilot training schools.

Private pilot training courses conducted by a certified Flight Training Organization shall be given in accordance with the course training program that they submitted to the Authority and that was approved as part of their Flight Training Organization Operator Certificate. An approved ground training program is part of this approved training program. Completion of an approved training program is a private pilot licensing requirement.

It is recognized that any practical training syllabus must be flexible, and should be used as a guide. The order of training can be altered, when necessary, to suit the progress of the student and the demands of special circumstances. In departing from the order prescribed by the syllabus, however, it is the responsibility of the Chief Flight Instructor and individual instructors, to consider the relationships of the blocks of learning affected. It is often preferable to skip to a completely different part of the syllabus when the conduct of a scheduled lesson is impossible, rather than proceeding to the next block, which may be predicated completely on skills to be developed during the lesson that is being postponed.

Sample Private Pilot Licence - Aeroplane Ground Training Syllabus

Each lesson of the sample private pilot licence - aeroplane ground training syllabus which follows sets forth a unit of ground school instruction. Neither the time nor the number of ground school periods to be devoted to each lesson is specified. The sequence in which the sample lessons are listed is not necessarily the most desirable one to use in all training situations and may be varied as desired. Each lesson includes an *objective*, *content*, and *completion standards*.

LESSON NO. 1

OBJECTIVE. To develop the student's knowledge with regard to the definitions and abbreviations in Part 1 of the Lebanese Aviation Regulations (LARs) and the appropriate regulatory requirements of the Aviation Act and Parts II and IV of the regulations.

CONTENT.

1. LAR, Part 1 – Definitions and abbreviations important to a private pilot.
2. Aircraft registration and Certificate of Airworthiness.
3. LAR, Parts 400 & 401.
 - a) Requirements for licences and ratings.
 - b) Validity periods of pilot licences and ratings.
 - c) Medical certificate requirements.
 - d) Written tests.
 - e) Flight tests.
 - f) Pilot logbooks.

- g) Recency of experience requirements.
- h) Private pilot privileges and limitations.

LESSON NO. 2

OBJECTIVE. To develop the student's knowledge of the pertinent regulatory requirements of Part VI of the LARS and accident reporting rules as they relate to private pilot operations.

CONTENT.

1. LAR, Part IV.
 - a) General operating and flight rules.
 - b) VFR requirements.
 - c) Operation in the vicinity of aerodromes.
 - d) IFR requirements (familiarization).
 - e) Aircraft maintenance rules.
2. Accident reporting requirements.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student demonstrates the ability to locate and use information in the appropriate rule as related to private pilot operations.

LESSON NO. 3

OBJECTIVE. To develop the student's knowledge of the Aeronautical Information Publication and other publications as they relate to VFR operations and to develop competence in using the Lebanese Advisory Circular System.

CONTENT.

1. Aeronautical Information Publication as it relates to:
 - a) Air navigation radio aids.
 - b) Airports and air navigation lighting and marking aids.
 - c) Airspace.
 - d) Air Traffic Control.
 - e) Services available to pilots.
 - f) Airport operations.
 - g) Emergency procedures.
 - h) Operating practices.
 - i) Air Directory (legend).
 - j) Airport facility directory (legend).
 - k) Graphic notices and supplemental data.
2. Authority Advisory Circular System (familiarization).

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays a basic knowledge of appropriate Parts of the Aeronautical Information Publication and the Authority Advisory Circular System.

LESSON NO. 4

OBJECTIVE. To develop the student's knowledge of the operation of aircraft radios, the use of proper radio phraseology with respect to air traffic control facilities, and to develop competence in the use of the slide rule face of the flight computer and aeronautical charts in planning a VFR cross-country flight.

CONTENT.

Radio communications.
Operation of radio communications equipment.
Ground control.
Tower
ATIS.
Flight service station.
UNICOM.
Technique and phraseology.
ATC light signals.
Flight computer – slide rule face.
Time.
Speed.
Distance.
Fuel consumption.
VFR navigation.
Aeronautical charts.
Measurement of courses.
Pilotage.
Dead reckoning.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays a basic knowledge of radio communications, ATC facilities, and aeronautical charts, and is able to use the flight computer to solve elementary VFR navigation problems.

LESSON NO. 5

OBJECTIVE. To further develop the student's knowledge of pilotage, dead reckoning, and radio navigation.

CONTENT.

VFR navigation.
Pilotage.
Dead reckoning
Operation of the navigational radio equipment.
VOR.
ADF.
Use of radio aids.
Flight computer – wind face.
Determination of wind correction angle and true heading.
Determination of groundspeed.
Flight computer – slide rule face.

Review time, speed, and distance problems.
Review fuel consumption problems.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays a basic knowledge of VFR navigation and the use of radio aids. The student should be able to solve fundamental and advanced problems on the flight computer.

LESSON NO. 6

OBJECTIVE. To review Lesson 5 and thereby improve the student's competence in VFR navigation procedures; to introduce advanced VFR radio navigational problems; to develop the student's knowledge of emergency procedures with respect to VFR cross-country flying; and to introduce flight planning.

CONTENT.

Review of Lesson 5.
Use of ADF.
Radar,
Use of VOR, intercepting and maintaining radials.
Emergency procedures.
Diversion to an alternate.
Lost procedures, including the use of radar and DF instructions.
Inflight emergencies, including emergency landings.
Transponder.
DME.
Flight planning.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays a working knowledge of advanced VFR radio navigational procedures, cross-country emergency procedures, and can accurately plan and plot VFR cross-country flight.

LESSON NO. 7

OBJECTIVE. To further develop the student's competence in flight planning and to acquaint the student with the human factors related to flight.

CONTENT.

1. Flight planning.
2. Human factors related to flight.
 - a) Introduction
 - b) Learning to fly
 - i) The learning attitude
 - ii) Learning techniques
 - c) The brain
 - i) The working of the brain
 - ii) Memory
 - iii) Attention
 - iv) Motivation thinking and problem solving

- v) Expectancy
- d) The body
 - i) Hypoxia.
 - ii) Hyperventilation.
 - iii) Alcohol.
 - iv) Drugs.
 - v) Carbon monoxide.
 - vi) Fatigue.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student displays a basic knowledge of flight planning, the human factors related to flight.

LESSON NO. 8

OBJECTIVE. To further develop the student's knowledge of the human factors and general safety related to flight.

Human factors related to flight (continued).

- a) The eyes
 - i) How we see
 - ii) Factors affecting vision
 - iii) Psychological issues of vision
 - iv) Visual illusions fixation and motion
 - b) The ears
 - i) Physical characteristics of the ears
 - ii) Hearing and communication
 - iii) Orientation and disorientation
 - c) Stress
 - i) What is stress
 - ii) Types of stress
 - iii) Effects of stress
 - iv) preventing and managing stress
 - d) Decision making and judgment
 - e) Good flying practices
2. General safety.
- a) Ground handling of aircraft.
 - b) Fire – on the ground and in the air.
 - c) Collision avoidance precautions.
 - d) Wake turbulence avoidance.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student displays a basic knowledge of the human factors and general safety related to flight.

LESSON NO. 9

OBJECTIVE. To develop the student's knowledge of the fundamentals of weather, as associated with the operation of aircraft.

CONTENT.

1. Atmospheric layers.
2. Pressure.
3. Circulation.
4. Temperature and moisture.
5. Stability and lapse rate.
6. Turbulence.
7. Clouds.
8. Airmasses.
9. Fronts.
10. Aircraft icing.
11. Thunderstorms.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student demonstrates a fundamental knowledge of aviation weather.

LESSON NO. 10

OBJECTIVE. To develop the student's ability to interpret and use weather charts, reports, forecasts, and broadcasts; and to develop the student's knowledge of the procedure for obtaining weather briefings.

CONTENT.

1. Review Lesson 8.
2. Weather charts.
 - a) Weather depiction charts.
 - b) Surface prognostic charts.
3. Aviation weather reports.
 - a) Hourly sequence reports.
 - b) Special surface reports.
 - c) Pilot reports.
 - d) Radar reports
4. Aviation weather broadcasts.
 - a) Transcribed weather broadcasts.
 - b) Inflight weather advisories.
5. Weather briefings.
6. Review requirements of regulations for VFR flight.
7. Aviation weather forecasts.
 - a) Area forecasts.
 - b) Terminal forecasts.
 - c) Winds aloft forecasts and reports.
 - d) Route forecasts.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays the ability to interpret and use weather charts, reports, forecasts, and broadcasts, and can obtain and understand a weather briefing.

LESSON NO. 11

OBJECTIVE. To further develop the student's knowledge of aviation weather through a review of Lessons 8 and 9; to develop the student's knowledge of Greenwich time; and to develop the student's ability to recognize various weather conditions.

CONTENT.

1. Review of Lessons 8 and 9.
2. Greenwich time.
3. Weather recognition.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student displays a working knowledge of Greenwich time, and a knowledge of how critical weather situations can be recognized both from the ground and during flight.

LESSON NO. 12

OBJECTIVE. To develop the student's knowledge of aeroplane structures, propellers, engines, systems, and the magnetic compass.

CONTENT.

1. Aeroplane structures.
 - a) Construction features.
 - b) Flight control systems.
 - c) Rigging.
2. Propellers.
 - a) Fixed pitch.
 - b) Controllable.
3. Reciprocating aircraft engines.
 - a) Construction features.
 - b) Principle of operation – four stroke cycle.
 - c) Fuel system, including carburetors and fuel injectors.
 - d) Lubrication system.
 - e) Ignition system.
 - f) Engine instruments.
 - g) Operating limitations.
 - h) Malfunctions and remedial actions.
4. Aeroplane hydraulic system.
 - a) Principle of hydraulics.
 - b) Use of hydraulics in airplanes
 - c) Construction features of a simple aeroplane hydraulic system.
 - d) Retractable landing gear and flaps.
 - e) Malfunctions and remedial actions.
5. Aeroplane electrical system.
 - a) Fundamentals of electricity.

- b) Operation of aeroplane electrical power system units.
- c) Electrically operated flight instruments.
- d) Retractable landing gear
- e) Flaps.
- f) Fuses and circuit breakers.
- g) Malfunctions and remedial actions.
- 6. Pilot-static system and instruments.
 - a) Airspeed indicator, including markings.
 - b) Altimeter.
 - c) Vertical-speed indicator.
- 7. Vacuum system and instruments.
 - a) Attitude indicator.
 - b) Heading indicator
 - c) Turn and slip indicator.
- 8. Magnetic compass.
 - a) Errors.
 - b) Use in flight.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student displays a basic understanding of aeroplane structures, engines, systems and instruments.

LESSON NO. 13

OBJECTIVE. To develop the student's knowledge of basic aerodynamics.

CONTENT.

- 1. Forces acting on an aeroplane in flight
 - a) Lift.
 - b) Weight.
 - c) Thrust.
 - d) Drag.
- 2. Airfoils.
 - a) Angle of incidence.
 - b) Angle of attack.
 - c) Bernoulli's Principle.
 - d) Newton's Laws.
- 3. Factors affecting lift and drag.
 - a) Wing area.
 - b) Airfoil shape.
 - c) Angle of attack
 - d) Airspeed.
 - e) Air density.
- 4. Function of the controls.
 - a) Axes of rotation – longitudinal, lateral and vertical.
 - b) Primary controls – ailerons, elevators and rudder.
 - c) Secondary controls – trim tabs.
 - d) Flaps and other high-lift devices.
- 5. Stability.
 - a) Static stability.
 - b) Dynamic stability.

6. Loads and load factors.
 - a) Effect of bank angle on stall speed.
 - b) Effect of turbulence on load factor.
 - c) Effect of speed on load factor.
 - d) Effect of load factor on stall speed.
7. Torque.
 - a) Gyroscopic reaction.
 - b) Asymmetrical loading of propeller ("P" factor).
 - c) Slipstream rotation.
 - d) Torque reaction.

COMPLETION STANDARD. The lesson will have been successfully completed when, by an oral test, the student displays an understanding of basic aerodynamics.

LESSON NO. 14

OBJECTIVE. To develop the student's knowledge of the fundamental flight maneuvers.

CONTENT.

1. Straight-and-level- flight.
 - a) Pitch, bank and yaw.
 - b) Trim.
 - c) Integrated use of outside references and flight instruments.
2. Level turns.
 - a) Forces acting in a turn.
 - b) Aileron drag and coordination.
 - c) Speed of roll.
 - d) Slips and skids.
 - e) Integrated use of outside references and flight instruments.
3. Climbs and climbing turns.
 - a) Best rate-of-climb airspeed.
 - b) Best angle-of-climb airspeed.
 - c) Torque and coordination
 - d) Trim.
4. Glides and gliding turns.
 - a) Effect of high lift devices.
 - b) Most efficient glide speed.
 - c) Coordination.
 - d) Trim.
5. Descents with power.
 - a) Power settings and airspeeds.
 - b) Trim.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student displays a basic understanding of the fundamental flight maneuvers.

LESSON NO. 15

OBJECTIVE. To develop the student's ability to properly use Pilot's Operating Handbooks and Approved Aeroplane Flight Manuals; to develop the student's ability to perform basic weight and

balance computations; and to develop the student's understanding of fundamental flight training maneuvers.

CONTENT.

1. Use of data in Pilot's Operating Handbook or Approved Aeroplane Flight Manual.
 - a) Takeoff and landing distances.
 - b) Fuel consumption and related charts.
 - c) Maximum range power settings.
 - d) Maximum endurance power settings.
2. Weight and balance.
 - a) Terms and definitions.
 - b) Effects of adverse balance.
 - c) Finding loaded weight.
 - d) Finding center of gravity – when weight is added or removed – when weight is shifted.
3. Maneuvering at minimum controllable air speed.
4. Stalls.
 - a) Theory of stalls.
 - b) Imminent stalls – power-on and power-off.
 - c) Full stalls – power-on and power-off.
5. Flight maneuvering by reference to ground objects.
 - a) "S" turns across a road.
 - b) Rectangular course.
 - c) Eight's along a road.
 - d) Eight's across a road.
 - e) Turns around a point.
6. Takeoffs and landings.
 - a) Normal and crosswind takeoffs and landings.
 - b) Soft field takeoffs and landings.
 - c) Short field takeoffs and landings.
 - d) Go-arounds or rejected landings.
7. Introduction to attitude instrument flying. Maneuvering by reference to flight
 - a) Instruments – pitch , power, bank and trim control in the performance of basic flight maneuvers.
 - b) Straight-and-level flight.
 - c) Turns.
 - d) Climbs.
 - e) Descents.
 - f) Recovery from unusual attitudes.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays a basic knowledge of Pilot's Operating Handbooks and Approved Aeroplane Flight Manuals; when the student is able to perform basic weight and balance computations; and when the student has a working knowledge of the performance of fundamental flight training maneuvers.

Reference Documents

1. Lebanese Civil Aviation Regulation
 - a) Part I - General
 - b) Part II - Aircraft Registration and Marking
 - c) Part IV - Personnel Licensing

- d) Part V - Aircraft Maintenance
- e) Part IV - General Operating and Flight Rules
- 2. Lebanese Aeronautical Information Publication
- 3. Human Factors For Aviation - Transport Canada Safety and Security
 - a) Basic Handbook - TP 12863
 - b) Instructor's Guide - TP 12865
- 4. Aeroplane Flight Training Manual - Transport Canada Aviation & Gage Publishing Company, Canada

Sample Private Pilot Licence - Helicopter Ground Training Syllabus

Each lesson of the sample private pilot licence - helicopter ground training syllabus which follows sets forth a unit of ground school instruction. Neither the time nor the number of ground school periods to be devoted to each lesson is specified. The sequence in which the sample lessons are listed is not necessarily the most desirable one to use in all training situations and may be varied as desired. Each lesson includes an *objective*, *content*, and *completion standards*.

LESSON NO. 1

OBJECTIVE. To develop the student's knowledge with regard to the definitions and abbreviations in Part 1 of the Lebanese Aviation Regulations (LARs) and the appropriate regulatory requirements of the Aviation Act and Parts II and IV of the regulations.

CONTENT.

1. LAR, Part 1 – Definitions and abbreviations important to a private pilot
2. Aircraft registration and Certificate of Airworthiness.
3. LAR, Parts 400 & 401.
 - a) Requirements for licences and ratings.
 - b) Validity periods of pilot licences and ratings.
 - c) Medical certificate requirements.
 - d) Written tests.
 - e) Flight tests.
 - f) Pilot logbooks.
 - g) Recency of experience requirements.
 - h) Private pilot privileges and limitations.

LESSON NO. 2

OBJECTIVE. To develop the student's knowledge of the pertinent regulatory requirements of Part VI of the LARS and accident reporting rules as they relate to private pilot operations.

CONTENT.

1. LAR, Part IV.
 - a) General operating and flight rules.
 - b) VFR requirements.
 - c) Operation in the vicinity of aerodromes.
 - d) IFR requirements (familiarization).
 - e) Aircraft maintenance rules.
2. Accident reporting requirements.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student demonstrates the ability to locate and use information in the appropriate rule as related to private pilot operations.

LESSON NO. 3

OBJECTIVE. To develop the student's knowledge of the Aeronautical Information Publication and other publications as they relate to VFR operations and to develop competence in using the Lebanese Advisory Circular System.

CONTENT.

1. Aeronautical Information Publication as it relates to:
 - a) Air navigation radio aids.
 - b) Airports and air navigation lighting and marking aids.
 - c) Airspace.
 - d) Air Traffic Control.
 - e) Services available to pilots.
 - f) Airport operations.
 - g) Emergency procedures.
 - h) Operating practices.
 - i) Air Directory (legend).
 - j) Airport facility directory (legend).
 - k) Graphic notices and supplemental data.
2. Authority Advisory Circular System (familiarization).

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays a basic knowledge of appropriate Parts of the Aeronautical Information Publication and the Authority Advisory Circular System.

LESSON NO. 4

OBJECTIVE. To develop the student's knowledge of the operation of aircraft radios, the use of proper radio phraseology with respect to air traffic control facilities, and to develop competence in the use of the slide rule face of the flight computer and aeronautical charts in planning a VFR cross-country flight.

CONTENT.

Radio communications.
Operation of radio communications equipment.
Ground control.
Tower
ATIS.
Flight service station.
UNICOM.
Technique and phraseology.
ATC light signals.
Flight computer – slide rule face.
Time.
Speed.
Distance.
Fuel consumption.
VFR navigation.
Aeronautical charts.
Measurement of courses.

Pilotage.
Dead reckoning.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays a basic knowledge of radio communications, ATC facilities, and aeronautical charts, and is able to use the flight computer to solve elementary VFR navigation problems.

LESSON NO. 5

OBJECTIVE. To further develop the student's knowledge of pilotage, dead reckoning, and radio navigation.

CONTENT.

VFR navigation.
Pilotage.
Dead reckoning
Operation of the navigational radio equipment.
VOR.
ADF.
Use of radio aids.
Flight computer – wind face.
Determination of wind correction angle and true heading.
Determination of groundspeed.
Flight computer – slide rule face.
Review time, speed, and distance problems.
Review fuel consumption problems.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays a basic knowledge of VFR navigation and the use of radio aids. The student should be able to solve fundamental and advanced problems on the flight computer.

LESSON NO. 6

OBJECTIVE. To review Lesson 5 and thereby improve the student's competence in VFR navigation procedures; to introduce advanced VFR radio navigational problems; to develop the student's knowledge of emergency procedures with respect to VFR cross-country flying; and to introduce flight planning.

CONTENT.

Review of Lesson 5.
Use of ADF.
Radar.
Use of VOR, intercepting and maintaining radials.
Emergency procedures.
Diversion to an alternate.
Lost procedures, including the use of radar and DF instructions.
Inflight emergencies, including emergency landings.

Transponder.
DME.
Flight planning.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays a working knowledge of advanced VFR radio navigational procedures, cross-country emergency procedures, and can accurately plan and plot VFR cross-country flight.

LESSON NO. 7

OBJECTIVE. To further develop the student's competence in flight planning and to acquaint the student with the human factors related to flight.

CONTENT.

1. Flight planning.
2. Human factors related to flight..
 - a) Introduction.
 - b) Learning to fly.
 - i) The learning attitude.
 - ii) Learning techniques.
 - c) The brain.
 - i) The working of the brain.
 - ii) Memory.
 - iii) Attention.
 - iv) Motivation thinking and problem solving.
 - v) Expectancy.
 - d) The body.
 - i) Hypoxia.
 - ii) Hyperventilation.
 - iii) Alcohol.
 - iv) Drugs.
 - v) Carbon monoxide.
 - vi) Fatigue.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student displays a basic knowledge of flight planning, the human factors related to flight.

LESSON NO. 8

OBJECTIVE. To further develop the student's knowledge of the human factors and general safety related to flight.

1. Human factors related to flight (continued).
 - a) The eyes.
 - i) How we see.
 - ii) Factors affecting vision.
 - iii) Psychological issues of vision.
 - iv) Visual illusions fixation and motion.

- b) The ears.
 - i) Physical characteristics of the ears.
 - ii) Hearing and communication.
 - iii) Orientation and disorientation.
 - c) Stress.
 - i) What is stress.
 - ii) Types of stress.
 - iii) Effects of stress.
 - iv) preventing and managing stress.
 - d) Decision making and judgment.
 - e) Good flying practices.
2. General safety.
- a) Ground handling of aircraft.
 - b) Fire – on the ground and in the air.
 - c) Collision avoidance precautions.
 - d) Wake turbulence avoidance.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student displays a basic knowledge of the human factors and general safety related to flight.

LESSON NO. 9

OBJECTIVE. To develop the student's knowledge of the fundamentals of weather, as associated with the operation of aircraft.

CONTENT.

- 1. Atmospheric layers.
- 2. Pressure.
- 3. Circulation.
- 4. Temperature and moisture.
- 5. Stability and lapse rate.
- 6. Turbulence.
- 7. Clouds.
- 8. Airmasses.
- 9. Fronts.
- 10. Aircraft icing.
- 11. Thunderstorms.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student demonstrates a fundamental knowledge of aviation weather.

LESSON NO. 10

OBJECTIVE. To develop the student's ability to interpret and use weather charts, reports, forecasts, and broadcasts; and to develop the student's knowledge of the procedure for obtaining weather briefings.

CONTENT.

1. Review Lesson 8.
2. Weather charts.
 - a) Weather depiction charts.
 - b) Surface prognostic charts.
3. Aviation weather reports.
 - a) Hourly sequence reports.
 - b) Special surface reports.
 - c) Pilot reports.
 - d) Radar reports
4. Aviation weather broadcasts.
 - a) Transcribed weather broadcasts.
 - b) Inflight weather advisories.
5. Weather briefings.
6. Review requirements of regulations for VFR flight.
7. Aviation weather forecasts.
 - a) Area forecasts.
 - b) Terminal forecasts.
 - c) Winds aloft forecasts and reports.
 - d) Route forecasts.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays the ability to interpret and use weather charts, reports, forecasts, and broadcasts, and can obtain and understand a weather briefing.

LESSON NO. 11

OBJECTIVE. To further develop the student's knowledge of aviation weather through a review of Lessons 8 and 9; to develop the student's knowledge of Greenwich time; and to develop the student's ability to recognize various weather conditions.

CONTENT.

1. Review of Lessons 8 and 9.
2. Greenwich time.
3. Weather recognition.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student displays a working knowledge of Greenwich time, and a knowledge of how critical weather situations can be recognized both from the ground and during flight.

LESSON NO. 12

OBJECTIVE. To develop the student's knowledge of helicopter structures, propellers, engines, systems, and the magnetic compass.

CONTENT.

1. Helicopter structures.
 - a) Construction features.
 - b) Flight control systems.
 - c) Rigging.
2. Rotors.
 - a) Types.
 - b) Blades.
3. Helicopter power plants.
 - a) Piston engines.
 - i) Principle of operation – four stroke cycle.
 - ii) Fuel system, including carburetors and fuel injectors.
 - iii) Lubrication system.
 - iv) Ignition system.
 - v) Engine instruments.
 - vi) Operating limitations.
 - vii) Malfunctions and remedial actions.
 - b) Turbine engines.
 - i) Principle of operation.
 - ii) Fuel systems.
 - iii) Ignition system.
 - iv) Lubrication system.
 - v) Engine controls.
 - vi) Engine instruments.
 - vii) Operating limitations.
 - viii) Malfunctions and remedial actions.
4. Helicopter electrical system.
 - a) Fundamentals of electricity.
 - b) Operation of Helicopter electrical power system units.
 - c) Electrically operated flight instruments.
 - d) Fuses and circuit breakers.
 - e) Malfunctions and remedial actions.
5. Pilot-static system and instruments.
 - a) Airspeed indicator, including markings.
 - b) Altimeter.
 - c) Vertical-speed indicator.
6. Vacuum system and instruments.
 - a) Attitude indicator.
 - b) Heading indicator.
 - c) Turn and slip indicator.
7. Magnetic compass.
 - a) Errors.
 - b) Use in flight.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student displays a basic understanding of helicopter structures, engines, systems and instruments.

LESSON NO. 13

OBJECTIVE. To develop the student's knowledge of basic aerodynamics.

CONTENT.

1. The atmosphere.
 - a) Composition and structure.
 - b) ICAO standard atmosphere.
 - c) Atmospheric pressure.
2. Airflow around a body, sub-sonic.
 - a) Air resistance and air density.
 - b) Boundary layer.
 - c) Friction forces.
 - d) Laminar and turbulent flow.
 - e) Bernoulli's principle - venturi effect.
3. Airflow about a two dimensional airfoil.
 - a) Airflow around a flat plate.
 - b) Airflow around a curved plate (airfoil).
 - c) Description of airfoil cross section.
 - d) Lift and drag.
 - e) Cl and Cd and their relationship to angle of attack.
4. Three dimensional flow about an airfoil.
 - a) Airfoil shapes and wing platforms.
 - b) Induced drag.
 - i) Downwash angle, vortex drag, ground effect.
 - ii) Aspect ratio.
 - c) Parasite (profile) drag.
 - i) Form, skin friction and interference drag.
 - d) Lift/drag ratio.
5. Rotor aerodynamics.
 - a) Blade movement (feathering, flapping, dragging).
 - b) Forces acting on rotors (blades lift/drag, weight, rotor thrust, H-force).
 - c) Forces acting on entire helicopter (M.R. thrust, helicopter weight, fuselage drag, tail rotor thrust).
 - d) Finite blade element and momentum theory.
 - e) Advancing blade high mach, retreating blade high incidence.
 - f) Distribution of lift.
 - g) Autorotation anti-torque.
6. Flying controls.
 - a) The three planes.
 - i) Pitching about the lateral axis.
 - ii) Rolling about the longitudinal axis.
 - iii) Yawing about the normal axis.
 - b) Effects of cyclic, collective and rudder pedal inputs.
 - c) Stabilizer and rudder.
 - d) Control in pitch, roll and yaw.
 - e) Cross coupling, roll and yaw.
 - f) Effect of rotor configuration on control power.
7. Stability.
 - a) Definitions of static and dynamic stability.

- b) Longitudinal stability.
- c) Centre of gravity effect on control in pitch.
- d) Lateral and directional stability.
- e) Interrelationship, lateral and directional stability.
- 8. Load factor and manoeuvres.
 - a) Structural considerations.
 - b) Manoeuvring and gust envelope.
 - c) Limiting load factors.
 - d) Changes in load factor in turns and pull-ups.
 - e) Vibrations, controls feedback.
 - f) In-flight precautions.
 - g) H/V diagram, take off and landing.
- 9. Stress loads on the ground.
 - a) Side loads on the landing gear.
 - b) Landing.
 - c) Taxiing, precautions during turns.
- 10. Helicopter specific hazards.
 - a) Ground resonance.
 - b) Blade stall.
 - c) Mast bumping.
 - d) Vortex ring (main and tail rotor).
 - e) Settling with power.
 - f) Dynamic and static rollover.

COMPLETION STANDARD. The lesson will have been successfully completed when, by an oral test, the student displays an understanding of basic aerodynamics.

LESSON NO. 14

OBJECTIVE. To develop the student's knowledge of the fundamental flight maneuvers.

CONTENT.

- 1. Effects of controls.
 - a) Function of flying controls, primary and secondary effect.
 - b) Effect of airspeed.
 - c) Effect of power.
 - d) Effect of sideslip.
 - e) Effect of control friction.
- 2. Power and attitude changes.
 - a) Power changes with constant RPM to be focused in the cockpit.
 - b) Altitude and speed changes at constant power.
- 3. Straight and level.
 - a) At normal cruising power, attaining and maintaining straight and level flight.
 - b) Control in pitch, including use of control friction and/or trim.
 - c) Lateral level, direction and balance, yawstring use.
 - d) At selected airspeeds (use of power).
- 4. Climbing.
 - a) Entry, maintaining the normal and Max rate climb, leveling off.
 - b) Leveling off at selected altitudes.
 - c) Maximum angle of climb.
- 5. Descending.

- a) Entry, maintaining and leveling off.
- b) Leveling off at selected altitudes.
- c) Descent (including effect of power and airspeed).
- 6. Turning.
 - a) Entry and maintaining medium level turns.
 - b) Resuming straight flight.
 - c) Faults in the turn - balance.
 - d) Climbing turns.
 - e) Descending turns.
- 7. Hovering.
 - a) Effect of wind direction on helicopter attitude and control margin.
- 8. Transition from hover to climb and vice versa.
 - a) Ground effect, transitional lift and their effects.
 - b) Flapback and its effect.
 - c) Effect of wing direction during transition from hover to climb and vice versa.
- 9. Autorotation.
 - a) Straight autorotation from level flight.
 - b) Control of rotor RPM.
 - c) Control of speed, rate of descent and ground distance.
 - d) Recovery, power flight (throttle over-ride during re-engagement).
 - e) Low/medium turns in autorotation.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test, the student displays a basic understanding of the fundamental flight maneuvers.

LESSON NO. 15

OBJECTIVE. To develop the student's ability to properly use Pilot's Operating Handbooks and Approved Helicopter Flight Manuals and to develop the student's ability to perform basic weight and balance computations.

CONTENT.

- 1. Use of data in Pilot's Operating Handbook or Approved Helicopter Flight Manual.
 - a) Takeoff and landing limitations.
 - b) Fuel consumption and related charts.
 - c) Maximum range power settings.
 - d) Maximum endurance power settings.
- 2. Weight and balance.
 - a) Terms and definitions.
 - b) Effects of adverse balance.
 - c) Finding loaded weight.
 - d) Finding center of gravity – when weight is added or removed – when weight is shifted.

COMPLETION STANDARDS. The lesson will have been successfully completed when, by an oral test and demonstration, the student displays a basic knowledge of Pilot's Operating Handbooks and Approved Helicopter Flight Manuals and when the student is able to perform basic weight and balance computations.

Reference Documents

1. Lebanese Civil Aviation Regulation
 - a) Part I - General
 - b) Part II - Aircraft Registration and Marking
 - c) Part IV - Personnel Licensing
 - d) Part V - Aircraft Maintenance
 - e) Part IV - General Operating and Flight Rules
2. Lebanese Aeronautical Information Publication
3. Human Factors For Aviation - Transport Canada Safety and Security
 - a) Basic Handbook - TP 12863
 - b) Instructor's Guide - TP 12865
4. Helicopter Flight Training Manual - Transport Canada Aviation & Gage Publishing Company, Canada.

Appendix B Commercial Pilot Ground School Training Syllabus

This Appendix contains a Commercial Pilot ground training syllabus that meets the requirement so this Sub-part. Flight Training Organizations may request approval of a customized syllabus that meets an equivalent standard. The form of the syllabus may vary, but it should always be in the form of an abstract or digest of the course of training. It also should consist of the blocks of learning so that the course is completed in the most efficient manner.

There are many tried and proven syllabi available that may be used. These are found in various training manuals, approved school syllabi, and in publications available from other state civil aviation authorities and pilot training schools.

Commercial pilot training courses conducted by a certified Flight Training Organization shall be given in accordance with the course training program that they submitted to the Authority and that was approved as part of their Flight Training Organization Operator Certificate. An approved ground training program is part of this approved training program. Completion of an approved training program is a private pilot licensing requirement.

It is recognized that any practical training syllabus must be flexible, and should be used as a guide. The order of training can be altered, when necessary, to suit the progress of the student and the demands of special circumstances. In departing from the order prescribed by the syllabus, however, it is the responsibility of the Chief Flight Instructor and individual instructors, to consider the relationships of the blocks of learning affected. It is often preferable to skip to a completely different part of the syllabus when the conduct of a scheduled lesson is impossible, rather than proceeding to the next block, which may be predicated completely on skills to be developed during the lesson that is being postponed.

Sample Commercial Pilot Licence - Aeroplane Ground Training Syllabus

TO BE DEVELOPED

Sample Commercial Pilot Licence - Helicopter Ground Training Syllabus

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Appendix C Multi-engine Aeroplane Class Rating Training Syllabus

This Appendix contains a Multi-engine Aeroplane class rating training syllabus that meets the requirement so this Sub-part. Flight Training Organizations may request approval of an individual syllabus that meets an equivalent standard. The form of the syllabus may vary, but it should always be in the form of an abstract or digest of the course of training. It also should consist of the blocks of learning so that the course is completed in the most efficient manner.

There are many tried and proved syllabi available which may be used. These are found in various training manuals, approved school syllabi, and in publications available from other state civil aviation authorities and pilot training schools.

Multi-engine aeroplane class rating training courses conducted by a certified flight training organization shall be given in accordance with the course training program that they submitted to the Authority and that was approved as part of their Flight Training Organization Operator Certificate. Completion of an approved training program is a Multi-engine Aeroplane class rating licensing requirement.

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Sample Multi-Engine Aeroplane Class Rating Training Syllabus

STAGE I

STAGE OBJECTIVE

During this stage, the applicant will become familiar with the multi-engine airplane used in the training course. Additionally, through the introduction and review of multi-engine maneuvers and procedures, the applicant will learn to fly the multi-engine airplane during normal two-engine operations.

STAGE COMPLETION STANDARD

The applicant must successfully complete each of the lessons in Stage I. The applicant will be able to demonstrate the procedures for each of the ground and flight operations listed in this stage in accordance with the criteria set forth in the Multi-engine Aeroplane flight test standard.

Ground Lesson 1

Lesson Objective:

During this lesson, the applicant will learn the principles of aerodynamics, aircraft systems, operating procedures and performance related to multi-engine airplanes.

Lesson Content

1. Procedures and Maneuvers
 - a) Multi-engine Aerodynamics
 - b) Pre-flight Preparation
 - c) Multi-engine Operations
 - d) Maximum Performance Takeoff and Climb
 - e) Maximum Performance Approach and Landing
 - f) Multi-engine Flight Maneuvers
2. General Systems
 - a) Propeller Systems
 - b) Fuel Systems
 - c) Fuel Injection System
 - d) Electrical Systems
 - e) Landing Gear Systems
 - f) Turbocharging
 - g) Ice Control Equipment and Systems
 - h) Cabin Heating Systems
 - i) High Altitude Operations

Flight Exercise 1

Objective

During this lesson, the applicant will become acquainted with the training airplane. Additionally, the applicant will learn the attitudes, power settings, and configurations required for the performance of the listed maneuvers and procedures.

Introduction of:

1. Pre-flight Preparation
 - a) Certificates and Documents
 - b) Minimum Equipment List
2. Multi-engine Operations
 - a) Operation of Systems
 - b) Performance and Limitations
3. Pre-flight Procedures
 - a) Pre-flight Inspection
 - b) Cockpit Management
 - c) Engine Starting
 - d) Taxiing: Normal / Crosswind
 - e) Before Takeoff Check
4. Normal and Crosswind Takeoff and Climb
5. Traffic Patterns
6. Visual Scanning and Collision Avoidance
7. Basic Instrument Maneuvers
 - a) Straight-and-Level Flight
 - b) Constant Altitude Change of Airspeed
 - c) Constant Airspeed Climbs and Descents
 - d) Turns to Headings
8. Drag Changes for Various Configurations
9. Normal and Crosswind Approach and Landing
10. Post-flight Procedures
 - a) After Landing
 - b) Parking and Securing

Completion Standards:

At the completion of this lesson, the applicant will be able to perform the listed ground operations with a minimum of instructor assistance. The applicant will demonstrate the knowledge of attitudes, power settings, and configurations necessary to perform the listed maneuvers and procedures by maintaining altitude within 200 feet, heading within 10°, and airspeeds within 10 knots.

Flight Exercise 2

Objective:

During this lesson, the applicant will review the maneuvers listed in Flight 1. In addition, the applicant will be introduced to stalls and maneuvering during slow flight to become familiar with the flight characteristics of the airplane. Steep turns and emergency operations also are introduced.

Review of:

1. Pre-flight Preparation
 - a) Certificates and Documents
 - b) Minimum Equipment List
2. Multi-engine Operations
 - a) Operation of Systems
 - b) Performance and Limitations
3. Pre-flight Procedures
 - a) Pre-flight Inspection
 - b) Cockpit Management
 - c) Engine Starting
 - d) Taxiing: Normal / Crosswind
 - e) Before Takeoff Check
4. Normal and Crosswind Takeoff and Climb
5. Traffic Patterns
6. Visual Scanning and Collision Avoidance
7. Basic Instrument Maneuvers
 - a) Straight-and-Level Flight
 - b) Constant Altitude Change of Airspeed
 - c) Constant Airspeed Climbs and Descents
 - d) Turns to Headings
8. Drag Changes for Various Configurations
9. Normal and Crosswind Approach and Landing
10. Post-flight Procedures
 - a) After Landing
 - b) Parking and Securing

Introduction of:

1. Slow Flight and Stalls
 - a) Maneuvering During Slow Flight
 - b) Power-On Stalls
 - c) Power-Off Stalls
 - d) Spin Awareness
2. Performance Maneuvers
 - a) Steep Turns
3. Emergency Operations

- a) Emergency Descent
- b) Systems and Equipment Malfunctions
- c) Emergency Equipment and Survival Gear

Completion Standards:

At the completion of this lesson, the applicant will be able to perform all the listed ground procedures without instructor assistance. During takeoff and landing, the applicant will demonstrate good directional control and maintain liftoff, climb, approach, and touchdown airspeed within 10 knots of the correct speed. Straight-and-level flight, climbs, and descents will be performed while maintaining assigned airspeeds within 10 knots, rollouts from turns within 15° of assigned heading, and specified altitudes within 150 feet. In demonstrate the correct flight procedures for maneuvering during slow flight, steep turns, emergency descents, and the correct entry and recovery procedures for stalls. All stalls and maneuvering during slow flight must be completed no lower than 3,000 feet AGL.

Ground Lesson 2

Lesson Objective:

During this lesson, the applicant will learn to compute and control the weight and balance condition of the multi-engine airplanes. The applicant also will review the factors affecting airplane performance, and will learn to compute the expected performance values accurately from multi-engine airplane performance charts.

Lesson Content:

- 1. Weight and Balance
 - a) Weight
 - b) Balance
- 2. Performance Chart
 - a) Performance Factors
 - b) Performance Charts

Flight Exercise 3

Lesson Objective:

During this lesson, the applicant will practice each of the assigned review maneuvers and procedures to increase proficiency and experience. The applicant will be introduced to short-field takeoffs and climbs, short-field approaches and landings, go-arounds, and high altitude operations.

Review of:

- 1. Multi-engine Operations
- 2. Pre-flight Procedures
- 3. Normal and Crosswind Takeoff and Climb
- 4. Slow Flight and Stalls

- a) Maneuvering During Slow Flight
- b) Power-On Stalls
- c) Power-Off Stalls
- d) Spin Awareness
- 5. Performance Maneuvers
 - a) Steep Turns
- 6. Emergency Operations
 - a) Emergency Descent
 - b) Systems and Equipment Malfunctions
 - c) Emergency Equipment and Survival Gear
- 7. Normal and Crosswind Approach and Landing
- 8. Post-flight Procedures

Introduction of:

- 1. Short-Field Takeoff and Climb
- 2. Short-Field Approach and Landing
- 3. Go-Around
- 4. High Altitude Operations
 - a) Supplemental Oxygen
 - b) Pressurization

Completion Standards:

At the completion of this lesson, the applicant will perform all the maneuvers and procedures listed for review at a proficiency level that meets or exceeds the criteria set forth in the Multi-engine Aeroplane flight test standard. The newly introduced maneuvers and procedures will be evaluated on the adherence to proper procedures, operating techniques, coordination, smoothness, and understanding.

Flight Exercise 4 - Stage Check

Lesson Objective:

During this lesson, the instructor will evaluate the applicant's ability to fly the multi-engine airplane during normal two-engine operations under VFR conditions.

Review of:

- 1. Pre-flight Preparation
- 2. Multi-engine Operations
- 3. Pre-flight Procedures
- 4. Normal and Crosswind Takeoff and Climb
- 5. Short-Field Takeoff and Climb
- 6. Traffic Patterns
- 7. Visual Scanning and Collision Avoidance

8. Basic Flight Maneuvers
 - a) Straight-and-Level Flight
 - b) Constant Altitude Change of Airspeed
 - c) Constant Airspeed Climbs and Descent
 - d) Turns to Headings
9. Slow Flight and Stalls
 - a) Maneuvering During Slow Flight
 - b) Power-on Stalls
 - c) Power-Off Stalls
 - d) Spin Awareness
10. Performance Maneuvers
 - a) Steep Turns
11. Emergency Operations
 - a) Emergency Descent
 - b) Systems and Equipment Malfunctions
 - c) Emergency Equipment and Survival Gear
12. High Altitude Operations
 - a) Supplemental Oxygen
 - b) Pressurization
13. Normal and Crosswind Approach and Landing
14. Short-Field Approach and Landing
15. Go-Around
16. Post-flight Procedures

Completion Standards:

At the completion of this lesson, the applicant will be able to demonstrate the performance of each of the listed maneuvers and procedures at a proficiency level which meets or exceeds those criteria outlined in the Multi-engine Aeroplane flight test standard.

STAGE II

Stage Objective

During this stage, the applicant will learn the techniques and procedures required for the performance of engine-out operations in the multi-engine airplane. In addition, the applicant will conduct a review of the maneuvers and procedures performed in Stage I.

Stage Completion Standard

The applicant must successfully complete each of the lessons in Stage II. At the completion of the stage, the applicant will be able to demonstrate each of the listed maneuvers and procedures at a proficiency level that meets or exceeds those criteria outlined in the Multi-engine Aeroplane flight test standard.

Ground Lesson 3

Lesson Objective:

During this lesson, the applicant will learn the principles of single-engine aerodynamics and the procedures and maneuvers relating to engine-out operations in multi-engine airplanes.

Aerodynamic

- Critical Engine
- Minimum Control Speed
- Engine-Out V-Speeds
- Single-Engine Ceilings

Procedures and Maneuvers

- Engine Shutdown
- Engine-Out Maneuvers
- Engine Inoperative Loss of Directional Control Demonstration

Flight Exercise 5

Lesson Objective:

During this lesson, the applicant will practice the review maneuvers and procedures to maintain or gain proficiency. The applicant will be introduced to engine-out procedures and will learn to identify the inoperative engine, initiate appropriate corrective procedures, and maneuver the airplane with one engine inoperative. The instructor will demonstrate engine inoperative loss of directional control and the recovery technique so the applicant may learn the significance of this airspeed limitation.

Review of:

1. Multi-engine Operations
2. Pre-flight Procedures
3. Takeoff, Landing, and Go-Around
4. Traffic Patterns
5. Slow Flight and Stalls
6. Post-flight Procedures

Introduction of:

1. Emergency Operations (Engine-Out)
 - a) Flight Principles - Engine Inoperative
 - b) Engine Failure During Cruise
 - c) Identification of Inoperative Engine
 - d) Use of Controls to Counteract Yaw and Roll
 - e) Engine Inoperative - Loss of Directional Control Demonstration (by Instructor)
 - f) Procedures for Shutdown and Feathering
2. Maneuvering with One Engine Inoperative
 - a) Straight-and-Level Flight
 - b) Turns in Both Directions

- c) Climbs and Descents to Assigned Altitudes
- d) Effects of Various Airspeeds and Configurations During Engine Inoperative Performance

Completion Standards:

At the completion of this lesson, the applicant will be able to identify the inoperative engine during cruise and use the correct control inputs to maintain straight flight. The applicant will have a complete and accurate knowledge of the cause, effect, and significance of engine-out minimum control speed (V_{MC}) and recognize the imminent loss of control. The engine inoperative loss of directional control demonstration must be completed no lower than 3,000 feet AGL.

Flight Exercise 6

Lesson Objective:

During this lesson, the applicant will practice the review maneuvers and procedures to maintain or gain proficiency. The applicant will be introduced to engine failure on takeoff and initial climb. The applicant will demonstrate engine inoperative loss of directional control and the proper recovery. The applicant also will be introduced to approaches and landings with an inoperative engine.

Review of:

- 1. Emergency Operations (Engine-Out)
 - a) Flight Principles - Engine Inoperative
 - b) Engine Failure During Cruise
 - c) Identification of Inoperative Engine
 - d) Use of Controls to Counteract Yaw and Roll
 - e) Procedures for Shutdown and Feathering
- 2. Maneuvering with One Engine Inoperative
 - a) Straight-and-Level Flight
 - b) Turns in Both Directions
 - c) Climbs and Descents to Assigned Altitudes
 - d) Effects of Various Airspeeds and Configurations During Engine Inoperative Performance

Introduction of:

- 1. Emergency Operations (Engine-Out)
 - a) Engine Failure During Takeoff Before V_{MC} (simulated)
 - b) Engine Failure After Liftoff (simulated)
 - c) Engine Inoperative - Loss of Directional Control Demonstration (by applicant)
 - d) Full Feather and Inflight Restart
 - e) Approach and Landing with An Inoperative Engine (simulated)

Completion Standards:

At the completion of this lesson, the applicant will be able to maneuver the airplane during level flight with one engine inoperative, while maintaining altitude within 150 feet and heading within 15°. During engine-out climbs, the airspeed will be maintained within five knots of that recommended by the manufacturer. During simulated engine failures, the applicant will be able to promptly identify the inoperative engine and demonstrate the correct shutdown and feathering procedures. The applicant will demonstrate the correct procedure for engine failure on takeoff before V_{MC} and after liftoff. Engine-out approaches and landings will be performed while maintaining airspeed during final approach within 10 knots of, but never below, the correct approach speed.

Flight Exercise 7

Lesson Objective:

During this lesson, the applicant will review the listed maneuvers and procedures to gain proficiency in engine-out operations.

Review of:

1. Emergency Operations (engine-out)
 - a) Engine Failure During Takeoff Before V_{MC} (simulated)
 - b) Engine Failure After Liftoff (simulated)
 - c) Flight Principles - Engine Inoperative
 - d) Maneuvering with One Engine Inoperative
 - e) Engine Inoperative - Loss of Directional Control Demonstration
 - f) Full Feather and Inflight Restart
 - g) Approach and Landing with An Inoperative Engine (simulated)

Completion Standards:

At the completion of this lesson, the applicant will be able to promptly identify the failed engine and maintain headings within 10° and altitude within 100 feet of those assigned during engine shutdown, feathering, and un-feathering procedures. The applicant will demonstrate the ability to remain at or above the appropriate airspeed. Within 5 knots, during initial climb phase of an engine failure after takeoff. During a recovery from engine out loss of directional control, the applicant will maintain $V_{YSÉ}$, ± 5 knots. During an approach to landing with an inoperative engine, the applicant will maintain the appropriate approach speed until landing is assured.

Flight Exercise 8

Lesson Objective:

During this lesson, the applicant will review the listed maneuvers and procedures to gain proficiency in engine-out operations.

Review of:

1. Emergency Operations (engine-out)
 - a) Engine Failure During Takeoff Before V_{MC} (simulated)
 - b) Engine Failure After Liftoff (simulated)
 - c) Flight Principles - Engine Inoperative
 - d) Maneuvering with One Engine Inoperative
 - e) Engine Inoperative - Loss of Directional Control Demonstration
 - f) Full Feather and Inflight Restart
 - g) Approach and Landing with an Inoperative Engine

Completion Standards:

At the completion of this lesson, the applicant's proficiency will be evaluated on the basis of heading control within 10° , airspeed within 5 knots, prompt identification of simulated power failure, proper control usage, flap and landing gear clean-up procedures, accurate engine shutdown, and correct feathering procedures. Control of the airplane will never be in doubt.

Flight Exercise 9 - Stage Check

Lesson Objective:

During this lesson, instructor will determine that the applicant meets the proficiency requirements for a multi-engine land class rating.

Review of:

1. Pre-flight Preparation
2. Multi-engine Operations
3. Pre-flight Procedures
4. Takeoff, Landing, and Go-Around
5. Traffic Patterns
6. Visual Scanning and Collision Avoidance
7. Basic Flight Maneuvers
 - a) Straight-and-Level Flight
 - b) Constant Altitude Change of Airspeed
 - c) Constant Airspeed Climbs and Descent
 - d) Turns to Headings
8. Performance Maneuvers
 - a) Steep Turns
9. Slow Flight and Stalls
10. Emergency Operations
 - a) Emergency Descent
 - b) Systems and Equipment Malfunctions
 - c) Emergency Equipment and Survival Gear
 - d) Engine Failure During Takeoff Before V_{MC} (simulated)

- e) Maneuvering with One Engine Inoperative
 - f) Engine Inoperative - Loss of Directional Control Demonstration
 - g) Approach and Landing with An Inoperative Engine (simulated)
- 11. High Altitude Operations
 - 12. Post-flight Procedures

Completion Standards:

At the completion of this lesson, the applicant will be able to demonstrate each of the listed areas of operation at a proficiency level that meets or exceeds those criteria outlined in the Multi-engine Aeroplane flight test standard.

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LEBANESE AVIATION REGULATIONS

Part IV
PERSONNEL LICENSING

Subpart 406
FLIGHT TRAINING
ORGANIZATIONS

Republic of Lebanon 

UNDP / ICAO PROJECT LEB / 95 / 001
Civil Aviation Technical Training and Safety Oversight Programme

United Nations



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RECORD OF AMENDMENTS

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PART IV

PERSONNEL LICENSING

Subpart 6 - Flight Training Organizations

406.01 Interpretation

Any reference in this Subpart to the personnel licensing standards is a reference to the Personnel Licensing Standards Respecting Flight Training Organizations and where so noted, the related provisions contained in the current edition of the Federal Aviation Regulations (FARs) and related Circulars, published by the government of the United States of America, and the Joint Aviation Regulations (JARs) published by the Joint Aviation Authorities (JAA) of the European Civil Aviation Conference (ECAC) .

406.02 Application

This Subpart applies in respect of the operation of an aeroplane, helicopter, glider or free balloon in a flight training service toward obtaining any of the following:

- a) for aeroplanes:
 - i) a private pilot licence,
 - ii) a commercial pilot licence,
 - iii) a landplane or seaplane rating,
 - iv) a flight instructor rating,
 - v) an instrument rating,
 - vi) a multi-engine rating, or
 - vii) a night rating;
- b) for helicopters:
 - i) a private pilot licence,
 - ii) a commercial pilot licence,
 - iii) a flight instructor rating,
 - iv) an instrument rating, or
 - v) a night rating;
- c) for gliders:
 - i) a pilot licence; and
- d) for free balloons:
 - i) a pilot licence.
- e) for ultra-light aeroplanes:
 - i) a pilot licence .

406.03 Requirement to Hold a Flight Training Organization Operator Certificate

1. Subject to subsection (2), no person shall operate a flight training service using an aeroplane or helicopter in Lebanon unless the person holds and complies with the conditions and operations specifications in a flight training organization operator certificate that authorizes the person to operate that service.
2. A person who does not hold a flight training organization operator certificate may operate a flight training service if:
 - a) the person holds an air operator certificate,
 - b) the aircraft used for training is specified in the air operator certificate, and
 - c) the training is other than toward obtaining a private pilot licence, a commercial pilot licence, or a flight instructor rating.

406.04 Eligibility to Hold a Flight Training Organization Operator Certificate

A person is eligible to hold a flight training organization operator certificate if the person is a Lebanese.

406.05 Notification Requirement

1. No person shall operate a flight training service using a glider or free balloon in Lebanon unless the person notifies the Authority in writing of:
 - a) the legal name, trade name and address of the operator of the flight training organization;
 - b) the base of operations;
 - c) the category of aircraft;
 - d) the type of flight training to be conducted; and
 - e) the name of the flight instructor who will be responsible for operational control of the flight training operations.
2. The information referred to in subsection (1) shall be provided to the Authority by the flight training organization:
 - a) prior to commencing flight training operations;
 - b) within 10 working days after any change in the information; and
 - c) upon the service being discontinued.

406.06 Issuance or Amendment of a Flight Training Organization Operator Certificate

Subject to Article 70 of the Civil Aviation Safety Act, the Authority shall, on receipt of an application submitted in the form and manner specified in the personnel licensing standards, issue or amend a flight training organization operator certificate where the applicant demonstrates to the Authority the ability to:

- a) maintain an adequate organizational structure;
- b) maintain operational control;
- c) comply with maintenance requirements;
- d) meet the personnel licensing standards; and
- e) conduct the operation safely.

406.07 Contents of a Flight Training Organization Operator Certificate

A flight training organization operator certificate shall contain the following information:

- a) the legal name, trade name and address of the flight training organization;
- b) the number of the certificate;
- c) the effective date of certification;
- d) the date of issue of the certificate;
- e) the general conditions identified in Section 406.08;
- f) specific conditions with respect to:
 - i) the main base,
 - ii) the category of aircraft, and
 - A) the class of aeroplane, or
 - B) the type of helicopter, and
 - iii) the type of training authorized; and
- g) where the flight training organization complies with the personnel licensing standards, operations specifications with respect any other condition pertaining to the operation that the Authority deems necessary for aviation safety.

406.08 General Conditions of Issuance of a Flight Training Organization Operator Certificate

An operator certificate shall be issued subject to the following general conditions:

- a) the flight training organization shall maintain the organizational structure referred to in paragraph 406.06(a);
- b) the flight training organization shall have the personnel referred to in this Subpart and the personnel licensing standards;
- c) the flight training organization shall have aircraft that are properly equipped for the geographic area of operation and the type of authorized training;
- d) the flight training organization shall maintain its aircraft in accordance with the maintenance requirements of this Part;
- e) the flight training organization shall conduct flight training operations in accordance with the provisions of this Part;
- f) the flight training organization shall notify the Authority within 10 working days after any change in its legal name, trade name, base of operations or managerial personnel;
- g) the flight training organization shall conduct a safe operation; and
- h) the required fees have been paid.

406.09 Appointment of a Chief Flight Instructor

1. A flight training organization that operates an aeroplane or a helicopter shall appoint a Chief Flight Instructor who meets the requirements of the personnel licensing standard.
2. A flight training organization shall inform the Authority within 10 working days after:
 - a) the appointment, or
 - b) any change in the appointment, of a Chief Flight Instructor.

3. The responsibilities of a Chief Flight Instructor shall be as specified in the personnel licensing standards.
4. A person appointed as a Chief Flight Instructor shall acknowledge in writing that he knows, accepts and will carry out the responsibilities of the position, as set out in the personnel licensing standards.

406.10 Appointment of Flight Instructors

No flight training organization shall appoint a person as a flight instructor unless the person is qualified in accordance with Section 405.07.

406.11 Appointment of Ground Instructors

No flight training organization shall appoint a person as a ground instructor, and no person shall act as a ground instructor, unless the person:

- a) has been briefed by the Chief Flight Instructor on the objectives and standards of the training to be conducted; and
- b) has demonstrated to the Chief Flight Instructor, competency to teach the assigned subjects.

406.12 Instructor Records

A flight training organization shall, at its main base, establish, maintain and retain for at least two years after an entry is made, for each ground instructor and each flight instructor, a record that meets the personnel licensing standards.

406.13 Aircraft Qualification and Familiarization

No flight training organization shall assign a person to conduct flight training in an aircraft unless the person is qualified to act as pilot in command of that class or type, of aircraft and is familiar with the flight characteristics, operating limitations and operational performance data specified in the aircraft flight manual or equivalent document.

406.14 Flight Training Aircraft

1. No flight training organization that operates an aeroplane, helicopter, glider or free balloon shall operate an aircraft in a flight training service unless that aircraft holds a standard certificate of airworthiness and meets the requirements of Sub-part 405.
2. No flight training organization shall operate an aeroplane or a helicopter unless each front seat, or each seat occupied by a trainee or flight instructor, is equipped with a safety belt that includes a shoulder harness.
3. A flight training organization may provide flight instruction for licences and ratings, other than a private pilot licence, on an aircraft not operated by the flight training organization where the aircraft is owned by the trainee, a member of the trainee's immediate family, or a corporation controlled by the trainee.

406.15 Checklists

For the purpose of establishing safe aircraft operating procedures, a flight training organization that operates an aeroplane or a helicopter shall establish and make readily available to each flight crew member on board the aircraft, a checklist for each aircraft type that it operates.

406.16 Facilities at Base of Operations

A flight training organization shall have facilities at a base of operations that meet the personnel licensing standards.

406.17 Maintenance Control System

A flight training organization that operates an aeroplane or a helicopter shall establish and comply with a maintenance control system that:

- a) consists of policies and procedures regarding the maintenance of aircraft operated by the flight training organization;
- b) meets the requirements of this Part; and
- c) is described in the flight training organization's maintenance control manual (MCM).

406.18 Person Responsible for Maintenance Control System

1. A flight training organization that operates an aeroplane or a helicopter shall:
 - a) appoint a person who meets the requirements specified in the personnel licensing standards to be responsible for its maintenance control system; and
 - b) authorize the person who is responsible for its maintenance control system to remove aircraft from operation, where the removal is justified because of non-compliance with the requirements of these Regulations or because of a risk to the safety of the aircraft, persons or property.
2. Where a flight training organization that operates an aeroplane or a helicopter is the holder of an approved maintenance organization (AMO) certificate issued pursuant to Part V, Sub-part 545, the person appointed pursuant to paragraph 1.a) shall be the person responsible for the maintenance control system of the AMO.
3. The person who is responsible for a maintenance control system may assign to another person management functions for specific maintenance control activities, including the authority to remove aircraft from operation pursuant to paragraph 1.b), if the assignment and the assigned functions are described in the flight training organization's maintenance control manual.

406.19 Maintenance Personnel and Facilities

A flight training organization shall provide the person who is responsible for its maintenance control system with the staff, facilities, technical and regulatory data, supplies and spare parts referred to in the personnel licensing standards that are necessary for compliance with this Subpart.

406.20 Maintenance Control Manual

1. A flight training organization that operates an aeroplane or a helicopter shall:
 - a) establish and submit to the Authority for approval, a maintenance control manual that contains the information set out in the personnel licensing standards;
 - b) except where otherwise authorized by the Authority in writing where it is demonstrated that the granting of the authorization will not jeopardize the safety of the service, authorize the use of its maintenance control manual and comply with the policies and procedures contained therein;
 - c) take steps to ensure that a copy of its maintenance control manual, or of the relevant portions of its maintenance control manual, is made available to each person who performs or certifies a function that is dealt with in the maintenance control manual or in any manual that is incorporated in the maintenance control manual pursuant to subsection 2.;
 - d) submit amendments to its maintenance control manual to the Authority for approval when instructed to do so by the Authority, where:
 - i) the maintenance control manual does not meet the requirements of this Subpart, or
 - ii) the maintenance control manual contains policies or procedures, or a lack thereof, such that the flight training organization's maintenance control system no longer meets the requirements of these Regulations; and
 - e) insert amendments to its maintenance control manual into each copy of the manual within 30 days after approval of the amendments pursuant to paragraph (d).
2. The Authority may authorize the incorporation by reference in a maintenance control manual of detailed procedures manuals prepared by the flight training organization, where:
 - a) the policies affecting the detailed procedures remain in the maintenance control manual;
 - b) the incorporation is clearly indicated in the maintenance control manual;
 - c) the flight training organization ensures that the incorporated manuals meet the requirements of this Section; and
 - d) the person responsible for the flight training organization's maintenance control system, or the person to whom this function has been assigned pursuant to subsection 406.36.3., has certified in writing that the incorporated manuals meet the requirements of this Section.

406.21 Maintenance Arrangements

1. No flight training organization that operates an aeroplane or a helicopter shall permit a person or organization to perform maintenance on the flight training organization's aircraft unless the person or organization has adequate facilities, equipment, spare parts and personnel available at the site where the maintenance is to be performed and:
 - a) the person or organization holds an approved maintenance organization (AMO) certificate issued pursuant to Sub-part 545 that is rated in the category for the maintenance to be performed;
 - b) where the maintenance is to be performed outside Lebanon by a person or organization that does not hold an approved maintenance organization (AMO) certificate issued pursuant to Sub-part 545, the person or organization has been approved under the laws of a state that is party to an agreement with Lebanon that provides for recognition of the work performed; or

- c) in cases other than those described in paragraphs (a) and (b), the performance of the maintenance by the person or organization has been approved by the Authority as being in conformity with these Regulations.
2. A flight training organization that operates an aeroplane or a helicopter shall ensure that a maintenance arrangement made with a person or organization pursuant to subsection (1)
- a) specifies the maintenance required and clearly defines the tasks to be performed; and
 - b) is made in accordance with the procedures governing maintenance arrangements included in the maintenance control manual or is approved by the Authority as being in conformity with these Regulations.
3. Where a flight training organization that operates an aeroplane or a helicopter makes a maintenance arrangement referred to in paragraph 1.b), the Authority shall, in the following cases, authorize the arrangement by issuing a maintenance specification to indicate that the maintenance control procedures set out in the arrangement conform to the personnel licensing standards:
- a) the issuance of a maintenance specification is either required by the agreement or requested by the foreign state; or
 - b) the maintenance is performed in a state that is not party to an agreement with Lebanon that provides for recognition of the work performed.

406.22 Technical Dispatch Procedures

A flight training organization that operates an aeroplane or a helicopter shall establish and comply with policies and procedures to ensure that an aircraft is not operated unless it is:

- a) airworthy;
- b) appropriately equipped, configured and maintained for its intended use; and
- c) maintained in accordance with the flight training organization's maintenance control manual.

406.23 Defect Recording, Rectification and Control Procedures

A flight training organization that operates an aeroplane or a helicopter shall establish and comply with policies and procedures that meet the personnel licensing standards for:

- a) recording aircraft defects, including defects that are detected during aircraft operation or during the performance of elementary work or servicing;
- b) identifying defects that recur and reporting those defects as recurring defects to maintenance personnel;
- c) ensuring that defects are rectified in accordance with the requirements of these Regulations; and
- d) subject to Sections 605.09 and 605.10, scheduling the rectification of defects whose repair has been deferred.

406.24 Service Difficulty Reporting

A flight training organization that operates an aeroplane or a helicopter shall report to the Authority any service difficulties related to the aircraft that it operates, in accordance with the requirements specified in Sub-part 585.

406.25 Elementary Work

No flight training organization that operates an aeroplane or a helicopter shall authorize a person to perform, without supervision, a task that is elementary work set out in Sub-part 575 unless the person

- a) has satisfactorily completed training for the task under a training program required by Section 406.27; and
- b) has previously performed that task under the direct supervision of a qualified aircraft maintenance technician or a training organization approved pursuant to Sub-part 407.

406.26 Servicing

A flight training organization that operates an aeroplane or a helicopter shall ensure that each person who performs or requests the performance of servicing has satisfactorily completed training, under a training program required by Section 406.27, for the servicing to be performed.

406.27 Training Program

A flight training organization that operates an aeroplane or a helicopter shall implement a training program to ensure that persons who are authorized to perform a function under this Division are trained in respect of the regulations, standards and flight training organization procedures applicable to that function, as specified in the personnel licensing standards.

406.28 Maintenance Personnel Records

1. A flight training organization that operates an aeroplane or a helicopter shall establish, maintain and retain for at least two years after an entry is made a record of maintenance personnel that meets the personnel licensing standards.
2. Where an authorization is given or training is completed, the flight training organization shall provide a copy of each record required by subsection (1) to the person to whom the record refers.

406.29 Evaluation Program

1. A flight training organization that operates an aeroplane or a helicopter shall, in order to ensure that its maintenance control system and all of the included maintenance schedules continue to be effective and to comply with these Regulations, establish and maintain an evaluation program that:
 - a) meets the personnel licensing standards; and
 - b) includes records relating to the findings resulting from the program, which records shall be retained for at least six years after an entry is made.
2. The person appointed to be responsible for the maintenance control system pursuant to paragraph 406.18(1)(a) shall ensure that the records relating to the findings resulting from an evaluation program are efficiently distributed and controlled in accordance with the policies and procedures specified in the maintenance control manual.

406.30 Aircraft Operations Requirements

1. A flight training organization that operates an aeroplane to conduct training for a private pilot licence, a commercial pilot licence or a flight instructor rating shall have access to at least one aeroplane that is certified under Part V for the spin maneuver.
2. A flight training organization that operates a helicopter to conduct training a private pilot licence, a commercial pilot licence or a flight instructor rating shall have access to at least one helicopter that is configured for and capable of full-on autorotational landings.

406.31 Solo Cross-country Routes

No flight training organization that operates an aeroplane or a helicopter shall permit a person to conduct the solo cross-country flight required by Subpart 1 for the private pilot licence - aeroplane or the private pilot licence - helicopter unless the flight training organization notifies the Authority in writing of the planned route of the flight.

406.32 Daily Flight Record

A flight training organization that operates an aeroplane, a helicopter or a glider shall, for the purpose of maintaining operational control, establish, maintain and retain for at least two years after an entry is made a daily flight record that meets the personnel licensing standards.

406.33 Journey Log Entries

A flight training organization that operates an aeroplane, a helicopter or a glider shall designate a person to make journey log entries in accordance with Section 605.94.

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Subpart s406 - Personnel Licensing Standards Respecting Flight Training Organizations

s406.06 Issuance or Amendment of a Flight Training Organization Operator Certificate

1. An applicant shall have:
 - a) a management organization capable of exercising supervision and operational control over any flight that is to be operated;
 - b) ground instructors and flight instructors who:
 - i) are qualified to perform the duties to which they are assigned, and
 - ii) are collectively qualified to conduct all the authorized training;
 - c) a Chief Flight Instructor:
 - i) who is appointed by the applicant,
 - ii) who is employed on a full-time basis during flight training operations, and
 - iii) that meet the requirements specified in s406.09;
 - d) after January 1 2001, legal custody and control of at least one Lebanese registered aircraft; and
 - e) aircraft that are properly equipped for the geographic area of operations and the type of authorized training.

Note: *Depending on the size and complexity of the flight training organization, one person may hold two or more of the positions identified in section 1.*

2. The following constitutes an application for a flight training organization operator certificate:
 - a) information with respect to:
 - i) the main base, including written permission from the airport operator;
 - ii) the names of the person appointed as Chief Flight Instructor, supported by a resume of qualifications and experience;
 - iii) the name of the person appointed as being responsible for the maintenance control system;
 - iv) the aircraft to be operated, including category, class, type and registration;
 - v) the type of flight training to be conducted; and
 - vi) the proposed route for the solo cross-country training flight, if applicable.
 - b) a copy of the flight training program, pursuant to Section 405.05;
 - c) a copy of the pre-solo knowledge exam;
 - d) a copy of the statements signed by the person appointed as Chief Flight Instructor, pursuant to Section 407.09;
 - e) the proposed maintenance control system, including the maintenance control manual;
 - f) written confirmation of liability insurance coverage against risks of injury or death to passengers, and public liability, as required by LAR 606.02;
 - g) form LAR 406/01 - Statement of Intent – Commercial Air Service completed and signed;
 - h) form LAR 406/02 - Application for Flight Training Organization Operator Certificate completed and signed; and
 - i) an emergency response plan.

s406.09 Appointment of a Chief Flight Instructor

1. Qualifications

- a) A person may be appointed as Chief Flight Instructor for a flight training organization that is operating an aeroplane or helicopter where a flight instructor rating is required to conduct any of the authorized training, and other instructors are employed, if that person:
 - i) is authorized to conduct instruction for the issue of a Flight Instructor rating for the category of aircraft in which the flight training is to be conducted; and
 - ii) has demonstrated to the Authority the knowledge required to manage the Flight Training Programs of Flight Training Organization.
- b) If no other flight instructors are employed, the person shall:
 - i) have completed at least 500 hours of flight time including at least 200 hours of flight instruction in the category of aircraft in which the flight training is to be conducted, and
 - ii) has demonstrated to the Authority the knowledge required to conduct the Flight Training Programs of Flight Training Organization.

2. Responsibilities

- a) The Chief Flight Instructor of a flight training organization shall be responsible for operational control of the organization.
- b) The Chief Flight Instructor shall be specifically shall be responsible for:
 - i) the overall pilot training program;
 - ii) the supervision of other flight instructors at that flight training organization including the designation of a flight instructor to supervise an instructor during their Restricted Period.;
 - iii) approving of the appointment of persons to be appointed as ground instructors;
 - iv) the quality and content of ground school instruction and flight training provided by that flight training organization;
 - v) the content and accuracy of Pilot Training Records, course reports, licence applications and any other documents which form part of the training process;
 - vi) ensuring that flight instruction is based on the contents of approved training program;
 - vii) ensuring that the daily flight record is used for operational control;
 - viii) ensuring that the regulatory and licence standards publications including the Lebanese Aviation Regulations, Aeronautical Information Publication, Flight Instructor Guide and Flight Training Manual as appropriate, and the applicable training manual on human factors are readily available to trainees and amended to date;
 - ix) maintaining a current copy of training publications, charts, maps and any other material required for the ground instruction and flight training of trainees;
 - x) ensuring that all solo training flights are properly authorized by a flight instructor and acknowledged by the trainee and that they are supervised by a flight instructor who is available to provide assistance in the case of emergency;
 - xi) decisions with respect to flight safety during flying periods; and

- xii) confirming the continuing validity of staff licences and ratings endorsed on a licence.

s406.12 Instructor Records

1. An individual record for each ground instructor shall contain the following:
 - a) the name of the ground instructor; and
 - b) the date of the appointment pursuant to Section 407.11.
2. An individual record for each flight instructor shall contain the following:
 - a) the name of the flight instructor;
 - b) the licence number, the ratings endorsed therein and their valid to dates as applicable; and
 - c) the date on which the next medical examination is due.

s406.16 Facilities at Base of Operations

A flight training organization that operates an aeroplane or helicopter shall have at a base of operations:

1. a means of communication with the nearest air traffic control organization;
2. continuous use of instructional facilities consisting of adequate classrooms or other suitable spaces which can be used for ground school instruction and preparatory ground instruction, equipped with training aids appropriate to the authorized training; that are:
 - a) heated, lighted and ventilated to conform to local building, sanitation and health codes; and
 - b) are located so that students in the facility are not distracted by training conducted in other rooms, or by flight and maintenance operations on the airport.
3. continuous use of operational dispatch facilities including suitable spaces for:
 - a) flight planning,
 - b) pre-flight briefing, and
 - c) post-flight debriefing of trainees;
4. adequate supplies of flight planning documents, charts, forms and other materials; and
5. a means of obtaining weather information required for the safe conduct of training operations.

s406.18 Person Responsible for the Maintenance Control System

A person appointed to be responsible for the maintenance control system shall:

- a) demonstrate to the Authority knowledge of the planning, implementation and direction of the maintenance control system for the aircraft operated by the flight training organization;
- b) except for the holder of a pilot licence or an aircraft maintenance technician licence, complete an open book examination on Lebanese Aviation Regulations; and
- c) have not been convicted more than once in the past 5 years of contravening with full knowledge "mensrea" the Lebanese Aviation Act or the Lebanese Aviation Regulations.

s406.19 Maintenance Personnel and Facilities

1. There shall be sufficient staff for:
 - a) the initial development of the maintenance schedule as required by Section 605.86 - Maintenance Schedule;
 - b) the scheduling and performance of maintenance, elementary work and servicing within the time constraints specified in the approved maintenance schedule;
 - c) the scheduling of the accomplishment of applicable Airworthiness Directives;
 - d) the operation of the evaluation program required by Section 406.29;
 - e) the proper dispatch of aircraft in regard to:
 - i) the availability of spare parts and the control of defects,
 - ii) the conformity of aircraft with their type design, and
 - iii) the requirements of other applicable operating rules;
 - f) the management of issuance of authorizations to personnel who are assigned to perform elementary work and servicing;
 - g) the liaison with approved maintenance organizations for the performance of maintenance; and
 - h) the initial development and the updating of the maintenance control manual.
2. There shall be facilities, technical and regulatory data, supplies and spare parts, which shall include:
 - a) a place of business, with a fixed address;
 - b) a means of communication, such as telephone, facsimile machine, Telex, etc.;
 - c) devices used to establish when a particular aircraft requires maintenance, which may include planning bulletin boards, card files, or a computer system;
 - d) where the flight training organization performs elementary work or servicing, equipment and tools necessary to comply with Sub-part 575 - Maintenance Performance Rules;
 - e) sufficient supplies and spare parts to ensure timely rectification of defects in regard to MEL provisions; and
 - f) a secure, dry storage area to retain aircraft technical records.

s406.20 Maintenance Control Manual

1. Except where otherwise incorporated by reference pursuant to Section 406.20(2), the maintenance control manual of a flight training organization shall include the following information:
 - a) a Table of Contents;
 - b) an amendment control page;
 - c) a List of Effective Pages, with each page numbered and dated;
 - d) the legal name, trade name and address of the flight training organization;
 - e) the location of the main base and any satellite base;
 - f) the category, class, type and number of aircraft operated;
 - g) a statement signed by the flight training organization confirming that the maintenance control manual and any incorporated documents identified therein, reflect the flight training organization's means of compliance with Section 406.17;
 - h) details of any assignment of maintenance control functions for specific maintenance control activities, pursuant to subsection 406.18(3) that includes:

- i) the name and title of the person to whom the function has been assigned,
 - ii) a description of the function that has been assigned,
 - iii) where necessary to ensure comprehension, a chart depicting the distribution of the functions;
- i) a description of the maintenance control manual amendment control procedure that includes:
 - i) a means of identifying each page of the MCM, with each page numbered and either dated or marked with a revision number, and
 - ii) a List of Effective Pages;
- j) a description of the system used to distribute the manual, including the name or title of each person who holds a copy of the manual, to ensure compliance with paragraph 406.20(1)(c);
- k) details of the incorporation by reference of detailed procedures manuals, pursuant to subsection 406.20(2), that include policy affecting the detailed procedures;
- l) a description of the procedures used to ensure that regulatory information and technical data appropriate for the work performed are used in respect of maintenance or elementary work, as required by with Sub-part 575 - Maintenance Performance Rules;
- m) details of the methods used to record the maintenance, elementary work or servicing performed, and ensure that any defects are recorded in the technical record established pursuant to Section 605.92 - Requirement to Keep Technical Records;
- n) where the organization performs maintenance or elementary work and uses methods, techniques, practices, parts, materials, tools, equipment and test apparatus that are other than those recommended by the manufacturer, pursuant with Sub-part 575 - Maintenance Performance Rules, the identification of those items;
- o) the identification of any maintenance schedule approved pursuant to Section 605.86 - Maintenance Schedule, in respect of any of the flight training organization's aircraft;
- p) a detailed description of the procedure used to ensure that any maintenance tasks required by the maintenance schedule, an airworthiness directive, or any task required for the rectification of a defect is completed within the constraints specified in Sub-part 575 - Aircraft Maintenance Requirements;
- q) details of procedures governing maintenance arrangements, that include procedures for approval of maintenance conducted by:
 - i) an AMO that is the flight training organization,
 - ii) an AMO that is not the flight training organization,
 - iii) a person or an organization outside of Lebanon that does not hold an AMO certificate, or
 - iv) any other person or organization;
- r) a list of all approved maintenance arrangements;
- s) a description of procedures to ensure that only parts and materials that meet the requirements of Sub-part 575 - Aircraft Maintenance Requirements are used in the performance of maintenance or elementary work, including any details respecting part pooling arrangements that have been entered into;
- t) a description of the methods used to ensure that the persons authorized to perform elementary work or servicing are trained as required by Section 406.27 and qualified in accordance with the requirements of Section 406.25 and Section 406.26;
- u) a description of the procedure used to ensure that the empty weight and balance of an aircraft is recorded in accordance with the requirements of Sub-part 575 - Recording of Maintenance and Elementary Work or Section 605.92 - Requirement to Keep Technical Records;

- v) a description of technical dispatch procedures;
 - w) a description of defect recording, rectification and control procedures;
 - x) a description of service difficulty reporting procedures; and
 - y) a description of the evaluation program.
2. A Flight Training Organization that operates four or fewer aircraft, none of which are turbine powered or having a maximum take off weight (MTOW) greater than 5700 kg (12566 lb.), may use the simplified Maintenance Control Manual attached to this Sub-part should they wish to do so.

s406.21 Maintenance Arrangements

The authorization for the performance of maintenance outside of Lebanon by a person or organization that does not hold an AMO certificate will be granted by issuance of a Maintenance Specification where the maintenance arrangement includes details of:

- a) the relevant portions of the MCM that shall be provided to the person or organization;
- b) the maintenance to be performed; and
- c) the records to be kept by the person performing the maintenance.

s406.23 Defect Recording, Rectification and Control Procedures

1. The defect recording system shall include a method to highlight defects that recur, so that they are readily identifiable by flight crews and the maintenance organization at all bases where the aircraft is operated.
2. The defect control system shall ensure that the rectification of a defect identified as a recurring defect will take into account the methodology used in previous repair attempts.
3. For the purpose of these standards, defects are recurring defects where a failure mode is repeated three times, on a particular aircraft, within 15 flight segments of a previous repair made in respect of that failure mode.

s406.27 Training Program

1. The training program shall:
 - a) include initial training to ensure that persons performing elementary work or servicing are aware of the regulations, standards and flight training organization procedures associated with that work;
 - b) include updating training to ensure that personnel remain competent and are made aware of any changes to those regulations, standards and flight training organization procedures; and
 - c) include additional training where it is shown to be necessary by a finding made under the evaluation program of Section 406.29; and
 - d) ensure that personnel are aware of their responsibilities in regard to Sub-part 575 - Maintenance Performance Rules, and in regard to technical records pursuant Sub-part 575 - Recording of Maintenance and Elementary Work and Section 605.92 - Requirement to Keep Technical Records.
2. The standards applicable to servicing are normally limited to the procedures contained in those publications procured in respect of maintenance performance rules pursuant to Sub-part 575 - Maintenance Performance Rules. These will typically include manufacturer's maintenance publications, servicing manuals, etc. Where the standards used are not the

standards specified by the manufacturer, they shall be listed in the MCM as required by Section 406.20.

3. Where a flight training organization is the holder of an AMO certificate issued pursuant to Sub-part 545 - Entitlement to and Scope of Certificate, the training required by Section 406.27 can be managed by means of its AMO training program provided that:
 - a) there is mention made to that effect in its MCM; and
 - b) all the requirements specified in this section are covered in its AMO manual approved pursuant to Sub-part 545 - Maintenance Policy Manual.

s406.28 Maintenance Personnel Records

A record of maintenance personnel for a flight training organization shall contain the following information:

- a) all appointments, and personnel qualifications in respect of such appointments, made pursuant to paragraph 406.18.1.a);
- b) all authorizations to perform elementary work made pursuant to Section 406.25; and
- c) all training conducted pursuant to Section 406.27.

s406.29 Evaluation Program

1. Each Flight Training Organization must establish and maintain a program to ensure that the maintenance control system, including maintenance schedules, continue to comply with the regulations. It is not intended that this program be based on a system of end product inspection, but rather upon periodic verifications of all aspects of the systems and practices used for the control of maintenance, to ensure compliance with regulations and with the Flight Training Organization's approved procedures. The program should provide an unbiased picture of the Flight Training Organization's performance, to verify that activities comply with the MCM and confirm that the systems and procedures, described in the MCM, remain effective and are achieving the Flight Training Organization's requirements.
2. The program must be under the sole control of either the person responsible for the maintenance control system or a person to whom, pursuant to Section 406.18.3., the management function for the program has been assigned. It must, as a minimum, cover all functions defined within the MCM. It must include all elements necessary to confirm that the Flight Training Organization is in compliance with the applicable regulations and with the MCM. It must ensure that all referenced procedures remain applicable and effective.
3. The program must address the Flight Training Organization's requirements, the operational and environmental conditions, organizational structure, maintenance schedules, record keeping system, etc.
4. The program must be responsive to any changes and must address the need for amendments to the MCM or Maintenance Schedules. The MCM and Maintenance Schedules must be reviewed periodically to ensure compliance with current requirements. The program must include the use of checklists that are sufficiently detailed to ensure that all maintenance functions are evaluated. Specifically, the program must include the following elements:
 - a) an initial evaluation, using the checklists, that covers all aspects of the Flight Training Organization technical activities conducted within 3 months following the date on which the Flight Training Organization certificate is issued;
 - b) recurring evaluations conducted at intervals established in the approved MCM;
 - c) records of findings of compliance and non compliance resulting from the evaluations required by (a) and (b);

- d) procedures to ensure that the findings of the evaluations are communicated to the person appointed pursuant to Section 406.18 and made available to the Flight Training Organization.

NOTE: In the context of paragraph (4)(d), the term "Flight Training Organization" means the holder of the Flight Training Organization certificate.

- e) where appropriate, immediate and long term actions to correct the root cause of each non-compliance noted;
- f) follow up procedures, to ensure that necessary corrective actions (both immediate and long term) instituted by the Flight Training Organization are effective; and
- g) a record keeping system to ensure that details of evaluation findings, corrective actions, and follow up is recorded, and that the records are retained for two complete evaluation cycles.

- 5. Functions related to the evaluation program may be performed by persons within the Flight Training Organization or by external agents.

s406.32 Daily Flight Record

A daily flight record shall include the following information:

- 1. date;
- 2. aircraft registration;
- 3. pilot-in-command;
- 4. trainee;
- 5. exercise or lesson plan to be conducted;
- 6. flight instructor's authorization;
- 7. trainee's acknowledgment;
- 8. take-off time;
- 9. landing time;
- 10. air time; and
- 11. flight time.

Appendix A - Sample Maintenance Control Manual

This Appendix contains a sample Maintenance Control Manual (MCM) that meets the requirements of this Sub-part. It can be adopted by a Flight Training Organization that operates four or fewer aircraft, none of which are turbine powered or having a maximum take off weight (MTOW) greater than 5700 kg (12566 lb.). Applicants are directed to Attachment B if the Appendix for explanatory material on several sections of the sample MCM.

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1. DESCRIPTION OF ORGANIZATION**Name of Flight Training Organization:***(hereafter referred to as "the FTO")***Address:** **Phone:** **Fax:** **E-mail:****Person responsible for maintenance:****License Number:****Location of principal base:****Type of FTO:***(e.g., Aeroplane, Helicopter. Other)***Landing gear:** **Wheels** ☐ **Floats** ☐ **Skids** ☐ *(check all that apply)***2. AIRCRAFT OPERATED**

Aircraft Type	Registration	Maintenance schedule

3. DISTRIBUTION OF DOCUMENT

Holder	No.	Holder	No.
Person Responsible for Maintenance	1		
DGCA Lebanon	2		
Chief Flight Instructor	3		

4. APPROVAL

This document describes the FTOs means of compliance with the Lebanese Aviation Regulations (LARs). Failure to comply with the procedures outlined in this document may result in suspension of the FTO Operator Certificate, the aircraft certificates of airworthiness, or both. In case of conflict between this document/manual and the LARs, the LARs will prevail. Inquiries regarding this document should be directed to the person responsible for maintenance.

Signed: *Operator Certificate holder* *Date*

Approved in accordance with (Flight Training Organizations) regulatory requirements.

Signed: *DGCA* *Date*

5. DISTRIBUTION CONTROL

When changes are required, the person responsible for maintenance shall complete two new copies (Copy # 1 & 2) of this document, sign Section 4, and forward both copies to the Authority. The Authority representative will indicate approval by signing Section 4 of the copies, and returning Copy # 1 to the FTO. The Person Responsible for Maintenance may make additional photocopies as required, provided that the distribution of all such copies is listed in Section 3. This document shall be made available to all persons performing maintenance on the FTO's aircraft and all persons who are authorized to request maintenance. Upon receipt of an approved replacement copy of this document, each document holder shall ensure that the earlier copy is either destroyed.

6. PERSON RESPONSIBLE FOR MAINTENANCE (RESPONSIBILITIES)

The Person Responsible for Maintenance is responsible for the planning and control of all maintenance, liaison with the Authority on maintenance topics, and liaison with all Person or Approved Maintenance Organizations (AMOs) performing maintenance on the FTO's aircraft. They shall have access to all applicable technical and regulatory publications necessary to perform these duties, and shall ensure that those publications are kept up to date. The Person Responsible for Maintenance shall remove from service any aircraft that are unsafe, or that do not comply with the LARs or this document. In cases of temporary absence, the duties of the Person Responsible for Maintenance may be assigned in writing to another qualified person for periods of up to 30 days. Longer assignments will require written authorization from the Minister.

7. TECHNICAL RECORDS

Immediately upon finding a defect in an aircraft, or upon completing any maintenance on an aircraft, the person discovering the defect or performing the maintenance shall enter details of the event in the applicable technical records required by applicable LARs. If the event occurs between scheduled maintenance checks, the entries shall be made in the aircraft journey log. The Person Responsible for Maintenance shall ensure that journey log entries are transcribed to the applicable airframe, engine, and propeller or component records within 30 days of the events to which they relate. Details of defects found during a scheduled maintenance check, or of maintenance performed during such a check, may be entered directly in the applicable airframe, engine, propeller or component record, provided that any outstanding items remaining upon completion of the maintenance check are entered in the aircraft journey log upon certification of the maintenance event /check or prior to flight.

8. MAINTENANCE SCHEDULES

All aircraft shall be maintained in accordance with the FTO's approved maintenance schedule applicable to the aircraft type, identified in Section 2.

9. ELEMENTARY WORK & SERVICING

No person shall perform any elementary work or servicing without first being trained and authorized in accordance with Section 17. Elementary work and servicing shall be performed in accordance with the methods and procedures recommended by the aircraft manufacturer. (Refer to APPENDIX A)

10. AIRWORTHINESS DIRECTIVES

The Person Responsible for Maintenance shall implement a system to ensure that the aircraft are in compliance with all applicable airworthiness directives and other mandatory maintenance requirements. He shall examine the aircraft records upon appointment to the position, and upon each acquisition of a new aircraft, to verify this compliance. The Person Responsible for Maintenance shall review all new and revised airworthiness directives upon receipt, to determine if they are applicable. He shall enter details of all applicable airworthiness directives, and details of all directives pertaining to the aircraft make and model, in the appropriate airframe, engine, propeller or component technical record. The Person Responsible for Maintenance shall determine the date, air time or operating cycles, when the actions specified in the directive must be taken. If the required actions are due before the next scheduled maintenance activity he or she shall make the necessary entries in the aircraft journey log in accordance with Section 15.

11. EVALUATION PROGRAM

The Person Responsible for Maintenance shall continually evaluate the effectiveness of the maintenance control system, operating procedures and maintenance schedules. At intervals not greater than three months, a review of the aircraft technical records must be conducted, in conjunction with the qualified maintenance technician or AMO, if currently responsible for maintenance of the aircraft, to ensure that the system, procedures and schedules are satisfactory. This review shall also include an assessment of all defects reported during the period, to identify any negative trends in aircraft performance or reliability. Where deficiencies are discovered, the person responsible for maintenance shall take action to correct them. Where the deficiencies relate to the performance of maintenance, details of the deficiencies shall be communicated to the applicable maintenance technician/AMO. The Person Responsible for Maintenance shall keep a record of each evaluation, including any decisions taken.

Upon receipt of all recommendations issued by the aircraft, engine, propeller and component manufacturers in the form of service bulletins or equivalent documents, the Person Responsible for Maintenance shall review the recommendations to determine whether compliance is appropriate. Where necessary, he shall obtain technical advice from the qualified maintenance technician/AMO currently responsible for maintenance of the FTO's aircraft. The Person Responsible for Maintenance will keep a record of each such decision made, and retains the record along with the service bulletin or equivalent document. All records required by this section shall be retained for not less than six years.

12. DEFERRED RECTIFICATION OF DEFECTS

All defects shall be rectified before further flight of the aircraft, except as provided in this section. Where permitted by LAR provisions as applicable, aircraft having outstanding defects may be operated subject to the following procedures:

- Where a Minimum Equipment List (MEL) has been approved and the list includes limits on the amount of time equipment may be inoperative, those limits apply.
- Where the MEL does not specify time limits, or where no MEL has been approved, the aircraft may be operated following discovery of a defect. This provision is conditional to the following procedure:
 - the pilot must report and coordinated the defect deferral with the Person Responsible for Maintenance, who must request written authorization from the qualified maintenance technician/AMO;
 - **it must be confirmed by the qualified maintenance technician/AMO that the defect does not invalidate the aircraft certificate of airworthiness;**
 - the Authorization shall be recorded in the aircraft journey log and original filed in the aircraft record;
 - the journey log entry shall specify the reason for the deferral and the latest date by which the defect must be corrected, but no longer than at the next scheduled maintenance event; and
 - rectification shall take place no later than 30 days following discovery of the defect.

13. RECURRING DEFECT CONTROL

At intervals not to exceed one month, the Person Responsible for Maintenance shall review the aircraft technical records to detect any recurring defects. Any defect that has occurred three times or more within the past month or the past 15 flight segments shall be reported by the Person Responsible for Maintenance to the qualified maintenance technician/AMO responsible for maintenance. If a defect that has been reported as a recurring defect occurs again within one month of receiving the report, the Person Responsible for Maintenance shall ensure that the corrective action includes a complete investigation of the affected system(s), taking into consideration all previous occurrences of the defect and the actions taken to correct them. The journey log entry for rectification of the defect shall indicate that a recurring defect investigation has been carried out.

14. SDR REPORTING

The Person Responsible for Maintenance shall submit Service Difficulty Reports (SDR) to the Authority in accordance with LAR Part V subpart 585. In the case of service difficulties discovered during maintenance, the qualified maintenance technician/AMO performing the maintenance will be responsible for submitting the SDR, and for notifying the Person Responsible for Maintenance that an SDR has been submitted. Between scheduled maintenance activities/visits to the AMO, any employee discovering a defect that may warrant submission of an SDR must immediately bring it to the attention of Person Responsible for Maintenance, who will determine whether a report is required.

15. TECHNICAL DISPATCH

Technical dispatch of aircraft shall be by means of the aircraft journey log. The Person Responsible for Maintenance shall ensure that all items of deferred maintenance other than those recorded in the current page of the aircraft journey log are entered on an approved serialized list attached to the front page of the log. Immediately following completion of any item of scheduled maintenance specified by a maintenance schedule, airworthiness directive or other mandatory requirement, the Person Responsible for Maintenance shall review the aircraft technical records to determine the date, air time, or operating cycles when the next scheduled maintenance activity will become due, and make an entry to that effect in the journey log.

Before each flight of an aircraft, the pilot in command and/or supervising instructor, shall consult the journey log and take note of the next scheduled maintenance requirement and the current list of outstanding defects, to decide whether the flight may take place. If in doubt as to the time remaining to maintenance tasks, or the acceptability of defects, the pilot in command/supervising instructor must contact the Person Responsible for Maintenance.

16. PARTS AND MATERIAL CONTROL

Parts required for elementary work and servicing shall be held under the control of the Person Responsible for Maintenance. Fuels, oils, lubricants and cleaning materials shall be kept in closed containers, clearly marked with the contents and handle in accordance with applicable industry recommendations. No fluids shall be dispensed from any unmarked container.

17. TRAINING PROGRAM

The Person Responsible for Maintenance shall ensure that all employees receive initial and update training on the LARs, and on the procedures, servicing and elementary work tasks appropriate to their duties. The content of the training given shall take into account the findings of the evaluation program described in Section 11. Flight instructors shall receive training in aircraft servicing procedures for the aircraft type they are authorized to fly. This training shall include refueling, oiling, de-icing, pre-flight inspection and aircraft ground handling. Personnel must perform each elementary work task under the direct supervision of a qualified maintenance technician, before being authorized to perform the task unsupervised. Initial training shall be carried out before any servicing or elementary work authorization is granted. Thereafter, training shall be carried out on a two-year cycle.

The following table lists the minimum training which must be completed within each two year period by persons authorized to perform servicing or elementary work.

Subject	Amount
FTO's procedures	2 Hours
Lebanese Aviation Regulations	2 Hours
Each aircraft type	4 Hours

The Person Responsible for Maintenance shall maintain a list of persons authorized to perform elementary work and servicing. Details of the tasks authorized and the training undertaken by each employee shall be recorded on the individual's personnel record. The Person Responsible for Maintenance shall retain all personnel records for at least two years. Each employee will receive a transcript of his or her training upon completion of the training.

18. AIRCRAFT WEIGHT & BALANCE CONTROL

The Person Responsible for Maintenance shall maintain and retain weight and balance reports and amendments for all aircraft. Details of the empty weight and center of gravity of each aircraft shall be kept in the Journey Log or on board the aircraft.

19. MAINTENANCE ARRANGEMENTS

All aircraft maintenance shall be performed by the FTO's own authorized qualified maintenance technician, approved maintenance organization (AMO) or an external approved maintenance organization (AMO) holding proper license/ratings and scope for the work to be undertaken, authorized in writing in the form of a contract, purchase order or letter. Each request for maintenance shall specify that the work be performed and certified in accordance with the applicable requirements of the LARs and in accordance with this document. The Person Responsible for Maintenance shall make all planned maintenance arrangements. In the case of unplanned maintenance away from main base, the pilot in command/instructor may request the maintenance in writing. This may be done by completing a work order or similar document provided by the AMO. The Person Responsible for Maintenance shall be notified of all unplanned maintenance activities as soon as practical.

Note: *the term "technician" is used in this context as an all-encompassing expression for maintenance personnel, "engineer" and "mechanic" being an acceptable alternative*

20. FLIGHT AUTHORIZATION

The Person Responsible for Maintenance shall be responsible for all applications made to the Authority for aircraft flight authorities, and is authorized to make any required declarations for this purpose on behalf of the FTO.

Note: *This document may be used by Flight Training Organization operating four or fewer aircraft, none of which are turbine powered or have a MTOW greater than 5700 kg (12566 lb.). It provides a simplified Maintenance Control Manual (MCM) for Flight Training Organizations to evaluate and adopt, if they do not wish to develop their own systems and procedures. The document is also intended for FTOs who purchase maintenance services from an AMO. FTOs who wish to deviate from the procedures outlined in this document may develop an MCM containing alternative procedures and submit it for approval.*

Attachment A

Elementary Work

The following lists are exhaustive in nature; if a task is not listed, it is not elementary work. Elementary work is a form of maintenance that is not subject to a maintenance release. Hence, it need not be performed by a holder of a maintenance technician license, or by persons working under an AMO certificate. The owner is responsible for controlling authorizations to persons who may perform elementary work.

All tasks designated, as elementary work must be detailed in the technical record and certified in the aircraft log.

Elementary Work Task Listings

Aeroplanes and Helicopters Operated in Flight Training Organizations.

The following tasks are considered elementary work:

- (a) performance of a pre-flight or turnaround checks;
- (b) removal and installation of passenger seats and passenger seat belts;
- (c) repairs to upholstery and cabin furnishings;
- (d) removal, installation or repositioning of non structural partitions in the passenger cabin;
- (e) opening and closing of non-structural access panels;
- (f) removal and installation of cabin doors on unpressurized aircraft, where the door is designed for rapid removal and installation;
- (g) removal and installation of co-pilot flight control levers and pedals that are designed for quick removal and installation;
- (h) removal and installation of fuses and light bulbs;
- (i) removal and installation of aircraft batteries;

Attachment B

Guidance Notes

PREAMBLE

This attachment is intended to give added information with respect to the data that must be entered in some sections, and to expand on the content of some other sections.

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This element, situated at the top right hand corner of the document, indicates its current status, i.e. original, indicated by "0" or the sequential number of the latest approved change.

DISTRIBUTION CONTROL (section 5)

As stated in section 5 of the MCM, following approval of the document and upon receipt of the master copy, the Person Responsible for Maintenance may make additional photocopies as required, provided that the distribution of all such copies is controlled and a list of holders is available for review by the Authority. Control of all copies of the document, is the responsibility of the Person Responsible for Maintenance.

PERSON RESPONSIBLE FOR MAINTENANCE'S RESPONSIBILITIES (section 6)

Pursuant to applicable LAR requirements, the person appointed as being responsible for the maintenance of the FTO's aircraft must demonstrate competence related to the duties and responsibilities issued under this document. The same competency requirements apply to the person assigned to replace the Person Responsible for Maintenance. Therefore, it would be to the advantage of the FTO to have a second person demonstrate competence in order to readily act as a replacement during the absence of the Person Responsible for Maintenance.

MAINTENANCE ARRANGEMENTS (section 19)

The selection of any qualified maintenance technician or AMO to perform the maintenance is at the discretion of the FTO, provided they hold a certificate/license specifying the applicable category and that all the specific scope and limitations of the agreement are covered under a maintenance arrangements.

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LARs

LEBANESE AVIATION REGULATIONS

Part IV
PERSONNEL LICENSING

Subpart 405
FLIGHT TRAINING

Republic of Lebanon 

UNDP / ICAO PROJECT LEB / 95 / 001
Civil Aviation Technical Training and Safety Oversight Programme



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RECORD OF AMENDMENTS

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PART IV

PERSONNEL LICENSING

Subpart 5 - Flight Training

405.01 Interpretation

Any reference in this Subpart to the personnel licensing standards is a reference to the Personnel Licensing Standards Respecting Flight Training and where so noted, the related provisions contained in the current edition of the Federal Aviation Regulations (FARs) and related Circulars, published by the government of the United States of America, and the Joint Aviation Regulations (JARs) published by the Joint Aviation Authorities (JAA) of the European Civil Aviation Conference (ECAC) .

405.02 Application

This Subpart applies in respect of the conduct of flight training by a flight training service, using an aeroplane, helicopter, glider, free balloon or ultra-light aeroplane.

405.03 Flight Training Program

No person shall conduct flight training unless the flight training program is in accordance with the requirements of Subpart 1 in respect of:

- a) the initial issuance of a licence or rating; or
- b) the renewal of a rating.

405.04 Flight Training Program Approval

Where a syllabus for a flight training program is not set out in this Part, the Authority shall approve a proposed syllabus for a flight training program if the syllabus meets the requirements for the particular licence or rating.

405.05 Provision of a Flight Training Program to a Trainee

A person who conducts flight training using an aeroplane or helicopter shall provide to each trainee, at the time of commencing a flight training program referred to in Section 405.03, a copy of the approved flight training program.

405.06 Flight Training Program Requirements

Flight training that is conducted using an aeroplane or helicopter shall be conducted in accordance with:

- a) the training course requirements specified in this Part,
- b) the applicable flight instructor guide and flight training manual, or equivalent document, and
- c) the applicable training manual on human factors.

405.07 Qualifications of Flight Instructors

1. No person shall conduct flight training unless the person who conducts flight instruction for:
 - a) an aeroplane or helicopter licence or rating is the holder of a Flight Instructor rating and meets the qualifications specified in Sub-part 401 or Part VII.
 - b) a glider , free balloon or ultra-light - aeroplane pilot licence or rating, meets the standards specified in Sub-part 401.
2. No person shall conduct flight training in an aircraft unless the person is qualified to act as pilot in command of that class or type, of aircraft and is familiar with the flight characteristics, operating limitations and operational performance data specified in the aircraft flight manual or equivalent approved document.

405.09 Training Aircraft Requirements

No person shall operate a training aircraft unless the aircraft meets the personnel licensing standards.

405.10 Flight Training Aerodrome

No person shall operate a training aircraft at an aerodrome unless the aerodrome is suitable for the aircraft:

- a) to be safely operated within the operating limitations and operational performance data specified in the aircraft flight manual or equivalent document:
 - i) allowing for the actual aircraft weight and existing air temperature and wind conditions,
 - ii) with the power plant operation and landing gear and flap operation, if applicable, recommended by the manufacturer, and
 - iii) with smooth transition from take-off to the best rate-of-climb speed; and
- b) in the case of a helicopter, to carry out normal transitions from the hover to forward flight and from forward flight to the hover.

405.11 Training Flight Briefings

No person shall commence a training flight unless the trainee has received from the flight instructor:

- a) a pre-flight briefing; and
- b) where new flight exercises are to be conducted during the flight, preparatory ground instruction.

405.12 Authorization of Training Flight

Before the commencement of a training flight, the flight instructor who will supervise the training shall:

- a) authorize the training flight; and
- b) receive an acknowledgment of that authorization from the trainee.

405.13 Pilot Training Record

1. A person who conducts flight training for the issuance of a private pilot licence, a commercial pilot licence or a flight instructor rating - aeroplane or helicopter shall, for each trainee, maintain a pilot training record that meets the personnel licensing standards.
2. On request from a trainee receiving training for the purposes referred to in subsection 1, the person responsible for maintaining the trainee's pilot training record shall:
 - a) certify the accuracy of the entries; and
 - b) provide the trainee with the record.
3. When a trainee has completed or ceased flight training, the pilot training record shall be retained on file for at least five years from the start of training.

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Subpart s405 - Personnel Licensing Standards Respecting Flight Training

s405.05 Provision of a Flight Training Program to a Trainee

The flight training program outline provided to each trainee at the time of commencing a flight training program shall include the following:

- a) the name of the program in which the trainee is enrolled;
- b) information in respect of the minimum age, medical fitness, knowledge, experience and skill for which the training is being conducted;
- c) a copy of the current applicable course outline, a study and reference guide and skill test standard;
- d) the minimum weather conditions required for dual and solo training flights during day, night, VFR and IFR operations including:
 - i) minimum ceiling and visibility for local and cross-country training flights;
 - ii) maximum cross-wind for conducting a take-off and landing;
- e) the fuel reserves necessary for dual and solo, local and cross-country training flights;
- f) the description and use of assigned practice areas;
- g) the location of any restricted areas;
- h) the reporting of aircraft defects and unserviceabilities;
- i) the securing of aircraft when not in use;
- j) the procedures in the event of an unscheduled or forced landing; and
- k) any other safety measures pertaining to the geographic area of operation that the person who conducts the flight training deems necessary for aviation safety.

s405.09 Training Aircraft Requirements

1. An aircraft that is used for flight training shall:
 - a) meet the aircraft equipment requirements of Subpart 605, in respect of the conditions and rules under which it is to be operated: day or night, VFR or IFR.
 - b) in the case of an aeroplane, be equipped with a turn and slip indicator or a turn coordinator; and
 - c) in the case of a helicopter, be equipped with a turn and slip indicator, turn coordinator or a slip-skid indicator.
2. An aircraft that is used for dual flight training, shall:
 - a) be at least a two place aircraft;
 - b) have engine power controls and flight controls that are easily reached and that operate in a normal manner from both pilot stations, unless in the case of an ultra-light aeroplane, the trainee has received sufficient ground training and is considered competent to operate the available appropriate controls; and
 - c) in the case of a helicopter, be equipped with an intercom system.
3. An aeroplane or helicopter that is used for instrument flight training toward the Private Pilot Licence or Commercial Pilot Licence, shall be equipped with flight instruments that enable the trainee to complete the applicable manoeuvres specified in the instrument flying exercise of the Private and Commercial Pilot Licences flight tests in the Flight Test Examiner Guide .

4. An aeroplane or helicopter that is used for radio navigation training toward the Private or Commercial Pilot Licence, or Flight Instructor rating, shall be equipped with an ADF, VOR or GPS radio navigation aid receiver.
5. An aeroplane, helicopter or gyroplane that is used for instrument flight training toward the night rating, shall be equipped with flight instruments in accordance with Subpart 605, Section 605.16 - Power-driven Aircraft - Night VFR.
6. An aeroplane or helicopter that is used for instrument flight training toward the instrument rating, shall be equipped with flight instruments in accordance with in Subpart 605, Section 605.18 - Power-driven Aircraft - IFR.
7. Gliders and free balloons used to conduct training for a glider or free balloon pilot licence or rating shall be two place and have flight controls that may be easily reached and operated in a normal manner, from both pilot positions.

s405.13 Pilot Training Record Requirements

Pilot training records shall contain at least the following information:

- a) Student Name and Address
- b) First Solo Flight Prerequisites;
- c) Record of Ground School;
- d) Record of Stage Exam Results;
- e) Record of Flight Training Exercises;
- f) Record of Flight Time;
- g) Instructors Comments and Observations; and
- h) Recommendation For Flight Test.

Appendix A – Sample Pilot Training Record

This Appendix contains a sample Pilot Training Record that meets the requirements of this Sub-part.

RECORD OF GROUND SCHOOL

Stage Exam Results

I hereby certify that the above information is correct.

CHIEF FLIGHT INSTRUCTOR

INSTRUCTOR REMARKS AND STUDENT OBSERVATIONS

[illegible]

RECORD OF FLIGHT TRAINING

Revision - Original

Appendix A - Sample Pilot Training Record

Air Exercises

1	Familiarization	11	Slow Flight	21	Precautionary Landing
2	Preparation for Flight	12	Stall	22	Forced Landing
3	Ancillary Controls	13	Spin	23	Pilot Navigation
4	Taxiing	14	Spiral	24	Instrument Flying
5	Attitudes and Movements	15	Sideslip	25	Night Flying
6	Straight and Level Flight	16	Take-off	26	Floatplane
7	Climbing	17	Circuit	27	Skiplane
8	Descending	18	Approach and Landing	28	Type Conversion
9	Turns	19	First Solo	29	Emergency Procedures
10	Range and Endurance	20	Illusions Created by Drift	30	Radio Communications

Record as conducted Preparatory ☐ P Dual ☐ D Solo ☐ S

Exercise

1	FAMILIARIZATION										
2	PREPARATION FOR FLIGHT										
3	ANCILLARY CONTROLS										
4	TAXIING										
5	ATTITUDES AND MOVEMENTS										
6	STRAIGHT & LEVEL FLIGHT										
7	CLIMBING										
8	DESCENDING										
9	TURNING										
10	RANGE & ENDURANCE										
11	SLOW FLIGHT										
12	STALL										
13	SPIN										
14	SPIRAL										
15	SIDESLIP										
16	TAKE-OFF - NORMAL										
	SHORT FIELD										
	SOFT/ROUGH										
	OBSTACLE										
	CROSSWIND										
17	CIRCUIT										
18	APPROACH & LANDING - NORMAL										
	SHORT FIELD										
	SOFT/ROUGH										
	OBSTACLE										
	CROSSWIND										
19	FIRST SOLO										
20	DRIFT ILLUSIONS										
21	PRECAUTIONARY LANDINGS										
22	FORCED LANDINGS										
23	NAVIGATION - DEPARTURE PROCEDURES										
	ENROUTE PROCEDURES										
	DIVERSIONS										
24	INSTRUMENTS - FULL PANEL										
	LIMITED PANEL										
	UNUSUAL ATTITUDES										
	RADIO AIDS										
29	EMERGENCY PROCEDURES										
30	RADIO COMMUNICATIONS										

CERTIFIED THAT THE ENTRIES ON PAGES 3 AND 4 ARE CORRECT

CHIEF FLIGHT INSTRUCTOR		
LICENCE #	SIGNATURE	DATE

STUDENT	
SIGNATURE	DATE

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LEBANESE AVIATION REGULATIONS

Part IV
PERSONNEL LICENSING

Subpart 404
MEDICAL REQUIREMENTS

Republic of Lebanon 

UNDP / ICAO PROJECT LEB / 95 / 001
Civil Aviation Technical Training and Safety Oversight Programme



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RECORD OF AMENDMENTS

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PART IV

PERSONNEL LICENSING

Subpart 4 - Medical Requirements

404.01 Interpretation

1. In this Subpart, "CAME" means a Civil Aviation Medical Examiner appointed by the Authority to conduct medical examinations of applicants for the issuance or renewal of medical certificates pursuant to subsection 404.04(1).
2. Any reference in this Subpart to the personnel licensing standards is a reference to the *Personnel Licensing Standards Respecting Medical Requirements*.
3. "Accredited medical conclusion" is defined as the conclusion reached by one or more medical experts with specialized knowledge or training in aviation medicine, acceptable to the Authority for the purpose of the case concerned, in consultation with specialists in flight operations or other experts as necessary.

404.02 Application

This Sub-part applies to:

- a) persons who hold or who apply for the issuance or renewal of a medical certificate for the purpose of exercising the privileges of a licence or rating referred to in Section 404.10; and
- b) the physicians referred to in Section 404.13.

404.03 Requirement to Hold a Medical Certificate

No person shall exercise or attempt to exercise the privileges of a licence or rating unless the person holds a valid medical certificate of a class that is appropriate for that licence or rating, as specified in Section 404.10.

404.04 Issuance, Renewal and Validity Period of Medical Certificate

1. Subject to subsection (2) and subsection 404.05(1), the Authority shall, or a CAME so delegated by the Authority, shall issue or renew a medical certificate on receipt of an application therefore if it is established, by means of a medical examination conducted by an approved CAME, that the applicant fully meets the medical fitness requirements specified in the personnel licensing standards.
2. The Authority:
 - a) may request an applicant for the issuance or renewal of a medical certificate to undergo, before a specified date, any medical tests or examinations that are necessary to determine whether the applicant meets the medical fitness requirements specified in the personnel licensing standards;
 - b) shall not issue or renew a medical certificate until the applicant has undergone all of the tests and examinations requested by the Authority pursuant to paragraph (a); and

- c) may suspend, or refuse to issue or renew, the applicant's medical certificate if the applicant fails to comply with the request referred to in paragraph (a) by the specified date.
- 3. The Authority may:
 - a) request the holder of a medical certificate to undergo, before a specified date, any medical tests or examinations or provide any additional medical information, as necessary to determine whether the holder continues to meet the medical fitness requirements specified in the personnel licensing standards; and
 - b) suspend, or refuse to renew, the holder's medical certificate if the holder fails to comply with the request referred to in paragraph (a) before the specified date.
- 4. A medical certificate is subject to any restrictions or limitations that have been endorsed on the certificate in accordance with subsection 404.05(2).
- 5. A medical certificate is valid until the date specified on the certificate by the CAME or Authority in accordance with the validity periods as specified in the personnel licensing standards.
- 6. A medical examination required for the renewal of a medical certificate may be conducted within the 30 day period prior to the valid to date of the existing rating. In this case, the renewed rating shall be valid to the same date as if the flight test was done the date the medical certificate was scheduled to expire.

404.05 Medical Standards Flexibility, Limitations and Restrictions

- 1. The Authority may, in accordance with the personnel licensing standards, issue a medical certificate to an applicant who does not meet the requirements referred to in subsection 404.04(1) where it is in the public interest and is not likely to affect aviation safety.
- 2. Where the Authority issues a medical certificate under subsection (1), the Authority shall endorse the certificate with any limitation or restriction that is necessary to ensure aviation safety.
- 3. The Authority may amend or remove any limitation or restriction referred to in subsection (2) when it is no longer required to ensure aviation safety.
- 4. The Authority may suspend or cancel a medical certificate if the applicant fails to comply with any limitation or restriction referred to in subsection (2).
- 5. Before issuing a medical certificate under subsection (1), the Authority may require an applicant to undergo any practical test in respect of the functions of a flight crew member cabin attendant or air traffic controller, as appropriate, or any medical examination that is necessary to determine whether the applicant meets the medical fitness requirements specified in the personnel licensing standards

404.06 Prohibition Regarding Exercise of Privileges

- 1. No person shall exercise the privileges of a licence and related ratings at any time when they are aware of any decrease in their medical fitness which might render them unable to meet the medical standards or safely exercise those privileges, and they shall without undue delay seek the advice of the Authority or CAME when:

-
- a) being seriously ill or admitted to a hospital,
 - b) undergoing surgical operation or invasive procedure,
 - c) becoming aware of the need of the regular use of medication, or
 - d) becoming aware of the need for regular use of correcting lenses or a hearing aid.
2. A holder of a medical certificate issued in accordance with this Sub-part who is aware of:
- a) having sustained any serious injury, or suffered an incapacitating event; or
 - b) being pregnant,
- shall inform the Authority in writing of such injury, illness or pregnancy. The medical certificate shall be deemed to be suspended upon the occurrence of such injury or the elapse of such period of illness or the confirmation of the pregnancy, and:
- c) in the case of injury or illness the suspension shall be lifted upon the holder being medically examined under arrangements made by the Authority and being pronounced fit to function as a member of the flight crew, or upon the Authority exempting, subject to such conditions as it thinks fit, the holder from the requirement of a medical examination; and
 - d) in the case of pregnancy, the suspension may be lifted by the Authority for such period and subject to such conditions as specified in the personnel licensing standard.
3. The Authority may, in writing, authorize the holder of a medical certificate to exercise, under the circumstances described in paragraphs 1 or 2, the privileges of the licence or rating to which the medical certificate relates if such authorization is in the public interest and it can be shown that the conditions of the authorization will ensure or lead to at least an equivalent level of safety.
4. No person shall exercise the privileges of a licence and related ratings issued under this Part at any time when they are the influence of alcohol or any psychoactive substance which might render them unable to safely and properly exercise these privileges.
5. No holder of a licence issued under this Part shall engage in any problematic use of substances.

404.07 - 09 Reserved

404.10 Medical Certificate Requirements for Personnel Licences

1. A Class 1 medical certificate is required for the following licences:
 - a) commercial pilot licence - aeroplanes or helicopters;
 - b) airline transport pilot licence - aeroplanes or helicopters. and
 - c) flight engineer licence.
2. A Class 2 or 1 medical certificate is required for the following, licences and ratings:
 - a) student pilot;
 - b) private pilot licence - aeroplanes or helicopters;
 - c) free balloon pilot;
 - d) glider pilot;
 - e) ultra-light pilot - aeroplanes
3. A Class 3 or 1 medical certificate is required for a cabin attendant licence.

4. A Class 3 or 1 medical certificate is required for an air traffic controller licence.

404.11 Medical Fitness - Authority's Assessment

1. The Authority shall assess any medical reports submitted pursuant to paragraph 404.14(b) to determine whether an applicant for the issuance or renewal of a medical certificate meets the medical fitness requirements set out in the personnel licensing standards that are necessary for the issuance or renewal of the medical certificate.
2. If the Authority concludes that the fitness of the applicant is in doubt, the Authority shall, by personal service or by registered mail sent to the applicant at the latest known address of the applicant, immediately:
 - a) notify the applicant of the result of an assessment, and
 - b) in the case of an application for the renewal of a medical certificate, inform the applicant that the Authority will, no earlier than 30 days after the date that the notification was delivered to the applicant, make a decision based on the result of the assessment.

404.12 Reconsideration of Assessment

1. An applicant for the renewal of a medical certificate who is assessed by the Authority as not meeting the requirements referred to in subsection 404.11.1 may, within 30 days after the date that the notification referred to in subsection 404.11.3, was delivered:
 - a) request the Authority to reconsider the assessment; and
 - b) submit additional information to the Authority regarding the medical fitness of the applicant in support of the request.
2. Where the Authority is requested to reconsider an assessment pursuant to subsection 1, the Authority shall:
 - a) take into consideration any additional information regarding the medical fitness of the applicant; and
 - b) immediately notify the applicant in writing of the result of the reconsideration of the assessment.

404.13 Authority to Conduct Medical Examinations

No physician shall conduct a medical examination of an applicant for the issuance or revalidation of a medical certificate unless the physician conducts the medical examination in the jurisdiction in which the physician is licensed to practice; and

- a) the physician is appointed by the Authority as a CAME and authorized to conduct a medical examination for the requested class of medical certificate; or
- b) where the applicant resides or is examined in a contracting state other than Lebanon, the physician is authorized by the licensing authority of the contracting state to conduct such examinations.

404.14 Responsibilities of Medical Examiner

Where a physician referred to in paragraph 404.13 conducts a medical examination of an applicant for the issuance or renewal of a medical certificate, the physician shall:

- a) conduct the medical examination in accordance with the procedures set out in the personnel licensing standards;
- b) issue a Medical Certificate:
 - i) where the applicant fully meets the medical standards; or
 - ii) where the Medical Certificate was previously issued with a restriction or a limitation and there has been no change to the applicants medical condition;
and
- c) submit to the Authority a medical report that specifies the results of the medical examination.

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s404 - Personnel Licensing Standards Respecting Medical Requirements

s404.04 Issuance and Validity Period of Medical Certificates

1. Issuance
 - a) Minimum medical fitness requirements for the various types of licence are broadly defined by international agreement through the International Civil Aviation Organization (ICAO). Lebanese medical requirements honor this agreement, and procedures and standards outlined in this document reflect ICAO Standards and Recommended Practices.
 - b) A medical certificate is a necessary prerequisite for those licences so identified in the personnel licensing standards. Medical certificates are issued by a Civil Aviation Medical Examiner approved to do so or by the Authority provided the applicant meets the pertinent medical standards as specified in this Sub-part, and has been assessed medically fit, or fit subject to any restriction or limitation recommended by the Authority.
2. Medical Examination
 - a) Every applicant for a medical certificate or revalidation thereof shall undergo a medical examination by a CAME.
 - b) Every applicant shall, at the time of the medical examination:
 - i) sign a declaration provided by the CAME stating whether the applicant has previously undergone a medical examination in connection with an application for a medical certificate or revalidation thereof and, where applicable, provide a statement that sets out the results of the most recent such examination;
 - ii) answer all of the CAME's questions that are pertinent to the assessment of the applicant's medical fitness;
 - iii) undergo any other medical examinations or tests that are required by the CAME in order to assess the applicant's medical fitness.
3. Validity Period - The validity period of a medical certificate shall be limited as indicated in the following table. If the CAME deems it advisable to limit the assessment to a shorter period the Medical Certificate may be issued for a shorter period and this shall be so noted in the medical examination report.

Licence	Medical Class	Validity Period	
		Under 40	40 and over
Airline Transport Pilot	1	12 months	6 months
Commercial Pilot	1	12 months	6 months
Private Pilot	2	24 months	12 months
Glider Pilot	2	24 months	12 months
Free Balloon Pilot	2	24 months	12 months
Ultra-light Pilot	2	24 months	12 months
Student Pilot	2	24 months	12 months
Flight Engineer	1	12 months	12 months
Cabin Attendant	3	12 months	12 months
Air Traffic Controller	3	12 months	12 months

s404.05 Medical Standards Flexibility, Limitations and Restrictions

1. If the medical requirements prescribed in this Sub-part for a particular licence are not fully met by an applicant, the Medical Certificate shall not be revalidated by the CAME but the decision shall be referred to the Authority. The Authority may reach an accredited medical conclusion and issue, revalidate or renew a medical certificate after due consideration has been given to the requirements, acceptable means of compliance and guidance material and to:
 - a) the medical deficiency in relation to the operating environment;
 - b) the ability, skill and experience of the applicant in the relevant operating environment;
 - c) the results of a practical medical test, if appropriate; and
 - d) the requirement for application of any limitations, conditions or variations to the medical certificate and licence.
2. Practical medical tests shall normally be conducted by a Flight Safety Department Inspector. However, where deemed appropriate Authority may designate as a testing officer
 - a) for a flight crew practical medical test a person who:
 - i) holds a flight crew licence endorsed with a flight instructor rating that is valid for the category of aircraft to be used during the practical test; or
 - ii) is a Designated Examiner for the type of aircraft flown by the applicant or holds a flight crew licence and has the qualifications required to conduct the practical test.
 - b) for a cabin attendant practical medical test a cabin attendant examiner, the Authority Medical Office or a CAME.
 - c) for an air traffic controller practical medical test the Unit Senior Air Traffic Controller, the Authority Medical Office or a CAME
3. Cabin attendant practical tests shall be conducted in an aircraft or an environment that simulates an actual operational environment.
4. Air traffic controller practical medical tests shall be conducted in an actual operational environment.
5. Where the issue of a Medical Certificate will require more than one limitation, condition or variation, the additive and interactive effects upon flight safety must be considered by the Authority before a certificate can be issued.
6. The Authority will convene a secondary review, involving independent medical advisers experienced in the practice of aviation medicine and operations specialists, to re-consider a case if requested to do so by the applicant. This body will provide a report to the Authority who will then make a final determination of the case.

s404.06 Prohibition Regarding Exercise of Privileges

1. In the case of a normal pregnancy where there are no complications present, the holder of a medical certificate may be considered fit if assessed so by the Authority:
 - a) for Class 1 or 2 until the twenty sixth (26th) week of pregnancy.
 - b) for Class 3 for cabin attendants until the twenty sixth (26th) week of pregnancy.
 - c) for Class 3 for air traffic controllers until her expected date of confinement.

2. After child birth or termination of pregnancy, the holder may be assessed as fit by the Authority upon receipt and assessment of a report form her attending physician attesting to her capacity to resume duties.

s404.13 Authority to Conduct Medical Examinations

1. To be appointed as a CAME, physicians shall be qualified and licensed in the practice of medicine and shall have received the training in aviation medicine including:
 - a) aviation medicine history and evolution;
 - b) aviation physiology
 - c) human factors in aviation;
 - d) flight crew fatigue;
 - e) on duty incapacitation;
 - f) international medical requirements;
 - g) the medical standards contained in the Sub-part; and
 - h) CAME duties and responsibilities
2. They also, should acquire practical knowledge and experience of the conditions in which the holders of licences and ratings carry out their duties.
3. During the three year period of authorization a CAME shall attend a minimum of 15 hours approved refresher training, five hours of which should be under the direct supervision of the Authority. Scientific meetings, congresses and flight deck experience may be approved by the Authority for this purpose.
4. A CAME will be appointed for a period not exceeding three years. Authorization to perform medical examinations may be for Class 1, 2 and 3 or limited to Class 2 and 3 at the discretion of the Authority.
5. To maintain proficiency and retain authorization a CAME should complete at least ten aeromedical examinations each year.
6. For re-appointment the CAME shall have completed an adequate number of aeromedical examinations to the satisfaction of the Authority and shall also have undertaken relevant training during the period of authorization.

s404.14 Responsibility of Medical Examiners

1. When conducting a medical examination of an applicant for the issuance or revalidation of a medical certificate, the CAME shall:
 - a) examine the applicant in accordance with:
 - i) medical practice recognized by the medical profession, and
 - ii) the medical standards specified in this Sub-part as appropriate to the Medical Class;
 - b) record in a medical examination report:
 - i) the CAME's clinical findings, and
 - ii) where the applicant meets the requirements of any class of medical certificate, as set out in this section, that class; and
 - c) submit to the Authority:
 - i) the medical examination report,

- ii) any other medical report required for the purpose of establishing medical fitness to hold a licence or rating.
2. The medical examination shall be sufficiently thorough so as to determine whether the applicant meets the requirements in respect of the class of medical certificate that is applied for or in respect of which a validation is sought.
- a) The purpose of the medical examination is to determine whether an applicant meets the standards that apply in respect of the issuance of the medical certificate that is needed to validate a particular licence or rating and may include additional medical tests required to determine that the applicant fully meets the medical standards.
 - b) A CAME shall be familiar with aeromedical assessment, and shall possess some practical knowledge of flight duties and the flight environment.
 - c) It shall be the responsibility of the CAME to examine the applicant carefully.
 - d) Where the CAME cannot reach a conclusion concerning the fitness of an applicant he/she shall omit the allocation of a class and refer the Medical Examination Report to the Authority for assessment or further advice.
 - e) Medical examination reports and pertinent specialist or laboratory reports shall be forwarded to the Authority attention of the Aviation Medicine Section.
3. An applicant shall be granted the highest assessment possible on the basis of the finding recorded during the medical examination. An applicant desiring a medical class higher than that necessary for the type of licence or rating requested shall so inform the CAME. Where specialist examinations or laboratory tests are required to determine fitness for a higher assessment, these may be arranged by the CAME, with the concurrence of the applicant.

The following Table contains the standards that an applicant must attain for the issuance or renewal of a medical certificate for each medical Class.

Table s404 – 1 Physical and Mental Requirements

PHYSICAL AND MENTAL REQUIREMENT		
Class 1 Medical	Class 2 Medical	Class 3 Medical
<p>This class applies to the issue or revalidation of:</p> <p>Airline Transport Pilot Licence</p> <p>Commercial Pilot Licence</p> <p>Flight Engineer Licence</p> <p>NOTE: The holder of Class 1 Medical shall be considered fit for any licence for its respective duration of validity unless otherwise specified.</p>	<p>This class applies to the issue or revalidation of:</p> <p>Student Pilot Licence</p> <p>Private Pilot Licence</p> <ul style="list-style-type: none"> • Aeroplanes • Helicopters <p>Free Balloon Pilot Licence</p> <p>Glider Pilot Licence</p> <p>Ultra-light Pilot – Aeroplanes</p>	<p>This class applies to the issue or revalidation of:</p> <p>Air Traffic Controller Licence</p> <p>Cabin Attendant Licences</p>
The medical examination and assessment shall be based upon the following requirements of physical and mental fitness.	The medical examination and assessment shall be based on the following requirements of physical and mental fitness.	The medical examination and assessment shall be based on the following requirements of physical and mental fitness.
<p>1.1 The applicant shall be free from</p> <p>(a) any abnormality, congenital or acquired;</p> <p>(b) any active, latent, acute or chronic disability;</p> <p>(c) any wound, injury or sequelae from operation; or</p> <p>(d) any effect or side effect of any prescribed or non-prescribed therapeutic medication taken,</p> <p>such as would entail a degree of functional incapacity which accredited medical conclusion indicates would interfere with the safe operation of an aircraft or the safe performance of duties at any altitude throughout a prolonged or difficult flight, or may reasonably be expected within the period of validity of the licence to make the applicant unfit to exercise the privileges of the licence applied for or held.</p>	<p>2.1 The applicant shall be free from</p> <p>(a) any abnormality, congenital or acquired;</p> <p>(b) any active, latent, acute or chronic disability;</p> <p>(c) any wound, injury or sequelae from operation; or</p> <p>(d) any effect or side effect of any prescribed or non-prescribed therapeutic medication taken,</p> <p>such as would entail a degree of functional incapacity which accredited medical conclusion indicates would interfere with the safe operation of an aircraft during the period of validity of the licence.</p>	<p>3.1 The applicant shall be free from</p> <p>(a) any abnormality, congenital or acquired;</p> <p>(b) any active, latent, acute or chronic disability;</p> <p>(c) any wound, injury or sequelae from operation; or</p> <p>(d) any effect or side effect of any prescribed or non-prescribed therapeutic medication taken,</p> <p>such as would entail a degree of functional incapacity which accredited medical conclusion indicates would interfere with reliable performance of duties within the period of validity of the licence.</p>
<p>1.2 The applicant shall not suffer from any disease or disability which could render the likely to become suddenly unable to operate an aircraft or to perform assigned duties safely.</p>	<p>2.2 The applicant shall not suffer from any disease or disability which could render the likely to become suddenly unable to operate an aircraft or to perform assigned duties safely.</p>	<p>3.2 The applicant shall not suffer from any disease or disability which may render the applicant liable to a sudden or insidious degradation of performance within the period of validity of the licence.</p>

PHYSICAL AND MENTAL REQUIREMENT		
Class 1 Medical	Class 2 Medical	Class 3 Medical
Nervous System		
<p>1.3 The applicant shall have no established medical history or clinical diagnosis which, according to accredited medical conclusion, would render the applicant unable to exercise safely the privileges of the licence or rating applied for or held, as follows:</p> <p>(a) psychosis or established neurosis;</p> <p>(b) alcohol or chemical dependence or abuse;</p> <p>(c) a personality or behaviour disorder that has resulted in the commission of an overt act;</p> <p>(d) other significant mental abnormality</p>	<p>2.3 The applicant shall have no established medical history or clinical diagnosis which, according to accredited medical conclusion, would render the applicant unable to exercise safely the privileges of the licence or rating applied for or held, as follows:</p> <p>(a) psychosis or established neurosis;</p> <p>(b) alcohol or chemical dependence or abuse;</p> <p>(c) a personality or behaviour disorder that has resulted in the commission of an overt act;</p> <p>(d) other significant mental abnormality.</p> <p><i>NOTE: An applicant providing documented proof of recovery from alcohol or chemical dependence or abuse may be considered fit.</i></p>	<p>3.3 The applicant shall have no established medical history or clinical diagnosis which, according to accredited medical conclusion, would render the applicant unable to exercise safely the privileges of the licence or rating applied for or held, as follows:</p> <p>(a) psychosis or established neurosis;</p> <p>(b) alcohol or chemical dependence or abuse;</p> <p>(c) a personality or behaviour disorder that has resulted in the commission of an overt act;</p> <p>(d) other significant mental abnormality.</p>
<p>1.4 The applicant shall have no established medical history or clinical diagnosis of any of the following:</p> <p>(a) a progressive or non-progressive disease of the nervous system, the effects of which, according to accredited medical conclusion, are likely to interfere with the safe operation of an aircraft;</p> <p>(b) a convulsive disorder;</p> <p>(c) any disturbance of consciousness without satisfactory medical explanation of cause;</p> <p>(d) any history of serious head injury the effects of which, according to the accredited medical conclusion, are likely to interfere with the safe operation of an aircraft.</p>	<p>2.4 The applicant shall have no established medical history or clinical diagnosis of any of the following:</p> <p>(a) a progressive or non-progressive disease of the nervous system, the effects of which, according to accredited medical conclusion, are likely to interfere with the safe operation of an aircraft during the period of validity of the licence;</p> <p>(b) a convulsive disorder;</p> <p>(c) any disturbance of consciousness, without satisfactory medical explanation, which is likely to interfere with the safe operation of an aircraft.</p> <p>(d) any history of serious head injury the effects of which, according to accredited medical conclusion, are likely to interfere with the safe operation of an aircraft.</p>	<p>3.4 The applicant shall have no established medical history or clinical diagnosis of any of the following:</p> <p>(a) a progressive or non-progressive disease of the nervous system, the effects of which, according to accredited medical conclusion, is likely to interfere with the reliable performance of duties;</p> <p>(b) a convulsive disorder;</p> <p>(c) any disturbance of consciousness without satisfactory medical explanation of cause;</p> <p>(d) any history of head injury the effects of which, according to accredited medical conclusion, are likely to interfere with reliable performance of duties.</p>
Cardio-vascular System		
<p>1.5 The applicant shall not possess any abnormality of the heart, congenital or acquired, which is likely to interfere with the safe exercise of the applicant's licence and rating privileges.</p>	<p>2.5 The applicant shall not possess any abnormality of the heart, congenital or acquired, which is likely to interfere with the safe exercise of the applicant's licence and rating privileges.</p>	<p>3.5 The applicant shall not possess any abnormality of the heart, congenital or acquired which is likely to be the cause of incapacitation during the period of validity of the licence.</p>
<p>1.6 An established medical history or clinical diagnosis of:</p>	<p>2.6 An established medical history or clinical diagnosis of:</p>	<p>3.6 An established medical history or clinical diagnosis of:</p>

PHYSICAL AND MENTAL REQUIREMENT		
Class 1 Medical	Class 2 Medical	Class 3 Medical
(a) myocardial infarction; or (b) myocardial ischemia, overt or silent, or other evidence of coronary artery disease, considered by accredited medical conclusion to potentially predispose to an incapacitating event, shall be assessed unfit.	(a) myocardial infarction; or (b) myocardial ischemia, overt or silent, or other evidence of coronary artery disease considered by accredited medical conclusion to potentially predispose to an incapacitating event, shall be assessed unfit.	(a) myocardial infarction; or (b) myocardial ischemia, overt or silent, or other evidence of coronary artery disease, considered by accredited medical conclusion to potentially predispose to an incapacitating event, shall be assessed unfit.
<p>NOTE :</p> <p><i>Applicants with a history of myocardial infarction, angina pectoris, or coronary artery disease that has required treatment (including coronary artery bypass, coronary angioplasty, or other revascularization procedures such as, stenting and endarterectomy) or, if untreated, that has been symptomatic or clinically significant, may on an individual basis, be assessed as Fit where accredited medical conclusion indicates the level of risk of an incapacitating event has been reduced to an acceptable level. The “fit” assessment may be subject to specified restrictions and shall consider at least the following conditions:</i></p> <ol style="list-style-type: none"> <i>A 6-month, or longer as necessary, recovery period shall elapse after an infarction, angina, bypass surgery, or angioplasty to ensure recovery, stability and restored good left ventricular function.</i> <i>Post-event coronary angiography shall be required.</i> <i>A current cardiovascular evaluation by a cardiologist shall be obtained. This evaluation must include an assessment of personal and family medical history, a clinical cardiac examination and general physical examination, blood lipid profile, a plasma glucose level, and a maximal electrocardiographic exercise stress test. The evaluation must also include an assessment and statement regarding the applicant's medications, functional capacity, modifiable cardiovascular risk factors, motivation for any necessary change, and prognosis for incapacitation during the certification period. An applicant will be expected to achieve a normal maximal electrocardiographic exercise stress test at a 6-month intervals, plus radionuclide studies at 24-month intervals, unless otherwise indicated or required by the Authority.</i> <i>Radionuclide studies may be required if clinically indicated or if the maximal electrocardiographic exercise stress test is equivocal, positive for ischemia, or demonstrates ventricular dysfunction or other significant abnormalities. Either stress MUGA studies, first pass technetium scans, stress echocardiography, Thallium 201 exercise / rest scans, radionuclide studies, or a combination thereof may be required as appropriate for the individual applicant and recommended by the attending physician or required by the Authority.</i> <i>All stress testing, including radionuclide studies, must be maximal or symptomlimited. All maximal electrocardiographic exercise stress tracings, actual scans, and blood pressure/pulse recordings must be submitted.</i> <p>NOTE:</p> <p><i>Such commonly occurring conditions as respiratory arrhythmia, occasional extrasystoles which disappear on exercise, increase of pulse rate from excitement or exercise, or a slow pulse not associated with auriculoventricular dissociation may be regarded as being within “normal” limits.</i></p>		
<p>1.7 Routine electrocardiography shall form part of the heart examination of an applicant:</p> <p>(a) for the first issue of a medical certificate;</p> <p>(b) within the two years preceding the examination between ages 30 years and 40 years; and</p> <p>(c) within the 12 months preceding the examination after age 40.</p>	<p>2.7 Routine electrocardiography shall form part of the heart examination of an applicant:</p> <p>(a) at the first examination after the applicant has attained the age of forty years; and</p> <p>(b) subsequently within the five years preceding the examination.</p> <p><i>NOTE: To avoid possible inconvenience at a later date all applicants under the age of 40 are encouraged to submit a routine ECG upon initial application.</i></p>	<p>3.7 Routine electrocardiography shall form part of the heart examination of an applicant:</p> <p>(a) for the first issue of a medical certificate;</p> <p>(b) within the two years preceding the examination between ages 30 years and 40 years; and</p> <p>(c) within the 12 months preceding the examination after age 40.</p>
1.8 The systolic and diastolic blood pressure shall be within normal	2.8 The systolic and diastolic blood pressure shall be within normal	3.8 The systolic and diastolic blood pressure shall be within normal

PHYSICAL AND MENTAL REQUIREMENT		
Class 1 Medical	Class 2 Medical	Class 3 Medical
limits. <i>NOTE:</i> <i>The use of drugs for control of high blood pressure is disqualifying except for those drugs, the use of which according to accredited medical conclusion, can be adequately tolerated by the applicant, are compatible with the safe performance of duties and can be closely monitored by the aviation medical examiner or a physician in communication with the Authority Medical Staff.</i> (2) When initiating a new treatment for hypertension, the applicant shall not exercise the privileges of the licence until the new medication is well tolerated.	limits. <i>NOTE:</i> <i>The use of drugs for control of high blood pressure is disqualifying except for those drugs, the use of which according to accredited medical conclusion, can be adequately tolerated by the applicant, are compatible with the safe performance of duties and can be closely monitored by the aviation medical examiner or a physician in communication with the Authority Medical Staff.</i>	limits. <i>NOTE:</i> <i>The use of drugs for control of high blood pressure is disqualifying except for those drugs, the use of which, according to accredited medical conclusion, can be adequately tolerated by the applicant and are comparable with the safe performance of duties.</i> (2) When initiating a new treatment for hypertension, the applicant shall not exercise the privileges of the licence until the new medication is well tolerated.
1.9 There shall be no functional or structural abnormality of the peripheral vascular system which accredited medical conclusion indicates could affect safe performance of duties.	2.9 There shall be no functional or structural abnormality of the peripheral vascular system which accredited medical conclusion indicates could affect safe performance of duties.	3.9 There shall be no functional or structural abnormality of the peripheral vascular system which accredited medical conclusion indicates could affect safe performance of duties.
<i>NOTE:</i> <i>Guidance material on electrocardiography and the use of drugs to control blood pressure is provided in ICAO Doc 8984-AN/895 Manual of Civil Aviation Medicine.</i>		
Respiratory System		
1.10 There shall be no significant disability or progressive disease of the lungs, pleura or mediastinum. Radiography shall form a part of the initial medical examination in all doubtful clinical cases.	2.10 There shall be no significant disability or progressive disease of the lungs, pleura or mediastinum. Radiography shall form a part of the initial medical examination in all doubtful clinical cases.	3.10 There shall be no significant disability or progressive disease of the lungs, pleura or mediastinum. Radiography shall form a part of the initial medical examination in all doubtful clinical cases.
1.11 Any extensive mutilation of the chest wall with collapse of the thoracic cage and sequelae of surgical procedures resulting in decreased respiratory efficiency at altitude shall be assessed as unfit for flight duties.	2.11 Any extensive mutilation of the chest wall with collapse of the thoracic cage and sequelae of surgical procedures resulting in decreased respiratory efficiency at altitude shall be assessed as unfit for flight duties.	3.11 An applicant shall have a respiratory efficiency within the normal range required for the performance of duties.
1.12 Cases of chronic obstructive pulmonary disease shall be assessed as unfit only if the condition is causing obvious symptoms on moderate exercise and could lead to impairment at altitude.	2.12 Cases of chronic obstructive pulmonary disease shall be assessed as unfit only if the condition is causing obvious symptoms on moderate exercise and could lead to impairment at altitude.	3.12 Cases of chronic obstructive pulmonary disease shall be assessed as unfit if the condition is causing symptoms.

PHYSICAL AND MENTAL REQUIREMENT		
Class 1 Medical	Class 2 Medical	Class 3 Medical
1.13 Cases of active pulmonary tuberculosis shall be assessed as unfit. Cases of quiescent or healed lesions which are known to be tuberculous, or are presumably tuberculous in origin, shall be assessed as fit if not liable to cause incapacitation in the air.	2.13 Cases of active pulmonary tuberculosis, duly diagnosed, shall be assessed as unfit. Cases of quiescent or healed lesions which are known to be tuberculous, or are presumably tuberculous in origin, shall be assessed as fit if not liable to cause incapacitation in the air.	3.13 Cases of active pulmonary tuberculosis, duly diagnosed, shall be assessed as unfit. Cases of quiescent or healed lesions which are known to be tuberculous, or are presumably tuberculous in origin, shall be assessed as fit if the condition is not liable to affect the reliable performance of duties.
Gastro-intestinal System		
1.14 There shall be no disease of the gastrointestinal tract which accredited medical conclusion indicates could affect safe performance of duties.	2.14 There shall be no disease of the gastrointestinal tract which accredited medical conclusion indicates could affect safe performance of duties.	3.14 There shall be no disease of the gastrointestinal tract which accredited medical conclusion indicates could affect safe performance of duties.
1.15 The applicant shall be free from any hernia that might give rise to incapacitating symptoms in flight.	2.15 The applicant shall be free from inguinal, hiatal or other hernia that might give rise to sudden incapacitation in flight.	3.15 The applicant shall be free from any hernia that is likely to give rise to incapacitating symptoms while exercising the privileges of the licence.
1.16 Any sequelae of disease, medication or surgical intervention on any part of the digestive tract and its adnexa, likely to cause incapacitation in flight, in particular any obstructions due to stricture or compression, shall be assessed as unfit. <i>NOTE: An applicant who has undergone a major surgical operation on the biliary passages or the digestive tract or its adnexae, involving a total or partial excision or a diversion of any of these organs shall be assessed as unfit until such time as accredited medical conclusion considers that the effects of the operation are not liable to cause incapacitation in the air.</i>	2.16 Any sequelae of disease, medication or surgical intervention on any part of the digestive tract and its adnexa, and in particular any stricture or compression that might cause sudden incapacitation in flight, shall be assessed as unfit.	3.16 Any sequelae of disease, medication or surgical intervention on any part of the digestive tract and its adnexa, liable to give rise to incapacitating or distracting symptoms, in particular any obstructions due to stricture or compression, shall be assessed as unfit.
Other Medical Conditions		
1.17 Cases of metabolic, nutritional or endocrine disorders likely to interfere with the safe operation of an aircraft shall be assessed as unfit.	2.17 Cases of metabolic, nutritional and endocrine disorders likely to interfere with the safe operation of an aircraft shall be assessed as unfit.	3.17 Cases of metabolic, nutritional or endocrine disorders likely to interfere with reliable performance of duties shall be assessed as unfit.
1.18 Proven cases of diabetes mellitus shown to be satisfactorily controlled without the use of any anti-diabetic drug, may be assessed as fit. 118(a) Cases of severe and moderate enlargement of the spleen persistently below the costal margin shall be assessed as unfit.	2.18 Proven cases of diabetes mellitus shown to be satisfactorily controlled without the use of any anti-diabetic drug, may be assessed as fit. The use of anti-diabetic drugs for the control of diabetes mellitus is disqualifying except for those oral drugs administered under conditions permitting appropriate medical supervision and control and which, according to accredited medical conclusion, are compatible with the	3.18 Proven cases of diabetes mellitus shown to be satisfactorily controlled without the use of any anti-diabetic drug, may be assessed as fit. The use of anti-diabetic drugs for the control of diabetes mellitus is disqualifying except for those oral drugs administered under conditions permitting appropriate medical supervision and control and which, according to accredited medical conclusion, are compatible with the

PHYSICAL AND MENTAL REQUIREMENT		
Class 1 Medical	Class 2 Medical	Class 3 Medical
	safe exercise of the applicant's licence and rating privileges.	safe exercise of the applicant's licence privileges.
1.19 Cases of significant localised and generalised enlargement of the lymphatic glands and of diseases of the blood shall be assessed as unfit, except in cases where accredited medical conclusion indicates that the condition is not likely to affect the safe exercise of the applicant's licence or rating privileges.	2.19 Cases of significant localised and generalised enlargement of the lymphatic glands and of diseases of the blood shall be assessed as unfit, except in cases where accredited medical conclusion indicates that the condition is not likely to affect the safe exercise of the applicant's licence privileges.	3.19 Cases of significant localised and generalised enlargement of the lymphatic glands and of diseases of the blood shall be assessed as unfit, except in cases where accredited medical conclusion indicates that the condition is not likely to affect the safe exercise of the applicant's licence privileges.
<p>NOTE:</p> <p><i>Cases in 6.3.2.19 due to a transient condition should be assessed as only temporarily unfit.</i></p> <p><i>Possession of the sickle cell trait should not be a reason for disqualification unless there is positive medical evidence to the contrary.</i></p>		
1.20 Not allocated	2.20 Not allocated	3.20 Not allocated
Genito-urinary System		
1.21 Cases presenting signs of established or progressive organic disease of the kidney or genito-urinary tract shall be assessed as unfit. The urine shall be free of any element considered by the CAME to be pathological. Urinary conditions of a transient nature shall be considered unfit while the condition exists.	2.21 Cases of organic disease of the genito-urinary tract likely to affect the safe operation of an aircraft shall be considered unfit. The urine shall contain no abnormal element indicative of such disease or indicative of any other unassessed general condition.	3.21 Cases of organic disease of the genito-urinary tract likely to affect the carrying out of duties shall be considered unfit. The urine shall contain no abnormal element indicative of such disease or indicative of any other unassessed general condition.
<p>1.22 Any sequelae of disease, medication or surgical procedures on the kidneys and the urinary tract liable to cause incapacitation, in particular any obstructions due to stricture or calculus obstruction, shall be assessed as unfit unless accredited medical conclusion considers that the condition is not liable to cause incapacitation in the air.</p> <p>Compensated nephrectomy without hypertension or uraemia shall be assessed as fit.</p> <p>NOTE: <i>An applicant who has undergone a major surgical operation on the urinary system, which has involved a total or partial excision or a diversion of any of its organs shall be assessed as unfit until such time as accredited medical conclusion considers that the effects of the operation are not liable to cause incapacitation in the air.</i></p>	<p>2.22 Any sequelae of disease, medication or surgical procedures on the kidneys and the urinary tract liable to cause incapacitation, in particular any obstructions due to stricture or calculus obstruction, shall be assessed as unfit unless accredited medical conclusion considers that the condition is not liable to cause incapacitation in the air.</p> <p>Compensated nephrectomy without hypertension or uremia shall be assessed as fit.</p> <p>NOTE: <i>An applicant who has undergone a major surgical operation on the urinary system, which has involved a total or partial excision or a diversion of any of its organs shall be assessed as unfit until such time as accredited medical conclusion considers that the effects of the operation are not liable to cause incapacitation in the air.</i></p>	<p>3.22 Any sequelae of disease, medication or surgical procedures on the kidneys and the urinary tract liable to cause incapacitation, in particular any obstructions due to stricture or calculus obstruction, shall be assessed as unfit unless accredited medical conclusion considers that the condition is not liable to affect the reliable performance of duties.</p> <p>Compensated nephrectomy without hypertension or uremia shall be assessed as fit.</p> <p>NOTE: <i>An applicant who has undergone a major surgical operation on the urinary system, which has involved a total or partial excision or a diversion of any of its organs shall be assessed as unfit until such time as accredited medical conclusion considers that the effects of the operation are not liable to affect the reliable performance of duties.</i></p>
1.23 An applicant for the first issue of a licence who has a personal history of syphilis shall be required to furnish evidence, satisfactory to the CAME, that he/she has	2.23 An applicant for the first issue of a licence who has a personal history of syphilis shall be required to furnish evidence, satisfactory to the CAME, that he/she has	3.23 An applicant for the first issue of a licence who has a personal history of syphilis shall be required to furnish evidence, satisfactory to the CAME, that he/she has

PHYSICAL AND MENTAL REQUIREMENT		
Class 1 Medical	Class 2 Medical	Class 3 Medical
undergone adequate treatment. Seropositive HIV applicants shall be assessed unfit, unless certain specific criteria, as determined by accredited medical conclusion, can be met.	undergone adequate treatment. Seropositive HIV applicants shall be assessed unfit, unless certain specific criteria, as determined by accredited medical conclusion, can be met..	undergone adequate treatment. Seropositive HIV applicants shall be assessed unfit, unless certain specific criteria, as determined by accredited medical conclusion, can be met.
1.24 Reproductive System	2.24 Reproductive System	3.24 Reproductive System
(1) Pregnancy and Childbirth (a) In the case of a normal pregnancy, the applicant may be considered fit until the twenty sixth (26th) week of pregnancy. (b) In the case of a high- risk pregnancy that is liable to cause incapacitation in the air, the applicant shall be considered unfit. (c) After childbirth or the termination of pregnancy, the applicant may be assessed as fit before six (6) weeks post partum if she provides a report to the Authority from her attending physician attesting to her capacity to resume her duties.	(1) Pregnancy and Childbirth (a) In the case of a normal pregnancy, the applicant may be considered fit until the twenty sixth (26th) week of pregnancy. (b) In the case of a high- risk pregnancy that is liable to cause incapacitation in the air, the applicant shall be considered unfit. (c) After childbirth or the termination of pregnancy, the applicant may be assessed as fit before six (6) weeks post partum if she provides a report to the Authority from her attending physician attesting to her capacity to resume her duties.	(1) Pregnancy and Childbirth (a) In the case of a normal pregnancy, an air traffic controller may be considered fit until her expected date of confinement. (b) In the case of a normal pregnancy, a cabin attendant may be considered fit until the twenty sixth (26th) week of pregnancy. (c) In the case of a high- risk pregnancy that is liable to cause incapacitation in the air, a Cabin Attendant shall be considered unfit. (d) After childbirth or the termination of pregnancy, the applicant may be assessed as fit before six (6) weeks post partum if she provides a report to the Authority from her attending physician attesting to her capacity to resume her duties.
(2) Gynaecological Disorders In the case of an applicant who has a history of a gynaecological disorder that: (a) has not responded to treatment and is liable to cause incapacitation in the air or interfere with the safe exercise of the applicant's licence or ratings, or (b) requires medication incompatible with the safe operation of an aircraft shall be considered unfit.	(2) Gynaecological Disorders In the case of an applicant who has a history of a gynaecological disorder that: (a) has not responded to treatment and is liable to cause incapacitation in the air or interfere with the safe exercise of the applicant's licence or ratings, or (b) requires medication incompatible with the safe operation of an aircraft shall be considered unfit.	(2) Gynaecological Disorders In the case of an applicant who has a history of a gynaecological disorder that is likely to interfere with the reliable performance of duties shall be considered unfit.
Musculoskeletal System		
1.25 Any active disease of the bones, joints, muscles or tendons and all serious functional sequelae of congenital or acquired disease shall be assessed as unfit. Functional after-effects of lesions affecting bones, joints, muscles or tendons and certain anatomical defects if they are compatible with the safe performance of duties at any altitude and throughout a prolonged or difficult flight shall be assessed as fit.	2.25 Any active disease of the bones, joints, muscles or tendons and all serious functional sequelae of congenital or acquired disease shall be assessed as unfit. Functional after-effects of lesions affecting the bones, joints, muscles or tendons and certain anatomical defects compatible with the safe performance of duties shall be assessed as fit.	3.25 Any active disease of the bones, joints, muscles or tendons, congenital abnormality or significant functional sequelae of congenital or acquired disease, likely to be a handicap in the working environment, shall be assessed as unfit. Functional after-effects of lesions affecting bones, joints, muscles or tendons, and certain anatomical defects if they are compatible with the safe performance of duties shall be assessed as fit.
Ear, Nose and Throat Conditions		

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Class 1 Medical	Class 2 Medical	Class 3 Medical
<p>1.26 There shall be</p> <p>(a) no active pathological process, acute or chronic, of the inner ear or of the middle ear;</p> <p>(b) no unhealed (unclosed) perforation of the tympanic membranes. However, a single dry perforation of non-infectious origin need not render the applicant unfit. medical Certificates shall not be issued or revalidated in these circumstances unless the appropriate hearing requirements specified in section 1.29 and following are complied with;</p> <p>(c) no permanent obstruction of the Eustachian tubes;</p> <p>(d) no permanent disturbances of the vestibular system.</p> <p>Transient conditions shall be assessed as temporarily unfit while the condition exists.</p>	<p>2.26 There shall be</p> <p>(a) no active pathological process, acute or chronic, of the inner ear or of the middle ear;</p> <p>(b) no unhealed (unclosed) perforation of the tympanic membranes. However, a single dry perforation of non-infectious origin need not render the applicant unfit. medical Certificates shall not be issued or revalidated in these circumstances unless the appropriate hearing requirements specified in section 2.29 and following are complied with;</p> <p>(c) no permanent obstruction of the Eustachian tubes;</p> <p>(d) no permanent disturbances of the vestibular system.</p> <p>Transient conditions shall be assessed as temporarily unfit while the condition exists.</p>	<p>3.26 There shall be</p> <p>(a) no active pathological process, acute or chronic, of the inner ear or of the middle ear;</p> <p>(b) no unhealed (unclosed) perforation of the tympanic membranes. However, a single dry perforation of non-infectious origin need not render the applicant unfit. medical Certificates shall not be issued or revalidated in these circumstances unless the appropriate hearing requirements specified in section 3.29 and following are complied with;</p> <p>(c) no permanent obstruction of the Eustachian tubes;</p> <p>(d) no permanent disturbances of the vestibular system.</p> <p>Transient conditions shall be assessed as temporarily unfit while the condition exists.</p> <p><i>NOTE: In the revalidation of Medical Certificates the Aviation Medical Examiner shall assess any pathology of the ear and inner ear in respect to the duties involved. The Certificate shall not be revalidated, however, unless the applicant can meet the hearing requirements.</i></p>
<p>1.27 There shall be free nasal air entry on both sides and the nasal and sinus cavities shall be free from significant obstructions. There shall be no serious malformation nor serious acute or chronic infection of the buccal cavity or upper respiratory tract that might affect the safe performance of duties.</p>	<p>2.27 There shall be free nasal air entry on both sides, and the nasal and sinus cavities should be free from significant obstructions. There shall be no serious malformation nor serious acute or chronic infection of the buccal cavity or upper respiratory tract that might affect safe performance.</p>	<p>3.27 There shall be free nasal air entry on both sides and the nasal and sinus cavities shall be free from significant obstructions. There shall be no serious malformation, nor acute or chronic infection of the buccal cavity or upper respiratory tract that affects speech or is likely to interfere with reliable performance of duties.</p>
<p>1.28 Speech defects and stuttering that cause communication difficulties shall be considered unfit.</p>	<p>2.28 Speech defects and stuttering that are liable to give rise to radio communication difficulties shall be considered unfit.</p>	<p>3.28 Speech defects and stuttering that are liable to give rise to communication difficulties shall be considered unfit.</p>
Hearing Requirement		
<p>1.29 The applicant shall be required to be free from any hearing defect which could interfere with the safe performance of the applicants duties in exercising the privileges of the licence.</p>	<p>2.29 The applicant shall be free from any hearing defect which could interfere with the safe performance of the applicants duties in exercising the privileges of the licence.</p>	<p>3.29 The applicant shall be required to be free from any hearing defect which could interfere with the safe performance of the applicants duties in exercising the privileges of the licence</p>
<p>1.30 The applicant shall be tested on a pure tone audiometer at the initial examination for a Class 1 Medical</p>	<p>2.30 Not allocated.</p>	<p>3.30 An applicant for an air traffic controller licence shall be tested on a pure tone audiometer at the initial</p>

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Class 1 Medical	Class 2 Medical	Class 3 Medical
and at the first medical examination and not less than once every five years up to 40 years of age and thereafter not less than once every 3 years. Hearing loss, in either ear separately, shall not be more than 35 dB at any of the frequencies 500, 1000, 2000 Hz or more than 50 dB at 3000 Hz.		examination for a Class 3 Medical and at the first medical examination and not less than once every five years up to 40 years of age and thereafter not less than once every 3 years. Hearing loss, in either ear separately, shall not be more than 35 dB at any of the frequencies 500, 1000, 2000 Hz or more than 50 dB at 3000 Hz.
1.31 At each examination the applicant shall demonstrate, in a quiet room, the ability to hear a average-whispered voice in each ear separately at a distance of two metres from the Aviation Medical Examiner, with the back turned to the examiner. Applicants experiencing some difficulty with routine whisper shall be tested by pure tone audiometry.	2.31 At each examination the applicant shall demonstrate, in a quiet room, the ability to hear an average conversational voice using both ears at a distance of two metres from the Aviation Medical Examiner, with the back turned to the examiner.	3.31 At each examination the applicant shall demonstrate, in a quiet room the ability to hear a average-whispered voice in each ear at a distance of two metres from the Aviation Medical Examiner with the back turned to the examiner. Applicants experiencing some difficulty with routine whisper shall be tested by pure tone audiometry.
<p>1.32 Provided that there is no greater loss than 50 dB at 3000 Hz, applicants who show an average loss on pure tone audiometry of no greater than 45 dB in the better ear shall be considered fit if they can demonstrate satisfactory hearing in the cockpit noise environment in which they normally operate. Average losses greater than 45 dB in the better ear shall be evaluated by an otolaryngologist and be subject to individual assessment according to accredited medical conclusion.</p> <p><i>NOTE: The reference zero for calibration of pure tone audiometers used is that of the International Organisation of Standardisation Recommendation R389, 1964 or that of the American National Standards Institute.</i></p> <p>(2) The use of individual hearing aids during voice or practical testing is not permitted unless flexibility has previously been granted in accordance with this Part.</p>	<p>2.32 Provided that there is no greater loss than 50 dB at 3000 Hz applicants who show an average loss on pure tone audiometry of no greater than 45 dB in the better ear shall be considered fit if they can demonstrate satisfactory hearing in the cockpit noise environment in which they normally operate. Average losses greater than 45 dB in the better ear shall be evaluated by an otolaryngologist and be subject to individual assessment according to accredited medical conclusion.</p> <p><i>NOTE: Pure tone audiometry is the method of choice for assessment of hearing and shall be repeated every five years. The applicant, on testing by pure tone audiometry, shall not have a hearing loss in either ear separately of more than 35 dB at any of the frequencies 500, 1000 or 2000, or more than 50 dB at 3000 Hz.</i></p> <p>(2) The reference zero of pure tone audiometers used is that of the International Organisation for Standardisation Recommendation R389, 1964 or that of the American National Standards Institute.</p> <p>(3) A sound level of an average conversational voice used for voice testing is considered to range from 85 to 95 dB at point of output.</p> <p>(4) Where a hearing aid is required to meet the requirements of paras. 2.31 or 2.32 the validation certificate shall be endorsed "Valid only when</p>	<p>3.32 Provided that there is no greater loss than 50 dB at 3000 Hz, an air traffic controller who shows an average loss on pure tone audiometry of no greater than 45 dB in the better ear shall be considered fit if they can demonstrate satisfactory hearing in the aircraft or appropriate ATC noise environment in which they normally operate. Average losses greater than 45 dB in the better ear shall be evaluated by an otolaryngologist and be subject to individual assessment according to accredited medical conclusion.</p> <p><i>NOTE: The reference zero for calibration of pure tone audiometer used is that of the International Organisation of Standardisation Recommendation R389, 1964 or that of the American National Standards Institute.</i></p> <p>(2) The sound level of an average conversational voice used for voice testing is considered to range from 85 to 95 dB at point of output.</p> <p>(3) The use of individual hearing aids during voice or practical testing is not permitted unless flexibility has previously been granted in accordance with this Subpart.</p>

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	wearing a satisfactory hearing aid".	
Visual Requirement		
<p>1.33 The function of the eyes and their adnexae shall be normal. There shall be no active pathological or artificially induced condition, acute or chronic, of either eye or adnexae which is likely to interfere with its proper function to an extent that would jeopardise safety in flight or the safe exercise of the applicant's licence and rating privileges.</p>	<p>2.33 The function of the eyes and their adnexae shall be normal. There shall be no active pathological or artificially induced condition, acute or chronic, of either eye or adnexae which is likely to interfere with its proper function to an extent that would jeopardise safety in flight, or the safe exercise of the applicant's licence and rating privileges.</p>	<p>3.33 There shall be no active pathological or artificially induced condition, acute or chronic, of either eye or adnexae which is likely to interfere with its proper function to an extent that would jeopardise the safe performance of duties.</p>
<p>1.34 The applicant shall be required to have normal fields of vision.</p> <p>1.35 The applicant shall be required to have a distant visual acuity of not less than 6/9 (20/30) in each eye separately, with or without the use of correcting lenses. Where this standard of visual acuity can be obtained only with correcting lenses the applicant shall be assessed fit provided that</p> <p>(a) such correcting lenses are worn when exercising the privileges of the licence or rating applied for or held;</p> <p>(b) the applicant possesses a visual acuity without correction in each eye separately, not less than 6/60 (20/200) and the refractive error falls within the range of ± 3 diopters (equivalent spherical error);</p> <p>(c) the applicant has a spare pair of suitable correcting glasses available for immediate use when exercising the privileges of the licence.</p> <p><i>NOTE: Correcting lenses" shall be interpreted to mean spectacles or contact lenses. Contact lenses shall not be approved prior to six months trial wear.</i></p>	<p>2.34 The applicant shall be required to have normal fields of vision.</p> <p>2.35 The applicant shall be required to have a distant visual acuity of not less than 6/9 (20/30) in each eye separately, with or without the use of correcting lenses. Where this standard of visual acuity can be obtained only with correcting lenses, the applicant shall be assessed fit provided that</p> <p>(a) such correcting lenses are worn when exercising the privileges of the licence or rating applied for or held;</p> <p>(b) the applicant possesses a visual acuity without correction in each eye separately, not less than 6/60 (20/200) and the refractive error falls within the range of ± 5 diopters (equivalent spherical error);</p> <p>(c) the applicant has a spare pair of suitable correcting glasses available for immediate use when exercising the privileges of the licence.</p> <p>Individual applicants whose refractive error in either eye falls outside the range of ± 5 diopters (equivalent spherical error) shall be accepted as fit according to accredited medical conclusion.</p> <p><i>NOTE: Correcting lenses" shall be interpreted to mean spectacles or contact lenses. Contact lenses shall not be approved prior to six months trial wear.</i></p>	<p>3.34 The applicant shall be required to have normal fields of vision.</p> <p>3.35 The applicant shall be required to have a distant visual acuity of not less than 6/9 (20/30) in each eye separately, with or without the use of correcting lenses. Where this standard of visual acuity can be obtained only with correcting lenses, the applicant shall be assessed fit provided that</p> <p>(a) such correcting lenses are worn when exercising the privileges of the licence or rating applied for or held;</p> <p>(b) the applicant possesses a visual acuity without correction in each eye separately, not less than 6/60 (20/200) and the refractive error falls within the range of ± 5.0 diopters (equivalent spherical error);</p> <p>(c) the applicant has a spare pair of suitable correcting glasses available for immediate use when exercising the privileges of the licence.</p> <p>Individual applicants whose refractive error in either eye falls outside the range of ± 5 diopters (equivalent spherical error) shall be assessed as fit if this assessment is valid according to accredited medical conclusion.</p> <p><i>NOTE: Correcting lenses" shall be interpreted to mean spectacles or contact lenses. Contact lenses shall not be approved prior to six months trial wear.</i></p>

PHYSICAL AND MENTAL REQUIREMENT		
Class 1 Medical	Class 2 Medical	Class 3 Medical
<p>(2) Visual acuity shall be measured using Landolt Rings, a chart of Snellen letters, or other similar optotypes situated at an optical distance of 6 metres (20 feet) in either an eye lane or an approved vision testing instrument. Where an eye lane is used, the test chart shall be illuminated to a level equivalent to that provided by a 100 watt light bulb placed 120 centimetres (4 feet) in front of, and slightly above the chart and the light shielded against the applicant. The examination room shall be darkened with exception of the illuminated chart.</p> <p>(3) An applicant accepted as meeting the provisions of para. 1.35 (b) is deemed to continue to do so unless there is reason to suspect otherwise, in which case refraction is repeated as required. The uncorrected visual acuity is measured and recorded at each re-examination. Conditions which indicate a need to redetermine the refractive error include, but are not limited by: a refractive state close to the limit of acceptability, a substantial decrease in the uncorrected visual acuity and the occurrence of eye disease, eye injury or eye surgery.</p>	<p>(2) Visual acuity shall be measured using Landolt Rings, a chart of Snellen letters, or other similar optotypes situated at an optical distance of 6 metres (20 feet) in either an eye lane or an approved vision testing instrument. Where an eye lane is used, the test chart shall be illuminated to a level equivalent to that provided by a 100 watt light bulb placed 120 centimetres (4 feet) in front of, and slightly above the chart and the light shielded against the applicant. The examination room shall be darkened with exception of the illuminated chart.</p> <p>(3) An applicant accepted as meeting the provisions of para. 2.35 (b) is deemed to continue to do so unless there is reason to suspect otherwise, in which case refraction is repeated as required. The uncorrected visual acuity is measured and recorded at each examination. Conditions which indicate a need to redetermine the refractive error include, but are not limited by: a refractive state close to the limit of acceptability, a substantial decrease in the uncorrected visual acuity, and the occurrence of eye disease, eye injury or eye surgery.</p>	<p>(2) Visual acuity shall be measured using Landolt Rings, a chart of Snellen letters, or other similar optotypes situated at an optical distance of 6 metres (20 feet) in either an eye lane or an approved vision testing instrument. Where an eye lane is used, the test chart shall be illuminated to a level equivalent to that provided by a 100 watt light bulb placed 120 centimetres (4 feet) in front of, and slightly above the chart and the light shielded against the applicant. The examination room shall be darkened with exception of the illuminated chart.</p> <p>(3) An applicant accepted as meeting the provisions of para. 3.35 (b) is deemed to continue to do so unless there is reason to suspect otherwise, in which case refraction is repeated as required. The uncorrected visual acuity is measured and recorded at each examination. Conditions which indicate a need to redetermine the refractive error include, but are not limited by: a refractive state close to the limit of acceptability, a substantial decrease in the uncorrected visual acuity and the occurrence of eye disease, eye injury or eye surgery.</p>
<p>1.36 The applicant shall be required to have the ability to read the N5 Chart or its equivalent at a distance of 30 to 50 centimetres (12 to 20 inches). If the requirement is met only by the use of correcting lenses, the applicant shall be assessed as fit provided that such lenses are available for immediate use when exercising the privileges of the licence.</p> <p><i>NOTE: N5 refers to the Faculty of Ophthalmologist's Reading Type.</i></p> <p>(2) An applicant who needs correction to meet this requirement will require "look-over", bifocal or trifocal lenses to enable him/her to read the instruments and a chart or manual held in the hand, and also make use of distant vision through the windscreen without removing his/her lenses. Single-vision near correction (full lenses of one power only, appropriate to reading) significantly reduces distant visual acuity. Whenever there is a requirement to obtain or renew</p>	<p>2.36 The applicant shall be required to have the ability to read the N5 Chart or its equivalent at a distance of 30 to 50 centimetres (12 to 20 inches). If this requirement is met only by the use of correcting lenses, the applicant shall be assessed as fit provided that such lenses are available for immediate use when exercising the privileges of the licence.</p> <p><i>NOTE: N5 refers to the Faculty of Ophthalmologist's Reading Type.</i></p> <p>(2) An applicant who needs correction to meet this requirement will require "look-over", bifocal or trifocal lenses to enable him/her to read the instruments and a chart or manual held in the hand, and also make use of distant vision through the windscreen without removing his/her lenses. Single-vision near correction (full lenses of one power only, appropriate to reading) significantly reduces distant visual acuity. Whenever there is a requirement to obtain or renew</p>	<p>3.36 The applicant shall be required to have the ability to read the N5 Chart or its equivalent at a distance of 30 to 50 centimetres (12 to 20 inches). If this requirement is met only by the use of correctional lenses, the applicant shall be assessed as fit provided that such lenses are available for immediate use when exercising the privileges of the licence.</p> <p><i>NOTE: N5 refers to the Faculty of Ophthalmologist's Reading Type.</i></p> <p>(2) An applicant who needs intermediate/near vision correction will require "look-over", bifocals or trifocals lenses to enable him/her to read instruments, charts, manuals, etc., and still make use of distant vision without removing his/her lenses. Single vision near correction (full lenses of one power only, appropriate to reading) significantly reduce distant visual acuity. Whenever there is a requirement to obtain or renew correcting lenses, an applicant shall advise the</p>

PHYSICAL AND MENTAL REQUIREMENT		
Class 1 Medical	Class 2 Medical	Class 3 Medical
correcting lenses, an applicant shall advise the refractionist of reading distances for the visual flight deck tasks relevant to the type of aircraft in which he/she is likely to function or to other aviation tasks.	correcting lenses, an applicant shall advise the refractionist of reading distances for the visual cockpit tasks relevant to the type of aircraft in which he/she is likely to function or to other aviation tasks.	refractionist of the reading distances for the visual aircraft or Air Traffic Control tasks relevant to the normal work environment.
<p>1.37 All contact lens wearers shall have replacement spectacles available for immediate use in the event the contact lens(es) become dislodged or are required to be removed in flight; and</p> <p>Hard contact lens wearers shall be required to have two pairs of spectacles available to overcome the frequent phenomenon of spectacle blur. In such cases, one pair of spectacles shall correct the vision immediately following removal of the lens(es), the second pair shall correct the vision after the eye is stabilised.</p> <p><i>NOTE: When an applicant is licensed with the limitation "Valid only when wearing required contact lenses" further evaluation shall be required should the applicant, in the future, wish to wear spectacles only on a continuing basis while flying.</i></p> <p>(2) Prescription sun lenses shall not be deemed to meet these requirements for flight at night.</p>	<p>2.37 All contact lens wearers are required to have replacement spectacles available for immediate use in the event the contact lens(es) become dislodged or are required to be removed in flight; and</p> <p>Hard contact lens wearers shall be required to have two pairs of spectacles available to overcome the frequent phenomenon of spectacle blur. In such cases one pair of spectacles shall correct the vision immediately following removal of the lens(es), the second pair shall correct the vision after the eye is stabilised.</p> <p><i>NOTE: When an applicant is licensed with the limitation "Valid only when wearing required contact lenses" further evaluation shall be required should the applicant, in the future, wish to wear spectacles only on a continuing basis while flying.</i></p> <p>(2) Prescription sun lenses shall not be deemed to meet these requirements for flight at night.</p>	<p>3.37 All contact lens wearers shall have replacement spectacles available for immediate use in the event the contact lens(es) become dislodged or are required to be removed while exercising the privileges of the wearers licence; and</p> <p>Hard contact lens wearers shall be required to have two pairs of spectacles available to overcome the frequent phenomenon of spectacle blur. In such cases, one pair of spectacles shall correct the vision immediately following removal of the lens(es), the second pair shall correct the vision after the eye is stabilised.</p> <p><i>NOTE: When an applicant is licensed with the limitation "Valid only when wearing required contact lenses" further evaluation shall be required should the applicant, in the future, wish to wear spectacles only on a continuing basis while exercising the privileges of the applicants licence.</i></p> <p>(2) Prescription sun lenses shall not be deemed to meet these requirements for night duties.</p>
Ocular Muscle Balance		
<p>1.38 The applicant shall be assessed with the Cover-Uncover Test, or an appropriate technique to measure the amount of exophoria, esophoria and hyperphoria present in prism diopters. The acceptable limits shall be 6 diopters for exophoria and esophoria, and 1 diopter for hyperphoria.</p> <p><i>NOTE: Applicants found to have ocular muscle imbalance greater than the above noted shall be referred to an eye specialist for evaluation. Such cases shall be licensed under the standards provided that there is no danger of developing diplopia during the course of a prolonged or difficult flight.</i></p>	<p>2.38 The applicant shall be assessed with the Cover-Uncover Test, or an appropriate technique to measure the amount of exophoria, esophoria and hyperphoria present in prism diopters. The acceptable limits shall be 6 diopters for exophoria and esophoria, and 1 diopter for hyperphoria.</p> <p><i>NOTE: Applicants found to have ocular muscle imbalance greater than the above noted shall be referred to an eye specialist for evaluation. Such cases shall be assessed fit if this assessment is valid according to accredited medical conclusion.</i></p>	<p>3.38 The applicant shall be assessed with the Cover-Uncover Test, or an appropriate technique to measure the amount of exophoria, esophoria and hyperphoria present in prism diopters. The acceptable limits shall be 6 diopters for exophoria and esophoria, and 1 diopter for hyperphoria.</p> <p><i>NOTE: Applicants found to have ocular muscle imbalance greater than the above noted shall be referred to an eye specialist for evaluation. Such cases shall be assessed fit if this assessment is valid according to accredited medical conclusion.</i></p>
Colour Perception Requirement		

PHYSICAL AND MENTAL REQUIREMENT		
Class 1 Medical	Class 2 Medical	Class 3 Medical
<p>1.39 The candidate shall be required to demonstrate his/her ability to perceive readily those colours the perception of which is necessary for the safe performance of his/her duties. For this requirement, one of the following colour test plates and score shall be used.</p> <p>See the following "Table for Colour Perception Requirement 1.39" for requirements.</p>	<p>2.39 The candidate shall be required to demonstrate his/her ability to perceive readily those colours the perception of which is necessary for the safe performance of his/her duties. For this requirement, one of the following colour test plates and score shall be used.</p> <p>See the following "Table for Colour Perception Requirement 2.39" for requirements.</p>	<p>3.39 The candidate shall be required to demonstrate his/her ability to perceive readily those colours the perception of which is necessary for the safe performance of his/her duties. For this requirement, one of the following colour test plates and score shall be used.</p> <p>See the following "Table for Colour Perception Requirement 3.39" for requirements.</p>
<p>1.40 If an applicant does not qualify under para. 1.39, the applicants colour vision shall be assessed fit under this requirement if he/she passes a Farnsworth D-15 test.</p>	<p>2.40 If an applicant does not qualify under para. 2.39, the applicants colour vision shall be assessed fit under this requirement if he/she passes a Farnsworth D-15 test.</p>	<p>3.40 If an applicant does not qualify under para. 3.39, the applicants colour vision shall be assessed fit under this requirement if he/she passes a Farnsworth D-15 test.</p>
<p>1.41 An applicant who does not qualify under paras. 1.39 or 1.40 shall be assessed as fit for a restricted Commercial Pilot Licence provided the licence is issued with the following restriction: "Valid daylight only, 2-way radio required at controlled airports".</p>	<p>2.41 Applicants who do not meet the Requirements of paras. 2.39 and 2.40 may be considered fit with the following restriction: "Valid daylight only, 2-way radio required at controlled airports".</p>	<p>3.41 Not allocated.</p>

**Table for Colour Perception Requirement
1.39**

Types of Plates (pseudo-isochromatic)	Edition	Plates to be Read	Max # Errors
American Optical	18 plates (1378A)	1-18 (include)	3
Ishihara	14 plates	1-11 (include)	1
Ishihara	16 plates	1- 8 (include)	1
Ishihara	24 plates	1-15 (include)	2
Ishihara	36 plates	1-21 (include)	3
American Optical	20 plates	1- 6 (include)	0
HRR	(2nd. ed)		
*Titmus Vision Tester		ALL	0
*Keystone Orthoscope		ALL	0
*Keystone Telebinocular		ALL	0
*If failed, retest with plates to verify.			

**Table for Colour Perception Requirement
2.39**

Types of Plates (pseudo-isochromatic)	Edition	Plates to be Read	Max # Errors
American Optical	18 plates (1378A)	1-18 (include)	3
Ishihara	14 plates	1-11 (include)	1
Ishihara	16 plates	1- 8 (include)	1
Ishihara	24 plates	1-15(include)	2
Ishihara	36 plates	1-21 (include)	3
American Optical	20 plates	1- 6 (include)	0
HRR	(2nd. ed)		
*Titmus Vision Tester		ALL	0
*Keystone Orthoscope		ALL	0
*Keystone Telebinocular		ALL	0
*If failed, retest with plates to verify.			

**Table for Colour Perception Requirement
3.39**

Types of Plates (pseudo-isochromatic)	Edition	Plates to be Read	Max # Errors
American Optical	18 plates(1378A)	1-18 (include)	3
Ishihara	14 plates	1-11 (include)	1
Ishihara	16 plates	1- 8 (include)	1
Ishihara	24 plates	1-15 (include)	2
Ishihara	36 plates	1-21 (include)	3
American Optical	20 plates	1- 6 (include)	0
HRR	(2nd. ed)		
*Titmus Vision Tester0		ALL	0
*Keystone Orthoscope		ALL	0
*Keystone Telebinocular		ALL	0
*If failed, retest with plates to verify.			

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LEBANESE AVIATION REGULATIONS

Part IV
PERSONNEL LICENSING

Subpart 403
CABIN ATTENDANT
LICENSING

Republic of Lebanon 

UNDP / ICAO PROJECT LEB / 95 / 001
Civil Aviation Technical Training and Safety Oversight Programme



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PART IV

PERSONNEL LICENSING

Subpart 3 - Cabin Attendant Licensing

403.01 Interpretation

Any reference in this Subpart to the personnel licensing standards is a reference to the Personnel Licensing Standards Respecting Cabin Attendant Licensing and where so noted, the related provisions contained in the current edition of the Federal Aviation Regulations (FARs) and related Circulars, published by the government of the United States of America, and the Joint Aviation Regulations (JARs) published by the Joint Aviation Authorities (JAA) of the European Civil Aviation Conference (ECAC) .

403.02 Application

This Subpart applies to persons who hold a cabin attendant licence or who apply for the issuance of such a licence.

403.03 Issuance, Endorsement and Renewal of Cabin Attendant Licences

1. Subject to Article 70 of the Civil Aviation Safety Act, the Authority shall, on receipt of an application submitted in the form and manner specified in the personnel licensing standards, issue or endorse a cabin attendant licence where the applicant provides documentation to the Authority that establishes:
 - a) the applicant's citizenship;
 - b) that the required fees have been paid;
 - c) that the applicant meets the applicable requirements set out in the personnel licensing standards in respect of:
 - i) minimum age,
 - ii) medical fitness,
 - iii) knowledge,
 - iv) experience, and
 - v) skill; and
 - d) the applicant is employed by the air operator that provided the training or is employed or was trained by another AOC holder with whom the employer has a training agreement.
2. Renewal - The Authority shall renew a cabin attendant licence upon receipt of documentation that establishes that the holder has met the requirements specified in the personnel licensing standard.

403.04 Prohibitions

1. No person shall act as a cabin attendant in a commercial air transport service, or exercise the privileges of a cabin attendant licence, unless that person holds and can produce while so acting and while exercising such privileges, a cabin attendant licence endorsed for the type of aircraft involved and a valid medical certificate.
2. Paragraph 1. does not apply to a person who, while under supervision, acts as a cabin attendant, or exercises the privileges of a cabin attendant when undergoing:
 - a) instruction, training or testing in respect of a cabin attendant licence; or
 - b) familiarization in the course of the person's employment.

403.05 Recency Requirements

The holder of a cabin attendant licence shall not exercise the privileges of that licence unless the holder has:

- a) flown as a cabin attendant within the preceding 6 months. and
- b) successfully completed the specified recurrent training and a proficiency check within the preceding 12 months.

403.06 Privileges

The holder of a cabin attendant licence may serve as a cabin attendant in an air transport service on any aircraft type for which the licence is endorsed, that is being conducted under Part VI or VII of these regulations and is being operated by the air operator named on the licence.

403.07 Aircraft Type Rating

The Authority shall endorse a cabin attendant licence with an aircraft type rating upon receipt of documentary evidence that establishes that the applicant meets the requirements specified in the personnel licensing standards.

403.08 Validity of Licences

1. A Cabin Attendant Licence is not valid unless the holder is in possession of and can produce a valid Medical Certificate.
2. A cabin attendant licence shall be valid for one year.

Subpart 3 - Personnel Licensing Standards Respecting Cabin Attendant Licensing

s403.03 Issue, Endorsement and Renewal of Cabin Attendant Licences

1. Proof of Citizenship - The following documents are acceptable as proof of citizenship:
 - a) a Lebanese Identity Card;
 - b) a valid passport; or
 - c) an aviation personnel licence showing the citizenship of the holder and issued by the state of which the applicant is a citizen.
2. Proof of Age - The following documents are acceptable proof of the age of an applicant for a personnel licence or rating:
 - a) a Lebanese Identity Card;
 - b) a valid passport; or
 - c) an aviation personnel licence showing the citizenship of the holder and issued by the state of which the applicant is a citizen.
3. Licence Issue Requirements:
 - a) Age - An applicant shall be a minimum of 18 years of age.
 - b) Medical Fitness -
 - i) An applicant shall hold a Class 3 Medical Certificate valid for a Cabin Attendant Licence.
 - ii) The medical validity period is 12 months.
 - iii) The licence is maintained valid by a Class 1, 2 or 3 Medical Certificate.
 - c) Knowledge - An applicant shall provide documentary evidence of successful completion of an approved initial course of training that was conducted by the air carrier by which they will be employed or is employed or was trained by another AOC holder with whom the employer has a training agreement and that meets the standards specified in Part VII.
 - d) Experience - An applicant shall provide documentary evidence of completion of familiarization flight training as specified in the air operator's Operations Manual.
 - e) Skill - An applicant shall provide documentary evidence of successful completion of a competency check as specified in the air operator's Operations Manual.
4. Licence Renewal Requirements - An applicant shall provide documentary evidence of:
 - a) successful completion an approved recurrent training program as specified in the air operator's Operations Manual for each type of aircraft to be endorsed on the licence, and
 - b) employment by the air operator that provided the training or is employed or was trained by another AOC holder with whom the employer has a training agreement.

s403.07 Aircraft Type Rating Requirements

1. An applicant shall provide documentary evidence from the AOC holder, of successful completion of an approved conversion course for each type of aircraft to be endorsed on the licence.
2. The aircraft types that may be endorsed on a licence shall be as specified in LAR - Personnel Licensing Circular _____.

3. No more than three aircraft types, may be endorsed on a Cabin Attendant Licence. However, a fourth type may be endorsed upon presentation of documentary evidence that establishes to the satisfaction of the Authority, that the safety equipment and emergency procedures for at least two of the types are similar.
4. For the purposes of para 3, variants of an aeroplane type are considered to be different types if they are not similar in all of the following aspects:
 - a) Emergency exit operation;
 - b) Location and type of safety equipment; and
 - c) Emergency procedures.

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LEBANESE AVIATION REGULATIONS

Part IV
PERSONNEL LICENSING

Subpart 402
AIR TRAFFIC
CONTROLLER LICENSING

Republic of Lebanon 

UNDP / ICAO PROJECT LEB / 95 / 001
Civil Aviation Technical Training and Safety Oversight Programme

United Nations



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Subpart 2 – Air Traffic Controller Licensing

402.01 Interpretation

In this Subpart:

1. Any reference in this Part to the personnel licensing standards is a reference to the *Personnel Licensing Standards Respecting Air Traffic Controller Licensing*.
2. Any reference to "the Authority" is a reference to the Directorate General of Civil Aviation (DGAC) or the Civil Aviation Authority (CAA) that may replace the DGCA.
3. "*Proficiency check*" means an assessment of the operational knowledge, skill and judgement of the holder of, or an applicant for, an air traffic control licence or rating, with respect to the provision of the requisite air traffic services relating to that licence or rating at that specific ATC unit.
4. "*ATC unit*" means the operational location that provides a specific air traffic control service.
5. "Operational environment" means a functioning ATC unit that is providing a specific air traffic control service.

402.02 Application

This Subpart applies to persons who hold or apply for the issuance or renewal of an air traffic controller licence and ratings referred to in this Subpart.

402.03 Authority to Act as an Air Traffic Controller in Lebanon

1. No person shall act as an air traffic controller or exercise the privileges of an air traffic controller licence, unless that person holds and can produce while so acting and while exercising such privileges:
 - a. an air traffic controller licence endorsed with a rating appropriate to the privileges being exercised and at that ATC unit; and
 - b. a valid Class 3 or Class 1 Medical Certificate.
2. Paragraph 1.a does not apply to a person who, while under supervision, acts as air traffic control trainee or exercises the privileges of an air traffic controller licence when undergoing:
 - a. instruction, training or testing in respect of an air traffic controller licence; or
 - b. ATC unit familiarization in the course of the person's employment.

402.04 Issuance and Endorsement of Air Traffic Controller Licences and Ratings

1. Subject to Article 70 of the Act the Authority shall, on receipt of an application submitted in the form and manner specified in the personnel licensing standards, issue an air traffic controller licence or endorse the applicant's air traffic controller licence with a rating where the applicant provides documentation to the Authority that establishes:
 - a. the applicant's citizenship; and

- b. that the applicant meets the applicable requirements set out in the personnel licensing standards in respect of:
 - i. minimum age,
 - ii. medical fitness,
 - iii. knowledge,
 - iv. experience,
 - v. skill, and
 - vi. language proficiency.
- 2. The Authority may specify in an air traffic controller licence any condition in respect of the exercise of the privileges of the licence or the privileges of a rating endorsed on the licence, if the condition is required to ensure aviation safety, including any condition in respect of:
 - a. the training of the licence holder;
 - b. the supervision of the licence holder;
 - c. the equipment that the licence holder may use; or
 - d. the ATC unit at which the licence holder may exercise the privileges of the holder's air traffic controller licence.

402.05 Recency Requirements

The holder of an air traffic controller licence shall not exercise the privileges of that licence at an air traffic control unit unless the holder has:

- a. successfully completed a proficiency check at that ATC unit within the preceding 12 months, and
- b. has exercised the privileges of the rating at that ATC unit within the proceeding six months.

402.06 Privileges

The holder of an air traffic controller licence may, in accordance with the personnel licensing standards, the *Lebanese Air Traffic Control Manual of Operations*, the *Lebanese Domestic Air Traffic Control Separation Standards*, and *Annex 11 To The Convention on International Civil Aviation* provide or supervise the provision of:

- a. aerodrome control service for any aerodrome for which the licence is endorsed with an aerodrome control rating;
- b. non-radar approach control service for the aerodrome or aerodromes for which the licence is endorsed with an approach non-radar control rating, within the airspace or portion thereof, under the jurisdiction of the ATC unit providing the approach control service;
- c. approach control service using radar or other surveillance systems, for the aerodrome or aerodromes for which the licence is endorsed with an approach radar control rating, within the airspace or portion thereof, under the jurisdiction of the ATC unit providing the approach control service;
- d. non-radar area control service within the control area or portion thereof, for which the licence is endorsed with an area non-radar control rating;
- e. area control service using radar or other surveillance systems, within the control area or portion thereof, for which the licence is endorsed with an area radar control rating.
- f. training of an air traffic controller or an air traffic control trainer in an operational environment for which the licence is endorsed with an instructor rating.

402.16 Training Records

The Chief of an ATC unit or the head of a training school shall:

- a. maintain, in a form acceptable to the Authority, a training record for each person undergoing training at the ATC unit or school for the purpose of obtaining a licence, rating or operational location endorsement in respect of the ATC unit;
- b. enter the licence number of the training officer or supervisor in the training record and certify that any information entered in the record is correct by signing and dating the entry and any amendment thereto;
- c. at the request of any person who is undergoing or has undergone training at the ATC unit or school, provide a copy of the person's training record to the person; and
- d. at the request of the Authority, provide the Authority with a copy of the training record of any person who is undergoing or has undergone training at the ATC unit and who holds an air traffic controller licence.

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s402 - Personnel Licensing Standards Respecting Air Traffic Controller Licensing

s402.04 Issue and Endorsement of Air Traffic Controller Licences and Ratings

1. General

- a. An applicant shall, during the 18 month period immediately preceding the date of issue of a licence:
 - i. submit an application; and
 - ii. complete all tests and examinations for issuance of a licence.
- b. Ratings to an Air Traffic Controller Licence, which may be endorsed for one or more specified operational locations, are:
 - i. Aerodrome Control;
 - ii. Approach Non-radar Control;
 - iii. Approach Radar Control;
 - iv. Area Non-radar Control; and
 - v. Area Radar Control.
- c. An instructor rating also be endorsed on an Air Traffic Controller licence.
- d. Prior to the issue of an Air Traffic Controller Licence, or the endorsement of an Air Traffic Controller Licence with a rating, and before any privileges may be exercised, an applicant shall have met all requirements set out in this section and in the Regulations for the endorsement of a particular rating at a specific location.
- e. An applicant shall have demonstrated ability to perform those functions applicable to the privileges to be granted.
- f. Application for the issue of a licence or endorsement of a rating or a location shall be made on form LAR 402/01 accompanied by a copy of the applicants training record.

2. Licences

- a. Citizenship - An applicant's citizenship must be shown on an Air Traffic Controller licence. The following documents are acceptable as proof of citizenship:
 - i. a Lebanese Identity Card;
 - ii. a valid passport; or
 - iii. an aviation personnel licence showing the citizenship of the holder and issued by the state of which the applicant is a citizen, plus a second legal document satisfactory to the Authority.
- b. Requirements:
 - i. Minimum Age - An applicant shall be not less than 19 years of age. The following documents are acceptable proof of age of an applicant for an air traffic controller licence:
 - A. a Lebanese Identity Card;
 - B. a valid passport; or
 - C. an aviation personnel licence showing the citizenship of the holder and issued by the state of which the applicant is a citizen, plus a second legal document satisfactory to the Authority.
 - ii. Medical Fitness - An applicant shall have completed the medical examination requirements in accordance with the Personnel Licensing and Training Standards Respecting Medical Requirements and be in possession of a Class3 Medical Certificate

valid for an Air Traffic Controller Licence. A valid Class 1 Medical Certificate is also acceptable.

- iii. Knowledge - An applicant shall have successfully completed Air Traffic Controller basic training and written examinations prescribed by the Authority on:
 - A. Air law - rules and regulations relevant to the air traffic controller;
 - B. Air traffic control equipment - principles, use and limitations of equipment used in air traffic control;
 - C. General knowledge - principles of flight; principles of operation and functioning of aircraft, powerplants and systems; aircraft performances relevant to air traffic control operations;
 - D. Human performance and limitations - human performance and limitations relevant to air traffic control;
 - E. Meteorology - aeronautical meteorology; use and appreciation of meteorological documentation and information; origin and characteristics of weather phenomena affecting flight operations and safety; altimetry;
 - F. Navigation - principles of air navigation; principle, limitation and accuracy of navigation systems and visual aids; and
 - G. Operational procedures - air traffic control, communication, radiotelephony and phraseology procedures (routine, non routine and emergency); use of the relevant aeronautical documentation; safety practices associated with flight.
- iv. Experience and Skill - An applicant shall have met all approved practical training course standards and requirements for the endorsement of one or more of the Ratings.
- v. Language - An applicant shall demonstrate to the satisfaction of the Authority, the ability to use the English language without accent or impediment which would adversely affect radio communication.

3. Ratings

An applicant shall demonstrate the level of knowledge, judgement, experience and skill for the endorsement of the Rating applied for as follows:

- a. Aerodrome Control Rating:
 - i. Knowledge - An applicant for an Aerodrome Control Rating shall have successfully completed a course and exams prescribed by the Authority and have demonstrated knowledge of the particular ATC Unit for which the rating is desired. The course of training shall include:
 - A. aerodrome layout; physical characteristics and visual aids;
 - B. airspace structure;
 - C. applicable rules, procedures and source of information;
 - D. air navigation facilities;
 - E. air traffic control equipment and its use;
 - F. terrain and prominent landmarks;
 - G. characteristics of air traffic;
 - H. weather phenomena; and
 - I. emergency and search and rescue plans;
 - ii. Experience - During the six months preceding the endorsement of an aerodrome control rating, the applicant shall have:
 - A. successfully completed a practical training course prescribed by the Authority; and
 - B. served under the supervision of a qualified aerodrome air traffic controller for:

- (I) not less than 180 hours or three months, whichever is greater, in the case of the initial issue of an Air Traffic Controller Licence;
 - (II) not less than 90 hours or one month, whichever is greater, in the case of the initial issue of an aerodrome control rating to the holder of a licence endorsed with an approach control or area control rating; or
 - (III) a period of time necessary to demonstrate competence in the case of the endorsement of an additional location to the holder of a licence with an existing aerodrome control rating.
- iii. Skill – An applicant shall have successfully completed an aerodrome control proficiency check.
- b. Approach Non-radar Control Rating:
- i. Knowledge - An applicant for an Approach Non-radar Control Rating shall have successfully completed a course and exams prescribed by the Authority and have demonstrated knowledge of the particular ATC unit for which the rating is desired. The course of training shall include:
 - A. airspace structure;
 - B. applicable rules, procedures and source of information;
 - C. air navigation facilities;
 - D. air traffic control equipment and its use;
 - E. terrain and prominent landmarks;
 - F. characteristics of air traffic and traffic flow;
 - G. weather phenomena; and
 - H. emergency and search and rescue plans.
 - ii. Experience - During the six months preceding the endorsement of an Approach Non-radar Control Rating, the applicant shall have:
 - A. successfully completed a practical training courses prescribed by the Authority; and
 - B. served under the supervision of a qualified air traffic controller that holds an approach non-radar control rating in a combination of actual and simulated non-radar approach control environment for:
 - (I) not less than 180 hours or three months, whichever is greater, in the case of the initial issue of an Air Traffic Controller Licence;
 - (II) not less than 90 hours or one month, whichever is greater, in the case of the initial issue of an approach non-radar control rating to the holder of a licence endorsed with an aerodrome control or area control rating; or
 - (III) a period of time as necessary to demonstrate competence in the case of the endorsement of an additional location to the holder of a licence with an existing approach non-radar control rating.
 - iii. Skill – An applicant shall have successfully completed an approach non-radar control proficiency check.
- c. Approach Radar Control Rating:
- i. Knowledge - An applicant for an Approach Radar Control Rating shall have successfully completed a course and exams prescribed by the Authority and have demonstrated knowledge of the particular ATC unit for which the rating is desired. The course of training shall include:
 - A. the Knowledge requirements specified for the Approach Non-radar Control rating;
 - B. principles, use and limitations of radar, other surveillance systems and associated equipment; and

- C. procedures for the provision of approach control services including procedures to ensure appropriate terrain clearance.
 - ii. Experience - During the six months preceding the endorsement of an Approach Radar Control Rating, the applicant shall have:
 - A. successfully completed a practical training courses prescribed by the Authority; and
 - B. served under the supervision of a qualified air traffic controller that holds an approach radar control rating in a radar environment for:
 - (I) not less than 180 hours or three months, whichever is greater, in the case of the initial issue of an Air Traffic Controller Licence;
 - (II) not less than 60 hours or one month, whichever is greater, in the case of the initial issue of an approach radar control rating to the holder of a licence endorsed with an aerodrome control, approach non-radar control or area control rating; or
 - (III) a period of time as necessary to demonstrate competence in the case of the endorsement of an additional location to the holder of a licence with an existing approach radar control rating.
 - iii. Skill – An applicant shall have successfully completed an approach radar control proficiency check.
- d. Area Non-radar Control Rating:
- i. Knowledge - An applicant for an Area Non-radar Control Rating shall have successfully completed a course and exams prescribed by the Authority and have demonstrated knowledge of the particular ATC unit for which the rating is desired. The course of training shall include:
 - A. airspace structure;
 - B. applicable rules, procedures and source of information;
 - C. air navigation facilities;
 - D. air traffic control equipment and its use;
 - E. terrain and prominent landmarks;
 - F. characteristics of air traffic and traffic flow;
 - G. co-ordination procedures and airspace agreements between the area control center and other underlying and adjacent air traffic control units;
 - H. weather phenomena in the area and adjacent areas; and
 - I. emergency and search and rescue plans.
 - ii. Experience - During the six months preceding the endorsement of an Area Non-radar Control Rating, the applicant shall have:
 - A. successfully completed a practical training course prescribed by the Authority; and
 - B. served under the supervision of a qualified area air traffic controller in a combination of non-radar area control environment and simulation for:
 - (I) not less than 180 hours or three months, whichever is greater, in the case of the initial issue of an Air Traffic Controller Licence;
 - (II) not less than 90 hours or one month, whichever is greater, in the case of the initial issue of an area control rating to the holder of a licence endorsed with an aerodrome control or approach control rating; or

- (III) a period of time as necessary to demonstrate competence in the case of the endorsement of an additional location of the holder of a licence with an existing area control rating.
 - iii. Skill – An applicant shall have successfully completed an area non-radar control proficiency check.
- e. Area Radar Control Rating:
 - i. Knowledge - An applicant for an Area Radar Control Rating shall have successfully completed a course and exams prescribed by the Authority and have demonstrated knowledge of the particular ATC unit for which the rating is desired. The course of training shall include:
 - A. the Knowledge requirements specified for the Area Non-radar Control rating;
 - B. principles, use and limitations of radar, other surveillance systems and associated equipment; and
 - C. procedures for the provision of approach control services including procedures to ensure appropriate terrain clearance.
 - ii. Experience - During the six months preceding the endorsement of an Area Radar Control Rating, the applicant shall have:
 - A. successfully completed an air traffic control training course prescribed by the Authority; and
 - B. served under the supervision of a qualified area air traffic controller in a radar area control environment for:
 - (I) not less than 180 hours or three months, whichever is greater, in the case of the initial issue of an Air Traffic Controller Licence;
 - (II) not less than 90 hours or one months, whichever is greater, in the case of the initial issue of an area control rating to the holder of a licence endorsed with an aerodrome control or approach control rating; or
 - (III) a period of time as necessary to demonstrate competence in the case of the endorsement of an additional location of the holder of a licence with an existing area control rating.
 - iii. Skill – An applicant shall have successfully completed an area radar control proficiency check.
- f. Instructor Rating:
 - i. Knowledge - An applicant for an Instructor Rating shall have successfully completed a course and exams prescribed by the Authority. The course of training shall include the:
 - A. principles of learning and techniques of instruction;
 - B. application of instructional techniques;
 - C. preparation and use of lesson plans;
 - D. use of training aids;
 - E. procedures for planning and presenting operational training, pre-training briefings and post training de-briefings; and
 - F. assessment of student performance, evaluation and testing.
 - ii. Experience – An applicant shall have completed at least:
 - A. 12 months experience in the operational environment (aerodrome control, approach control or area control); and
 - B. 20 hours experience delivering practical training under the supervision of the holder of an Air Traffic Controller licence that is endorsed with an Instructor Rating.

- iii. Skill – An applicant shall have successfully demonstrated to the Unit Manager, the ability to provide operational training.

4. Foreign Credits

The Authority shall review the training, experience and work history of each applicant and the licensing requirements of the state of issue of the licence, on an individual basis. Credits toward the issue of a Lebanese air traffic controller licence will be assigned on the basis of this review.

LARs

LEBANESE AVIATION REGULATIONS

Part IV

PERSONNEL LICENSING

Subpart 407

**AIRCRAFT MAINTENANCE
TECHNICIAN LICENSING**

Republic of Lebanon 

UNDP / ICAO PROJECT LEB / 95 / 001
Civil Aviation Technical Training and Safety Oversight Programme



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Subpart 7 - Aircraft Maintenance Technician Licensing

407.01 Interpretation

Any reference in this Part to the personnel licensing standards is a reference to the *Personnel Licensing Standards Respecting Aircraft Maintenance Technician Licensing*, and where so noted, the related provisions contained in the current edition of the Federal Aviation Regulations (FARs) and related Circulars, published by the government of the United States of America, and the Joint Aviation Regulations (JARs) published by the Joint Aviation Authorities (JAA) of the European Civil Aviation Conference (ECAC) .

407.02 Application

This Sub-part applies to:

- a) holders of an aircraft maintenance technician (AMT) licence and applicants for the issuance or renewal of such a licence; and
- b) approved training organizations that provide aircraft maintenance training courses, and persons applying to become approved training organizations.

407.03 Requirement to Hold an Aircraft Maintenance Technician Licence

1. Subject to subsection (2), no person shall exercise the privileges of an aircraft maintenance technician (AMT) licence unless the person:
 - a) holds an AMT licence issued pursuant to this Sub-part;
 - b) exercises the privileges in accordance with the ratings and any limitations endorsed on the licence; and
 - c) exercises the privileges in accordance with Part V.
2. A person who does not meet the conditions specified in subsection (1) may sign a maintenance release if the person holds a restricted certification authority issued pursuant to Part V.

407.04 Aircraft Maintenance Technician Licence - Privileges

The holder of an Aircraft Maintenance Technician Licence may certify that an aeronautical product, of a class, type or other rating for which the licence is endorsed, meets the applicable airworthiness standards.

407.05 Issuance, Endorsement and Renewal of an Aircraft Maintenance Technician Licence

1. Subject to Article 70 of the Act, the Authority shall, on receipt of an application submitted in the form and manner specified in personnel licensing standard, issue an aircraft maintenance technician (AMT) licence to the applicant or endorse the applicant's AMT licence with a rating, where the applicant provides documentary evidence that establishes, to the satisfaction of the Authority:
 - a) the applicant's citizenship; and
 - b) that the applicant meets the requirements set out in Personnel licensing standard in respect of:

- i) minimum age,
 - ii) knowledge,
 - iii) experience, and
 - iv) skill.
- 2. The Authority shall renew an AMT licence upon receipt of documentary evidence that establishes that the applicant meets the requirements specified in the personnel licensing standard.

407.06 Validity Period of an Aircraft Maintenance Technician Licence

Subject to Section 407.07, an AMT licence is valid for two years from the date of issue.

407.07 Recency Requirements

- 1. No holder of an AMT licence shall exercise the privileges of the licence unless:
 - a) the licence was issued within the preceding 24 months; or
 - b) the holder of the licence has, for at least six months within the preceding 24 months,
 - i) performed aircraft maintenance,
 - ii) supervised the performance of aircraft maintenance,
 - iii) supervised in an executive capacity the performance of aircraft maintenance, or
 - iv) served as an aviation maintenance instructor or supervised another aviation maintenance instructor in an aircraft maintenance training course provided by an approved training organization.
- 2. The holder of an AMT licence who has ceased to be current by reason of subsection (1) shall regain currency in accordance with the standards set out in personnel licensing standard prior to exercising the privileges of the licence.

407.08 Class and Individual Type Ratings

The Authority shall endorse an AMT licence with a class or individual type rating as specified in the personnel licensing standard if the applicant meets the requirements specified in 407.05.

407.09 Approved Training Organizations

No person shall provide aircraft maintenance training courses as an approved training organization unless the person holds an approved training organization certificate.

407.10 Training Organization Approvals

- 1. The Authority shall, where personnel licensing standards are met, approve a Training Organization Manual (TOM) and any amendments to that manual; and,
- 2. Issue an approved training organization certificate to a person who:
 - a) makes an application for a certificate; and

- b) meets the standards respecting, training organization manual, training courses, curriculum, facilities and instructors that are applicable to the training to be provided, as set out personnel licensing standard.

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s407 - Personnel Licensing Standards Respecting Aircraft Maintenance Technician Licensing

s407.01 Issue, Endorsement and Renewal of an Aircraft Maintenance Technician Licence - Requirements

1. An applicant shall complete form LAR 407/01 and submit it to the Authority along with the required supporting documentation and the prescribed licence fee.
2. Proof of Citizenship - The following documents are acceptable as proof of citizenship:
 - a) a Lebanese Identity Card;
 - b) a valid passport; or
 - c) an aviation personnel licence showing the citizenship of the holder and issued by the state of which the applicant is a citizen, plus a second legal document satisfactory to the Authority.
3. Age
 - a) An applicant shall be a minimum of 19 years of age.
 - b) The following documents are acceptable proof of the age of an applicant for a personnel licence or rating:
 - i) a Lebanese Identity Card;
 - ii) a valid passport; or
 - iii) an aviation personnel licence showing the citizenship of the holder and issued by the state of which the applicant is a citizen, plus a second legal document satisfactory to the Authority.
4. Knowledge
 - a) An applicant shall present documentary evidence of having successfully completed an approved course of training and where the technical knowledge exams are approved as part of the training program, passed the Air Law and Airworthiness Requirements exam specified by the Authority.
 - b) Where the applicant has not completed a training program which includes approved technical knowledge exams, passed exams specified by the authority in:
 - i) Air law and airworthiness requirements,
 - ii) Natural science and aircraft general knowledge,
 - iii) Aircraft engineering,
 - iv) Aircraft maintenance, and
 - v) Human performance and limitations.
5. Experience
 - a) Applicants shall have acquired the amount and type of total, class, and civil aviation maintenance experience specified in Table s407.05 - 1. This table must be applied together with the general requirements specified in this standard.
 - b) To use the table, first refer to the licence class, then read across horizontally, to identify training, applicable experience, and examination requirements.
 - c) Experience requirements are given in months. Each column specifies a different type of experience, and the applicant will be assessed separately against each category (i.e. the same time period may be applied to more than one column).

- d) When assessing experience claims, one year shall consist of a minimum of 1800 working hours. Maintenance of ultra-light or amateur built aircraft, does not qualify for any experience credit.
- e) Experience credit shall be granted for approved basic training in the ratio of one month's credit for each 100 hours of training.
- f) In the columns of the following table, the following descriptions of "Aviation Maintenance Experience" apply:
 - i) "**Total**" means experience in the maintenance of complete aircraft, electronic (avionics) systems or structures;
 - ii) "**Class**" means experience in the maintenance of aeronautical products of the kind defined in the scope of privileges for the rating;
 - iii) "**Civil**" means experience in the maintenance of civil registered aircraft, or parts thereof, and relates only to maintenance that is subject to a maintenance release pursuant to LAR 575, or an equivalent certification under the rules of a contracting state.
- g) As proof of experience, the applicant shall submit a personal log book or equivalent document, signed by the person responsible for the maintenance release of the work recorded. At the time of application, the candidate must have acquired all but six months of the required total experience. The required amount of total experience may be reduced by the amount of credit associated with an approved basic training course, up to a maximum of 12 months:

Licence <i>Class</i>	Scope of Privileges	Approved Basic Training	Aviation Maintenance Experience			Exams Required
			Total	Class	Civil	
M1	Small aircraft	Yes	36	12	6	Yes
M2	Large aircraft	Yes	36	12	6	Yes
E	Electronics	Yes	36	12	6	Yes
S	Structures of the type endorsed	Yes	36	24	6	Yes

Notes:

1. For ease of reference, the M1 and M2 ratings have been identified as small and large aircraft. The actual definition for all ratings is specified in s407.08.
2. Maintenance of ultra-light, advanced ultra-light, or amateur-built aircraft does not qualify for the experience credit.

6. Skill

- a) Applicants shall have performed a representative selection of eligible maintenance tasks, over the full range of systems or structures. The tasks shall comprise not less than 60 percent of the items listed in Appendix F applicable to the class/rating for which the application is made. Each task claimed shall have been subject to a maintenance release pursuant to LAR 575, or an equivalent certification under the rules of a contracting state.

Note: The requirement for a maintenance release is to ensure the tasks are completed on aircraft in operational service, not in a training simulation.

- b) Proof of having completed aircraft maintenance tasks shall take the form of a certification by the AMT, or equivalent person who supervised the work. The

certification statement shall include the date and the aircraft type, registration mark, or component serial number, as applicable, and confirm that the applicant is able to:

- i) identify the correct standard;
 - ii) select the proper tools;
 - iii) perform the task correctly without supervision; and
 - iv) complete the necessary documentation.
- c) Persons who sign for completion of maintenance tasks shall be responsible for the accuracy of statements made.

Note: One means of complying with this requirement is the use of an Aircraft Maintenance Technician Logbook as supplied by the Authority.

7. An AMT Licence shall will be renewed when the applicant supplies documentary evidence that establishes that the applicant has:
- a) for at least six months within the preceding 24 months,
 - i) performed aircraft maintenance,
 - ii) supervised the performance of aircraft maintenance,
 - iii) supervised in an executive capacity the performance of aircraft maintenance, or
 - iv) served as an aviation maintenance instructor or supervised another aviation maintenance instructor in an aircraft maintenance training course provided by an approved training organization; and
 - b) paid the required fee.
8. Where an AMT licence has been expired for:
- a) two years or less, it shall be renewed when the applicant supplies documentary evidence that establishes that the applicant meets the renewal requirement specified in sub-section 7 including a letter from the supervising AMT certifying that the applicant is competent to exercise the privileges of the licence.
 - b) more than two years, it will be renewed when the applicant meets the requirements for initial issue.

Note: In the case of licences that have been expired for more than two years the authority shall make an assessment of the applicants experience and work history and may assign credits toward the renewal requirements.

9. Foreign Credits - The Authority shall review the training, experience and work history of each applicant and the licensing requirements of the state of issue of the licence, on an individual basis. Credits toward the issue of a Lebanese Maintenance Technician licence will be assigned on the basis of this review.

s407.07 Recency Requirements

The holder of an AMT licence who has not met the recency requirement of 407.07(1) may regain currency by completing six months experience in the performance of maintenance of a class for which the licence was issued and endorsed, and having his logbook endorsed by the supervising AMT certifying that the licence holder is competent to exercise the privileges of the licence.

s407.08 Licence Class and Ratings

1. An AMT licence will be issued in one or more of the following classes:

Class	Maintenance Release Privileges
M1	All aircraft (other than turbojet aircraft) certificated to FAR/JAR 22, 23, 27 and equivalent other standards, and all piston-powered aircraft with a MTOW of 5700 kg. or less, including their engines, propellers, components, systems and minor repairs and modifications to structures in the sub-class which is endorsed on the licence.
M2	All aircraft not included in the M1 rating, including their engines, propellers, components, systems and minor repairs and modifications to structures, which are individually endorsed on the licence. Where an M2 licence is issued with no type rating, the holder shall be limited to privileges authorized through the AMO in which the holder is employed.
E	All aircraft electrical, instrument, radio and autoflight systems, including non-specialized structural work associated with the maintenance of those systems of the system type which is endorsed on the licence.
S	All airframe structures utilizing materials of the type endorsed on the licence.

2. M1 Sub-class Ratings.

- a) A M1 licence will be issued with ratings in one or more of the following sub-classes:
 - i) Fixed wing category aircraft,
 - ii) Rotary wing category aircraft,
 - iii) Piston engine aircraft, or
 - iv) Turbine powered aircraft.
- b) An applicant shall present documentary evidence of completion of a minimum of six month practical experience in maintenance of aircraft of the at sub-class.

3. M2 Individual Aircraft Type Ratings.

- a) An applicant shall have successfully completed an approved type rating course.
- b) Where an ATO engages in the delivery of bridging programs to address rating differences, the program must meet all applicable rating requirements identified in this Sub-part.

4. E - System Type Ratings.

- a) Ratings will be issued for the following types of systems:
 - i) Instrument and Electrical,
 - ii) Radios, or
 - iii) Autoflight.
- b) An applicant shall present documentary evidence of completion of a minimum of six month practical experience in maintenance of the type of systems.

5. S - Type Rating.

- a) Ratings will be issued for the following construction material types:
 - i) Wood,
 - ii) Tubular
 - iii) Sheet Metal ,or
 - iv) Composite.
- b) An applicant shall have successfully completed:
 - i) an approved basic structures course,

- ii) an approved course on the type of construction to be endorsed on the licence, and
- iii) provide documentary evidence of at least six months practical experience in maintenance of this type of construction.

s407.10 Training Organization Approvals

1. Application for an Approved Training Organization Certificate shall be made in writing to the Authority, and accompanied by two copies of a Training Organization Manual (TOM) and training outline (in hard copy or electronic form) that meets the following requirements.
2. The Training Organization Manual (TOM) may be a stand-alone document, or be contained in another manual, such as an air operator Maintenance Control Manual. The document shall be in sufficient detail and structured in such a manner as to form an easily accessible reference standard for day to day use and regulatory audit. The manual shall include the following elements:
 - a) An Organizational Chart:

The organizational chart shall show the responsibilities and reporting level of each faculty member. Where an individual reports to more than one manager, the chart shall make clear which manager is responsible for which function. The TOM shall describe the duties, position qualifications and responsibilities of each of the reporting levels listed on the organizational chart and describe the duties and responsibilities of the advisory committee.
 - b) A Policy Manual Amendment System:

The amendment system shall include a description of the TOM amendment procedure to ensure that the TOM in use reflects the latest approved amendment. It must include a means of identifying each page of the TOM. This may be in the form of a List of Effective Pages, with each page numbered and either dated or marked with a revision number.
 - c) Course Instructors:

An appropriate number of instructors, licensed in aircraft maintenance or having experience in the applicable specialty. Instructors must be trained in instructional techniques and in the applicable subject matter.
 - d) A Professional Development Program:

The professional development program shall ensure up-dating of instructor knowledge and expertise on a continuing basis. The cycle for update training shall not exceed three years.
 - e) An Advisory Committee:

An advisory committee, adequately representing the aviation industry, to ensure that course performance objectives are current from an industry perspective, and that they satisfy industry needs for appropriately trained technical personnel. Minutes of meetings shall be recorded, and decisions reached sent to individuals or organizations involved with changes to the program. The organization shall document, in detail, how changes to course format and content are handled. This includes, but is not limited to, content, equipment, delivery and facilities.
 - f) A Quality Assurance System:

Note: While an advisory committee is essential for basic training organizations and is part of the quality system, formally constituted advisory committees may not be required for type training organizations.

The quality assurance system should be a closed loop process and shall include a description of the methods used to control the:

- i) development of training, including lesson plans;
 - ii) development of student assessment methods;
 - iii) competency and currency of instructional staff;
 - iv) presentation of course material to meet training objectives;
 - v) method of gathering and analyzing feedback from the course;
 - vi) method used to determine corrective action where necessary; and
 - vii) method used to monitor the results of any corrective action taken.
- g) A Person Responsible for Training:
The organization shall appoint an individual to be responsible for program integrity. The responsible individual shall have a minimum of six years experience in the maintenance of aircraft, and a knowledge of maintenance training, development and delivery.
- h) Examination Methods:
The organization shall implement a program to evaluate whether or not students achieve the objectives and learning outcomes of the training provided. Examination methods may include written, oral, practical, or electronic testing. Records shall be retained and made available to the Authority upon request. The TOM shall include the following policies under examination development:
- i) a policy to ensure that the quantity or the weighted value of each examination is dependent upon the importance of the learned outcome, the frequency of occurrence, and the level of difficulty; and
 - ii) validation by an independent subject matter expert to ensure the validity, accuracy, clarity and appropriate weighting of the examinations.
- Notes:*
1. *The completed examinations should ensure that performance objectives have been accomplished. The use of a test map or other devices should ensure that those subject areas with the greatest impact are tested to the highest level; while the subject areas, or tasks with the least impact are tested to the lowest level.*
 2. *Independent subject matter experts may be from an outside source or members of the organization.*
- i) An Examination Process Control:
The organization shall establish a method of process control to ensure that:
- i) new examination questions are developed if confidentiality becomes compromised;
 - ii) all examination material and marking guides are maintained in a secure and confidential manner;
 - iii) examinations are carried out in a controlled environment to protect the integrity of the evaluation process;
 - iv) there is consistency of examination (usually specified in the course standard);
 - v) post examination reviews are conducted and corrected to 100 percent;
 - vi) versions and/or variances of the evaluation instruments used in the initial and rewrite evaluation process are secure;
 - vii) the successful completion of examinations occur within 1 year following program completion;
 - viii) a passing grade of 60 percent or greater is established for each major subject area listed in the TOM; and

ix) limits are set for the maximum number of attempts permitted.

j) Course Prerequisites:

The course prerequisites for student admission shall be based on the need for the training organization to meet course delivery objectives.

k) Student Attendance Control:

- i) The training schedules shall ensure that students do not exceed eight hours of training (or combined duty/training) in any one day, or six days or forty hours of duty/training in any seven day period. The only exceptions to these requirements are in isolated situations where, due to equipment availability, students would otherwise miss an opportunity for access to specific equipment (e.g. simulator, aircraft).
- ii) The organization shall accurately document the student's attendance, ensuring that the individual's presence is recorded and controlled for each class, shop or laboratory activity. Students having missed more than 5 percent of the course through absences, shall not qualify for experience credit from a basic training course. While not qualifying for an approved course credit, students may still qualify as having completed an acceptable course in aircraft maintenance.
- iii) Students shall not graduate from a type training course who have missed more than 5 percent of the course.
- iv) Lost time in excess of 5 percent can be made up through documented supplementary studies, equivalent to that missed from the original program to qualify for experience credit. The TOM shall contain details on how this is achieved.

Note: The 5 percent absence policy is intended for illness, bereavement, or other circumstances beyond the individuals control.

l) Record Keeping: A system to ensure that records are maintained and retained for a period of not less than 5 years. The records shall include:

- i) student attendance, performance and grades;
- ii) certificate issuance;
- iii) advisory committee meetings and minutes; and
- iv) instructor qualifications and professional development.

m) Certificate Issuance Control:

- i) A system to ensure that certificates are delivered to students who successfully complete an approved course. The certificate shall include:
 - A) The name and location of the training organization;
 - B) The type or description of training accomplished;
 - C) The full name of the student;
 - D) The date of course completion;
 - E) The course approval number;
 - F) An embossed raised seal;
 - G) The signature of authorized officials; and
 - H) For type training, the course duration in hours, and aircraft, engine, airframe or systems identification.
- ii) The TOM shall include a sample of the certificate issued by the training organization to indicate successful completion of a course. The organization shall provide a current list of names and signatures of all individuals authorized to sign certificates, forms and letters to the Authority.

- n) Facilities:
The organization shall provide sufficient facilities and support systems for the type of delivery consistent with the scope of the program. This shall include adequate heating, lighting and ventilation to accommodate the maximum number of students expected to be taught at any one time. The TOM shall include a simple floor plan of the primary facility showing the location of offices, classrooms, shops, etc. Where applicable, the ATO shall identify minimum facility standards for the conduct of courses at locations other than the prime facility.
 - o) Training Material and Instructional Aids:
 - i) The organization shall ensure that students have access to a current technical library in a controlled environment to support program course objectives. In addition, the organization shall make available an adequate supply of materials, shop equipment, tools (including special tools) and miscellaneous equipment used to support the training standard.
 - ii) Facilities, classrooms, tools and equipment shall be appropriate for the purpose for which they are to be used and shall be kept in a satisfactory condition to support the program. The training organization shall ensure the availability of any other equipment utilized within the organization or at external facilities to support their program. This may be achieved through a letter of agreement from the supplying or contracting organization. Each student shall have equal and adequate opportunity to actively participate in all learning objectives.
 - p) Training Material Evaluation:
A procedure to ensure that training material is sufficient and capable of supporting training objectives.
3. The training outline must be sufficient to ensure that graduating students are knowledgeable in all aspects of aircraft maintenance, inspection and regulatory subject matter. The intent of the approved program is to ensure that following successful completion of the Authority written examinations (where required) and applicable practical experience, students are prepared to assume the responsibilities and privileges of the license or rating for which the program was approved. The basic training course training standard is contained in Appendix A. Alternate methods of compliance will be reviewed on an individual basis to ensure that they meet these requirements.

Appendix A - Aircraft Maintenance Technician Licensing Course Standards

The following are the Course Training Standards for Aircraft Maintenance Technician (AMT) licence training courses.

1. Common to All Courses

Upon graduation from an approved AMT training programs, the student will be able to:

Apply:

- a) Occupational health and safety practices;
- b) Local governmental safety regulations;
- c) Company safety regulations;
- d) Use of personal safety equipment;
- e) Reporting procedures for personal injuries;
- f) The Lebanese Aviation Regulations applicable to an AMT; and,
- g) Acceptable industry standard practices.

Explain:

- a) Aircraft system operation to component level;
- b) Standard practices for operational checks, inspection and certification of aircraft systems;
- c) The purpose of an Aircraft Technical Log Book;
- d) The purpose of an Aircraft Journey Log Book;
- e) The purpose of a Type Approval Data Sheet (TADS);
- f) Privileges of an Approved Maintenance Organization (AMO);
- g) Delegated authority;
- h) The privileges of the Aircraft Maintenance Technician (AMT) Licence;
- i) Procedures and applicable standards required for structural and non-structural repairs and modifications including:
 - the purpose of a Supplemental Type Approval (STA) (USA - STC).
 - the Repair Design Approval (RDA) process.
- j) The definition of specialized work;
- k) The purpose of the Advisory Material, and
- l) The effects of human factors contributing to maintenance errors.

Perform:

- a) The installation and securing of fasteners and connectors;
- b) An applicable sheet metal repair or modification;
- c) To completion an applicable inspection for the purpose of certification;
- d) A maintenance release including: log book entries, certification forms, weight and balance reports and other related documentation; and
- e) log book entry procedures following repairs or modifications.
- f) Tasks utilizing and interpreting technical information systems.

2. M1 Class Training Course

Upon graduation from all approved M1 Class training programs, the student will be able to:

Explain:

- a) The system logic and processes used to determine, develop and maintain the appropriate maintenance schedule;
- b) The procedures used to inspect and test the operation of avionics and auto-flight systems representative of those installed in M1 aircraft; and
- c) Types of non-destructive inspection procedures.

Perform:

- a) Servicing procedures on fixed and rotary wing aircraft;
- b) Tasks utilizing minimum equipment lists; configuration deviation lists; and built in test equipment programs; and
- c) scheduled and unscheduled inspections.

Test, Troubleshoot, Repair, Adjust, Remove and Replace:

- a) Power plants & related systems;
- b) Propeller & rotor systems;
- c) Airframe & related systems;
- d) Electrical systems;
- e) Airframe structures; and
- f) Dynamic components.

3. M2 Class Training Course

Upon graduation from all approved M2 Class training programs, the student will be able to:

Explain:

- a) The procedures used to inspect and test the operation of avionics and auto-flight systems representative of those installed in M2 aircraft;
- b) The system logic and processes used to determine, develop and maintain the appropriate maintenance schedule;
- c) Types of non destructive inspection procedures;
- d) Fault diagnostic systems typical of those installed on M2 aircraft; and
- e) Mechanical and electronic systems including electrical/mechanical and digital control.

Perform:

- a) Servicing procedures on fixed and rotary wing aircraft;
- b) Tasks utilizing minimum equipment lists; configuration deviation lists; and built in test equipment programs; and
- c) Scheduled and unscheduled inspections.

Test, Troubleshoot, Repair, Adjust, Remove & Replace:

- a) Power plants & related systems;
- b) Propeller & rotor systems;
- c) Airframe & related systems;
- d) Electrical systems;
- e) Airframe structures; and
- f) Dynamic components.

4. M2 Type Rating Course

Upon graduation from all approved M2 Type training programs, the student will, for the individual type or group of aircraft, be able to:

Explain:

- a) The procedures used to inspect and test the operation of avionics and auto-flight systems representative of those installed in the aircraft;
- b) The system logic and processes used to determine, develop and maintain the appropriate maintenance schedule;
- c) Types of non destructive inspection procedures;
- d) Fault diagnostic systems typical of those installed on the aircraft; and
- e) Mechanical and electronic systems including electrical/mechanical and digital control.

Perform:

- a) Servicing procedures on the aircraft;
- b) Tasks utilizing minimum equipment lists; configuration deviation lists; and built in test equipment programs; and
- c) Scheduled and unscheduled inspections.

Test, Troubleshoot, Repair, Adjust, Remove & Replace:

- a) Power plants & related systems;
- b) Propeller and/or rotor systems if installed on the aircraft;
- c) Airframe & related systems;
- d) Electrical systems;
- e) Airframe structures; and
- f) Dynamic components.

5. E Class Training Course

Upon graduation from an approved E Class training course the student will be able to:

Explain:

- a) The system logic and processes used to determine develop and maintain the appropriate maintenance schedule;
- b) Fault diagnostic systems typical of those installed on M1 & M2 aircraft;
- c) The procedures used in the repair and servicing of auto-flight systems; and
- d) Mechanical and electronic systems including electrical/mechanical and digital control systems.

Perform:

- a) tasks utilizing minimum equipment lists; configuration deviation lists; and built in test equipment programs; and
- b) installation of a navigation and communication system.

Test, Troubleshoot, Repair, Adjust, Remove and Replace:

- a) Communication systems;
- b) Navigation systems;
- c) Electrical and lighting systems;
- d) Instrumentation systems; and
- e) Aircraft electrical and electronic integrated systems.

6. S Class Training Course

Upon graduation from an approved S Class training course the student will be able to:

Perform:

- a) Effective corrosion control and repair for aircraft structures;
- b) Tasks utilizing the tools and equipment applicable to the maintenance of aircraft structures of the construction type;
- c) Sealing procedures for aircraft structures;
- d) Tasks incorporating the correct selection and installation of fasteners used on aircraft structures;
- e) Repairs and replacement of fabric coverings if involved in the aircraft construction type; and
- f) A repair scheme to meet the applicable standards.

Fabricate, assemble and repair:

- a) Sheet metal, tubular, composite or wood structures as applicable to the construction type; and
- b) Fluid lines and conduits.

Assemble, install and repair:

- a) Transparencies (windcreens, windows, lenses, etc.) forming part of the aircraft structure.

Appendix B - M1 & M2 Topics and Curriculum Guide

This Appendix contains the items that should be included in a training outline or curriculum, for a M1 or M2 Class Aircraft Maintenance Technician licence training program. These items expand upon the Course Training Standard specified in Appendix A. This Appendix also designed to serve as a study guide for applicants who wish to take the M1 and M2 Class written examination set by the Authority.

1. General

- a) Identify:
 - i) the different classes of fires and suitable extinguishers.
- b) Explain:
 - i) the legal and moral responsibilities of an aircraft maintenance technician; and
 - ii) human factors in maintenance.
- c) Perform:
 - i) tasks utilizing health and safety practices, including handling of chemicals, metals, pyrotechnics and hazardous materials, environmental considerations, workplace hazardous materials information system or equivalent; and
 - ii) tasks extracting information from technical drawings including the Air Transport Association (ATA) system.

2. Hand Tools/Precision Instruments

- a) Perform:
 - i) tasks utilizing the proper selection and use of hand and power tools.

3. Metallurgy

- a) Identify:
 - i) the types of corrosion.
- b) Explain:
 - i) the hardness testing process;
 - ii) relevant manufacturing treatment processes of aircraft metals;
 - iii) the fundamentals of NDT processes including, visual inspection, liquid penetrate inspection, ultrasonic inspection, eddy current inspection, fluorescent penetrate, magnetic particle inspection, radiography etc.;
 - iv) the methods of corrosion treatment and prevention;
 - v) the inspection processes for welds; and
 - vi) the inspection process for bonds.
- c) Perform:
 - i) tasks identifying the types, properties and coding of aircraft metals; and
 - ii) visual inspection and liquid penetrant inspection.

4. Aircraft Servicing

- a) Explain:
 - i) servicing of aircraft systems such as water, waste, oxygen, etc.;
 - ii) the classifications, functions principles and properties of lubricants including: engine oil, grease and hydraulic fluids;
 - iii) aircraft deicing procedures;
 - iv) operating procedures and safety precautions of ground support equipment required to service the aircraft;
 - v) aircraft grooming procedures and precautions and
 - vi) aircraft storage procedures.
- b) Perform:
 - i) a fuel contamination check;
 - ii) tire servicing and inflation;
 - iii) servicing of aircraft main batteries;

- iv) servicing of lubrication, fuel, oil & hydraulic systems;
- v) standard ground handling practices; and
- vi) jacking of an aircraft.

5. Approved Parts

- a) Identify:
 - i) aircraft hardware using AN, MS, NAS parts systems.
- b) Explain:
 - i) the application of metric and British unified systems to aircraft hardware;
 - ii) the needs and rationale for aircraft specifications such as MIL, NAS; and
 - iii) the inventory control system including traceability, requisitioning, quarantine and bonded stores.
- c) Perform:
 - i) installation and securing of standard hardware and connectors

6. Aerodynamics

6.1 Fixed Wing Aircraft

Explain:

- a) the theory of flight, relative motion, dynamic stability, standard atmosphere, fluid dynamics, lift, drag, thrust and weight, forces and balance, stalling/landing speeds, speed of sound, aerodynamic loads, and high speed flight; and
- b) the purpose of flight controls including primary, secondary, and auxiliary controls, lift and anti-lift devices.

6.2 Rotary Wing Aircraft

Explain:

- a) theory of flight applicable to rotary wing including:
 - i) coriolis effect;
 - ii) retreating blade stall;
 - iii) auto-rotational characteristics;
 - iv) transverse flow;
 - v) dissymmetry of lift ; and
 - vi) ground effect.

6.3 Fixed Wing Controls and Rigging

Identify:

- a) types of flight controls and explain features and functions of flight control systems.

Explain:

- a) mechanical flight control system and components;
- b) servo powered flight control system and components;
- c) cables, fittings and repair of associated rigging hardware;
- d) incidence, symmetry checks and adjustments;
- e) the purpose and principles of flight control artificial feel/feedback systems; and
- f) the systems which modify flight control travel due to altitude, velocity or other factors e.g. rudder travel limitation, aileron lockout, and lift dump.

Perform:

- a) inspection of cable and control rod type flight control system;
- b) rigging of cable operated primary flight control system; and

- c) a cable repair.

6.4 Rotary Wing Controls and Rigging

Explain:

- a) elements of the drive train including:
 - i) transmission;
 - ii) clutches & freewheeling;
 - iii) drive shaft systems;
 - iv) gearboxes (intermediate and tail rotor);
 - v) ducted fan systems including Notar and Fenistron;
 - vi) gear construction, installation, types, ratios, patterns, lubrication and backlash;
 - vii) bearings and seals (friction, anti-friction, elastomeric);
 - viii) rotor head types and design including: rigid, semi-rigid, fully articulated; and
 - ix) rotor blade design, construction and types.
- b) the various fundamentals of flight control systems including:
 - i) rotating controls;
 - ii) non rotating controls;
 - iii) forced trim;
 - iv) forced gradient;
 - v) swash plate;
 - vi) spider system; and
 - vii) servo tabs.
- c) the various fundamentals of flight control rigging including:
 - i) cyclic rigging;
 - ii) collective rigging;
 - iii) anti-torque devices;
 - iv) elevators;
 - v) correlation devices; and
 - vi) droop compensators.
- d) the fundamentals and effects of vibration.
- e) vibration types and causes including:
 - i) vertical;
 - ii) lateral;
 - iii) low frequency;
 - iv) medium frequency;
 - v) high frequency;
 - vi) harmonics; and
 - vii) nodes.
- f) vibration canceling devices including:
 - i) dampers; and
 - ii) bifilar.
- g) landing gear types and systems including:
 - i) skids;
 - ii) floats;
 - iii) wheels;
 - iv) pop out floats; and
 - v) retractable gear.
- h) rotor tracking and balancing requirements, analysis and rectification.
- i) autorotational RPM adjustments.
- j) inspection requirements including:
 - i) sudden stoppage;
 - ii) hard landing;
 - iii) overspeed.;
 - iv) over torque; and

- v) periodic inspections.
- k) operational safety practices including approaching and exiting a running helicopter.
- l) ground crew responsibilities and precautions applicable to slinging external loads.

Perform:

- a) alignment and static balance procedures for a semi-rigid rotor head.
- b) tracking and dynamic balance of a main and tail rotor system using a simulator
- c) the testing, troubleshooting, repair, adjustment, removal and replacement of dynamic components

7.0 Sheet Metal

Explain:

- a) the difference between a structural and non-structural repair.
- b) the application and installation/removal of special fasteners.
- c) the requirements for scratch inspection.
- d) the purpose and use of sealant.

Perform:

- a) installation, inspection and removal of solid rivets.
- b) installation, and removal of standard fasteners.
- c) sheet metal repairs including cutting, bending, forming and fabricating.

8.0 Aircraft Structures

Identify:

- a) structural members and stress involved in floats, hulls, skis, stabilizers, wings, engine mounts, cowlings and fuselages.

Explain:

- a) types of primary aircraft structures.
- b) the fabric surfaces and wood components including inspection, materials, process, fabric repairs, wood types, uses, and repair.

9.0 Plastics And Composites

Explain:

- a) reinforcement fibers, matrix materials, core materials, manufacturing techniques composite safety, methods of curing, pre-pregs, temperature and pressure applications.
- b) inspection, damage assessment and repair procedures.

Perform:

- a) a repair using the following procedures: wet lay-up, and core repair.

10.0 Windows and Lenses

Explain:

- a) the construction of windows and lenses.
- b) inspection, repair, servicing and installation of windows and lenses.
- c) damage assessment of windows and lenses.
- d) handling and storage of windows and lenses.

11.0 Piston Engines

11.1 Basics

Explain:

- a) the calculation of energy, work and horsepower.
- b) the two stroke cycle and the Otto cycle.
- c) piston engine classification terminology (e.g. TSIO-520, R985).

11.2 Cooling and Lubrication of Engines

Explain:

- a) the purpose and methods of engine cooling.
- b) the functions, principles and properties of lubricating oil.
- c) lubrication systems including oil dilution and cold weather operations.

Perform:

- a) the selection of the appropriate lubricants.

11.3 Component Parts of a Reciprocating Engine Assembly

Explain:

- a) the purpose of parts including the following: crankshaft, connecting rods, bearings, pistons, cylinders, accessory/propeller gearing, valves and valve train, and crankcase.
- b) the procedure for lapping valves and seats, replacing bushings, removing nicks, burrs, scratches, scores, and replacing damaged studs.

Perform:

- a) disassembly, cleaning, inspection, measuring and re-assembly of the engine.

11.4 Carburetion Principles

Describe:

- a) characteristics of fuel and fuel/air metering systems
- b) carburetion principles and components as they apply to float type and pressure injection carburetors, single and multi-point fuel injection systems.
- c) induction system principles and components as they apply to normally aspirated, supercharged and turbo charged engines.
- d) the operation of turbocharger control systems.

11.5 Ignition Systems

Explain:

- a) the principles of operation and identify the components of reciprocating engine ignition systems.

Perform:

- a) the timing and installation of a magneto and ignition harness.
- b) the inspection, servicing and testing of magneto ignition system components.

11.6 Installing, Testing, Troubleshooting Engines

Explain:

- a) run-in procedures including testing and troubleshooting.
- b) the purpose and procedure for engine inhibiting.

Perform:

- a) engine removal and installation including installation of accessories and component systems.
- b) reciprocating engine run-up.

12.0 Turbine Engines

12.1 Basics

Explain:

- a) development, fundamentals and principles of operation of turbine engines.
- b) engine design and construction pertaining to: inlet ducts, compressors, bleed valves, diffusers, vane controllers, combustion section, turbines, exhaust section, gear boxes, bearings and seals, engine mounts.
- c) factors affecting thrust/torque.
- d) the mathematics and physics relating to thrust production including the Brayton cycle and thrust calculations.
- e) the purpose and advantages of modular construction.
- f) common designs of turbine engines including:
 - i) Torque producing Engines - Turboshift and turboprop
 - ii) Thrust Producing Engines - Turbojet and Turbofan.
- g) the principles of noise suppression techniques.
- h) turbine engine systems including fuel, lubrication, ignition, air, exhaust.

Define:

- a) common turbine engine terminology and acronyms

12.2 Fuel Control Systems

Explain:

- a) Explain fuel systems including: electronic fuel control, hydro-mechanical fuel control, pneumatic fuel control overspeed governors, fuel manifolds and nozzles, fuel heater, fuel filter, fuel system indication (flow pressure and temperature).

Perform:

- a) fuel nozzle inspection, servicing, testing and safety precautions.

12.3 Ignition

Explain:

- a) types and operation of turbine engine ignition systems and their components including: low tension (glow plugs), high tension (capacitive discharge), auto re-light.
- b) turbine engine ignition system safety precautions.

Perform:

- a) ignition systems servicing and inspection procedures.

12.4 Starting

Explain:

- a) design and components of starting systems.
- b) the operation of various turbine engine starters including air turbine starters, electrical starters, (motor and starter-generator).
- c) inspection and servicing procedures for starting systems.
- d) the operation of an auto-start system.

Perform:

- a) the inspection and servicing of an electrical turbine engine starter.

12.5 Engine Controls

Explain:

- a) rigging requirements for gas turbine controls and systems.
- b) adjustments of fuel controls including: acceleration/deceleration check, minimum flow, maximum speed, idle speed, part power trim check and shut off.
- c) mechanical, electronic interface, full authority digital engine control (FADEC) systems.

12.6 Lubrication

Explain:

- a) Types And Requirements Of Turbine Oil.
- b) Engine Lubrication System Principles And Component Operation Including: Wet Sump, Dry Sump, Scavenge Pumps, Pressure Pumps, Oil Filters, Bearings And Seals, Oil Pressure Regulator, Air Oil Separators, Oil Coolers, Oil Jets.
- c) Contamination Monitoring System Operation Principles Including: Chip Detectors, Filters, Spectrometric Oil Analysis Program (Soap).

12.7 Exhaust

Explain:

- a) types, operation and control of thrust reverse systems including hot and cold stream.
- b) principles of thrust vectoring systems.
- c) principles and engine trimming associated with exhaust ducts.

12.8 Air

Explain:

- a) general air systems of turbine engines including the following: anti-ice air, de-ice air, bleed valves, customer bleed air, case cooling/heating (clearance control), control air, temperature and pressure regulation, filters.

12.9 Engine Indicating Systems

Explain:

- a) principles and operation of engine indicating systems including:
 - i) speed indication.
 - ii) temperature indication.
 - iii) pressure indication.

- iv) flow metering systems.
- v) quantity indication (oil quantity).
- vi) fault detection (chip detector, filter bypass).
- vii) power indication systems engine pressure ratio (EPR), torque indication.
- viii) status enunciators.
- ix) built in test equipment (BITE) system.
- x) vibration indication.

12.10 Gear Box

Explain:

- a) purpose, function and types of engine gear boxes including:
 - i) accessories and accessory drives.
 - ii) gear reduction systems.
 - iii) attachment devices.
 - iv) fault detection analysis -chip detectors and filter catchment.
 - v) torque measurement system.
 - vi) gear types.

12.11 Engine Water Injection

Explain:

- a) the purpose and operation of water methanol injection systems.

12.12 Inspection/Servicing

Explain:

- a) handling and safety precautions.
- b) the purpose and procedures for trend monitoring and power checks.
- c) fundamentals of vibration analysis.
- d) turbine engine inspection procedures including: hot end inspection, borescope inspection.
- e) the engine start and shut down procedure.
- f) engine installation and test procedures.
- g) requirements and procedures for compressor wash.
- h) safety precautions and hazards while ground running including:
 - foreign object ingestion.
 - jet/prop blast.
 - turbine burst.
 - personnel.
 - hazards created by deviation from procedures
 - aircraft restraint (chocks, tie downs etc.).
 - noise.

12.13 Inspection/Servicing

Perform:

- a) procedures for calculating engine cycle counts.
- b) a hot section inspection.
- c) a simulation of a power check including calculating engine performance from manufacturer's performance charts and interpret data to determine faults such as:
 - i) faulty indication.
 - ii) compressor defect.
 - iii) turbine defect.
 - iv) fuel nozzle contamination.

- v) air leaks.
- vi) excessive bleed air.
- vii) rigging faults.
- d) engine ground run (students must be involved in live engine operation).

13.0 Propellers and Systems

Explain:

- a) theory and design of aircraft propellers including: forces acting on a propeller, lift and angle of attack, propeller construction materials.
- b) fixed pitch, controllable pitch, constant speed, feathering and reversing propellers.
- c) methods of controlling propeller pitch including:
 - i) springs.
 - ii) counter weights.
 - iii) hydraulic.
 - iv) pneumatic.
 - v) electric.
 - vi) ground adjustable.
 - vii) propeller control systems including:
 - viii) governors.
 - ix) synchronizers.
 - x) synchrophasers.
 - xi) feathering and un-feathering.
 - xii) reversing.
 - xiii) un-feathering accumulators.
 - xiv) negative torque sensing.
 - xv) auto feather
- d) propeller indication including:
 - i) speed sensing.
 - ii) torque sensing.
 - iii) blade angle indication.
- e) propeller installation and maintenance including:
 - i) flange mount.
 - ii) spline shaft.
 - iii) taper shaft.
 - iv) blade repair.
 - v) inspection techniques.
 - vi) balancing.
 - vii) tracking.
- f) propeller disassembly and re-assembly including:
 - i) blade installation.
 - ii) hub setup.
 - iii) electrical connection.
 - iv) associated systems (de-ice, beta pickups).
 - v) spinner backing plates.

Perform:

- a) propeller installation, safe operation, inspection, adjustment and minor repair.

14.0 Hydraulic and Pneumatic Power

Explain:

- a) safety precautions, including high pressure bottles and accumulators.
- b) fluid dynamics, types of fluid and system components.

- c) system design including multiple and integrated systems and system redundancy.
- d) system maintenance.

Perform:

- a) operation, inspection and testing of a hydraulic system.
- b) servicing of a high pressure accumulator.

15.0 Pneumatics

Explain:

- a) the differences between hydraulic and pneumatic systems.
- b) the principles of operation, components, maintenance and servicing of a pneumatic system including: temperature regulation, pressure control, flow control, sources and common applications.

16.0 Aircraft Plumbing

Explain:

- a) the standard fittings and hardware identification systems.

Perform:

- a) assembly, installation, inspection and testing of hose and rigid tube assemblies.

17.0 Landing Gear

Explain:

- a) the various types and configurations of landing gear assemblies including shock absorbing and non-shock absorbing systems.
- b) the purpose and operation of shimmy dampers.
- c) the operation of components of landing gear retraction and anti-retraction systems.
- d) the operation and components of hydraulic and mechanical, emergency extension systems.
- e) various brake types.
- f) anti-skid and skid warning systems.
- g) basic, boosted, power, automatic and emergency braking systems and components.
- h) brake indicating systems including brake wear and temperature indication.
- i) mechanical and powered steering systems.
- j) the purpose of air ground sensing systems.

Perform:

- a) disassembly, re-assembly and servicing of an oleo.
- b) removal, disassembly, visual inspection, re-assembly, servicing and installation, of wheels, tubes and tires.
- c) a retractable landing gear inspection including a gear swing and functional check.
- d) basic brake system inspection and servicing.
- e) installation and rigging check of floats or skis.

18.0 Environmental Control Systems

Identify:

- a) air sources for cabin pressurization.

Explain:

- a) fundamentals of heating, cooling and ventilation systems and their components including: Air Cycle Machine, vapour cycle cooling, bleed air heating, heat exchangers, exhaust type heaters and combustion type heaters.
- b) electrical/electronic equipment cooling systems.
- c) cabin pressure fundamentals and components including system safety precautions and functional tests.
- d) the various oxygen system fundamentals and component operation including: solid state/chemical oxygen, liquid oxygen, gaseous oxygen.

Perform:

- a) the inspection and servicing of environmental control systems including: (heating systems including: exhaust type heater, combustion heater) and oxygen storage systems utilizing standard handling and safety procedures.

19.0 Fuel

Explain:

- a) fuels - types, properties and additives.
- b) airframe fuel system configurations and component functions including: storage, jettison, distribution, venting, grounding, indication.

Perform:

- a) fuel system maintenance and safety precautions

20.0 Ice and Rain Protection

Explain:

- a) causes and types of ice formation.
- b) types of ice detection systems.
- c) anti-ice and de-ice systems and principles of operation including: propeller/rotor, powerplant (air inlets, external sensors, fuel heaters), windshields, air data gathering devices, vents & drains, airframe surfaces and water/waste systems.
- d) rain repellent systems.

Perform:

- a) operation, inspection and testing of an ice protection system.

21.0 Emergency Systems

Identify:

- a) the types and operation of emergency lighting systems.
- b) the types of ELTs including underwater locating devices.

Explain:

- a) requirements and procedures for inspecting, installing and testing of ELTs flotation device types, inspection and servicing including personal flotation devices, and airframe flotation devices.
- b) emergency breathing apparatus.

21.1 Fire Protection

Describe:

- a) various types of aircraft fire detection systems e.g. spot detectors, continuous loop, infra-red and ultra-violet.
- b) various types of suppression and extinguishing systems and safety precautions including aircraft installed and portable.

Perform:

- a) fire detection system inspection and operational test.

22.0 Electricity and Electrical/Electronic Systems

22.1 Basic Electricity DC

Explain:

- a) electron theory and electrostatics
- b) magnetism and electromagnetism
- c) electromagnetic induction
- d) units of electrical measurement
 - i) voltage
 - ii) current
 - iii) resistance
- e) sources of electrical energy
- f) characteristics of series, parallel, and series/parallel circuits
- g) laws and theorems utilized in DC circuit analysis
- h) circuit control devices including, but not limited to:
 - i) switches; relays; fuses; and circuit breakers
 - j) capacitors and capacitance in DC circuits
 - k) construction and operation of diodes
 - l) construction and operation of transistors
- m) DC motors and generator principles
- n) electron theory and electrostatics.

Perform:

- a) circuit calculation using laws and theorems associated with DC circuit analysis.
- b) tasks utilizing a multimeter to measure voltage, resistance and current in a DC circuit.
- c) calculations to substantiate the theories of Ohm's Law and Kirchhoff's Law.
- d) measurement of different battery types under load and no-load conditions.
- e) construction of an electromagnet.
- f) construction of electrical circuits from components that are the same as those previously solved mathematically.

Test, Troubleshoot, Repair, Adjust, Remove and Replace:

- a) DC generator, an aircraft DC motor, an aircraft alternator.
- b) test diodes and transistors for serviceability.
- c) switches, relays, circuit breakers, and fuses.

22.2 Basic Electricity - AC

Identify:

- a) a wiring diagram for a simple alternator circuit, then accomplish the wiring of the same circuit.

Describe:

- a) AC current
- b) inductive pickups.
- c) the effects of capacitors in electrical circuits.
- d) the use for capacitors.
- e) differences between AC and DC motors.
- f) the use of AC alternators in aircraft.
- g) generator control units.
- h) single-phase AC actuator motors.
- i) three-phase AC motors.
- j) the use of the common measuring devices.

Explain:

- a) Principles of AC theory
- b) RMS & Peak values
- c) frequency, period, phase
- d) use of AC measuring devices, including, but not limited to, multimeters and oscilloscopes
- e) polyphase AC circuits
- f) aircraft application of AC
- g) inductance coils, inductors and inductance in AC circuits
- h) transformers
- i) capacitors and capacitance in AC circuits
- j) reactance and impedance
- k) resonant circuits
- l) phase angle, and power factor calculations
- m) frequency and phase.
- n) AC generation theory, including construction and maintenance of alternators.
- o) the use of the multimeters, oscilloscope and other AC measuring devices.
- p) Impedance.
- q) Transformers.
- r) the principles of AC generation.
- s) aircraft alternators.
- t) voltage regulation.
- u) Inverters.
- v) variable-speed, constant-frequency power systems.
- w) AC motors.
- x) improvement of starting qualities.
- y) repulsion motors.
- z) synchronous motors.
- aa) motor losses.
- bb) power conversion methods.
- cc) using diodes to convert AC to DC.

Perform:

- a) circuit calculations using laws and theorems associated with AC circuit analysis.
- b) tasks demonstrating the proper use of test equipment to measure voltage, current, reactance and frequency in AC circuits
- c) serviceability test of a diode and a transistor
- d) evaluation of lab equipment.
- e) AC voltage and capacitance measurement.
- f) a transformer characteristics experiment using a semi-conductor.
- g) applications using an oscilloscope and other common measuring devices.
- h) inspection and servicing of motors.

22.3 ELECTRICAL SYSTEMS

Identify:

- a) electrical diagram symbols for control and protection devices.
- b) components which make up aircraft electrical motor circuits.

Describe:

- a) various types of wiring diagrams, drawings and schematic symbology.
- b) basic circuit components.
- c) maintenance of electrical wiring systems.
- d) types of electrical control devices.
- e) types of electrical circuit protection devices.
- f) electrical supply and generation components.
- g) maintenance of electrical power supply and generation systems.
- h) aircraft indication, monitoring and lighting circuits.
- i) various troubleshooting techniques.
- j) electrical motor theory.
- k) electrical components of a landing gear system.
- l) servicing and inspection of electrical landing gear system.
- m) safety procedures for maintenance of electrical systems.

Explain:

- a) construction, maintenance, and operation of aircraft batteries (all types)
- b) construction, maintenance, and operation of aircraft generators (DC)
- c) construction, maintenance, and operation of aircraft generators (AC)
- d) construction, maintenance, and operation of aircraft alternators
- e) construction, maintenance, and operation of TRUs
- f) construction, maintenance, and operation of generator control units (GCUs)
- g) construction, maintenance, and operation of constant speed drives and integrated drive generators (IDG)
- h) Current transformers
- i) construction, maintenance, and operation of aircraft inverters (rotary and static)
- j) construction, maintenance, and operation of aircraft motors (AC and DC)
- k) construction, maintenance, and operation of aircraft synchros, including transmitters (receivers and resolvers)
- l) proper use of test equipment and support curriculum
- m) wiring practices, including wire and coaxial cable specs (MIL and FAA)
- n) bonding EMI/RFI suppression techniques
- o) light aircraft electrical power distribution systems (single and multi engine)
- p) large multi engine aircraft electrical power distribution systems.

Perform:

- a) tasks using wiring diagram(s), and appropriate test equipment to troubleshoot an electrical power distribution system fault.
- b) the following tasks, employing acceptable methods, techniques and practices:
 - wire stripping
 - soldering and desoldering
 - various crimping methods
 - various splicing techniques
 - looming procedures
 - harness and connector assembly
 - wire routing, looming, clamping and lacing
 - wire selection and identification
 - electrical load analysis

22.3 Electrical Systems

Perform:

- a) reading of electrical supply power generation systems' wiring diagrams.
- b) servicing and charging of a lead acid battery in a battery shop
- c) servicing and deep cycling of a nickel-cadmium battery in a battery shop
- d) the installation and removal of a nickel-cadmium battery of an aircraft
- e) installation and removal of a lead acid battery on an aircraft
- f) construction of a basic wiring harness using acceptable methods, techniques and practices.
- g) troubleshooting of various control and protection devices as required by schematic diagram of a simple aircraft circuit.
- h) servicing and testing of an alternator and generator.
- i) connection and testing of components to simulate an aircraft generation system.
- j) troubleshooting of a given defect in an aircraft electrical system, employing the circuit diagram and appropriate test equipment.
- k) inspection and testing of an aircraft motor system components.
- l) testing, troubleshooting, repair, adjustment, removal and replacement of a motor, generator or alternator

22.4 Aircraft Instrumentation

Identify:

- a) both mechanically operated and electrical/electronic operated .
- b) instruments according to function.

Describe:

- a) the vertical, and instantaneous-vertical speed indicators.
- b) a vacuum pump system.
- c) various display types.
- d) various methods of display.
- e) electrical flight instruments.
- f) engine electrical indicating instruments.
- g) engine instrument installation and marking.
- h) testing of engine electrical indicating instruments.
- i) systems that employ electrical indicating instruments.
- j) maintenance of systems electrical indicating instruments.
- k) the types of instruments using direct drive linkages.
- l) installation of direct linkage and drive mechanisms.
- m) servicing of pitot/static instruments.

Explain:

- a) the reasons for using instrumentation.
- b) the principles of absolute pressure measurement.
- c) the principles of gauge pressure measurement.
- d) the principles of differential pressure measurement.
- e) Altimeters.
- f) airspeed indicators.
- g) Air Data Computers.
- h) electrically driven instruments.
- i) temperature measuring instruments.
- j) gyroscopic principles.
- k) the sources of power of gyroscopes.
- l) gyro attitude instruments.
- m) rate gyro instruments.

22.4 Aircraft Instrumentation

Explain:

- a) the principles of navigation.
- b) the procedures for correcting errors (compass swing).
- c) the procedure for setting up test equipment.

Perform:

- a) a functional check of a pitot/static system
- b) draining of a pitot/static system.
- c) inspections of instruments for correct installation and markings.
- d) a functional check on a liquid pressure instrument system.
- e) a check of aircraft instruments for correct function.
- f) a functional test an exhaust gas temperature system employing suitable testing.
- g) packaging of an instrument for shipping.
- h) a functional check of a fuel quantity indication system.
- i) a simulated compass swing.

22.5 Avionics

Identify:

- a) aircraft radio antennas

Describe:

- a) audio components.
- b) transmission lines.

Explain:

- a) radio theory
- b) radio transmitters
- c) radio receivers
- d) superheterodyne operation
- e) modulation (AM/FM)
- f) digital communications
- g) HF communication systems
- h) VHF communication systems
- i) SELCAL
- j) Interphone systems (flight / service)

- k) audio integration
- l) passenger entertainment systems (multiplex / audio / video)
- m) ELTs
- n) Satellite communication systems
- o) navigation principles
- p) flight management systems
- q) inertial navigation systems
- r) inertial reference systems
- s) radio navigation systems, including, but not limited to:
- t) DF, VOR, ILS, GPS, DME, ATC transponder, WX radar, radio altimeters, TCAS, GPWS,
- u) video displays, EFIS, EICAS, Flight Data Records, Cockpit Voice Recorders
- v) frequency spectrum.
- w) IFR versus VFR.
- x) maximum power transfer theorem.
- y) functions of audio control panels.
- z) functions of communication controls.
- aa) antenna fundamentals.

22.5 Avionics

Explain:

- a) selective calling.
- b) HUMS (Health and Usage Monitoring System).
- c) avionics installation practices.
- d) avionics maintenance inspections and system troubleshooting.
- e) interconnections of avionics systems.

Perform:

- a) Operational check and inspection of a COM T/R system and one NAV system to the LRU (Line replaceable unit) level on an avionics installation.
- b) Inspection of an antenna system.
- c) removal and replacement of an avionics LRU or component.
- d) tasks utilizing a multimeter or equivalent to troubleshoot an avionics wiring interconnection fault.

22.6 Data Bus and Logic

Describe:

- a) number systems.
- b) use of electrical circuit representations to explain logic gates.
- c) Boolean equations.
- d) the display of digital data.
- e) characteristics of integrated circuits.
- f) some applications of integrated circuits.
- g) use of electrical circuit representations to explain logic gates.
- h) functions of computer operations.
- i) aircraft digital systems.
- j) Air Data Computer systems.
- k) Flight Management Systems.
- l) Thrust Management Systems.
- m) systems testing and troubleshooting.
- n) safety procedures.

Explain:

- a) the difference between analog and digital systems.
- b) logic gates using truth tables.

Perform:

- a) determination of correct digital output, given a logic diagram with digital inputs.
- b) conversion between various numbering systems.

22.7 Auto Flight Systems

Explain:

- a) introduction to and system overview of:
 - single and multiaxis autopilot
 - flight director systems
 - speed command
 - stability augmentation systems
 - auto throttle
 - thrust management
 - VNAV
 -

Perform:

- a) Inspection and operation check of an auto-pilot system

23.0 Maintenance Procedures

Explain:

- a) inspection and maintenance requirements for private and commercial aircraft as outlined in the
- b) Lebanese Aviation Regulations.
- c) fundamentals and types of aircraft inspections including:
 - i) periodic, annual, progressive and approved inspection programs.
 - ii) abnormal occurrence (hard landing, lightning strike etc.).
 - iii) special (Airworthiness Directive or Service Bulletin).
- d) weight and balance procedures and requirements including:
 - i) jacking.
 - ii) leveling.
 - iii) weighing
 - iv) installed equipment list.
 - v) weight and balance report.
 - vi) amendment requirements.
 - vii) regulatory requirements.
- e) differences between fixed and rotary wing aircraft weight and balance procedures, e.g. lateral center of gravity.
- f) fundamentals of quality assurance.

Perform:

- a) a weight and balance procedure on an aircraft, including associated documentation.
- b) completion of documentation for maintenance records including:
 - i) log books.
 - ii) defect lists.
 - iii) technical reports.
 - iv) service difficulty reporting.
- c) computerized information input and retrieval.
- d) a typical rotorcraft and fixed wing maintenance schedule inspection (e.g. 100 hour or annual inspection)

- e) tasks utilizing Minimum Equipment Lists, Configuration Deviation Lists and built in test equipment programs

24.0 Units of Measure

Perform:

- a) calculations including conversions using:
 - i) Length - metres, feet, inches, statute mile, nautical mile .
 - ii) Velocity - metres/sec, feet/sec., miles/hr, knots .
 - iii) Weight/Mass - kilograms, pounds, ounces .
 - iv) Volume - litres, pints, quarts, imperial gallons, U.S. gallons .
 - v) Temperature, - Celsius, Fahrenheit, Rankine, Calvin.

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Appendix C - M2 Type Rating Topics and Curriculum Guide

This Appendix contains the items that should be included in a training outline or curriculum, for a M2 Type Rating training program. These items expand upon the Course Training Standard specified in Appendix A.

Training Outline

1. An applicant shall submit a training outline that meets the following standard. The aircraft type course must be sufficient to ensure a graduating student is knowledgeable in all aspects of aircraft maintenance and inspection for all major systems of the aircraft type, powerplant, systems or equipment being addressed, to support the privileges of the applicable license. A type training ATO may be limited in scope, or include coverage of the full aircraft and its systems. Following successful completion of the approved course, the AMT will be fully knowledgeable regarding the characteristics of the applicable topic area, particular aircraft type, or series.
2. The training shall provide system description and details of operation, component location, servicing, removal and installation, and test procedures to support a typical maintenance schedule for the aircraft type or series. Upon graduation the student will be able to:
 - a) Identify and use:
 - i) applicable reference manuals.
 - b) Recall:
 - i) safety precautions to be observed when working on or near the aircraft and its systems;
 - ii) locations of principal components;
 - iii) normal functions of each major system, including terminology and nomenclature;
 - iv) applicable system operations and maintenance practices; and
 - v) procedures for carrying out significant tasks associated with the routine servicing of the aircraft and its systems.
 - c) Carry out applicable system, engine, component and functional checks:
 - i) as specified in the instructions for continuing airworthiness applicable to the aircraft, engine and related systems.
 - d) Utilize:
 - i) the MEL/CDL, interpret reports provided by crew members and/or on-board reporting systems.
 - e) Interpret:
 - i) readings and indications provided by BITE and other information systems.
 - f) Analyze:
 - i) information for the purpose of making decisions in respect to fault diagnosis and rectification contained in the instructions for continuing airworthiness.
3. The training organization shall have available for audit, detailed supporting documents, including:
 - a) the allotted number of hours per subject;
 - b) the course objectives indicating level of knowledge, competency and skill to be achieved by the student;
 - c) practical projects to be completed; and
 - d) a schedule of the examinations or tests to be given.

4. An approved course shall have a system in place to ensure "hands-on" training is provided to support the training objectives. There shall be no less than 5 percent "hands-on" training in relation to the course duration.
5. Support for practical training requirements must include a list of instructional aids. This can be achieved with any combination of the following instructional aids:
 - a) a simulator or procedures trainer of a type compatible with or similar to the aircraft;
 - b) an aircraft of the type; and/or
 - c) training aid mock-ups, or computer simulation systems, or any other aids which support the intent, and are of equivalent training value when used as a substitute for actual aircraft or systems.

Information Note:

The purpose of the instructional aids is to ensure that students can identify and locate all aircraft systems and components, and are able to effectively carry out inspections and functional tests of live or simulated aircraft systems.

6. Training Material & Instructional Aids:
Student handout material and instructional guides are to be included in the course curriculum or training standard.

Information Notes

- a) *Type courses delivered by approved maintenance organizations (AMOs), to support the issuance of aircraft maintenance certification authority (ACA) privileges to their own employees, are approved as part of the AMO approval process and do not require a separate ATO approval. However, if the AMO intends to provide aircraft type training to AMTs of other organizations, then an ATO approval is required.*
 - b) *Before AMTs can exercise aircraft certification privileges within an Aircraft AMO, they must be granted Aircraft Certification Authority (ACA) as required by LAR 545. This authority will be dependent upon completion of training specified in the policy and procedures section of the AMO's policy manual.*
7. One-Off Courses:
An applicant may under special circumstances request approval for a one-time delivery of a type course (per aircraft type). For this one-off course delivery, a formal PM may not be required, however, supporting documentation must be submitted indicating the methods of compliance specified in this subsection. Second and subsequent courses must conform to all the applicable requirements specified in this Sub-part.

Information Note: The one-off courses will receive a distinctive approval number.

8. Differences Type Courses:
 - a) Where an organization is engaged in the delivery of aircraft type differences training, the course prerequisites must be such that only individuals who have successfully completed an initial type course in the particular aircraft series can be considered as acceptable candidates for differences training. All subject matter of the initial aircraft type course(s), must be considered, when evaluating differences subject matter for the applicable comparative or derivative type aircraft.
9. Validation of Foreign Type Training:
 - a) Foreign applicants who hold a valid license from a Contracting State who seek recognition for type training received external to the Lebanese ATO process, may request validation for this training. To this end, the applicant shall submit a graduation certificate and a transcript of the training or curriculum for evaluation, together with the applicable fees. If the training is found acceptable the Authority will confirm the validation in writing.

- b) Where the Authority has identified training deficiencies in the submission, the individual will be advised of the subject matter and topic areas where additional approved training is required.

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Appendix D - E Class Topics and Curriculum Guide

This Appendix contains the items that should be included in a training outline or curriculum, for an E Class Aircraft Maintenance Technician licence training program. These items expand upon the Course Training Standard specified in Appendix A. This Appendix also designed to serve as a study for applicant who wish to take the E Class written examination set by the Authority.

1.0 GENERAL

Identify:

- a) the different classes of fires and suitable extinguishers

Explain:

- a) the legal and moral responsibilities of an AME
- b) human factors in maintenance.

Perform:

- a) tasks utilizing health and safety practices, including; handling of chemicals, metals, pyrotechnics and hazardous materials, environmental considerations and WHMIS or equivalent
- b) tasks extracting information from technical publications including ATA system

2.0 Hand Tools/Precision Instruments

Perform:

- a) tasks utilizing the proper selection and use of hand and power tools

3.0 Metallurgy

Identify:

- a) the type of corrosion

Explain:

- a) the methods of corrosion treatment and prevention

Perform:

- a) tasks identifying the types, properties and coding of aircraft metals
- b) relevant manufacturing treatment processes of aircraft metals

4.0 Aircraft Servicing

Explain:

- a) servicing of aircraft systems such as water, waste, oxygen, etc.
- b) the classifications, functions principles and properties of lubricants including, engine oil, grease and hydraulic fluids.
- c) aircraft deicing procedures
- d) operating procedures and safety precautions of ground support equipment required to service the aircraft
- e) aircraft grooming procedures and precautions

Perform:

- a) a fuel contamination check
- b) tire servicing and inflation
- c) servicing of aircraft main batteries

- d) servicing of lubrication, fuel, oil & hydraulic systems
- e) standard ground handling practices
- f) jacking of an aircraft

5.0 Approved Parts

Identify:

- a) aircraft hardware using AN, MS, NAS parts systems

Explain:

- a) the application of metric and British unified systems to aircraft hardware
- b) the needs and rationale for aircraft specifications such as MIL, NAS
- c) inventory control including: tractability, requisitioning, quarantine and bonded stores

Perform:

- a) installation and securing of standard hardware and connectors

6.0 Aerodynamics

6.1 Fixed Wing Aircraft Aerodynamics

Explain:

- a) the theory of flight, relative motion, dynamic stability, standard atmosphere, fluid dynamics, lift, drag, thrust and weight, forces and balance, stalling/landing speeds, speed of sound, aerodynamic loads, and high speed flight
- b) the purpose of flight controls including primary, secondary, and auxiliary controls, lift and anti-lift devices.

6.2 Rotary Wing Aircraft Aerodynamics

Explain:

- a) theory of flight applicable to rotary wing including:
 - i) coriolis effect
 - ii) retreating blade stall
 - iii) auto-rotation characteristics
 - iv) dissymmetry of lift
 - v) ground effect
 - vi) transverse flow

6.3 Flight Controls and Rigging

Identify:

- a) types of flight controls and explain features and functions of flight control systems

Explain:

- a) mechanical flight control system and components
- b) servo powered flight control system and components
- c) cables, fittings and repair of associated rigging hardware
- d) incidence, symmetry checks and adjustments
- e) the systems which modify flight control travel due to altitude, velocity or other factors
- f) rudder travel limitation, aileron lockout, lift dump
- g) the purpose and principles of flight control artificial feel/feedback systems

7.0 Sheet Metal

Explain:

- a) the difference between a structural and non-structural repair
- b) the application and installation/removal of special fasteners
- c) the requirements for scratch inspection
- d) the purpose and use of sealant

Perform:

- a) installation, inspection and removal of solid rivets
- b) installation, and removal of standard fasteners
- c) sheet metal repair/modification including cutting, bending, forming and fabricating

8.0 Aircraft Structures

Identify:

- a) structural members and stress involved in floats, hulls, skis, stabilizers, wings, engine mounts, cowlings and fuselages
- b) types of primary aircraft structures

10.0 Piston Engines

10.1 Basics

Explain:

- a) basic design and theory of operation
- b) the calculation of energy, work and horsepower
- c) the two stroke cycle and the Otto cycle
- d) piston engine classification terminology (e.g. TSIO-520)

10.2 Ignition Systems

Explain:

- a) the principles of operation and identify the components of reciprocating engine ignition systems

11.0 Turbine Engines

11.1 Basics

Explain:

- a) development, fundamentals and principles of operation of turbine engines
- b) engine design and construction pertaining to: inlet ducts, compressors, bleed valves, diffusers, vane controllers, combustion section, turbines, exhaust section, gear boxes, bearings and seals, engine mounts
- c) factors affecting thrust/torque
- d) the purpose and advantages of modular construction
- e) common designs of turbine engines including: torque producing engines - Turboshift and turboprop, thrust producing engines - Turbojet and Turbofan
- f) the principles of noise suppression techniques
- g) turbine engine systems including fuel, lubrication, ignition, air exhaust

Describe:

- a) common turbine engine terminology and acronyms

11.2 Ignition

Explain:

- a) types and operation of turbine engine ignition systems and their components including: low tension (glow plugs), high tension (capacitive discharge), auto re-light
- b) turbine engine ignition system safety precautions

11.3 Starting

Explain:

- a) design and components of starting systems
- b) the operation of various turbine engine starters including air turbine starters, electrical starters, (motor and starter-generator)
- c) inspection and servicing procedures for starting systems
- d) the operation of an auto-start system

11.4 Engine Indicating Systems

Explain:

- a) principles and operation of engine indicating systems including:
- b) speed indication
- c) temperature indication
- d) pressure indication
- e) flow metering systems
- f) quantity indication (oil quantity)
- g) fault detection (chip detector, filter bypass)
- h) power indication systems engine pressure ratio (EPR), torque indication
- i) status enunciators
- j) built in test equipment (BITE) system
- k) vibration indication

11.5 Turbine Engine Safety

Explain:

- a) safety precautions and hazards while ground running including:
- b) foreign object ingestion
- c) jet/prop blast
- d) turbine burst
- e) personnel
- f) noise
- g) hazards created by deviation from procedures - (integrated systems)
- h) aircraft restraint (chocks, tie downs, etc.)

12.0 Propellers and Systems

Explain:

- a) theory and design of aircraft propellers including: forces acting on a propeller, lift and angle of attack, propeller construction materials
- b) fixed pitch, controllable pitch, constant speed, feathering and reversing propellers

13.0 Hydraulic Power

Explain:

- a) safety precautions, including high pressure bottles and accumulators
- b) fluid dynamics, types of fluid and system components
- c) system design including multiple and integrated systems and system redundancy
- d) system maintenance

14.0 Pneumatic Power

Explain:

- a) the differences between hydraulic and pneumatic systems
- b) the principles of operation, components, maintenance and servicing of a pneumatic system including: temperature regulation, pressure control, flow control, sources and common applications

15.0 Aircraft Plumbing

Explain:

- a) the standard fittings and hardware identification systems

16.0 Landing Gear

Explain:

- a) the various types and configurations of landing gear assemblies including shock absorbing and non-shock absorbing systems
- b) the purpose and operation of shimmy dampers
- c) the operation of components of landing gear retraction and anti-retraction systems
- d) the operation and components of hydraulic and mechanical, emergency extension systems
- e) various brake types
- f) anti-skid and skid warning systems
- g) basic, boosted, power, automatic and emergency braking systems and components
- h) brake indicating systems including brake wear and temperature indication
- i) mechanical and powered steering systems
- j) the purpose of air ground sensing systems

17.0 Environmental Control Systems

Identify:

- a) air sources for cabin pressurization

Explain:

- a) fundamentals of heating, cooling and ventilation systems and their components including: Air Cycle Machine, vapour cycle cooling, bleed air heating, heat exchangers, exhaust type heaters and combustion type heaters
- b) electrical/electronic equipment cooling systems
- c) cabin pressure fundamentals and components including system safety precautions and functional tests
- d) the various oxygen system fundamentals and component operation including: solid state/chemical oxygen, liquid oxygen, gaseous oxygen

18.0 Fuel

Explain:

- a) fuels - types, properties and additives
- b) airframe fuel system configurations and component functions including, storage, jettison, distribution, venting, grounding, indication

19.0 Ice and Rain Protection

Explain:

- a) causes and types of ice formation
- b) types of ice detection systems
- c) anti-ice and de-ice systems and principles of operation including: propeller/rotor, powerplant (air inlets, external sensors, fuel heaters), windshields, air data gathering devices, vents & drains, airframe surfaces and water/waste systems
- d) rain repellent systems

19.0 Emergency Systems

Identify:

- a) the types and operation of emergency lighting systems
- b) the types and operation of emergency evacuation slides and rafts
- c) the types of ELTs including underwater locating devices

Explain:

- a) requirements and procedures for inspecting, installing and testing of ELTs
- b) emergency breathing apparatus

19.1 Fire Protection

Describe:

- a) various types of aircraft fire detection systems e.g. spot detectors, continuous loop, infra-red and ultra-violet
- b) various types of suppression and extinguishing systems and safety precautions including aircraft installed and portable

20.0 Maintenance Procedures

Explain:

- a) inspection and maintenance requirements for private and commercial aircraft as outlined in the Lebanese Aviation Regulations
- b) fundamentals and types of aircraft inspections including:
- c) periodic, annual and approved inspection programs
- d) abnormal occurrence (hard landing, lightning strike, etc.)
- e) special (Airworthiness Directive or Service Bulletin)
- f) weight and balance procedures and requirements including:
 - i) jacking
 - ii) leveling
 - iii) weighing
 - iv) installed equipment list
 - v) weight and balance report
 - vi) amendment requirements
 - vii) regulatory requirements

- g) differences between fixed and rotary wing aircraft weight and balance procedures, e.g. lateral center of gravity
- h) fundamentals of quality assurance

Perform:

- a) a weight and balance procedure on an aircraft, including associated documentation
- b) completion of documentation of maintenance records including:
 - i) log books
 - ii) defect lists
 - iii) technical reports
 - iv) service difficulty reporting
- c) computerized information input and retrieval
- d) tasks utilizing Minimum Equipment Lists, Configuration Deviation Lists and built in test equipment programs

21.0 Imperial and Related Units

Perform

- a) calculation including conversions using:
- b) Length - Feet, Inches, Statue Mile, Nautical Mile
- c) Velocity - feet/sec., Miles/Hr., Knots
- d) Weight/Mass - Pounds, Ounces
- e) Volume - Pints, Quarts, Imperial Gallons, U.S. Gallons
- f) Temperature - Fahrenheit, Celsius, Rankine, Calvin

22.0 DC Theory

Explain:

- a) DC Theory.
- b) Electron Theory.
- c) Magnetism.
- d) Potential Difference and Capacitance.
- e) Current and Resistance.
- f) Electrical Measurements.
- g) Sources of Electrical Energy.
- h) Magnetic Effects of Electric Current.
- i) Inductance Fundamentals.
- j) Direct Current Generators and Motors.
- k) Synchros (Synchronous transmitters, Receivers and Resolver).
- l) Traducers.
- m) DC CCTs & Analysis.

Identify:

- a) Sources of Electrical Energy.
- b) Direct Current Measuring Devices.

Describe:

- a) Electrical Switches.

23.0 AC Theory

Explain:

- a) Alternating Current (AC) Theory.
- b) AC Generators, Motors and Transformers - Theory.

- c) Synchros (Synchronous transmitters, Receivers and Resolver) .
- d) Transducers.
- e) RCL\RC\RL Circuits.
- f) Resonant Circuits.
- g) Capacitance Fundamentals.

Identify:

- a) AC Measuring Devices.
- b) Vacuum Tube Devices.

24.0 Analog Theory

Explain:

- a) Semiconductor Devices.
- b) Semiconductor - Theory.
- c) Diodes.
- d) Transistors.
- e) Power Supplies.
- f) Rectification.
- g) Filtering.
- h) Regulation.
- i) Controls.

25.0 Digital Theory Principles

Explain:

- a) Integrated Circuits (LSI, CMOS).
- b) Special Application IC's.
- c) Pulse Techniques.
- d) Pulse Parameters.
- e) Pulse Modulation (PAM, PWM, RPM, PCM).
- f) Multivibrators (Monostable, astable, bistable).
- g) Boolean Algebra.
- h) Basic Laws and expressions.
- i) Numbering Systems.
- j) Decimals.
- k) Binary.
- l) Hexadecimal.
- m) Octal.
- n) Conversions.
- o) Binary Computations.
- p) Digital Electronics Techniques.
- q) Logic gates (AND, OR, Invert, NAND, NOR, COMP).
- r) Application of logic gates (Decoder, AD/DA, Multiplexing).
- s) Application of Basic Digital/Microcomputer technology.
- t) Microprocessors/Data transfer between systems.
- u) Summing Amplifiers (Operational Amplifiers).
- v) Differentiators.
- w) Integrators.
- x) Servo Loops.
- y) Application of Control Systems e.g. powerplant, flight control, landing gear.
- z) Integrated Circuits (LSI, CMOS).
- aa) Special Application IC's.

Perform:

- a) Binary Computations and conversions.

26.0 Maintain Communication Systems

Identify:

- a) ELTs.
- b) Radio Antennas.
- c) Communications.
- d) VHF Communications.
- e) SELCAL.

Describe:

- a) Acceptable Standards.

Explain:

- a) Radio - Theory.
- b) Amplifiers.
- c) Oscillators.
- d) Filters.
- e) Mixers.
- f) Modulation.
- g) Radio Antennas.
- h) Radio Transmitters and Receivers.
- i) Troubleshooting Techniques.
- j) Remote Radio Channeling.
- k) Digital Communications
- l) H.F. Communications.
- m) VHF Communications.
- n) SELCAL
- o) Interphone, including, flight , service, audio Integration.
- p) Passenger Entertainment (Multiplex audio and video).
- q) Air/Ground Radio Telephone.
- r) ELTs - Sat Comm.
- s) Aircraft Systems Troubleshooting, including.
 - i) Ramp Testing & Troubleshooting Communication Equipment.
 - ii) Locating & Repairing Predetermined Faults.

Perform:

- a) Installation of Avionics Systems including:
 - i) Avionics Systems including.
 - ii) Equipment Tray.
 - iii) Wire Installation.
 - iv) Antenna Installation.
 - v) Line Replaceable Unit.
- b) Electrical Load Analysis.
- c) Weight & Balance Amendment.
- d) Maintenance Release/Conformity Certificate.
- e) Journey & Technical Log Entries.
- f) Functional check of H.F. Communications, VHF Communications systems.

Test, Troubleshoot, Repair, Adjust, Remove and Replace:

- a) ELTs.

- b) Radio Antennas.
- c) H.F. Communications.
- d) VHF Communications .

27.0 Maintain Navigation Systems

Describe:

- a) Acceptable Standards.

Explain:

- a) Navigation Principles.
- b) Navigation Antennas.
- c) Standard Practices.
- d) Flight Management Systems.
- e) Inertial Navigation Systems.
- f) Inertial Reference.
- g) Radio Navigation
 - i) ADF
 - ii) VOR
 - iii) Localizer
 - iv) Glide Slope
 - v) Marker Beacon
 - vi) Horizontal Situation Indicator/R.M.I
 - vii) Area Nav
- h) LORAN.
- i) Hyperbolic Navigation Principles.
- j) Global Positioning Systems.
- k) Aircraft system troubleshooting including:
 - i) Ramp Testing & Troubleshooting Navigation Equipment
 - ii) Locating & Repairing Predetermined Faults

Test, Troubleshoot, Repair, Adjust, Remove and Replace:

- a) The following systems, including its associated antennas:
 - i) ADF
 - ii) VOR
 - iii) Localizer
 - iv) Glide Slope
 - v) Marker Beacon
 - vi) Horizontal Situation Indicator/R.M.I.
 - vii) Area Nav.
 - viii) Global Positioning Systems

Perform:

- a) Avionics System Equipment Tray Installation.
- b) Wire Installation.
- c) Antenna Installation.
- d) Installation of Line Replaceable Unit.
- e) Electrical Load Analysis.
- f) Weight & Balance Amendment.
- g) Maintenance Release/Conformity Certificate.
- h) Journey & Technical Log Entries.

28.0 Maintain Pulse Systems

Explain:

- a) Radar Navigation systems including:
- b) Introduction to Microwave Principles & Pulse Techniques.
- c) Weather Radar.
- d) DME Interrogator.
- e) ATC Transponder.
- f) TCAS.
- g) Radio Altimeter (LRRRA).
- h) Doppler Principles.
- i) GPWS.
- j) Troubleshooting Aircraft Systems, including:
 - i) Ramp Test & Troubleshoot Pulse Systems.
 - ii) Locate & Repair Predetermined Faults.
- k) Avionics System Installation, including:
 - i) Equipment Tray Installation.
 - ii) Wire Installation.
 - iii) Antenna Installation
 - iv) Line Replaceable Unit

Test, Troubleshoot, Repair, Adjust, Remove and Replace:

- a) Radar Navigation Systems, including:
 - i) Weather Radar.
 - ii) DME Interrogator
 - iii) ATC Transponder.
 - iv) Radio Altimeter (LRRRA).

29.0 Maintain Auto Flight Control Systems

Explain:

- a) Introduction and System Overview of:
 - i) Yaw Damper System.
 - ii) Flight Director
 - iii) Autopilot.
 - iv) Speed Command.
 - v) Auto Throttle.
 - vi) Standard Practices.
 - vii) VNAV.
 - viii) Stability Augmentation System.
- b) Aircraft Systems Troubleshooting, including:
 - i) Ramp Testing & Troubleshooting of Auto Flight Equipment.
 - ii) Locating & Repairing Faults

30.0 Maintain Electrical Systems

Explain:

- a) Proper Use of Test Equipment to Support Curriculum.
- b) Wiring Practices, including Wire and Co-Axial Cable Specifications (MIL & FAA) .
- c) Drawing and Schematic Symbolology.
- d) Bonding EMI/RFI Suppression Techniques.

Perform:

- a) Wire Stripping.
- b) Soldering/De-soldering.
- c) Crimping Methods (various).

- d) Splicing Techniques (various).
- e) Looming Procedures.
- f) Plugs, Receptacles and Connectors procedures.
- g) Physical Protection Devices Techniques.
- h) Potting Techniques.
- i) High Reliability Techniques.
- j) Routing/lacing/Clamping techniques.
- k) Wire Identification.
- l) Wire selection.
- m) Electrical Load Analysis.
- n) Weight & Balance Amendment.
- o) Maintenance Release/Conformity Certificate.
- p) Journey & Technical Log Entries.
- q) Controls (Voltage regulators and protection devices).

Troubleshoot Aircraft Systems Including:

- a) Ramp Test & Troubleshoot Electrical Systems.
- b) Locate & Repair Predetermined Faults.
- c) Service Batteries.
- d) Test DC Generation, including Controls (Voltage regulators and protection devices) and Inverters.
- e) Label, Test, Troubleshoot and Repair:
 - i) AC Generation.
 - ii) Introduction.
 - iii) Alternators (AC. generators).
 - iv) DC Generation
 - v) Introduction
 - vi) Generators.
 - vii) Electrical System Wire Installation Component and Battery Installation.
- f) Describe Electrical System Installation, including Acceptable Standards.
- g) Describe Electrical Power Systems Monitoring Devices.

31.0 Maintain Instrument Systems

Describe:

- a) Acceptable Standards.

Explain:

- a) Air Data Systems and Instrumentation, including:
 - i) Pitot and Static System Check .
 - ii) Central Air Data Computing System.
 - iii) Air Data Instruments (MACH/IAS, VSI/IVSI, BARO ALTM).
 - iv) Air Temperature Instruments.
 - v) Mach-Airspeed Warning.
- b) Attitude and Direction, including:
 - i) Introduction to Gyroscopic and Flux Valve Principles.
 - ii) Gyrosyn Compass System/Magnetic Compass.
 - iii) Attitude Reference Systems.
 - iv) Turn and Bank/Turn Coordinator/Slip Indication.
 - v) Standby Artificial Horizon.
 - vi) Laser Gyro.
 - vii) Attitude Director Indicators.
 - viii) Video Displays.
 - ix) EFIS.

- c) Flight data & Voice Recorder, including:
 - i) System Requirement.
 - ii) System Operation & Testing.
 - iii) Underwater Acoustic Beacon Operation and Testing.
- d) Compass Swing.
- e) Data Bus Systems.
- f) the Installation of Instrument System including.
 - i) Equipment Installation.
 - ii) Wire Installation.

Perform:

- a) Electrical Load Analysis (if applicable).
- b) Weight & Balance Amendment.
- c) Maintenance Release/Conformity Certificate.
- d) Journey & Technical Log Entries.
- e) Compass Swing.
- f) Installation of Instrument System including Equipment and Wire Installation.

Test, Troubleshoot, Repair, Adjust, Remove and Replace:

- a) Ramp Test & Troubleshoot Instrument Systems.
- b) Locate & Repair Predetermined Faults.
- c) Air Data Systems and Instrumentation, including:
 - i) Pitot and Static System and Check.
 - ii) Central Air Data Computing System.
 - iii) Air Data Instruments (MACH/IAS, VSI/IVSI, BARO ALTM).
 - iv) Gyrosyn Compass System/Magnetic Compass.

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Appendix E - S Class and Construction Type Rating Topics and Curriculum Guide

This Appendix contains the items that should be included in a training outline or curriculum, for an S Class and Construction Type Rating, Aircraft Maintenance Technician licence training program. These items expand upon the Course Training Standard specified in Appendix A. This Appendix also designed to serve as a study guide for applicants who wish to take the S Class and Construction Type Rating written examination set by the Authority.

S Class Training Requirements

1.0 Safety

Identify:

- a) potential health hazards.
- b) potential fire hazards.
- c) types and classes of fires.

Apply: (to comply with standard)

- d) Workplace Hazardous Materials Information System (WHMIS).
- e) use of Material Safety Data Sheets (MSDS).
- f) the effects of human factors contributing to maintenance errors.

2.0 Regulation and Documentation

Explain:

- a) privileges of an Approved Maintenance Organization (AMO).
- b) the definition of specialized work.

Apply: (to comply with standard)

- a) applicable sections of the Lebanese Air Regulations (LARs).
- b) log book entry procedures following repairs or modifications.

3.0 Technical Information

Review:

- a) the Air Transport Association Specification No. 100 (A.T.A. Spec. No. 100 System).
- b) the General Aviation Manufacturers Association (GAMA) Specification No. 2.
- c) Maintenance Manuals (MM).
- d) Illustrated Parts Catalogs (IPC).
- e) Structural Repair Manuals (SRM).
- f) the FAA Manual AC-43.13 (*USA*).
- g) the Military Specifications (MIL-Spec's) (*USA*).
- h) the National Aeronautical Standards (NAS) (*USA*).
- i) Service Bulletins (SB's).
- j) Alert Bulletins (AB's).
- k) shop records, work orders or similar documentation.
- l) technical drawings.
- m) aircraft hardware standards, i.e. AC, AN, MS, NAS and OEM standards.
- n) the Society of Automotive Engineers (SAE) Aeronautical Material Specifications (AMS).
- o) original equipment manufacturers (OEM) specifications.

4.0 General

Explain:

- a) privileges and responsibilities of a “S” licensed A.M.E.
- b) English measurement system.
- c) shop mathematics.
- d) basic physics.
- e) aircraft on ground (AOG) priority procedures.
- f) North American drafting standard (third-angle projection).
- g) world drafting standard (first-angle projection)
- h) title blocks.
- i) list of materials.
- j) notes and specifications.
- k) revision and application blocks.
- l) fastener codes.
- m) types of projections, i.e. perspective, orthographic and isometric.
- n) schematic diagrams.
- o) lines used in drawings.
- p) dimensions and tolerances.

Perform:

- a) blueprint reading.
- b) drawing shop sketches.
- c) storing and handling of aircraft materials.

5.0 Aircraft Systems

Explain:

- a) fixed and rotary wing theory of flight.
- b) aircraft flight control systems.
- c) aircraft propulsion systems.
- d) hydraulic and pneumatic systems.
- e) landing gear systems.
- f) environmental systems.
- g) ice protection systems.
- h) fire protection systems.
- i) emergency systems.

6.0 Tools and Equipment

Utilize:

- a) Hand tools such as:
 - i) measuring devices.
 - ii) approved marking methods.
 - iii) lay-out devices, i.e. templates.
 - iv) lights and mirrors.
 - v) clamping devices.
 - vi) cutting tools, i.e. saws, files, shears, reamers, chisels, scrapers etc.
 - vii) boring tools, i.e. drill bits, countersinks, counterbores, fly cutters.
 - viii) abrasives.
 - ix) punches.
 - x) hole finders.
 - xi) de-burring tools.
 - xii) chassis punches.
 - xiii) hammers and mallets.
 - xiv) pliers.

- xv) sidecutters.
- xvi) screwdrivers.
- xvii) internal wrenching tools.
- xviii) open-end and box wrenches.
- xix) socket wrenches.
- xx) torque-limiting wrenches.
- xxi) special wrenches, i.e. ratcheting box wrench, flare-nut wrenches.
- xxii) safety-wire twisters.
- xxiii) cotter pin pullers.
- xxiv) sealing guns.
- xxv) suction cups.
- xxvi) tube benders.
- xxvii) tube beadings.
- b) Machine tools such as:
 - i) Portable drill motors.
 - ii) Drill presses.
 - iii) Routers.
 - iv) Ketts saws.
 - v) Jigsaws.
 - vi) Grinders.
 - vii) Dimpling machines.
 - viii) Beading machines.
 - ix) Foot and power squaring shears.
 - x) Throatless shears.
 - xi) Bench bending brakes.
 - xii) Press brakes.
 - xiii) Punch presses.
 - xiv) Slip-roll formers.
 - xv) Wheeling machines.
 - xvi) Flanging machines.
 - xvii) Power planishing hammers.
 - xviii) Shrinkers and Stretchers.
 - xix) Band saws.
 - xx) Cut-off saws.
 - xxi) Pneumatic rivet guns.
 - xxii) Blind rivet pullers.
 - xxiii) Portable and fixed rivet squeezers.
 - xxiv) Pneumatic squeeze guns.
 - xxv) Pneumatic broach guns.
 - xxvi) Rivet shavers.
 - xxvii) Spot welders.
 - xxviii) Tube bending machines.
 - xxix) Hot bonders.
 - xxx) Sanders.
 - xxxi) Table (bench) saw.
 - xxxii) Jointer.

7.0 Airframe Structures and Designs

Explain:

- a) types and missions of fixed and rotary wing aircraft.
- b) major assembly breakdown of fixed and rotary wing aircraft.
- c) forces acting on an aircraft in flight and on the ground.
- d) truss type fuselage construction.
- e) monocoque and semi-monocoque type fuselage construction.
- f) types of wing and rotor arrangements and construction.
- g) types and arrangements of landing gears.

8.0 Structural Materials

Identify:

- a) ferrous metals.
- b) non-ferrous metals.
- c) types of composites.
- d) composite materials.
- e) aircraft quality wood.
- f) wrought aluminum alloys.
- g) titanium alloys.
- h) Monel.
- i) stainless steel.
- j) chrome-Molybdenum steel.
- k) Superalloys (high temperature).
- l) markings on ferrous and non-ferrous sheet metal.
- m) markings on ferrous and non-ferrous tubing.

9.0 Heat Treatment

Explain:

- a) solution heat treatment.
- b) precipitation heat treatment.
- c) quenching.
- d) natural aging.
- e) artificial aging.
- f) normalizing.
- g) annealing.
- h) hardening.
- i) tempering.
- j) work hardening.

10.0 Corrosion Control

Identify:

- a) causes of corrosion.
- b) locations susceptible to corrosion.
- c) surface corrosion.
- d) Intergranular corrosion.
- e) exfoliation.
- f) stress corrosion.
- g) dissimilar metal (galvanic) corrosion.
- h) concentration cell corrosion.
- i) fretting corrosion.

- j) magnesium corrosion.
- k) Filiform corrosion.
- l) nickel and chrome plating processes.
- m) galvanizing
- n) metal spray coating..
- o) metal cladding.
- p) anodizing.
- q) corrosion removal methods on high-strength steel.
- r) acceptable cleaning processes.

Apply:

- a) conversion coatings.
- b) primers and paints.
- c) water displacing compounds.
- d) leveling compounds.
- e) sacrificial anodes.

Perform:

- a) mechanical corrosion removal, i.e. abrasive blasting.
- b) chemical treatment of corroded areas.
- c) polishing of metal surfaces.

11.0 Damage Assessment

Explain:

- a) scanning and detail inspection.
- b) limitations of dye penetrant inspection.
- c) magnetic particle inspection (MPI).
- d) radiography (X - ray).
- e) ultrasonic inspection.
- f) Eddy Current inspection.
- g) infrared thermography.
- h) lifting and shoring procedures.
- i) impact damage and force travel.
- j) fire damage indications.

Perform:

- a) corrosive substances inspections, i.e. mercury and acids.
- b) lightning strike inspections.
- c) abnormal flight load inspections.
- d) heavy landing and tail strike inspections.
- e) bird strike inspections.
- f) aging aircraft checks (SSID).
- g) composite delamination inspections.

12.0 Fluid Lines and Conduits

Explain:

- a) fluid lines identification codes.
- b) pressure, return, breather and drain lines.
- c) rigid fluid lines (pipes).
- d) semi-rigid fluid lines (tubes).
- e) acceptable pipe and tubing materials.
- f) minimum bend allowance for thin walled tubing.

- g) acceptable bend distortion limits.
- h) standard threaded pipe and tube fittings.
- i) acceptable flaring angles.

Perform:

- a) tube and pipe cutting.
- b) bending of thin walled tubing using distortion limiting materials, i.e. sand, rosin or bending alloys.
- c) bending of thin walled tubing using distortion limiting devices, i.e. mandrels, coil springs or bending blocks.
- d) bending of thin walled tubing using hand benders.
- e) bending of thin walled tubing using bending machines.
- f) swaging of fittings.
- g) selection and attaching of flared fittings.
- h) flaring using single-flare method.
- i) flaring using double-flare method.
- j) pressure testing of completed assemblies.
- k) drilling of drain holes in conduits.
- l) beading of breather or drain lines

13.0 Thermoplastics

Identify:

- a) acceptable transparent thermoplastic materials.

Explain:

- a) inspection of installed windows and lenses with prisms.
- b) installation precautions for plastic windows and lenses.
- c) repair or replacement evaluation.
- d) storage and surface protection.
- e) cleaning/buffing procedures and precautions.

Perform:

- a) cutting of various plastic materials.
- b) gluing of various plastic materials.
- c) heat treatment of plastic glue joints.
- d) cold and hot forming of plastic windows and lenses.
- e) drilling with special drill bit angles.
- f) crack repairs.
- g) hole repairs.
- h) installations of plastic windows and lenses.

Wood Type Construction Rating Training Requirements

14.0 Wood Repairs

Identify:

- a) acceptable methods, techniques, and practices from AC 43.13.
- b) acceptable solid aircraft woods.
- c) acceptable aircraft plywoods.
- d) acceptable defects in aircraft woods.
- e) limitations on spar repairs.
- f) visual inspection procedures.
- g) stress inspection procedures.
- h) visual indications of decay, i.e. dry-rot.
- i) indications of separated glue joints.
- j) indications of deteriorated glue joints.
- k) causes of cracks, i.e. checks, shakes, splits.
- l) causes of compression failure.

Apply:

- a) doublers and re-enforcement plates.
- b) bonding agents (glues).
- c) wood sealers by brushing or spraying.

Perform:

- a) cutting of scarf joints.
- b) acceptable glue joint surface preparation.
- c) splicing of solid wood members, i.e. spars, ribs.
- d) plywood skin repairs, i.e. overlay, splayed, plug, and scarf patches.
- e) re-finishing of repaired wood structures.

15.0 Fabric Repairs

Explain:

- a) acceptable organic fabrics and grades.
- b) acceptable inorganic (synthetic) fabrics and grades.
- c) traditional methods of attaching fabric, i.e. rib-stitch, screws, blind rivets, clips.
- d) methods of re-covering components, i.e. envelope etc.
- e) acceptable coating materials (dopes), i.e. Nitrate, Butyrate.
- f) purpose of fungicidal additives.
- g) acceptable solvents and thinners.
- h) purpose of retarders.
- i) causes of blushing.
- j) methods of ultraviolet-ray (UV) protection.
- k) purpose of rejuvenators.
- l) approval requirements (STA or STC) for proprietary covering materials.
- m) causes of fabric deterioration.
- n) visual indications of fabric coating deterioration, i.e. peeling, ring-worms.
- o) methods of testing fabric strength.
- p) repair or replacement evaluation.

Apply:

- a) proprietary coating materials by brushing and spraying.
- b) reinforcing and surface tapes.
- c) primers and paint.

Perform:

- a) testing of fabric covered aircraft components with hand testing equipment, i.e. Seyboth, Maule.
- b) machine sewing of fabric panels.
- c) doped-on panel repairs.
- d) sewn-in patch repairs.
- e) fabric rejuvenation procedures.
- f) shrinking of synthetic fabric by heating.
- g) installation of grommets and inspection rings.

Tubular Type Construction Rating Training Requirements

16.0 Tubular Repairs (welding excluded)

Identify:

- a) acceptable methods, techniques, and practices from AC 43.13.
- b) inspection methods for internal corrosion.
- c) steel parts that are not permitted to be repaired by welding.
- d) support of tubular structure for repair, i.e. holding fixtures and jigs.
- e) acceptable replacement materials.
- f) cold-straightening limits for bent tubing.
- g) repair or replacement evaluation.

Apply:

- a) internal corrosion protection oils or water displacing compounds.
- b) external corrosion protection primers and paints.

Perform:

- a) cold removal of dents in thin walled steel tubing.
- b) removal of damaged tubing.
- c) cutting and fitting for splicing of replacement tubes by inner-sleeve and outer-sleeve method.
- d) cutting of scarf joints.
- e) cutting of fishmouth joints.
- f) drilling for rosette welds.
- g) fabrication of surface patches for dents or holes.
- h) fabrication of finger patches for cluster repairs.
- i) alignment checks.

Sheet Metal Type Construction Rating Training Requirements

17.0 Sheet Metal Repairs

Describe:

- a) acceptable methods, techniques, and practices from AC 43.13.
- b) inspection for repair or replacement assessment.
- c) support of aircraft components during repair, i.e. jigs or fixtures.
- d) selection of acceptable repair material.
- e) permissible fastener edge distance margins.
- f) minimum and maximum fastener spacing in pitch and gauge.
- g) acceptable oversizing of fastener holes.

- h) minimum allowable sheet thickness for countersinking.
- i) calculation of number of fasteners required using the rivet formulae.
- j) minimum bend-radii.
- k) acceptable rivet dimensions after bucking.

Apply:

- a) alignment check procedures during repairs.
- b) aerodynamic smoothers.
- c) sealing compounds.
- d) corrosion inhibiting primers.

Perform:

- a) removal of rivets and special fasteners.
- b) removal of damaged parts.
- c) stop-drilling of cracks.
- d) deburring of sheet metal edges.
- e) cutting of corner radii.
- f) calculation of bend allowances.
- g) fastener hole preparations, i.e. pre-drilling, reaming and broaching (cold working).
- h) locating of blind holes.
- i) driving and bucking of solid rivets.
- j) installation of blind rivets and bolts.
- k) installation of bolts, washers and nuts.
- l) skin repairs with surface and flush patches.
- m) repairs by splicing.
- n) installation of doublers.
- o) corrugated skin repairs.
- p) re-balancing of control surfaces after repairs.
- q) return to service inspections.

18.0 Standard and Special Fasteners

Identify:

- a) standard aircraft screws.
- b) standard aircraft bolts.
- c) special (OEM) aircraft bolts.
- d) special blind bolts.
- e) standard aircraft plain and locking nuts.
- f) special aircraft nuts, i.e. Tinnerman, anchor, blind nuts, etc.
- g) plain and special aircraft washers.
- h) locking devices, i.e. cotter pins, safety wire.
- i) straight and taper pins.
- j) standard solid aircraft rivets.
- k) special blind rivets.
- l) panel and cowling fasteners.

19.0 Sheet Metal Fabrication

Explain:

- a) protection of sheet metal from damage during production.
- b) transfer of measurements from sample or technical drawing.

- c) lay-out procedures.
- d) flat pattern lay-out.
- e) templates.
- f) drilling jigs and assembly fixtures.

Perform:

- a) sheet metal cutting by hand and machine cutters.
- b) punch press operation for blanking of sheet metal.
- c) routing of sheet metal blanks.
- d) drilling or punching of relief holes.
- e) edge deburring procedures.
- f) sheet metal bending with hand and power brakes.
- g) rolling of sheet metal with hand and power slip rolls.
- h) joggling of flat sheets and flanges.
- i) shrinking and stretching of flanged sheet metal.
- j) forming of sheet metal with rubber punch press.
- k) forming of sheet metal with stretch press.
- l) forming of sheet metal with wheeling machines.
- m) sheet metal bumping.

Composite Type Construction Rating Training Requirements

20.0 Composite Repairs

Explain:

- a) personal hygiene protection methods specific to composites.
- b) personal protection devices.
- c) absence of universal repair standards.
- d) fiber materials, i.e. glass, armada, graphite, carbon, boron, metal.
- e) warp and woof (a.k.a. fill or weft) threads.
- f) lay-up warp clock.
- g) types of fabric weaves.
- h) unidirectional fibers.
- i) honeycomb core materials.
- j) solid core materials.
- k) foam core materials.
- l) cold curing and thermosetting matrix resins.
- m) damage assessment methods, i.e. coin tapping, ultrasonic, X-ray, thermography, acoustic emission.
- n) repair or replacement evaluation.
- o) OEM specified repair methods, i.e. riveted patches, cold-, hot-bonding, autoclave.
- p) repair resins (Matrix materials).
- q) OEM specified core filling limits.
- r) pre-impregnated fabrics (B - state).

Perform:

- a) delamination detection by coin tapping.
- b) vacuum bagging.
- c) hot bonding.
- d) delamination repairs.
- e) routing with templates.
- f) core replacement repairs with honeycomb or balsa wood.
- g) core replacement repairs with syntactic foam.

- h) core replacement repairs with microballoons.
- i) removal of entrapped water.
- j) surface scratch removal.
- k) priming and painting.
- l) cleaning and polishing.
- m) re-balancing of control surfaces after completed repairs.

21.0 Composite Fabrication

Explain:

- a) master mould construction methods.
- b) autoclave curing procedures.
- c) curing steps and cycles.
- d) mould removal methods.

Apply:

- a) mould polishes.
- b) mould release agents.
- c) ultraviolet ray (UV) protection.
- d) lightning strike protection, i.e. metal spray, discharge devices.

Perform:

- a) edge trimming of cured composites.
- b) final inspections.
- c) priming and painting.

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Appendix F - Aircraft Maintenance Experience Sample Tasks List M, E & S Class

Aircraft Maintenance Experience Sample Tasks (by Air Transport Association Chapter 100 Code)

These sample tasks represent a cross section of experience which apply to M-1, M-2, E and S Class. While the Air Transport Association (ATA) code is not meant to address light aircraft, it does lend itself to easy reference and has been adopted for that purpose.

Some tasks apply to each rating, while others are clearly exclusive to one. License candidates should review the list for applicability to the type, or series, of aircraft on which they are logging experience. In most instances, the list emulates that which is contained in the Lebanese AMT Personal Logbook.

Once a task has been completed it should be entered in the trainee's log book and certified as specified in s407.05.

ATA: 05 (Time limits & maintenance checks)

100 hour check (general aviation aircraft).
"B" or "C" check (transport category aircraft).
Review records for compliance with airworthiness directives.
Review records for compliance with component life limits.
Inspection following heavy landing.
Inspection following lightning strike.

ATA: 06 (Dimensions/areas)

Locate component(s) by station number.
Perform symmetry check.

ATA: 07 (Lifting and shoring)

Jack aircraft nose or tail wheel.
Jack complete aircraft.
Sling or trestle major component.

ATA: 08 (Leveling/weighing)

Level aircraft.
Weigh aircraft.
Prepare weight and balance amendment.
Check aircraft against equipment list.

ATA: 09 (Towing and taxiing)

Tow aircraft.
Taxi aircraft.

ATA: 10 (Parking and mooring)

Tie down aircraft.
Park, secure and cover aircraft.
Position aircraft in dock.
Secure rotor blades.

ATA: 11 (Placards and markings)

Check aircraft for correct placards.
Check aircraft for correct markings.

ATA: 12 (Servicing)

Refuel aircraft.
Defuel aircraft.
Check tire pressures.
Check oil level.
Check hydraulic fluid level.
Check accumulator pressure.
Charge pneumatic system.
Grease aircraft.

Connect ground power.
Service toilet/water system.
Perform pre-flight check.

ATA: 18 (Vibration and noise analysis)

Analyze helicopter vibration problem.
Analyze noise spectrum.

ATA: 21 (Air conditioning)

Replenish vapour system.
Replace combustion heater.
Replace outflow valve.
Replace vapour cycle unit.
Replace air cycle unit.
Replace cabin blower.
Replace heat exchanger.
Replace pressurization controller.
Clean outflow valves.
Check operation of air conditioning/heating system.
Check operation of pressurization system.
Troubleshoot faulty system.

ATA: 22 (Auto flight)

Install servos.
Rig bridle cables.
Replace controller.
Replace amplifier.
Check operation of auto-pilot.
Check operation of auto-throttle.
Check operation of yaw damper.
Check and adjust servo clutch.
Perform autopilot gain adjustments.
Perform mach trim functional check.
Troubleshoot faulty system.

ATA: 23 (Communications)

Replace VHF com unit.
Replace HF com unit.
Replace existing antenna.
Install new antenna.
Replace static discharge wicks.
Check operation of radios.
Perform antenna check.
Perform selcal operational check.
Perform operational check of passenger address system.
Functionally check audio integrating system.
Repair co-axial cable.
Troubleshoot faulty system.

ATA: 24 (Electrical power)

Charge lead/acid battery.
Charge ni-cad battery.
Check battery capacity.
Replace cells.
Deep cycle ni-cad battery.
Replace generator.
Replace switches.
Replace circuit breakers.
Adjust voltage regulator.
Amend electrical load analysis report.
Repair / replace electrical feeder cable.
Troubleshoot faulty system.

ATA: 25 (Equipment/furnishings)

Replace carpets.
Replace crew seats.
Replace passenger seats.
Check inertia reels.
Check seats/belts for security.
Check emergency equipment.
Check ELT for compliance with regulations
Repair toilet waste container.
Repair upholstery.
Change cabin configuration.

ATA: 26 (Fire protection)

Check fire bottle contents.
Check operation of warning system.
Check cabin fire extinguisher contents.
Check lavatory smoke detector system.
Install new fire bottle.
Replace fire bottle squib.
Troubleshoot faulty system.

ATA: 27 (Flight controls)

Replace horizontal stabilizer.
Replace elevator.
Replace aileron.
Replace rudder.
Replace trim tabs.
Install control cable and fittings.
Replace flaps.
Replace powered flying control unit.
Replace flap actuator.
Adjust trim tab.
Adjust control cable tension.
Check control range and sense of movement.
Check for correct assembly and locking.
Troubleshoot faulty system.

ATA: 28 (Fuel)

Replace booster pump.
Replace fuel selector.
Replace fuel tank cells.
Check filters.
Flow check system.
Check calibration of fuel quantity gauges.
Check operation feed/selectors.
Troubleshoot faulty system.

ATA: 29 (Hydraulics)

Replace engine driven pump.
Replace standby pump.
Replace accumulator.
Check operation of shut off valve.
Check filters.
Check indicating systems.
Perform functional checks.
Troubleshoot faulty system.

ATA: 30 (Ice and rain protection)

Replace fluid tank.
Replace pump.
Replace timer.
Replace distributor.
Install wiper motor.
Repair de-icing boot.
Adjust brush block.
Check operation of systems.
Troubleshoot faulty system.

ATA: 31 (Indicating/recording systems)

Replace flight data recorder.
Replace cockpit voice recorder.
Replace clock.
Replace panel vibrator.
Replace master caution unit.
Perform FDR calibration/correlation check.
Perform FDR data retrieval.
Troubleshoot faulty system.

ATA: 32 (Landing gear)

Build up wheel.
Replace main wheel.
Replace nose wheel.
Replace shimmy damper.
Rig nose wheel steering.
Replace shock strut seals.
Replace brake unit.
Replace brake control valve.
Bleed brakes.
Test anti skid unit.
Test gear retraction.
Change bungees.
Install floats.
Install skis.
Adjust micro switches.
Charge struts.
Troubleshoot faulty system.

ATA: 33 (Lights)

Repair/replace rotating beacon.
Repair/replace landing lights.
Repair/replace navigation lights.
Repair/replace interior lights.
Repair replace emergency lighting system.
Perform emergency lighting system checks.
Troubleshoot faulty system.

ATA: 34 (Navigation)

Calibrate magnetic direction indicator.
Replace airspeed indicator.
Replace altimeter.
Replace air data computer.
Replace VOR unit.
Replace ADI.
Replace HSI.
Check pitot static system for leaks.
Check operation of directional gyro.
Functional check weather radar.
Functional check doppler.
Functional check TCAS.
Functional check DME.
Functional check ATC Transponder.
Functional check flight director system.
Functional check Inertial nav system.
Complete quadrantal error correction of ADF system.
Update flight management system data base.
Check calibration of altimeter system.
Check calibration of pressure altitude reporting system.
Troubleshoot faulty system.

ATA: 35 (Oxygen)

Inspect on board oxygen equipment.
Purge and recharge oxygen system.
Replace regulator.
Replace oxygen generator.
Test crew oxygen system.

Perform auto oxygen system deployment check.
Troubleshoot faulty system.

ATA: 36 (Pneumatic systems)

Replace filter.
Replace compressor.
Recharge dessicator.
Adjust regulator.
Check for leaks.
Troubleshoot faulty system.

ATA: 37 (Vacuum systems)

Replace vacuum pump.
Check/replace fillers.
Adjust regulator.
Troubleshoot faulty system.

ATA: 38 (Water/Waste)

Replace water pump.
Replace faucet
Replace toilet pump.
Troubleshoot faulty system.

ATA: 45 (Central maintenance system)

Retrieve data from CMU.
Replace CMU.
Perform Bite check.
Troubleshoot faulty system.

ATA: 49 (Airborne auxiliary power)

Install APU.
Inspect hot section.
Troubleshoot faulty system.

ATA: 51 (Structures)

Sheet metal repair.
Composite repair.
Wooden repair.
Fabric repair.
Recover fabric control surface.
Treat corrosion.
Apply protective treatment.

Corrosion Control

Removal and treatment of aluminum alloy corrosion
Removal and treatment of steel alloy corrosion
Removal and treatment of magnesium alloy corrosion
Prepare metal surfaces by shot peening
Perform removal and treatment of galvanic corrosion

Corrosion Assessment

Perform inspection of aircraft structure for corrosion
Perform removal of affected corroded areas by chemical/mechanical methods
Perform measurement of corrosion damage
Perform test of metal composites for corrosion
Perform non-destructive testing (NDT) inspection and interpret results

Aircraft Drawings

Interpret information from blueprints

Sealing

Prepare metal/wood/composite surfaces for sealing
Select/mix and apply sealants to seams, joints and fasteners

Fastener Installation

Identify fasteners and prepare lay out pattern
Drill, ream and countersink holes.
Identify solid rivet types.
Perform heat treatment of rivets.
Perform rivet installation (set and buck).
Perform installation of special fasteners/swage threadless collars.
Perform installation of panel and cowl fasteners.
Perform installation of blind bolts/nuts/rivets/rivnuts.
Perform installation of threaded fasteners/self and non-self locking fasteners.
Remove and install heli-coil.

Structural Damage Assessment

Perform visual inspection of damaged area.
Interpret NDI results.
Draw sketch of damaged area and determine required repair.

Aircraft Structure and Designs

Remove, install and align wing assembly after repair.
Remove, repair, balance install and rig flight surfaces.
Perform a weld repair to tubular structure.
Perform sheet metal repair to monocoque/semi-monocoque fuselages.

Engine and Mounting

Perform a weld repair to an engine mount.

Metallurgy and Heat Treatment of Metals

Perform heat treatment of ferrous/non ferrous metals.
Perform hardness testing of ferrous/and non ferrous metals.

Assembly

Install and align parts using jigs/holding fixtures.
Install parts maintaining tolerances.
Install, trim and fit parts.
Perform drilling, reaming and countersinking of holes.
Removal, disassembly/re-assembly and installation of components and parts to gain access to a sheet metal repair.
Perform dressing and deburring of repaired area.
Application of corrosion protection.
Application of required sealants.
Perform bonding /spot weld parts.
Assemble parts using structural fasteners.
Remove/fabricate/install and safety flight control cables.
Remove old sealant and prepare and apply sealant to “wet wing” fuel tank, and pressure test tank for leaks.
Removal, repair and installation of wing leading edge/vertical/horizontal stabilizer surfaces after hail/bird strike damage.
Removal, prepare and install de-icing boots to wing leading edge/vertical/horizontal stabilizer surfaces.
Removal, prepare and install propeller de-icing boots.

Landing Gear

Repair main/nose landing gear doors
Repair to skis/floats

Sheet Metal Structures

Remove, repair/replace damage parts.
Reinforce/splice/replace structural sheet metal parts.
Reinforce/splice/replace forgings and extrusions.
Remove and replace rod-end fittings.
Repair non-structural cabin interior lining.
Perform stop drilling of small cracks in sheet metal parts.
Prepare and install patch to sheet metal skins.

Sheet Metal Fabrication

Read and interpret technical drawings.
Perform layout patterns/templates.
Perform cutting of material to size.
Form sheet metal with hand/machine tools.
Perform cold-working of fastener holes.
Perform sawing and routing of sheet metal.
Perform stop drilling of small cracks in sheet metal.
Perform fastening of sheet metal with rivets.
Perform fastening of sheet metal using bonding process.
Perform punch and drilling of sheet metal.
Perform dimpling and countersinking of sheet metal.

Composite Structures - Composite Repairs

Perform sanding/grinding/routing of damaged area.
Prepare damaged area by step/taper sanding.
Perform fabrication of pattern for cutting cloth patches.
Perform wetting-out of fabric with resin and cut out patches.
Perform a lay-up repair ply/plies using wet/pre-preg cloth.
Perform curing of repairs at room temperature.
Perform curing of repairs with heat blankets/oven.
Perform check for delamination.
Perform installation of inserts.
Perform sanding/priming and painting of repaired surface.

Composite Fabrication

Perform fabrication of master model.
Perform removal of mould from master model.
Perform fabrication of cutting pattern for lay-up plies.
Prepare plies for wet/pre-preg lay-up.
Prepare mould surface.
Perform curing of lay-up with heat blanket/oven/autoclave/room temperature.
Perform check for improper bonding.
Perform trimming of excess from parts/structure being fabricated.
Perform sanding/priming /painting of fabricated parts.

Fabric and Wood Repair

Perform fabric tests.
Perform repair to fabric covering.
Perform recovering of aircraft fabric surfaces.
Perform application of dope to aircraft fabric surfaces.
Perform application of paint to recovered fabric surfaces.

Wood Structures

- Perform inspection of wood structures.
- Perform selection of aircraft grade wood.
- Perform repair/replacement to aircraft wood structure.
- Perform sealing and refinishing to an aircraft wood structure.
- Perform lamination of fabric to an aircraft wood structure.
- Perform application of varnish to an aircraft wood structure.

Fluid lines and Conduits

- Perform bending of tubing as per drawings/sample.
- Perform fabrication of flexible hoses and leak test.
- Perform fabrication of conduits and manifolds.

Windows

- Perform inspection of aircraft windows
- Remove and install cockpit windshield/sliding windows/side windows.
- Perform buffing/polishing of windows.

ATA: 52 (Doors)

- Rig/adjust locking mechanism.
- Adjust air stair system.
- Check operation of emergency exits.
- Test door warning system.
- Troubleshoot faulty system.

ATA: 56 (Windows)

- Replace windshield.
- Replace window.
- Repair transparency.

ATA: 57 (Wings)

- Skin repair.
- Recover fabric wing.
- Replace tip.
- Replace rib.
- Check incidence/rig.

ATA: 61 (Propeller)

- Assemble prop after transportation.
- Replace propeller.
- Replace governor.
- Adjust governor.
- Perform static functional checks.
- Check operation during ground run.
- Check track.
- Check setting of micro switches.
- Dress out blade damage.
- Dynamically balance prop.
- Overhaul governor.
- Overhaul prop.
- Troubleshoot faulty system.

ATA 62: (Main rotors)

- Install rotor assembly.
- Replace blades.

Replace damper assembly.
Check track.
Check static balance.
Check dynamic balance.
Troubleshoot.

ATA: 63 (Rotor drive)

Replace mast.
Replace drive coupling.
Replace clutch/freewheel unit.
Replace drive belt.
Install main gearbox.
Overhaul main gearbox.
Check gearbox chip detectors.

ATA: 64 (Tail rotors)

Install rotor assembly.
Replace blades.
Troubleshoot.

ATA: 65 (Tail rotor drive)

Replace bevel gearbox.
Replace universal joints.
Overhaul bevel gearbox.
Install drive assembly.
Check chip detectors.

ATA: 67 (Rotorcraft flight controls)

Install swash plate.
Install mixing box.
Adjust pitch links.
Rig collective system.
Rig cyclic system.
Rig anti-torque system.
Check controls for assembly and locking.
Check controls for operation and sense.
Troubleshoot faulty system.

ATA: 71 (Power plant)

Build up ECU.
Replace engine.
Replace scat hose.
Repair cooling baffles.
Repair cowling.
Adjust cowl flaps.
Repair faulty wiring.
Troubleshoot.

ATA: 72 (Piston engines)

Remove/install reduction gear
Overhaul engine.
Top overhaul.
Check crankshaft run-out.
Check tappet clearance.
Check compression.
Extract broken stud.
Install helicoil
Perform ground run.
Establish/check reference RPM.
Troubleshoot.

ATA: 72 (Turbine engines)

Replace module.
Hot section inspection.
Engine ground run.
Establish reference power
Trend monitoring/gas path analysis.
Troubleshoot.

ATA: 73 (Fuel and control, piston)

Replace engine driven pump.
Adjust AMC.
Adjust ABC.
install carburetor/injector.
Adjust carburetor/injector.
Clean injector nozzles.
Replace primer line.
Check carburetor float setting.
Troubleshoot faulty system.

ATA: 73 (Fuel and control, turbine)

Replace FCU.
Replace engine driven pump.
Clean/test fuel nozzles.
Clean/replace fitters.
Adjust FCU.
Troubleshoot faulty system.

ATA: 74 (Ignition systems, piston)

Change magneto.
Change ignition vibrator.
Change plugs.
Test plugs.
Check H.T. leads.
Install new leads.
Check timing.
Check system bonding.
Troubleshoot faulty system.

ATA: 74 (Ignition systems, turbine)

Check glow plugs/ignitors.
Check H.T. leads
Check ignition unit.
Replace ignition unit.
Troubleshoot faulty system.

ATA: 76 (Engine controls)

Rig thrust lever.
Rig RPM control.
Rig mixture HP cock lever.
Rig power lever.
Check control sync (multi-eng).
Check controls for correct assembly and locking.
Check controls for range and sense of operation.
Adjust pedestal micro-switches.
Troubleshoot faulty system.

ATA: 77 (Engine indicating)

Replace engine instrument(s).
Replace oil temperature bulb.
Replace thermocouples.
Check calibration.
Troubleshoot faulty system.

ATA: 78 (Exhaust, piston)

Replace exhaust gasket.
Inspect welded repair.
Pressure check cabin heater muff.

Troubleshoot faulty system.

ATA: 78 (Exhaust, turbine)

Change jetpipe.
Change shroud assembly.
Install trimmers.

ATA: 79 (Oil)

Change oil.
Check filter(s).
Adjust pressure relief valve.
Replace oil tank.
Replace oil pump.
Replace oil cooler.
Replace firewall shut off valve.
Perform oil dilution.
Troubleshoot faulty system.

ATA: 80 (Starting)

Replace starter.
Replace start relay.
Replace start control valve.
Check cranking speed.
Troubleshoot faulty system.

ATA: 81 (Turbines, piston engines)

Replace PRT
Replace turbo-blower.
Replace heat shields.
Replace waste gate.
Adjust density controller.

ATA: 82 (Engine water injection)

Replace water/methanol pump.
Flow check water/meth system.
Adjust water / meth. control unit.
Check fluid for quality.
Troubleshoot faulty system.

ATA: 83 (Accessory gear boxes)

Replace gearbox
Replace drive shaft
Check chip detector.

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