NOTICE OF PROPOSED AMENDMENT (NPA) NO 2008-17B

**DRAFT OPINION OF THE EUROPEAN AVIATION SAFETY AGENCY,
FOR A COMMISSION REGULATION establishing the implementing rules for the licensing and medical certification of pilots
and**

**DRAFT DECISION OF THE EXECUTIVE DIRECTOR OF THE EUROPEAN AVIATION SAFETY AGENCY on
acceptable means of compliance and guidance material on the licensing and medical certification of pilots**

"Implementing Rules for Pilot Licensing"

B. Part-FCL

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GENERAL REQUIREMENTS

FCL.001 Competent authority

For the purpose of this Part, the competent authority shall be the authority designated by the Member State to whom a person applies for the issuance of pilot licences or associated ratings or certificates.

FCL.005 Scope

This Part establishes the requirements for the issue of pilot licences and associated ratings and certificates and the conditions of their validity and use.

FCL.010 Definitions

For the purposes of this Part, the following definitions apply:

- ‘Aerobatic flight’ means an intentional manoeuvre involving an abrupt change in an aircraft’s attitude, an abnormal attitude, or abnormal acceleration, not necessary for normal flight.
- ‘Aeroplane’ means an engine-driven fixed-wing aircraft heavier than air, that is supported in flight by the dynamic reaction of the air against its wings.
- ‘Aeroplane required to be operated with a co-pilot’ means a type of aeroplane that is required to be operated with a co-pilot as specified in the flight manual or by the air operator certificate.
- ‘Airship’ means a power-driven lighter-than-air aircraft, with the exception of hot-air airships, which, for the purposes of this Part, are included in the definition of balloon.
- ‘Balloon’ means a lighter than air aircraft that is not engine driven and sustains flight through the use of either gas or an airborne heater. For the purposes of this part, a hot-air airship, although engine driven, is also considered a balloon.
- ‘Basic Instrument Training Device (BITD)’ means a ground based training device which represents the student pilot‘s station of a class of aeroplanes. It may use screen based instrument panels and spring-loaded flight controls, providing a training platform for at least the procedural aspects of instrument flight. Each BITD shall comply with a specific BITD model and be a serial numbered unit.
- ‘Category of aircraft’ means a categorisation of aircraft according to specified basic characteristics, for example aeroplane, powered-lift, helicopter, airships, sailplane, free balloon.
- ‘Class of aeroplane’ means a categorisation of single-pilot aeroplanes not requiring a type rating, in accordance with the operational suitability certificate issued in accordance with Part -21.
- ‘Class of balloon’ means a categorisation of balloons taking into account the lifting means used to sustain flight.
- ‘Competency’ means a combination of skills, knowledge and attitude required to perform a task to the prescribed standard.

- 'Co-pilot' means a pilot operating other than as pilot-in-command, an aircraft for which more than one pilot is required, but excluding a pilot who is on board the aircraft for the sole purpose of receiving flight instruction for a licence or rating.
- 'Cross-Country' means a flight between a point of departure and a point of arrival following a pre–planned route using standard navigation procedures.
- 'Dual instruction time' means flight time or instrument ground time during which a person is receiving flight instruction from a properly authorised instructor.
- 'Full Flight Simulator (FFS)' means a full size replica of a specific type or make, model and series aircraft flight deck, including the assemblage of all equipment and computer programmes necessary to represent the aircraft in ground and flight operations, a visual system providing an out of the flight deck view, and a force cueing motion system.
- 'Flight time' means:
  - for aeroplanes, touring motor gliders and powered-lift, the total time from the moment an aircraft first moves for the purpose of taking off until the moment it finally comes to rest at the end of the flight.
  - for helicopters, the total time from the moment a helicopter's rotor blades start turning until the moment the helicopter finally comes to rest at the end of the flight, and the rotor blades are stopped.
  - for airships, the total time from the moment an airship is released from the mast for the purpose of taking off until the moment the airship finally comes to rest at the end of the flight, and is secured on the mast;
  - for sailplanes, the total time from the moment the sailplane commences the ground run in the process of taking off until the moment the sailplane finally comes to a rest at the end of flight;
  - for balloons, the total time from the moment the basket leaves the ground for the purpose of taking off until the moment it finally comes to a rest at the end of the flight.
- 'Flight time under Instrument Flight Rules (IFR)' means all flight time during which the aircraft is being operated under the Instrument Flight Rules.
- 'Flight Training Device (FTD)' means a full size replica of a specific aircraft type's instruments, equipment, panels and controls in an open flight deck area or an enclosed aircraft flight deck, including the assemblage of equipment and computer software programmes necessary to represent the aircraft in ground and flight conditions to the extent of the systems installed in the device. It does not require a force cueing motion or visual system.
- 'Flight and Navigation Procedures Trainer (FNPT)' means a training device which represents the flight deck or cockpit environment including the assemblage of equipment and computer programmes necessary to represent an aircraft type or class in flight operations to the extent that the systems appear to function as in an aircraft.
- 'Group of balloon' means a categorisation of balloons taking into account the size or capacity of the envelope.
- 'Helicopter' means a heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes.
- 'Instrument flight time' means the time during which a pilot is controlling an aircraft in flight solely by reference to instruments.
- 'Instrument ground time' means the time during which a pilot is receiving instruction in simulated instrument flight in flight simulation training devices (FSTD).
- Multi-crew co-operation (MCC), means the functioning of the flight crew as a team of co-operating members led by the pilot-in-command.
- 'Multi-pilot aircraft'
  - In the case of aeroplanes, means aeroplanes certificated for operation with a minimum crew of at least two pilots.

  - In the case of helicopters, airships and powered-lift aircraft, means a type of aircraft that is required to be operated with a co-pilot as specified in the flight manual or by the air operator certificate or equivalent document.
- 'Night' means the period between the end of evening civil twilight and the beginning of morning civil twilight, or such other period between sunset and sunrise as may be prescribed by the appropriate authority, as defined by the Member State.
- 'Pilot-in-command under supervision (PICUS)' means a co-pilot performing, under the supervision of the pilot-in-command, the duties and functions of a pilot-in-command.
- 'Powered-lift aircraft' means any aircraft deriving vertical lift and in flight propulsion/lift from variable geometry rotors or engines/propulsive devices attached to or contained within the fuselage or wings.
- 'Powered sailplane' means an aircraft equipped with one or more engines having, with engines inoperative, the characteristics of a sailplane.
- 'Route sector' means a flight comprising take-off, departure, cruise of not less than 15 minutes, arrival, approach and landing phases.
- 'Sailplane' means a heavier-than-air aircraft that is supported in flight by the dynamic reaction of the air against its fixed lifting surfaces, the free flight of which does not depend on an engine.
- 'Single-pilot aircraft' means an aircraft certificated for operation by one pilot.
- 'Solo flight time' means flight time during which a student pilot is the sole occupant of an aircraft.
- 'Touring Motor Glider (TMG)' means a specific class of powered sailplane having an integrally mounted, non-retractable engine and a non-retractable propeller. It shall be capable of taking off and climbing under its own power according to its flight manual.
- 'Type of aircraft' means all aircraft of the same basic design including all modifications thereto except those which result in a change in handling or flight characteristics.

FCL.015 Application and issue of licences, ratings and certificates

(a) An application for the issue, revalidation or renewal of pilot licences and associated ratings and certificates shall be to the competent authority in a manner established by this authority. The application shall be accompanied by evidence that the applicant complies with the requirements for the issue, revalidation or renewal of the licence or certificate as well as associated ratings or endorsements, established in this Part and Part-Medical.

(b) Any limitation or extension of the privileges granted by a licence, rating or certificate shall be endorsed in the licence or certificate.

(c) A person shall not hold at any time more than one licence issued in accordance with this Part.

(d) An application for an amendment, revalidation or renewal of a pilot licence and associated ratings or certificates shall be made to the competent authority that issued the pilot licence, except when the pilot has requested a change of competent authority and a transfer of his records to that competent authority.

FCL.020 Student pilot

(a) A student pilot shall not fly solo unless authorised to do so by a flight instructor.

(b) Before his first solo flight, a student pilot shall be at least:

  (1) in the case of aeroplanes, helicopters and airships, 16 years of age;

  (2) in the case of sailplanes and balloons, 14 years of age.

FCL.025 Theoretical knowledge examinations for the issue of licences

(a) *Responsibilities of the applicant*

(1) Applicants shall take the entire set of examinations in one Member State.

(2) Applicants shall only take the examination when recommended by the approved training organisation responsible for their training, once they have completed the appropriate elements of the training course of theoretical knowledge instruction to a satisfactory standard.

(b) *Pass standards*

(1) A pass in an examination paper will be awarded to an applicant achieving at least 75% of the marks allocated to that paper. There is no penalty marking.

(2) Except when otherwise determined in this Part, an applicant has successfully completed the required theoretical knowledge examination for the appropriate pilot licence or rating when he/she has passed all of the required subjects within a period of 18 months counted from the end of the calendar month when the applicant first attempted an examination.

(3) If an applicant has failed to pass one of the examination papers within 4 attempts, or has failed to pass all papers within either six attempts or the period mentioned in paragraph (2), he/she shall re-take the complete set of examination papers.

Before re-taking the examinations, the applicant shall undertake further training at an approved training organisation. The extent and scope of the training needed shall be agreed between the training organisation and the competent authority, based on the needs of the applicant.

(c) *Validity period*

(1) The successful completion of the theoretical knowledge examinations will be valid:

(i) for the issue of a leisure pilot licence, a private pilot licence, a sailplane pilot licence or a balloon pilot licence, for a period of 24 months;

(ii) for the issue of a commercial pilot licence or instrument rating, for a period of 36 months;

(iii) the periods in (i) and (ii) shall be counted from the day when the pilot successfully completes the theoretical knowledge examination, in accordance with (b)(2).

(2) Provided that the applicant holds an instrument rating, the completion of the airline transport pilot licence theoretical knowledge examinations will remain valid for a period of 7 years from the last validity date of the instrument rating entered in the commercial pilot licence for the issuance of an airline transport pilot licence.

FCL.030 Practical skill test

(a) Before a skill test for the issue of a licence, rating or certificate is taken, the applicant shall have passed the required theoretical knowledge examination, except in the case of applicants undergoing a course of integrated flying training.

In any case, the theoretical knowledge instruction shall always have been completed before the skill tests are taken.

(b) Except for the issue of an airline transport pilot licence, the applicant for a skill test shall be recommended for the test by the organisation/person responsible for the training.

FCL.035 Crediting of flight time and theoretical knowledge

(a) *Crediting of flight time*

(1) Unless otherwise specified in this Part, flight time to be credited for a licence, rating or certificate shall have been flown in the same category of aircraft for which the licence or rating is sought.

(2) An applicant for a licence, rating or certificate shall be credited in full with all solo, dual instruction or pilot-in-command flight time towards the total flight time required for the licence, rating or certificate.

(3) *Flight time as co-pilot*

(i) Except where otherwise determined in this Part, the holder of a pilot licence, when acting as co-pilot, is entitled to be credited with all of the co-pilot time towards the total flight time required for a higher grade of pilot licence.

(ii) The holder of a pilot licence, when acting as co-pilot under supervision, shall be entitled to be credited in full with this flight time towards the total flight time required for a higher grade of pilot licence.

(b) *Crediting of theoretical knowledge*

(1) An applicant having passed the theoretical knowledge examination for an airline transport pilot licence shall be credited with the theoretical knowledge requirements for the leisure pilot licence, the private pilot licence, the commercial pilot licence and the instrument rating in the same category of aircraft.

(2) An applicant having passed the theoretical knowledge examination for a commercial pilot licence shall be credited with the theoretical knowledge requirement for a leisure pilot licence or a private pilot licence in the same category of aircraft

(3) The holder of an instrument rating shall be fully credited towards the requirements for the theoretical knowledge instruction and examination for an instrument rating in another category of aircraft.

(4) The holder of a pilot licence shall be credited towards the requirements for theoretical knowledge instruction and examination for a licence in another category of aircraft in accordance with Appendix 1 to this Part.

This credit also applies to applicants for a pilot licence that have already successfully completed the theoretical knowledge examinations for the issue of that licence in another category of aircraft, as long as within the validity period specified in FCL.025 (c).

FCL.040 Exercise of the privileges of licences

The exercise of the privileges granted by a licence shall be dependent on the validity of the ratings contained therein, if applicable, and of the medical certificate.

FCL.045 Obligation to carry and present documents

(a) A valid licence and a valid medical certificate shall always be carried by the pilot when exercising the privileges of the licence.

(b) The pilot shall also carry a personal identification document containing his/her photo.

(c) *Presentation of flight time record*

(1) A pilot or a student pilot shall without undue delay present his/her flight time record for inspection upon request by an authorised representative of the competent authority.

(2) A student pilot shall carry with him on all solo cross-country flights evidence of the authorisation required by FCL.020(a).

FCL.050 Recording of flight time

The pilot shall keep a reliable record of the details of all flights flown.

FCL.055 Language proficiency

(a) *General*. Pilots required to use the radio telephone shall not exercise the privileges of their licences and ratings unless they have a language proficiency endorsement on their licence in either English or the language used for air traffic control communications involved in the flight.

(b) The applicant for a language proficiency endorsement shall demonstrate an operational level of language proficiency both in the use of phraseologies and plain language. To do so, the applicant shall demonstrate the ability to:

(1) communicate effectively in voice-only and in face-to-face situations;

(2) communicate on common and work-related topics with accuracy and clarity;

(3) use appropriate communicative strategies, to exchange messages and to recognize and resolve misunderstandings in a general or work-related context;

(4) handle successfully the linguistic challenges presented by a complication or unexpected turn of events that occurs within the context of a routine work situation or communicative task with which they are otherwise familiar; and

(5) use a dialect or accent which is intelligible to the aeronautical community.

(c) Except for pilots that have demonstrated language proficiency at an expert level, in accordance with table 1 bellow, the language proficiency endorsement shall be re-evaluated every:

(1) 3 years if the level demonstrated is operational level in accordance with table 1 below; or

(2) 6 years if the level demonstrated is extended level in accordance with table 1 below.

(d) *Specific requirements for holders of an instrument rating (IR)*. Without prejudice to the paragraphs above, holders of an IR shall have demonstrated the ability to use the English language at a level that allows them to:

(1) understand all the information relevant to the accomplishment of a flight;

(2) use radio telephony in all phases of flight, including emergency situations;

(3) communicate with other crew members during all phases of flight, including flight preparation.

(e) The demonstration of language proficiency and of the use of English for holders of an IR shall be done through a method of assessment established by the competent authority.

	Operational level	**Extended level**	**Expert level**
Pronunciation Assumes a dialect and/or accent intelligible to the aeronautical community	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.
Structure Relevant grammatical structures and sentence patterns are determined by language functions appropriate to the task	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.
Vocabulary	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.
Fluency	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.
Comprehension	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.

Interactions	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.

Table 1- Language proficiency levels

FCL.060 Recent experience

(a) *Balloons*. A pilot shall not operate a balloon in commercial air transport or carrying passengers unless he/she has completed in the preceding 90 days at least one take-off, approach and landing as a pilot flying in a balloon.

(b) *Aeroplanes, helicopters, powered-lift, airships and sailplanes*. A pilot shall not operate an aircraft in commercial air transport or carrying passengers:

(1) as pilot-in-command or co-pilot unless he/she has carried out in the preceding 90 days at least 3 take-offs, approaches and landings as pilot flying in an aircraft of the same type or class or a FFS representing that type or class;

(2) as pilot-in-command at night unless he/she:

(i) has carried out in the preceding 90 days at least 1 take-off, approach and landing at night as a pilot flying in an aircraft of the same type or class or an FFS representing that type or class; or

(ii) holds a valid instrument rating.

(3) as cruise relief co-pilot unless he/she:

(i) has carried out in the preceding 90 days at least 3 sectors as a cruise relief pilot on the same type or class of aircraft; or

(ii) has carried out recency and refresher flying skill training in an FFS at intervals not exceeding 90 days. This refresher training may be combined with the training prescribed in MS.OPS.3.075[1].

(4) When a pilot has the privilege to operate more than one type of non-complex helicopter with similar handling and operations characteristics, as defined in accordance with Part-21, the 3 take-offs, approaches and landings required in (1) may be performed in only one of the types, provided that the pilot has completed at least 2 hours of flight in the all the relevant types of helicopter, during the preceding 6 months.

(c) *Specific requirements for commercial air transport*

(1) In the case of commercial air transport, the 90-day period prescribed in subparagraphs (b)(1) and (2) above may be extended up to a maximum of 120 days, as long as the pilot undertakes line flying under the supervision of a type rating instructor or examiner or a person appropriately qualified to provide line training in accordance with Part-MS.

(2) When the pilot does not comply with the requirement in (1), he/she shall complete a training flight in the aircraft or a FFS of the aircraft type to be used, which shall include at least the requirements described in (b)(1) and (2) before he can exercise his/her privileges.

FCL.065 Curtailment of privileges of licence holders aged 60 years or more

(a) *Age 60–64.* 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 except:

(1) as a member of a multi-pilot crew; and,

[1] The reference to this paragraph in Part-MS may still change.

(2) provided that such holder is the only pilot in the flight crew who has attained age 60.

(b) *Age 65.* The holder of a pilot licence who has attained the age of 65 years shall not act as a pilot of an aircraft engaged in commercial air transport operations.

FCL.070 Revocation, suspension and limitation of licences, ratings and certificates

(a) Licences, ratings and certificates issued in accordance with this Part shall be limited, suspended or revoked by the competent authority when the pilot doesn’t comply with the requirements of this Part, Part-Medical or Part-OPS, in accordance with the conditions and procedures laid down in Part Authority Requirements.

(b) Upon suspension or revocation, the pilot shall immediately return the licence or certificate to the competent authority.

SUBPART B

LEISURE PILOT LICENCE - LPL

SECTION 1

Common Requirements

FCL.100 LPL - Minimum age

Applicants for the LPL shall be at least 16 years of age.

FCL.105 LPL - Privileges and conditions

(a) *General*. The privileges of the holder of a LPL are to act without remuneration as pilot-in-command in non-commercial operations within the appropriate aircraft category engaged.

(b) *Conditions*. Applicants for the LPL shall have fulfilled the requirements for the relevant aircraft category and, when applicable, for the class or type of aircraft used in the skill test.

FCL.110 LPL – Crediting for the same aircraft category

(a) Applicants for a LPL that have held another licence in the same category of aircraft shall be fully credited towards the requirements of the LPL in that category of aircraft.

(b) Without prejudice to the paragraph above, if the applicant's licence has lapsed for more than 1 year, he/she shall have to pass a skill test for the issue of a LPL in the appropriate aircraft category.

FCL.115 LPL - Training course

Applicants for a LPL shall complete a training course within an approved training organisation. The course shall include theoretical knowledge and flight instruction appropriate to the privileges given.

FCL.120 LPL - Theoretical knowledge examination

(a) Applicants for a LPL shall have demonstrated to the competent authority a level of theoretical knowledge appropriate to the privileges granted, through examinations on the following:

(1) common subjects:

- Air law;
- Human performance;
- Meteorology; and
- Communications;

(2) specific subjects concerning the different aircraft categories:

- Principles of flight;
- Operational procedures;
- Flight performance and planning;
- Aircraft general knowledge; and
- Navigation.

FCL.125 LPL - Skill Test

(a) Applicants for a LPL shall demonstrate through the completion of a skill test the ability to perform, as pilot-in-command of the appropriate aircraft category, the relevant procedures and manoeuvres with competency appropriate to the privileges granted.

The skill test shall be taken within 6 months of completing the flight instruction.

(b) Applicants for the skill test shall have received instruction on the same class, type or group of aircraft to be used for the skill test.

(c) *Pass marks*.

(1) The skill test shall be divided into different sections, representing all the different phases of flight appropriate to the category of aircraft flown.

(2) Failure in any item of a section will cause the applicant to fail the entire section. If the applicant fails only 1 section, he/she shall repeat only that section. Failure in more than one section will cause the applicant to fail the entire test.

(3) When the test needs to be repeated in accordance with (2), failure in any section, including those that have been passed on a previous attempt, will cause the applicant to fail the entire test.

(4) Failure to achieve a pass in all sections of the test in 2 attempts will require further practical training.

SECTION 2

Specific requirements for the Basic LPL - aeroplane and helicopter categories

FCL.105.BA/H Basic LPL - Privileges

(a) *Aeroplanes*. The privileges of the holder of a Basic LPL for aeroplanes are to fly single-engine piston aeroplanes or touring motor gliders (TMG) with a maximum certificated take-off mass of 2000 kg or less, carrying a maximum of 1 passenger, in local flights within no more than 50 km from the aerodrome of departure, with no intermediate landings, and when, taking into account the conditions of flight, the pilot is always able to return to the aerodrome of departure.

(b) *Helicopters*. The privileges of the holder of a Basic LPL for helicopters are to fly single-engine piston helicopters with a maximum certificated take-off mass of 2000 kg or less, carrying a maximum of 1 passenger, in local flights within no more than 50 km from the aerodrome of departure, with no intermediate landings, and when, taking into account the conditions of flight, the pilot is always able to return to the aerodrome of departure.

FCL.110.BA/H Basic LPL – Experience requirements and crediting

(a) *Aeroplanes*. Applicants for a Basic LPL for aeroplanes shall have completed at least 20 hours of flight instruction in aeroplanes or TMG, including at least:

(1) 10 hours of dual instruction;

(2) 4 hours of supervised solo flight time;

(3) 3 hours of navigation training.

(b) *Helicopters*. Applicants for a Basic LPL for helicotpers shall have completed at least 35 hours of flight instruction in helicopters, including at least:

(1) 20 hours of dual instruction

(2) 6 hours of supervised solo flight time

(3) 3 hours of navigation training

(c) *Crediting*. Applicants holding a pilot licence for another category of aircraft, with the exception of balloons, shall be credited with 10 % of their total flight time as pilot-in-command in such aircraft, up to a maximum of 3 hours, towards the requirements in (a) or (b).

FCL.135.BA/H Basic LPL - Extension of privileges to another class or type

The privileges of a Basic LPL shall be limited to the class of aeroplane or, in the case of helicopters, to the type of helicopters in which the skill test was taken. This limitation may be withdrawn when the pilot has completed in the other class of aeroplanes or in another type of helicopters:

(a) *Aeroplanes.* 3 hours of dual instruction flight time, including:

(1) 10 take-offs and landings; and

(2) 10 supervised solo take-offs and landings.

(b) *Helicopters.* 5 hours of dual instruction flight time, including:

(1) 15 take-offs and landings; and

(2) 15 supervised solo take-offs and landings.

(c) a skill test to demonstrate an adequate level of practical skill in the new class or on the new type. During this skill test, the applicant shall also demonstrate to the examiner an adequate level of theoretical knowledge for the other type or class in the following subjects:

- Operational procedures;
- Flight performance and planning;
- Aircraft general knowledge.

FCL.140.BA/H Basic LPL - Recency requirements

Holders of a Basic LPL shall only exercise the privileges of their licence when they comply with the recency requirements established in FCL.140.A, in the case of aeroplanes, or FCL.140.H, in the case of helicopters.

SECTION 3

Specific requirements for the LPL for aeroplanes - LPL(A)

FCL.105.A LPL(A) - Privileges

The privileges of the holder of a LPL for aeroplanes are to fly single-engine piston aeroplanes or TMG with a maximum certificated take-off mass of 2000 kg or less, carrying a maximum of 3 passengers, such that there are never more than 4 persons on board of the aircraft.

FCL.110.A LPL(A) – Experience requirements and crediting

(a) Applicants for a LPL(A) shall have completed at least 30 hours flight time in aeroplanes or TMG, including at least:

(1) 15 hours of dual instruction;

(2) 6 hours of supervised solo flight time, including at least 3 hours of solo cross-country flight time with at least 1 cross-country flight of at least 150 km, during which 1 full stop landing at an aerodrome different from the aerodrome of departure shall be made.

(b) *Specific requirements for applicants holding a basic LPL for aeroplanes*. Applicants for a LPL(A) holding a Basic LPL for aeroplanes shall have completed 10 hours of flight instruction, including at least:

(1) 6 hours of dual instruction;

(2) 3 hours of supervised solo flight time, including 1 cross-country flight of at least 150 km, during which 1 full stop landing at an aerodrome different from the aerodrome of departure shall be made

(c) *Specific requirements for applicants holding a LPL(S) with TMG extension*. Applicants for a LPL(A) holding a LPL(S) with TMG extension shall have completed at least 24 hours of flight time on TMGs after the endorsement of the TMG extension, of which at least 3 shall be of dual instruction.

(d) *Crediting*. Applicants holding a pilot licence for another category of aircraft, with the exception of balloons, shall be credited with 10 % of their total flight time as pilot-in-command in such aircraft, up to a maximum of 6 hours, towards the requirement in (a).

FCL.135.A LPL(A) – Extension of privileges to another class of aeroplane

The privileges of a LPL(A) shall be limited to the class of aeroplanes in which the skill test was taken. This limitation may be withdrawn when the pilot complies with the requirements in FCL.135.BA/H.

FCL.140.A LPL(A) - Recency requirements

(a) Holders of a LPL(A) shall only exercise the privileges of their licence when they have:

(1) completed, in the last 24 months, as pilots of aeroplanes or TMG at least:

(i) 12 hours of flight time as pilot-in-command, including 12 take-offs and landings; or

(ii) 6 hours of flight time as pilot-in-command, including 6 takes offs and landings, and 1 training flight of at least one hour with an instructor;

(2) passed a proficiency check on an aeroplane or a touring motor glider with an examiner, at least once in every 6 years.

(b) Holders of a LPL(A) that do not comply with the requirements in (a) shall undertake a proficiency check with an examiner before they can resume the exercise of the privileges of their licence.

SECTION 4

Specific requirements for the LPL for helicopters - LPL(H)

FCL.105.H LPL(H) - Privileges

The privileges of the holder of a LPL for helicopters are to fly single-engine piston helicopters with a maximum certificated take-off mass of 2000 kg or less, carrying a maximum of 3 passengers, such that there are never more than 4 persons on board.

FCL.110.H LPL(H) - Experience requirements and crediting

(a) Applicants for the LPL(H) shall have completed 45 hours of flight time in helicopters, including at least:

(1) 25 hours of dual instruction; and

(2) 10 hours of supervised solo flight time, including at least 5 hours of solo cross-country flight time with at least 1 cross-country flight of at least 150 km, during which one full stop landing at an aerodrome different from the aerodrome of departure shall be made.

(b) *Specific requirements for applicants holding a basic LPL(H)*. Applicants for a LPL(H) holding a Basic LPL for helicopters shall complete 10 hours of flight instruction, including at least 5 hours of solo flight, including 1 cross-country flight of at least 150 km, during which one full stop landing at an aerodrome different from the aerodrome of departure shall be made.

(c) *Crediting*. Applicants holding a pilot licence for another category of aircraft, with the exception of balloons, shall be credited with 10 % of their total flight time as pilot-in-command in such aircraft, up to a maximum of 6 hours, towards the requirement in (a).

FCL.135.H LPL(H) – Extension of privileges to another type of helicopter

The privileges of a LPL(H) shall be limited to the specific type of helicopter in which the skill test was taken. This limitation may be withdrawn when the pilot complies with the requirements in FCL.135.BA/H.

FCL.140.H LPL(H) - Recency requirements

(a) Holders of LPL(H) shall only exercise the privileges of their licence on a specific type when they have:

(1) completed on helicopters of that type in the last 24 months at least:

(i) 12 hours of flight time as pilot-in-command; or

(ii) 6 hours of flight time as pilot-in-command and 1 training flight of at least one hour with an instructor;

(2) passed a proficiency check on the type with an examiner, at least once in every 6 years.

(b) Holders of a LPL(H) that do not comply with the requirements in (a) shall undertake a proficiency check with an examiner on the specific type before they can resume the exercise of the privileges of their licence.

SECTION 5

Specific requirements for the LPL for sailplanes – LPL(S)

FCL.105.S LPL(S) - Privileges and conditions

(a) The privileges of the holder of a LPL for sailplanes are to fly sailplanes and powered sailplanes or TMG.

(b) The holder of a LPL(S) shall only carry passengers after he/she has completed 10 hours of flight time as pilot-in-command of sailplanes, powered sailplanes or TMG.

FCL.110.S LPL(S) - Experience requirements and crediting

(a) Applicants for a LPL(S) shall have completed at least 10 hours of flight time in sailplanes, powered sailplanes and/or TMG, including at least:

(1) 8 hours dual instruction;

(2) 2 hours of supervised solo flight time;

(3) 40 launches and landings.

(b) Applicants holding a pilot license for another category of aircraft, with the exception of balloons, shall be credited with 10 % of their total flight time, launches and landings as pilot-in-command in such aircraft, up to a maximum of 6 hours and 20 launches and landings, towards the requirement of (a).

FCL.130.S LPL(S) - Launch methods

(a) The privileges of the LPL(S) shall be limited to the launch method included in the skill test. This limitation may be withdrawn when the pilot has completed:

(1) in the case of winch launch, a minimum of 10 launches in dual instruction, and 5 solo launches under supervision;

(2) for aero tow, self launch, and car launches, a minimum of 5 launches in dual instruction, and 5 solo launches under supervision. In the case of self launch, dual instruction may be done in a touring motor glider;

(3) in the case of bungee launch, a minimum of 10 launches performed in dual instruction or solo under supervision.

(b) The completion of the additional training flights shall be entered in the logbook and confirmed by the instructor.

(c) In order to maintain their privileges in each launch method, pilots shall complete a minimum of 5 launches during the last 24 months.

(d) When the pilot does not comply with the requirement in (c) he/she shall complete the missing number of launches with or under the supervision of an instructor in order to renew the privileges.

FCL.135.S LPL(S) - Extension of privileges to TMG

(a) The privileges of a LPL(S) shall be limited to flying sailplanes and powered sailplanes. This limitation may be withdrawn when the pilot has completed on a TMG:

(1) 6 hours of flight instruction, including:

(i) 4 hours of dual instruction;

(ii) 1 solo cross-country flight of at least 150 km, during which 1 full stop landing at an aerodrome different from the aerodrome of departure shall be performed.

(2) a skill test to demonstrate an adequate level of practical skill in TMG. During this skill test, the applicant shall also demonstrate to the examiner an adequate level of theoretical knowledge for TMG in the following subjects:

- Operational procedures;
- Flight performance and planning;
- Aircraft general knowledge;
- Navigation.

FCL.140.S LPL(S) - Recency requirements

(a) *Sailplanes and powered sailplanes*. Holders of a LPL(S) shall only exercise the privileges of their licence on sailplanes or powered sailplanes when they have:

(1) completed on sailplanes, in the last 24 months, at least:

(i) 6 hours of flight time as pilot-in-command, including 10 launches; or

(ii) 3 hours of flight time as pilot-in-command, including 5 launches, and a minimum of 3 training flights with an instructor;

(2) passed a proficiency check with an examiner on a sailplane at least once in every 6 years.

(b) *TMG*. Holders of a LPL(S) shall only exercise the privileges of their licence on touring motor gliders when they have:

(1) completed on touring motor gliders, in the last 24 months, at least:

(i) 12 hours of flight time as pilot-in-command including 12 launches; or

(ii) 6 hours of flight time as pilot-in-command or TMG, including 6 take-offs and landings, and 1 training flight of at least one hour with an instructor;

(2) passed a proficiency check with an examiner on a TMG at least once in every 6 years.

(3) When the holder of the LPL(S) also has the privileges to fly aeroplanes, the requirements in (1) and (2) may be completed on aeroplanes.

(c) Holders of a LPL(S) that do not comply with the requirements in (a) or (b) shall pass a proficiency check with an examiner before they can resume the exercise of their privileges.

SECTION 6

Specific requirements for the LPL for balloons – LPL(B)

FCL.105.B LPL(B) - Privileges

The privileges of the holder of a LPL for balloons are to fly hot-air balloons or hot-air airships with a maximum of 4000m^3 envelope capacity or gas balloons with a maximum of 1200m^3 envelope capacity, carrying a maximum of 3 passengers, such that there are never more than 4 persons on board of the aircraft.

FCL.110.B LPL(B) - Experience requirements

Applicants for a LPL(B) shall have completed on balloons of the same class at least:

(a) 16 hours of dual flight instruction, including 10 fillings and 20 take-offs and landings; and

(b) 1 supervised solo flight with a minimum flight time of 30 minutes.

FCL.135.B LPL(B) - Extension of privileges to another balloon class

(a) The privileges of the LPL(B) shall be limited to the class of balloon in which the skill test was taken. This limitation may be withdrawn when the pilot has completed in the other class:

(1) Flight instruction:

(i) 5 instruction flights; or,

(ii) in the case of a LPL(B) for hot-air balloons wishing to extend their privileges to hot-air airships, 5 hours of dual instruction time; and

(2) a skill test, during which they shall demonstrate to the examiner an adequate level of theoretical knowledge for the other class in the following subjects:

- Principles of flight;
- Operational procedures;
- Flight performance and planning; and
- Aircraft general knowledge.

FCL.140.B LPL(B) - Recency requirements

(a) Holders of a LPL(B) shall only exercise the privileges of their licence when they have:

(1) completed in one class of balloons in the last 24 months, at least:

(i) 12 hours of flight time as pilot-in-command, including 8 take-offs and landings; or

(ii) 6 hours of flight time as pilot-in-command and one training flight with an instructor;

(2) passed a proficiency check with an examiner at least once in every 6 years.

(b) If the pilot is qualified to fly more than one class of balloons, in order to exercise their privileges in the other class, they shall have completed at least 2 hours of flight time on that class within the last 24 months.

(c) Holders of a LPL(B) that do not comply with the requirements in (a) and (b) shall undertake a proficiency check with an examiner before they can resume the exercise of their privileges.

SUBPART C

PRIVATE PILOT LICENCE (PPL), SAILPLANE PILOT LICENCE (SPL) AND BALLOON PILOT LICENCE (BPL)

SECTION 1

Common Requirements

FCL.200 Minimum age

[JAR-FCL 1.100/2.100]

(a) An applicant for a PPL shall be at least 17 years of age;

(b) An applicant for a BPL or an SPL shall be at least 16 years of age.

FCL.205 Conditions

Applicants for the issue of a BPL, SPL or PPL shall, when applicable, have fulfilled the requirements for the class or type rating for the aircraft used in the skill test, as established in Subpart H.

FCL.210 Training course

Applicants for a BPL, SPL or PPL shall complete a training course at an approved training organisation. The course shall include theoretical knowledge and flight instruction appropriate to the privileges given.

FCL.215 Theoretical knowledge examination

(a) Applicants for a BPL, SPL or PPL shall have demonstrated to the competent authority a level of theoretical knowledge appropriate to the privileges granted through examinations in the following subjects:

- Air law;
- Aircraft general knowledge;
- Flight performance and planning;
- Human performance;
- Meteorology;
- Navigation;
- Operational procedures;
- Principles of flight;
- Communications.

FCL.235 Skill Test

(a) Applicants for a BPL, SPL or PPL shall demonstrate through the completion of a skill test the ability to perform, as pilot-in-command of the appropriate aircraft category, the relevant procedures and manoeuvres with competency appropriate to the privileges granted.

The skill test shall be taken within 6 months of completing the flight instruction.

(b) An applicant for the skill test shall have received instruction on the same class or type of aircraft to be used for the skill test.

(c) *Pass marks*.

(1) The skill test shall be divided into different sections, representing all the different phases of flight appropriate to the category of aircraft flown. An applicant shall pass all the relevant sections of the skill test within six months.

(2) Failure in any item of a section will cause the applicant to fail the entire section. Failure in more than one section will cause the applicant to fail the entire test. If the applicant fails only 1 section, he/she shall repeat only that section.

(3) When the test needs to be repeated in accordance with (2), failure in any section, including those that have been passed on a previous attempt, will cause the applicant to fail the entire test.

(4) Failure to achieve a pass in all sections of the test in 2 attempts will require further training.

SECTION 2

Specific requirements for the PPL aeroplanes - PPL(A)

FCL.205.A PPL(A) - Privileges

(a) The privileges of the holder of a PPL(A) are to act without remuneration as pilot-in-command or co-pilot of aeroplanes engaged in non-commercial operations.

(b) Notwithstanding the paragraph above, the holder of a PPL(A) may receive remuneration for the provision of flight instruction for the LPL(A) or the PPL(A).

FCL.210.A PPL(A) - Experience requirements and crediting

(a) Applicants for a PPL(A) shall have completed at least 45 hours of flight time in aeroplanes, 5 of which may have been completed in a FSTD, including at least:

(1) 25 hours of dual instruction; and

(2) 10 hours of supervised solo flight time, including at least 5 hours of solo cross-country flight time with at least 1 cross-country flight of at least 270 km (150 NM), during which full stop landings at two aerodromes different from the aerodrome of departure shall be made.

(b) *Specific requirements for applicants holding a LPL(A)*. Applicants for a PPL(A) holding a LPL(A) shall have completed at least 15 hours of flight time after the issue of the LPL(A), of which at least 10 shall be dual instruction completed in a training course at an approved training organisation.

(c) *Crediting.* Applicants holding a pilot licence for another category of aircraft, with the exception of balloons, shall be credited with 10 % of their total flight time as pilot-in-command in such aircraft up to a maximum of 10 hours. In this case, the requirement for dual instruction in (a)(1) shall be reduced proportionally, but in any case to not less than 20 hours.

SECTION 3

Specific requirements for the PPL helicopters – PPL(H)

FCL.205.H PPL(H) - Privileges

(a) The privileges of the holder of a PPL(H) are to act without remuneration as pilot-in-command or co-pilot of helicopters engaged in non-commercial operations.

(b) Notwithstanding the paragraph above, the holder of a PPL(H) may receive remuneration for the provision of flight instruction for the LPL(H) or the PPL(H).

FCL.210.H PPL(H) - Experience requirements and crediting

[JAR-FCL 2.120]

(a) Applicants for a PPL(H) shall have completed at least 45 hours of flight time in helicopters, 5 of which may have been completed in a FSTD, including at least:

(1) 25 hours of dual instruction, including at least 5 hours instrument dual instruction time; and

(2) 10 hours of supervised solo flight time, including at least 5 hours of solo cross-country flight time with at least 1 cross-country flight of at least 185km (100 NM), with full stop landings at two aerodromes different from the aerodrome of departure.

(b) *Specific requirements for applicant holding a LPL(H)*. Applicants for a PPL(H) holding a LPL(H) shall complete 5 hours of dual instrument instruction time.

(c) Applicants holding a pilot licence for another category of aircraft, with the exception of balloons, shall be credited with 10 % of their total flight time as pilot-in-command in such aircraft up to a maximum of 6 hours.

SECTION 4

Specific requirements for the PPL powered-lift – PPL(PL)

Reserved

SECTION 5

Specific requirements for the PPL airships – PPL(As)

FCL.205.As PPL(As) - Privileges

[JAR-FCL 1.105/2.105]

(a) The privileges of the holder of a PPL(As) are to act without remuneration as pilot-in-command or co-pilot of airships engaged in non-commercial operations.

(b) Notwithstanding the paragraph above, the holder of a PPL(As) may receive remuneration for the provision of flight instruction for the PPL(As).

FCL.210.As PPL(As) - Experience requirements and crediting

(a) Applicants for a PPL(As) shall have completed at least 35 hours of flight time in airships, 5 of which may have been completed in a FSTD, including at least:

(1) 25 hours of dual instruction, including:

(i) 3 hours of cross-country flight training, including 1 cross-country flight of at least 65 km (35 NM);

(ii) 3 hours of instrument instruction~~;~~

(2) 5 take-offs and landings to a full stop at an aerodrome;

(3) 8 hours of supervised solo flight time.

(b) Applicants holding a BPL and qualified to fly hot-air airships shall be credited with 10 % of their total flight time as pilot-in-command in such airships up to a maximum of 5 hours.

SECTION 6

Specific requirements for the sailplane pilot licence (SPL)

FCL.205.S SPL – privileges and conditions

(a) The privileges of the holder of a SPL are to act as pilot-in-command of sailplanes, powered sailplanes and/or TMG.

(b) Holders of an SPL shall:

(1) not carry passengers unless they have completed at least 10 hours of flight as pilot of sailplanes, powered sailplanes or TMG;

(2) be restricted to act without remuneration in non-commercial operations until the holder has attained the age of 18 years and has completed 75 hours of experience as pilot-in-command of sailplanes, powered sailplanes and/or TMG.

(c) Before exercising commercial privileges the holder of a SPL shall pass a proficiency check with an examiner.

(c) Notwithstanding paragraphs (b)(2) and (c), the holder of a SPL may receive remuneration for the provision of flight instruction for the LPL or the SPL.

FCL.210.S SPL - Experience requirements and crediting

(a) Applicants for an SPL shall have completed at least 10 hours of flight time as a pilot of sailplanes, powered sailplanes or TMG, including at least the requirements specified in FCL.110.S.

(b) Applicants for an SPL holding a LPL(S) shall be fully credited towards the requirements in (a).

(c) Applicants holding a pilot licence for another category of aircraft, with the exception of balloons, shall be credited with 10 % of their total flight time, launches and landings as pilot-in-command in such aircraft up to a maximum of 6 hours and 20 launches and landings.

FCL.220.S SPL - Launch methods

The privileges of the SPL shall be limited to the launch method included in the skill test. This limitation may be withdrawn and the new privileges exercised when the pilot complies with the requirements in FCL.130.S.

FCL.225.S SPL – Extension of privileges to touring motor gliders

The privileges of the SPL shall be limited to sailplanes and powered sailplanes. This limitation may be withdrawn when the pilot complies with the requirements in FCL.135.S.

FCL.230.S SPL - Recency requirements

Holders of an SPL shall only exercise the privileges of their licence when complying with the recency requirements in FCL.140.S.

SECTION 7

Specific requirements for the balloon pilot licence (BPL)

FCL.205.B BPL privileges and conditions

(a) The privileges of the holder of a BPL are to act as pilot-in-command of balloons and hot-air airships.

(b) Holders of a BPL shall be restricted to act without remuneration in non-commercial operations until the holder has attained the age of 18 years and has completed 75 hours of experience as pilot-in-command of balloons.

(c) Before exercising commercial privileges the holder of a BPL shall pass a proficiency check with an examiner.

(d) Notwithstanding paragraphs (b) and (c), the holder of a BPL may receive remuneration for the provision of flight instruction for the LPL or the BPL.

FCL.210.B BPL – Experience requirements and crediting

(a) An applicant for a BPL shall have completed on balloons of the same class and group at least:

(1) 16 hours of dual instruction including 10 fillings, 20 take-offs and landings; and

(2) 1 supervised solo flight with a minimum flight time of 30 minutes.

(b) Applicants for an BPL holding a LPL(B) shall be fully credited towards the requirements in (a).

FCL.225.B BPL - Extension of privileges to another balloon class or group

The privileges of the BPL shall be limited to the class and group of balloons in which the skill test was taken. This limitation may be withdrawn when the pilot has:

(a) in the case of an extension to another class within the same group, complied with the requirements in FCL.135.B.

(b) in the case of an extension to another group within the same class of balloons, completed:

(1) 20 hours of flight time as a pilot-in-command of balloons;

(2) 3 instruction flights on a balloon of the relevant group.

FCL.230.B BPL - Recency requirements

Holders of a BPL shall only exercise the privileges of their licence when complying with the recency requirements in FCL.140.B.

SUBPART D

COMMERCIAL PILOT LICENCE - CPL

SECTION 1

Common Requirements

FCL.300 CPL - Minimum age

An applicant for a CPL shall be at least 18 years of age.

FCL.305 CPL - Privileges and conditions

(a) *Privileges.* The privileges of the holder of a CPL are, within the appropriate aircraft category, to:

(1) exercise all the privileges of the holder of a PPL;

(2) act as pilot-in-command or co-pilot of any aircraft engaged in operations other than commercial air transportation;

(3) act as pilot-in-command in commercial air transport of any single-pilot aircraft, subject to the restrictions specified in FCL.060 and in this Subpart;

(4) act as co-pilot in commercial air transportation.

(b) *Conditions.* An applicant for the issue of a CPL shall have fulfilled the requirements for the class or type rating of the aircraft used in the skill test.

FCL.310 CPL - Theoretical knowledge examinations

An applicant for a CPL shall demonstrate a level of knowledge appropriate to the privileges granted in the following subjects, further detailed in Appendix 2 to this Part:

- Air Law;
- Aircraft General Knowledge - Airframe/Systems/Powerplant;
- Aircraft General Knowledge – Instrumentation;
- Mass and balance;
- Performance;
- Flight Planning and Monitoring;
- Human Performance;
- Meteorology;
- General Navigation;
- Radio Navigation;
- Operational Procedures;
- Principles of flight;
- Visual Flight Rules (VFR) Communications.

FCL.315 CPL - Training course

An applicant for a CPL shall have completed theoretical knowledge instruction and flight instruction at an approved training organisation, in accordance with Appendix 3 to this Part.

FCL.320 CPL - Skill Test

An applicant for a CPL shall pass a skill test in accordance with Appendix 4 to this Part to demonstrate the ability to perform, as pilot-in-command of the appropriate aircraft category, the relevant procedures and manoeuvres with the competency appropriate to the privileges granted.

SECTION 2

Specific requirements for the aeroplane category – CPL(A)

FCL.305.A CPL(A) - Privileges in commercial air transport

(a) The holder of a CPL(A) shall only act as pilot-in-command in commercial air transport on a single-pilot aeroplane provided that:

(1) When carrying passengers under VFR outside a radius of 50 NM (90 Km) from an aerodrome of departure, he/she has a minimum of 500 hours of flight time on aeroplanes or holds a valid instrument rating; or

(2) When operating on a multi-engine type under IFR, he/she has a minimum of 700 hours of flight time on aeroplanes, including 400 hours as pilot-in-command. These hours shall include 100 hours under IFR and 40 hours in multi-engine operations. The 400 hours as pilot-in-command may be substituted by hours operating as co-pilot within an established multi-pilot crew system prescribed in the Operations Manual, on the basis of two hours of flight time as co-pilot for one hour of flight time as pilot-in command.

(b) The holder of a CPL(A) shall only act under IFR as a single-pilot when he/she complies with (a)(2) and with the applicable requirements prescribed in Subpart OPS of Part-MS[2].

(c) The holder of a CPL(A) shall only act as pilot-in-command in commercial air transport in multi-pilot operations provided that he/she has completed the command course prescribed in Subpart OPS of Part-MS[3].

FCL.325.A CPL(A) - Specific conditions for MPL holders

Before exercising the privileges of a CPL(A), the holder of an MPL shall have completed in aeroplanes:

(a) 70 hours flight time:

(1) as pilot-in-command; or

(2) made up of at least 10 hours as pilot-in-command and the additional flight time as pilot-in-command under supervision (PICUS).

Of these 70 hours, 20 shall be of VFR cross-country flight time as pilot-in-command, or cross-country flight time made up of at least 10 hours as pilot-in-command and 10 hours as PICUS. This shall include a VFR cross-country flight of at least 540 km (300 NM) in the course of which full-stop landings at two different aerodromes shall be flown as pilot-in-command;

(b) the elements of the CPL(A) modular course as specified in paragraphs 11(a) and 12 of Appendix 3. D; and

(c) the CPL(A) skill test, in accordance with FCL.320.

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[2] This reference to Part-MS may still change.

[3] This reference to Part-MS may still change.

SECTION 3

Specific Requirements for the helicopter category – CPL(H)

FCL.305.H CPL(H) - Privilege to act in commercial air transport

(a) The holder of a CPL(H) shall only act as pilot-in-command in commercial air transport on a single-pilot helicopter provided that:

(1) When operating under IFR, he/she has a minimum of 700 hours total flight time on helicopters, including 300 hours as pilot-in-command. These hours shall include 100 hours under IFR. The 300 hours as pilot-in-command may be substituted by hours operating as co-pilot within an established multi-pilot crew system prescribed in the Operations Manual on the basis of two hours of flight time as co-pilot for one hour flight time as pilot-in command.

(2) When operating under visual meteorological conditions (VMC) at night, he/she has:

(i) a valid instrument rating; or

(ii) 300 hours flight time on helicopters, including 100 hours as pilot-in-command and 10 hours as pilot flying at night.

(b) The holder of a CPL(H) shall only act under IFR as a single-pilot when he/she complies with (a) and with the applicable requirements prescribed in Subpart OPS of Part-MS[4].

SECTION 4

Specific requirements for the powered-lift category– CPL(PL)

Reserved

SECTION 5

Specific Requirements for the airship category – CPL(As)

FCL.305.As CPL(As) - Privileges to act in commercial air transport

The holder of a CPL(As) shall only act as pilot-in-command in commercial air transport provided that:

(a) For operations under IFR, he/she has a minimum of 500 hours total flight time on airships. These hours shall include at least 100 hours under IFR, and:

(1) 700 hours as co-pilot within an established multi-pilot crew system prescribed in the Operations Manual of an operator; or

(2) 250 hours as pilot-in-command.

(b) For operations under VMC at night, he/she has:

(1) a valid instrument rating; or

(2) 300 hours total flight time on airships, including 100 hours as pilot-in-command and 10 hours as pilot flying at night.

[4] This reference to Part-MS may still change.

SUBPART E

MULTI-CREW PILOT LICENCE – MPL

FCL.400.A MPL - Minimum age

An applicant for an MPL shall be at least 18 years of age.

FCL.405.A MPL - Privileges

(a) The privileges of the holder of an MPL are to:

(1) act as co-pilot in an aeroplane required to be operated with a co-pilot; and

(2) exercise the privileges of the IR(A) in an aeroplane required to be operated with a co-pilot.

(b) The holder of an MPL may obtain the extra privileges of:

(1) the holder of a PPL(A), provided that the requirements for the PPL(A) specified in Subpart C are met;

(2) a CPL(A), provided that the requirements specified in FCL.325.A are met;

(3) the IR(A) in single-pilot operations in aeroplanes provided that the licence holder has completed the training necessary to act as pilot-in-command in single-pilot operations exercised solely by reference to instruments and passed the skill test of the IR(A) as a single-pilot.

FCL.410.A MPL – Training course and Theoretical knowledge examinations

(a) *Course.* An applicant for an MPL shall have completed a training course of theoretical knowledge and flight instruction at an approved training organisation in accordance with Appendix 5 to this Part.

(b) *Examination.* An applicant for an MPL shall have demonstrated a level of knowledge appropriate to the holder of an ATPL(A) and of a multi-pilot type rating.

FCL.415.A MPL – Practical Skill

(a) An applicant for an MPL shall have demonstrated through continuous assessment the skills required for fulfilling all the competency units specified in Appendix 5 to this Part, as pilot flying and pilot not flying, in a multi-engine turbine-powered multi-pilot aeroplane, under VFR and IFR.

(b) On completion of the training course, the applicant shall pass a skill test in accordance with Appendix 9 to this Part, to demonstrate the ability to perform the relevant procedures and manoeuvres with the competency appropriate to the privileges granted. The skill test shall be taken in the type of aeroplane used on the advanced phase of the MPL integrated training course, or a simulator representing the same type,.

SUBPART F

AIRLINE TRANSPORT PILOT LICENCE - ATPL

SECTION 1

Common Requirements

FCL.500 ATPL - Minimum age

Applicants for an ATPL shall be at least 21 years of age.

FCL.505 ATPL - Privileges

(a) The privileges of the holder of an ATPL are to, within the appropriate aircraft category:

(1) exercise all the privileges of the holder of a PPL and a CPL;

(2) act as pilot-in-command in aircraft engaged in commercial air transportation;

(3) for the aeroplane category, to exercise all the privileges of an IR(A).

(b) Applicants for the issue of an ATPL shall have fulfilled the requirements for the type rating of the aircraft used in the skill test.

FCL.515 ATPL – Training course and theoretical knowledge examinations

(a) *Course*. Applicants for an ATPL shall have completed a training course at an approved training organisation. The course shall be either an integrated training course, in accordance with Appendix 3 to this Part, or a modular course.

(b) *Examination*. Applicants for an ATPL shall demonstrate a level of knowledge appropriate to the privileges granted in the following subjects, further detailed in Appendix 2 to this Part:

- Air Law;
- Aircraft General Knowledge - Airframe/ Systems/ Power plant;
- Aircraft General Knowledge – Instrumentation;
- Mass and balance;
- Performance;
- Flight Planning and Monitoring;
- Human Performance;
- Meteorology;
- General Navigation;
- Radio Navigation;
- Operational Procedures;
- Principles of flight;
- VFR Communications;
- IFR Communications.

SECTION 2

Specific requirements for the aeroplane category – ATPL(A)

FCL.505.A ATPL(A) - Restriction of privileges for pilots previously holding an MPL

When the holder of an ATPL(A) has previously held only a multi-crew pilot licence, the privileges of the licence shall be restricted to multi-pilot operations, unless the holder has complied with FCL.405.A (b)(2) and (3) for single-pilot operations.

FCL.510.A ATPL(A) - Pre-requisites, experience and crediting

(a) *Pre-requisites*. Applicants for an ATPL(A) shall hold:

(1) an MPL; or

(2) a CPL(A) and a multi-engine instrument rating(A). In this case, the applicant shall also have received instruction in multi-crew co-operation.

(b) *Experience*. Applicants for an ATPL(A) shall have completed a minimum of 1500 hours of flight time in aeroplanes, including at least:

(1) 500 hours in multi-pilot operations on aeroplanes with a type certificate issued in accordance with CS-25 or equivalent code, or CS–23 Commuter category or equivalent code;

(2) (i) 500 hours as pilot-in-command under supervision; or

(ii) 250 hours as pilot-in-command; or

(iii) 250 hours, including at least 70 hours as pilot-in-command, and the remaining as pilot-in-command under supervision;

(3) 200 hours of cross-country flight time of which at least 100 hours shall be as pilot-in-command or as pilot-in-command under supervision;

(4) 75 hours of instrument time of which not more than 30 hours may be instrument ground time; and

(5) 100 hours of night flight.

Of the 1500 hours flight time, up to 100 hours of flight time may have been completed in FFS and FNPT. Of these 100 hours, only a maximum of 25 hours may be completed in FNPT.

(c) *Crediting*.

(1) Holders of a pilot licence for other categories of aircraft shall be credited with flight time up to a maximum of:

(i) for TMG or sailplanes, 30 hours flown as pilot-in-command;

(ii) for helicopters, 50% of all the flight time requirements of paragraph (b).

(2) Holders of a flight engineer licence issued in accordance with applicable national rules shall be credited with 50% of the flight engineer time up to a maximum credit of 250 hours. These 250 hours may be credited against the 1500 hours requirement of paragraph (a), and the 500 hours requirement of paragraph (b)(1), provided that the total credit given against any of these paragraphs does not exceed 250 hours.

(d) The experience required in (b) shall be completed before the skill test for the ATPL(A) is taken.

FCL.515.A ATPL(A) - Theoretical knowledge instruction – Modular course

Applicants for an ATPL(A) that complete their theoretical knowledge instruction at a modular course shall:

(a) hold at least a PPL(A); and

(b) complete at least the following hours of theoretical knowledge instruction within a period of 18 months:

(1) for applicants holding a PPL(A): 650 hours;

(2) for applicants holding a CPL(A):400 hours;

(3) for applicants holding an IR(A): 500 hours;

(4) for applicants holding a CPL(A) and an IR(A): 250 hours.

(c) The theoretical knwoledge instruction shall be completed completed before the skill test for the ATPL(A) is taken

FCL.520.A ATPL(A) – Skill test

Applicants for an ATPL(A) shall pass a skill test in accordance with Appendix 9 to this Part to demonstrate the ability to perform, as pilot-in-command of a multi-pilot aeroplane under IFR the relevant procedures and manoeuvres with the competency appropriate to the privileges granted .

SECTION 3

Specific requirements for the helicopter category – ATPL(H)

FCL.510.H ATPL(H) - Pre-requisites, experience and crediting

Applicants for an ATPL(H) shall:

(a) hold a CPL(H) and a multi-pilot helicopter type rating and have received instruction in multi-crew co-operation VFR;

(b) have completed as a pilot of helicopters a minimum of 1000 hours of flight time including at least:

(1) 350 hours in multi-pilot helicopters;

(2) (i) 250 hours as pilot-in-command; or

(ii) 100 hours as pilot-in-command and 150 hours as pilot-in-command under supervision; or

(iii) 250 hours as pilot-in-command under supervision in multi-pilot helicopters. In this case, the ATPL(H) privileges shall be limited to multi-pilot operations only;

(3) 200 hours of cross-country flight time of which at least 100 hours shall be as pilot-in-command or as pilot-in-command under supervision.

(4) 30 hours of instrument time of which not more than 10 hours may be instrument ground time; and

(5) 100 hours of night flight as pilot-in-command or as co-pilot.

Of the 1000 hours, a maximum of 100 hours may have been completed in an FSTD, of which not more than 25 hours may be completed in an FNPT.

(c) Flight time in aeroplanes shall be credited up to 50% against the flight time requirements of paragraph (b).

(d) The experience required in (b) shall be completed before the skill test for the ATPL(H) is taken.

FCL.515.H ATPL(H) - Theoretical knowledge instruction – Modular course

(a) Applicants for an ATPL(H) that complete their theoretical knowledge instruction at a modular course shall hold at least a PPL(H) and complete at least the following hours of instruction within a period of 18 months:

(1) for applicants holding a PPL(H): 550 hours;

(2) for applicants holding a CPL(H): 300 hours.

(b) Applicants for an ATPL(H)/IR that complete their theoretical knowledge instruction at a modular course shall hold at least a PPL(H) and complete at least the following hours of instruction within a period of 18 months:

(1) for applicants holding a PPL(H): 650 hours;

(2) for applicants holding a CPL(H): 400 hours;

(3) for applicants holding an IR(H): 500 hours;

(4) for applicants holding a CPL(H) and an IR(H): 250 hours.

FCL.520.H ATPL(H) – Skill test

Applicants for an ATPL(H) shall pass a skill test in accordance with Appendix 9 to this Part to demonstrate the ability to perform as pilot-in-command of a multi-pilot helicopter the relevant procedures and manoeuvres with the competency appropriate to the privileges granted.

SECTION 4

Specific requirements for the powered-lift category – ATPL(PL)

Reserved

SUBPART G

INSTRUMENT RATING - IR

SECTION 1

Common Requirements

FCL.600 IR - General

Holders of a pilot licence shall only operate an aircraft under IFR when they hold an instrument rating appropriate to the category of aircraft, except when they are a pilot undergoing skill testing or dual instruction.

FCL.605 IR - Privileges

(a) The privileges of a holder of an IR are to fly aircraft under IFR with a minimum decision height of 200 feet (60 m).

(b) In the case of a multi-engine IR, these privileges may be extended to decision heights lower than 200 feet (60 m) when the applicant has undergone specific training at an approved training organisation and has passed section 6 of the skill test prescribed in Appendix 9 to this Part in multi-pilot aircraft.

(c) Holders of an IR shall exercise their privileges in accordance with the conditions established in Appendix 8 to this Part.

(d) *Helicopters only*. To exercise privileges as pilot-in-command under IFR in multi-pilot helicopters, the holder of an IR(H) must have at least 70 hours of instrument time of which up to 30 hours may be instrument ground time.

FCL.610 IR - Pre-requisites

Applicants for an IR shall:

(a) hold:

(1) a PPL with a night rating in the appropriate aircraft category; or

(2) a CPL, with a night rating in the appropriate aircraft category; or

(3) an ATPL in another category of aircraft;

(b) have completed at least 50 hours cross-country flight time as pilot-in-command in aeroplanes, helicopters or airships of which at least 10 or, in the case of airships, 20 hours shall be in the relevant aircraft category.

(c) Applicants who have completed an integrated flying training course as ATPL(H)/IR, ATPL(H), CPL(H)/IR or CPL(H) shall be exempted from the requirement in paragraph (b).

FCL.615 IR - Theoretical knowledge and flight instruction

(a) *Course*. Applicants for an IR shall have received a course of theoretical knowledge and flight instruction at an approved training organisation. The course shall be:

(1) an integrated training course that includes training for the IR, in accordance with Appendix 3 to this Part; or

(2) a modular course in accordance with Appendix 6 to this Part.

(b) *Examination*. Applicants shall demonstrate a level of theoretical knowledge appropriate to the privileges granted in the following subjects, further detailed in Appendix 2 to this Part:

- Air Law;

- Aircraft General Knowledge - Instrumentation;
- Flight Performance and Monitoring;
- Human Performance;
- Meteorology;
- Radio Navigation;
- IFR Communications

FCL.620 IR - Skill test

(a) Applicants for an IR shall pass a skill test in accordance with Appendix 7 to the Part to demonstrate the ability to perform the relevant procedures and manoeuvres with a degree of competency appropriate to the privileges granted.

(b) For a multi-engine IR, the skill test shall be taken in a multi-engine aircraft. For a single-engine IR the test shall be taken in a single-engine aircraft.

FCL.625 IR - Validity, revalidation and renewal

(a) *Validity.* An IR is valid for 1 year. This period shall be counted from the date of issue or renewal or, if the rating is revalidated before its expiry date, from that expiry date.

(b) *Revalidation*.

(1) An IR shall be revalidated within the 3 months immediately preceding the expiry date of the rating.

(2) An applicant who fails pass the relevant section of an IR proficiency check before the expiry date of the IR shall not exercise the IR privileges until he/she has passed the proficiency check.

(c) *Renewal.* If an instrument rating has expired, in order to renew his/her privileges the applicant shall:

(1) go through refresher training at an approved training organisation, to reach the level of proficiency needed to pass the instrument element of the skill test in accordance with Appendix 9 to this Part; and

(2) complete a proficiency check in accordance with Appendix 9 to this Part, in the relevant aircraft category.

(d) If the IR has not been revalidated or renewed within the preceding 7 years, the holder will be required to pass again the IR theoretical knowledge examination and skill test.

SECTION 2

Specific requirements for the aeroplane category

FCL.625.A IR(A) - Revalidation

(a) *Revalidation*. Applicants for the revalidation of an IR(A):

(1) When combined with the revalidation of a class or type rating, shall pass a proficiency check in accordance with Appendix 9 to this Part;

(2) when not combined with the revalidation of a class or type rating, shall :

(i) for single-pilot aeroplanes, complete section 3b and those parts of section 1 relevant to the intended flight, of the proficiency check prescribed in Appendix 9 to this Part; and

(ii) for multi-engine aeroplanes, complete section 6 of the proficiency check for single-pilot aeroplanes in accordance with Appendix 9 to this Part by sole reference to instruments.

(3) An FTD 2/3 or a FFS may be used in the case of paragraph (2), but at least each alternate proficiency check for the revalidation of an IR(A) in these circumstances shall be performed in an aeroplane.

(b) Cross-credit shall be given in accordance with Appendix 8 to this Part.

SECTION 3

Specific requirements for the helicopter category

FCL.625.H IR(H) - Revalidation

(a) Applicants for the revalidation of an IR(H):

(1) when combined with the revalidation of a type rating, shall complete a proficiency check in accordance with Appendix 9 to this Part, for the relevant type of helicopter.

(2) when not combined with the revalidation of a type rating, shall complete only Section 5 and the relevant parts of Section 1 of the proficiency check established in Appendix 9 to this Part for the relevant type of helicopter . In this case, an FTD II/III or a FFS, may be used, but at least each alternate proficiency check for the revalidation of an IR(H) in these circumstances shall be performed in a helicopter.

(b) Cross-credit shall be given in accordance with Appendix 8 to this Part.

FCL.630.H IR(H) - Extension of privileges from single-engine to multi-engine helicopters

Holders of an IR(H) valid for a single-engine helicopter type wishing to extend for the first time the IR(H) to a multi-engine helicopter type shall complete:

(a) a training course at an approved training organisation comprising at least 5 hours dual instrument instruction time, of which 3 hours may be in FS or FTD 2/3 or FNPT II/III; and

(b) Section 5 of the skill test for single-pilot or multi-pilot helicopters in accordance with Appendix 9 to this Part on that multi-engine type.

SECTION 4

Specific requirements for the powered-lift category

Reserved

SECTION 5

Specific requirements for the airship category

FCL.625.As IR(As) - Revalidation

Applicants for the revalidation of an IR(As):

(a) when combined with the revalidation of a type rating, shall complete a proficiency check in accordance with Appendix 9 to this Part, for the relevant type of airship;

(b) when not combined with the revalidation of a type rating, shall complete Section 5 and those parts of Section 1 relevant to the intended flight of the proficiency check for airships in accordance with Appendix 9 of this part. In this case, an FTD 2/3 or FFS may be used, but at least each alternate proficiency check for the revalidation of an IR(As) in these circumstances shall be performed in an airship.

SUBPART H

CLASS AND TYPE RATINGS

SECTION 1

Common requirements

FCL.700 Circumstances in which class or type ratings are required

(a) Except in the case of the LPL, the SPL and the BPL, holders of a pilot licence shall not act in any capacity as pilots of an aircraft unless they have a valid and appropriate class or type rating, except when undergoing skill testing or receiving flight instruction.

(b) Notwithstanding paragraph (a), in the case of flights related to the introduction of new aircraft types, the pilot shall hold a special certificate given by the competent authority, authorising him to perform the flights. This authorisation shall have its validity limited to the specific flights.

FCL.705 Privileges of the holder of a class or type rating

The privileges of the holder of a class or type rating are to act as a pilot on the class or type of aircraft specified in the rating.

FCL.710 Class and type ratings - Variants

(a) In order to extend its privileges to another variant of aircraft within one class or type rating, the pilot shall undertake differences or familiarisation training, as defined in accordance with Part-21

(b) If the variant has not been flown within a period of 2 years following the differences training, further differences training or a proficiency check in that variant shall be required to maintain the privileges, except for types or variants within the single-engine piston class rating.

(c) The differences training shall be entered in the pilot's logbook or equivalent document and signed by the instructor as appropriate.

FCL.725 Requirements for the issue of class and type ratings

(a) *Training course*. An applicant for a class or type rating shall complete a training course at an approved training organisation. The training course shall be based on the training syllabi for the relevant class or type as established in accordance with Part-21.

(b) *Theoretical knowledge examination*. The applicant for a class or type rating shall pass a theoretical knowledge examination organized by the approved training organization to demonstrate the level of theoretical knowledge required for the safe operation of the applicable aircraft class or type

(1) For multi-pilot aircraft, the theoretical knowledge examination shall be written and comprise at least 100 multi-choice questions distributed appropriately across the main subjects of the syllabus.

(2) For single-pilot multi-engine aircraft, the theoretical knowledge examination shall be written and the number of multi-choice questions shall depend on the complexity of the aircraft.

(3) For single-engine aircraft, the theoretical knowledge examination shall be conducted verbally by the examiner during the skill test, to determine whether or not a satisfactory level of knowledge has been achieved.

(4) For aeroplanes that are certified as high performance aeroplanes in accordance with Part-21, the examination shall be written and comprise at least 60 multi-choice questions distributed appropriately across the main subjects of the syllabus.

(c) Skill test. An applicant for a type or class rating shall pass a skill test in accordance with Appendix 9 to this Part, to demonstrate the skill required for the safe operation of the applicable type or class of aircraft.

The applicant shall pass the skill test within a period of 6 months after completion of the type rating training course and preceding the application for the issue of the type or class rating.

(d) *Helicopters and airships*. An applicant already holding a type rating for an aircraft type, after a skill test performed in either single-pilot or multi-pilot role, shall be considered to have fulfilled the theoretical requirements when applying for a further type rating for the same type, to be performed in the opposite role.

FCL.740 Validity and renewal of class and type ratings

(a) The period of validity of class and type ratings shall be 12 calendar months, except for single-pilot single-engine class ratings, for which the period of validity shall be 24 calendar months. This period shall be counted from the date of issue or renewal or, if the rating is revalidated before its expiry date, from that expiry date.

(b) *Renewal.* If a class or type rating has expired, the applicant shall:

(1) take refresher training at an approved training organisation, to reach the level of proficiency necessary to safely operate the relevant type or class of aircraft; and

(2) pass a proficiency check in accordance with Appendix 9 to this Part.

SECTION 2

Specific Requirements for the aeroplane category

FCL.720.A Experience requirements and pre-requisites for the issue of class or type ratings - aeroplanes

An applicant for a class or type rating shall comply with the experience requirements and pre-requisites for the issue of the relevant rating established in accordance with Part-21. In any case, those requirements and pre-requisites shall be at least the following:

(a) *Single-pilot multi-engine aeroplanes*. An applicant for a first class or type rating on a single-pilot multi-engine aeroplane shall have completed at least 70 hours as pilot-in-command of aeroplanes.

(b) *Single-pilot high performance aeroplanes*. Before starting flight training, an applicant for a first type or class rating for a single-pilot aeroplane that is certified as high performance aeroplane in accordance with Part-21 aeroplane shall:

(1) have at least 200 hours of total flying experience, of which 70 hours as pilot-in-command of aeroplanes; and

(2) (i) hold a certificate of satisfactory completion of a course for additional theoretical knowledge undertaken at an approved training organisation, containing the elements described in Appendix 10 to this Part; or

(ii) have passed the ATPL(A) theoretical knowledge examinations; or

(iii) hold, in addition to a licence issued in accordance with this Part, a valid ATPL(A) or CPL(A)/IR with theoretical knowledge credit for ATPL(A), issued in accordance with ICAO Annex 1.

(c) *Multi-pilot aeroplanes*. An applicant for the first type rating course for a multi-pilot aeroplane shall be a student currently undergoing training on a MPL training course or comply with the following requirements:

(1) have at least 70 hours as pilot-in-command of aeroplanes;

(2) have a valid multi-engine IR(A);

(3) have passed the ATPL(A) theoretical knowledge examinations; and

(4) Except when the type rating course is combined with a multi-crew co-operation (MCC) course:

(i) hold a certificate of satisfactory completion of an MCC course in aeroplanes; or

(ii) hold a certificate of satisfactory completion of MCC in helicopters and have more than 100 hours of flight experience as a pilot of multi-pilot helicopters; or

(iii) have at least 500 hours as a pilot of multi-pilot helicopters; or

(iv) have at least 500 hours as a pilot in multi-pilot operations on single-pilot multi-engine aeroplanes, in commercial air transport operations.

FCL.725.A Theoretical knowledge and flight instruction for the issue of class and type ratings - aeroplanes

(a) *Single-pilot multi-engine aeroplanes*.

(1) The theoretical knowledge course for a single-pilot multi-engine class rating shall include at least 7 hours of instruction in multi-engine aeroplane operations.

(2) The flight training course for a single-pilot multi-engine class or type rating shall include at least 2 hours and 30 minutes of dual flight instruction under normal conditions of multi-engine aeroplane operations, and not less than 3 hours 30 minutes of dual flight instruction in engine failure procedures and asymmetric flight techniques.

(b) *Single-pilot aeroplanes – sea ratings*. The flight training course for a class or type rating-sea for single-pilot aeroplanes-sea shall include at least 8 hours of dual flight instruction if the applicant holds the land version of the relevant class or type rating, or 10 hours if the applicant does not hold such a rating.

FCL.730.A Specific requirements for pilots undertaking a zero flight time type rating (ZFTT) course - aeroplanes

A pilot undertaking instruction at a ZFTT course shall have completed, on a multi-pilot turbo-jet aeroplane certificated in accordance with article 2 of Commission Regulation No 1702/2003 to the standards of CS-25 or equivalent airworthiness code or on a multi-pilot turbo-prop aeroplane having a maximum certificated take-off mass of not less than 10 tonnes or a certificated passenger seating configuration of more than 19 passengers, at least:

(a) if a FFS qualified to level CG, C or interim C is used during the course, 1500 hours flight time or 250 route sectors;

(b) if a FFS qualified to level DG, Interim D or D is used during the course, 500 hours flight time or 100 route sectors.

FCL.735.A Multi-crew cooperation training course- aeroplanes

(a) The multi-crew cooperation (MCC) training course shall comprise at least:

(1) 25 hours of theoretical knowledge instruction and exercises; and

(2) 20 hours of practical MCC training, or 15 hours in the case of students attending an ATP integrated course.

When the MCC training is combined with the initial type rating training for a multi-pilot aeroplane, the practical MCC training may be reduced to no less than 10 hours if the same FSTD is used for both the MCC and type rating training. A FNPT II or a FFS shall be used.

(b) The MCC training course shall be completed within six months at an approved training organisation.

(c) Unless the MCC course has been combined with a multi-pilot type rating course, on completion of the MCC training course the applicant shall be given a certificate of completion.

(d) An applicant having completed MCC training for any other category of aircraft shall be exempted from the requirement in (a)(1).

FCL.740.A Revalidation of class and type ratings - aeroplanes

(a) *Revalidation of type ratings and multi-engine class ratings.* For revalidation of type ratings and multi-engine class ratings, the applicant shall:

(1) pass a proficiency check in accordance with Appendix 9 to this Part in the relevant type or class of aeroplane, within the three months immediately preceding the expiry date of the rating; and

(2) complete during the period of validity of the rating, at least:

(i) 10 route sectors as pilot of the relevant type or class of aeroplane; or

(ii) 1 route sector as pilot of the relevant type or class of aeroplane or FFS, flown with an examiner.

(3) A pilot working for a commercial air transport operator that has passed the operators proficiency check combined with the proficiency check for the revalidation of the type or class rating shall be exempted from complying with the requirement in (2).

(4) The revalidation of an IR(A), if held, shall be combined with a proficiency check for the revalidation of a class or type rating.

(b) *Revalidation of single-pilot single-engine class ratings.*

(1) *Single-engine piston aeroplane class ratings and touring motor glider ratings.* For revalidation of single-pilot single-engine piston aeroplane class ratings or touring motor glider class ratings the applicant shall:

(i) within the three months preceding the expiry date of the rating, pass a proficiency check in the relevant class in accordance with Appendix 9 to this Part with an examiner; or

(ii) within the 12 months preceding the expiry date of the rating, complete 12 hours of flight time in the relevant class, including:

- 6 hours as pilot-in-command;
- 12 take-offs and 12 landings; and
- a training flight of at least one hour with a flight instructor (FI) or a class rating instructor (CRI). Applicants shall be exempted from this flight if they have passed a proficiency check or skill test in any other class or type of aeroplane.

(2) For at least every third revalidation, the applicant shall comply with the requirements in (1)(i).

(3) When the applicant holds both a single-engine piston aeroplane-land class rating and a touring motor glider rating, he/she may complete the requirements of the paragraph above in either class, and achieve revalidation of both ratings.

(4) *Single-pilot single-engine turbo-prop aeroplanes.* For revalidation of single-engine turbo-prop class ratings the applicant shall pass a proficiency check on the relevant class in accordance with Appendix 9 to this Part with an examiner, within the three months preceding the expiry date of the rating.

(c) An applicant who fails to pass all sections of a proficiency check before the expiry date of a type or class rating shall not exercise the privileges of that rating until a pass in the proficiency check has been achieved.

SECTION 3

Specific Requirements for the helicopter category

FCL.720.H Experience requirements and pre-requisites for the issue of type ratings - helicopters

An applicant for a type rating shall comply with the experience requirements and pre-requisites for the issue of the relevant rating established in accordance with Part-21. In any case, those requirements and pre-requisites shall be at least the following:

(a) *Multi-pilot helicopters.* An applicant for the first type rating course for a multi-pilot helicopter type shall:

(1) have at least 70 hours as pilot-in-command of helicopters;

(2) except when the type rating course is combined with a multi-crew co-operation (MCC) course:

(i) hold a certificate of satisfactory completion of an MCC course in helicopters; or

(ii) have at least 500 hours as a pilot on multi-pilot operations on single-pilot multi-engine helicopters;

(3) have passed the ATPL(H) theoretical knowledge examinations.

(b) An applicant for the first type rating course for a multi-pilot helicopter type that is a graduate from a ATP(H)/IR integrated, ATP(H) integrated, CPL(H)/IR integrated or CPL(H) integrated course may not comply with the requirement of (a)(1). In this case, he/she, shall have the type rating issued with the privileges limited to exercising functions as co-pilot only. The limitation shall be removed once the pilot has:

(1) completed 70 hours as pilot-in-command or pilot-in-command under supervision of helicopters;

(2) passed the multi-pilot skill test on the applicable helicopter type as pilot-in-command.

(c) Single-pilot *multi-engine helicopters.* An applicant for the issue of a first type rating for a single-pilot multi-engine helicopter shall:

(1) (i) have passed the ATPL(H) theoretical knowledge examinations; or

(ii) hold a certificate of completion of a pre-entry course conducted by an approved training organisation. The course shall cover the following subjects of the ATPL(H) theoretical knowledge course:

- Aircraft General Knowledge: airframe / systems / powerplant, and instrument / electronics;
- Flight Performance and Planning: mass and balance, performance;

(2) in the case of applicants who have not completed an integrated flying training course as ATPL(H)/IR, ATPL(H), or CPL(H)/IR, have completed at least 70 hours as pilot-in-command of helicopters.

FCL.735.H Multi-crew cooperation training course- helicopters

(a) The multi-crew cooperation (MCC) training course shall comprise at least:

(1) for MCC/IR:

(i) 25 hours of theoretical knowledge instruction and exercises; and

(ii) 15 hours of practical MCC training;

(2) for MCC/VFR:

(i) 25 hours of theoretical knowledge instruction and exercises; and

(ii) 10 hours of practical MCC training;

(b) The MCC training course shall be completed within six months at an approved training organisation.

A FNPT II or III qualified for MCC, a FTD 2 / 3 or a FFS shall be used.

(c) Unless the MCC course has been combined with a multi-pilot type rating course, on completion of the MCC training course the applicant shall be given a certificate of completion.

(d) An applicant having completed MCC training for any other category of aircraft shall be exempted from the requirement in (a)(1)(i) or (a)(2)(1), as applicable.

FCL.740.H Revalidation of type ratings – helicopters

(a) *Revalidation.* For revalidation of type ratings for helicopters, the applicant shall:

(1) pass a proficiency check in accordance with Appendix 9 to this Part in the relevant type of helicopter within the three months immediately preceding the expiry date of the rating; and

(2) complete at least 2 hours as a pilot of the relevant helicopter type within the validity period of the rating. The duration of the proficiency check may be counted towards the 2 hours.

(3) When the applicant holds more than one type rating for the single-engine piston helicopters listed in Appendix 11 to this part, he/she shall achieve revalidation of all the relevant type ratings by completing the proficiency check in only one of the relevant types held, provided that he/she has completed at least 2 hours of pilot-in-command flight time on the other types during the validity period.

The proficiency check shall always be performed on the type least recently used for a proficiency check.

(4) When the applicant holds more than one type rating for single-engine turbine helicopters with a maximum certificated take-off mass up to 3175 kg, he/she shall achieve revalidation of all the relevant type ratings by completing the proficiency check in only one of the relevant types held, provided that he/she has completed:

(i) 300 hours as pilot-in-command on helicopters;

(ii) 15 hours on each of the types held; and

(iii) at least 2 hours of pilot-in-command flight time on each of the other types during the validity period.

The proficiency check shall always be performed on the type least recently used for a proficiency check.

(b) An applicant who fails to pass all sections of a proficiency check before the expiry date of a type rating shall not exercise the privileges of that rating until a pass in the proficiency check has been achieved. In the case of (a)(3) and (4), the applicant shall not exercise his/her privileges in any of the types.

SECTION 4

Specific Requirements for the powered-lift aircraft category

FCL.720.PL Experience requirements and pre-requisites for the issue of type ratings - powered-lift aircraft

An applicant for a powered-lift type rating shall comply with the experience requirements and pre-requisites for the issue of the relevant rating established in accordance with Part-21. In any case, those requirements and pre-requisites shall be at least the following:

(a) For pilots of aeroplanes:

(1) hold a CPL/IR(A) with ATPL theoretical knowledge or an ATPL(A);

(2) hold a certificate of completion of a MCC course;

(3) have completed more than 100 hours as pilot of multi-pilot aeroplanes;

(4) have completed 40 hours of flight instruction in helicopters;

(b) For pilots of helicopters:

(1) hold a CPL/IR(H) with ATPL theoretical knowledge or an ATPL/IR(H);

(2) hold a certificate of completion of a MCC course;

(3) have completed more than 100 hours as a pilot of multi-pilot helicopters;

(4) have completed 40 hours of flight instruction in aeroplanes;

(c) For pilots qualified to fly both aeroplanes and helicopters:

(1) hold at least a CPL(H);

(2) hold an IR and an ATPL in either aeroplanes or helicopters;

(3) hold a certificate of completion of an MCC course in either helicopters or aeroplanes;

(4) have completed:

(i) at least 100 hours as pilot-in-command of multi-pilot helicopters or aeroplanes; or

(ii) 500 hours as a pilot on multi-pilot helicopters or aeroplanes; or

(iii) 500 hours as a pilot in multi-pilot operations on single-pilot multi-engine helicopters or aeroplanes, in commercial air transport operations.

FCL.725.PL Flight instruction for the issue of type ratings - powered-lift aircraft

The flight instruction part of the training course for a powered-lift type rating shall be completed in both the aircraft and an FSTD representing the aircraft and adequately qualified for this purpose.

FCL.740.PL Revalidation of type ratings – powered-lift aircraft

(a) *Revalidation*. For revalidation of powered-lift type ratings, the applicant shall:

(1) pass a proficiency check in accordance with Appendix 9 to this Part in the relevant type of powered-lift within the three months immediately preceding the expiry date of the rating;

(2) complete during the period of validity of the rating, at least:

(i) 10 route sectors as pilot of the relevant type of powered-lift aircraft; or

(ii) 1 route sector as pilot of the relevant type of powered-lift aircraft or FFS, flown with an examiner;

(3) A pilot working for a commercial air transport operator who has passed the operators proficiency check combined with the proficiency check for the revalidation of the type rating shall be exempted from complying with the requirement in (2).

(b) An applicant who fails to pass all sections of a proficiency check before the expiry date of a type rating shall not exercise the privileges of that rating until the a pass in the proficiency check has been achieved.

SECTION 5

Specific Requirements for the airship category

FCL.720.As Pre-requisites for the issue of type ratings - airships

(a) An applicant for an airship type rating shall comply with the experience requirements and pre-requisites for the issue of the relevant rating established in accordance with Part-21.

(b) *Multi-pilot airships.*

(1) An applicant for the first type rating course for a multi-pilot airship type shall hold a certificate of satisfactory completion of MCC in airships.

(2) An applicant that does not comply with the requirement in (1), shall have the type rating issued with the privileges limited to exercising functions as co-pilot only. The limitation shall be removed once the pilot has complete 100 hours of flight time as pilot-in-command or pilot-in-command under supervision of airships.

FCL.735.As Multi-crew cooperation training course - airships

(a) The multi-crew cooperation (MCC) training course shall comprise at least:

(1) for MCC/IR:

(i) 15 hours of theoretical knowledge instruction and exercises; and

(ii) 10 hours of practical MCC training;

(2) for MCC/VFR:

(i) 12 hours of theoretical knowledge instruction and exercises; and

(ii) 5 hours of practical MCC training;

(3) A FNPT II, or III qualified for MCC, a FTD 2/ 3 or a FFS shall be used.

(b) The MCC training course shall be completed within six months at an approved training organisation.

(c) Unless the MCC course has been combined with a multi-pilot type rating course, on completion of the MCC training course the applicant shall be given a certificate of completion.

(d) An applicant having completed MCC training for any other category of aircraft shall be exempted from the requirements in (a)(1)(i) or (a)(2)(i), as applicable.

FCL.740.As Revalidation of type ratings - airships

(a) *Revalidation.* For revalidation of type ratings for airships, the applicant shall:

(1) pass a proficiency check in accordance with Appendix 9 to this Part in the relevant type of airship within the three months immediately preceding the expiry date of the rating; and

(2) complete at least 2 hours as a pilot of the relevant airship type within the validity period of the rating. The duration of the proficiency check may be counted towards the two hours.

(3) The revalidation of an IR(As), if held, shall be combined with a proficiency check for the revalidation of a class or type rating

(b) An applicant who fails to pass all sections of a proficiency check before the expiry date of a type rating shall not exercise the privileges of that rating until a pass in the proficiency check has been achieved.

SUBPART I

ADDITIONAL RATINGS

FCL.800 Aerobatic rating

(a) Holders of a pilot licence for aeroplanes, helicopters or sailplanes shall only undertake aerobatic flights when they hold the appropriate rating.

(b) Applicants for an aerobatic rating shall have completed:

(1) at least 40 hours of flight time as pilot-in-command in the appropriate aircraft category;

(2) theoretical knowledge instruction appropriate for the rating;

(3) 5 hours of dual aerobatic instruction time.

(c) The privileges of the aerobatic rating shall be limited to the aircraft category in which the flight instruction was completed. This limitation may be withdrawn and the privileges extended to another category of aircraft if the pilot holds a valid license for that aircraft category and has successfully completed at least one dual familiarization flight with an instructor holding an aerobatic rating for that category of aircraft.

FCL.805 Sailplane towing and banner towing ratings

(a) Holders of a pilot licence with privileges to fly aeroplanes or touring motor gliders shall only tow sailplanes or banners when they hold the appropriate sailplane towing or banner towing rating.

(b) Applicants for a towing rating shall have completed:

(1) at least 150 hours of flight time as pilot-in-command for the banner towing rating or 100 hours of flight time as pilot-in-command for the sailplane towing rating. At least 40 of these hours shall be in aeroplanes, if the activity is to be carried out in aeroplanes, or in touring motor gliders, if the activity is to be carried out in touring motor gliders;

(2) theoretical knowledge instruction on towing operations and procedures;

(3) 10 dual instruction flights towing either a banner or a sailplane, as appropriate;

(4) additionally, for the sailplane towing rating, 3 familiarisation flights in a sailplane which is launched by an aircraft;

FCL.810 Night rating

(a) A*eroplanes, touring motor gliders, airships.* If the privileges of a LPL or a PPL for aeroplanes, touring motor glider or airships are to be exercised in VFR conditions at night, applicants shall complete at least 5 additional hours of flight time in the appropriate aircraft category at night, comprising 3 hours of dual instruction, including at least 1 hour of cross-country navigation and 5 solo take-offs and five solo full-stop landings.

(b) *Helicopters*. If the privileges of a PPL for helicopters are to be exercised in VFR conditions at night, the applicant shall have:

(1) completed at least 100 hours of flight time as pilots in helicopters after the issue of the licence, including at least 60 hours as pilot-in-command of helicopters and 20 hours of cross-country flight;

(2) completed a training course at an approved training organisation. The course shall be completed within a period of 6 months and comprise:

(i) 5 hours of theoretical knowledge instruction;

(ii) 10 hours of helicopter dual instrument instruction time; and

(iii) 5 hours of flight time, including at least 3 hours of dual instruction and 5 solo night circuits. Each circuit shall include a take-off and a landing.

(3) An applicant who holds or has held an IR in another category of aircraft shall be credited with 5 hours towards the requirement in (2)(ii) above.

(c) *Sailplanes.* If the privileges of a LPL(S) or a SPL are to be exercised in VFR conditions at night, applicants shall have completed at least:

(1) 50 hours as pilot-in-command in sailplanes or powered sailplanes after the issue of the licence;

(2) 5 hours of dual flight instruction at night.

(3) The privileges of this rating shall be limited to flight taking-off and landing at the same aerodrome.

(d) *Balloons*. If the privileges of a LPL for balloons or a BPL are to be exercised in VFR conditions at night, applicants shall complete at least two instruction flights with take-off during the night, with an average flight time of 90 minutes each.

FCL.815 Mountain ratings

(a) *Privileges*. The privileges of the holder of a wheel mountain rating or a ski mountain rating are to conduct flights to and from surfaces designated as requiring such a rating by the appropriate authorities designated by the Member States.

The wheel mountain rating grants the privilege to fly to and from such surfaces when the runway is not covered by snow.

The ski mountain rating grants the privilege to fly to and from such surfaces when the runway is covered by snow.

(b) *Training course*. Applicants for a wheel or ski mountain rating shall have completed, within a period of 12 months, a course of theoretical knowledge instruction and flight training at an approved training organisation. The content of the course shall be appropriate to the relevant rating.

(c) *Skill test*. After the completion of the training, the applicant shall pass a skill test with an FE qualified for this purpose. The skill test shall contain:

(1) A verbal examination of theoretical knowledge;

(2) 6 landings on at least two different surfaces designated as requiring a mountain rating other than the surface of departure.

(d) *Validity,* A mountain rating shall be valid for a period of 12 months.

(e) *Revalidation.* For revalidation of a mountain rating, the applicant shall:

(1) have completed at least 3 mountain landings in the past 12 months; or

(2) pass a proficiency check. The proficiency check shall comply with the requirements in (c).

(3) For at least every third revalidation the applicant shall comply with the requirements in (2).

(f) *Renewal*. If the rating has lapsed, the applicant shall comply with the requirement in (e)(2).

FCL.820 Flight tests

(a) Holders of a pilot licence for aeroplanes or helicopters shall only undertake category 1 or 2 flight tests for the certification of aircraft in accordance with article 2 of Commission Regulation No 1702/2003 to the standards of CS-25, CS-23, CS-27 and CS-29 or equivalent airworthiness codes, when they

(1) hold at least a CPL in the appropriate aircraft category;

(2) have completed a training course at an approved training organization appropriate to the intended aircraft and category of flights.

(b) Category 1 flight tests include the following:

(1) initial flights of a new type of aircraft or of an aircraft of which flight or piloting characteristics have been significantly modified;

(2) flights to investigate novel or unusual aircraft design features or techniques;

(3) flights to determine or expand the flight envelope;

(4) flights to determine the specified performances, flight characteristics and handling qualities in extreme conditions.

(c) Category 2 flight tests include the following:

(1) Flights done in the part of the flight envelope that has already been opened and comprising manoeuvres during which it is not envisaged to encounter flight or handling characteristics significantly different from those already known;

(2) Display flights and demonstration flights of a non type certificated aircraft;

(3) Flights conducted for the purpose of determining whether there is reasonable assurance that the aircraft and its parts and appliances are reliable and function properly.

SUBPART J
INSTRUCTORS

SECTION 1
Common requirements

FCL.900 Instructor certificates

(a) *General*. A person shall not carry out:

(1) flight instruction in aircraft unless he/she holds:

(i) a pilot licence issued or accepted in accordance with this Regulation;

(ii) an instructor certificate appropriate to the instruction given, issued in accordance with this Subpart;

(2) synthetic flight instruction or multi-crew cooperation instruction unless he/she holds an instructor certificate appropriate to the instruction given, issued in accordance with this Subpart.

(b) *Special conditions*

(1) In the case of introduction of new aircraft, when compliance with the requirements established in this Subpart is not possible, the competent authority shall issue a specific certificate giving privileges for flight instruction. Such a certificate shall be limited to the instruction flights necessary for the introduction of the new type of aircraft and its validity shall not, in any case, exceed 3 years.

(2) The holder of a certificate issued in accordance with (b)(1) who wishes to apply for an instructor certificate shall comply with the pre-requisites and revalidation requirements established for that category of instructor.

FCL.915 General requirements for instructors

(a) *General.* An applicant for an instructor certificate shall be at least 18 years of age.

(b) *Additional requirements for flight instructors*. An applicant for an instructor certificate with privileges to conduct flight instruction in an aircraft shall:

(1) hold at least the licence and, if applicable, the rating for which instruction is to be given;

(2) have:

(i) completed at least 15 hours of flight as a pilot on the class or type of aircraft on which instruction is to be given, of which a maximum of 7 hours may be in an FSTD, if applicable; or

(ii) passed a skill test or proficiency check for the relevant category of instructor on that class or type of aircraft;

(3) be entitled to act as pilot-in-command of the aircraft during such instruction.

(c) *Credit towards further ratings and for the purpose of revalidation*

(1) Applicants for further instructor certificates may be credited with the teaching and learning skills already demonstrated for the instructor certificate held.

(2) Hours flown as an examiner during skill tests or proficiency checks shall be credited in full towards revalidation requirements for instructor certificates held.

FCL.920 Instructor competencies and assessment

(a) *General*. All instructors shall be trained to achieve the following competences:

- Prepare resources;
- Create a climate conducive to learning;
- Present knowledge;
- Integrate Threat and Error Management (TEM) and crew resource management;
- Manage time to achieve training objectives;
- Facilitate learning;
- Assess trainee performance;
- Monitor and review progress;
- Evaluate training sessions;
- Report outcome.

(b) *Assessment*. Except for the multi-crew cooperation instructor (MCCI), the synthetic training instructor (STI) and the mountain rating instructor (MI), the skill test for the issue of an instructor certificate shall include the assessment of the applicant's competences as described in (a).

FCL.925 Instructors for the MPL

(a) Instructors conducting training for the MPL shall:

(1) have successfully completed an MPL instructor training course at an approved training organisation; and

(2) additionally, for the basic, intermediate and advanced phases of the MPL integrated training course:

(i) be experienced in multi-pilot operations; and

(ii) have completed initial crew resource management training with a commercial air transport operator.

(b) *MPL instructors training course*.

(1) The MPL instructor training course shall comprise at least 14 hours of training.

(2) On completion of the training course, the applicant shall undertake an assessment of instructor competencies and of knowledge of the competency-based approach to training.

The assessment shall consist of a practical demonstration of instruction in the appropriate phase of the MPL training course. This assessment shall be conducted by an instructor examiner.

(3) Upon successful completion of the MPL training course, the approved training organisation shall issue an MPL instructor qualification certificate to the applicant.

(c) In order to maintain the privilege to conduct competency based approach training, the instructor shall have, within the preceding 12 months, conducted within an MPL training course:

(1) 1 simulator session of at least 3 hours; or

(2) 1 air exercise of at least 1 hour comprising at least 2 take-offs and landings.

(d) If the instructor has not fulfilled the requirements of (c), before exercising the privileges to conduct instruction for the MPL he/she shall

(1) receive refresher training at an approved training organisation to reach the level of competence necessary to pass the assessment of instructor competencies; and

(2) pass the assessment of instructor competences as set out in (b)(2).

FCL.940 Validity of instructor certificates

With the exception of the mountain rating instructor, and without prejudice to FCL.900(b)(2), instructor certificates shall be valid for a period of 3 years.

SECTION 2

Specific requirements for the light aircraft flight instructor - LAFI

FCL.905.LAFI LAFI - Privileges and conditions

The privileges of a light aircraft flight instructor (LAFI) are to conduct flight instruction for the issue, revalidation or renewal of:

(a) a basic LPL, in the case of aeroplanes and helicopters;

(b) a LPL, in the appropriate aircraft category;

(c) class, type or group extensions to be endorsed on a LPL, in the appropriate aircraft category;

(d) the night rating in the appropriate aircraft category, provided the instructor is qualified to fly at night and has demonstrated the ability to instruct at night to an instructor qualified in accordance with (f);

(e) towing and aerobatic ratings in the appropriate aircraft category, provided that the LAFI holds the appropriate rating and, in the case of aerobatics, has at least 20 hours of experience in aerobatic flying;

(f) a LAFI certificate, provided that the instructor:

   (1) in the case of a LAFI for sailplanes or balloons, has completed at least 50 hours of instruction in the appropriate aircraft category;

   (2) for all other aircraft categories, has completed at least 250 hours of instruction in the appropriate aircraft category;

   (3) has demonstrated to an instructor examiner the ability to instruct for the LAFI certificate, during a skill test conducted in accordance with Appendix 12 to this Part in the appropriate aircraft category.

FCL.910.LAFI LAFI - Restricted privileges

(a) A LAFI shall have his/her privileges limited to not acting as an instructor for first solo flights and first solo navigation flights and to only conducting flight instruction for the issue of a LPL under the supervision of a LAFI or FI for the same category of aircraft nominated by the training organisation for this purpose.

(b) The limitations in (a) shall be removed from the certificate when the LAFI has completed:

   (1) in the case of a LAFI for aeroplanes, at least 50 hours of flight instruction in a single-engine piston aeroplane or TMG and has supervised at least 25 student solo flights.

   (2) in the case of a LAFI for helicopters, at least 50 hours of flight instruction in helicopters and supervised at least 25 student solo flight air exercises.

   (3) In the case of a LAFI for sailplanes, at least 15 hours or 50 launches of flight instruction covering the full flight training syllabus for the issuance of the LPL for sailplanes;.

   (4) in the case of a LAFI for balloons, at least 15 hours or 50 take-offs of flight instruction covering the full flight training syllabus for the issuance of a LPL for balloons.

FCL.915.LAFI Pre-requisites for the LAFI training course

Before attending the training course for the LAFI, an applicant for a LAFI certificate shall have:

(a) passed a pre-entry flight test to assess his/her ability to undertake the course.

In the case of the LAFI for aeroplanes and helicopters, the flight test shall be taken with a FI in the appropriate aircraft category. In the case of LAFI for other categories of aircraft, the flight test shall be taken with a LAFI or FI in the appropriate aircraft category.

(b) In the case of a LAFI for aeroplanes:

(1) received at least 3 hours of instrument flight instruction in a single-engine piston aeroplane, of which not more than 2 hours may be instrument ground time in a FSTD;

(2) completed at least 20 hours of cross-country flight time in a single-engine piston aeroplane or TMG as pilot-in-command;

(3) completed at least 200 hours of flight time of which 150 hours as pilot-in-command;

(4) completed at least 30 hours of flight time on a single-engine piston aeroplane of which at least 5 hours shall have been completed during the six months preceding the pre-entry flight test set out in (a);

(c) In the case of a LAFI for helicopters:

(1) received at least 10 hours of instrument flight instruction in a single-engine piston helicopter, of which not more than 5 hours may be instrument ground time in a FSTD;

(2) completed at least 20 hours of cross-country flight time in helicopters as pilot-in-command;

(3) completed at least 250 hours of flight time in helicopters of which 200 hours as pilot-in-command;

(4) have completed at least 15 hours of flight on the type of helicopter on which instruction is to be given;

(d) In the case of a LAFI for sailplanes, completed at least 100 hours of flight time as pilot-in-command and 200 launches as pilot-in-command on sailplanes. Additionally, in case the applicant wants to give instruction on motor gliders, he shall complete at least 30 hours of flight time as pilot-in-command on TMG.

(e) In the case of a LAFI for balloons, completed at least 75 hours of balloon flight time as pilot in-command, of which at least 15 hours have to be in the class and group for which instruction will be given.

FCL.930.LAFI LAFI - Training course

Applicants for a LAFI certificate shall have completed a course of theoretical knowledge instruction and flight training at an approved training organization.

The course shall include, at least:

(a) For the LAFI for aeroplanes or helicopters:

(1) 50 hours of theoretical knowledge instruction, including progress tests.

(2) 25 hours of instructional techniques;

(3) (i) for the LAFI for aeroplanes: at least 15 hours of dual flight instruction, of which 3 hours may be conducted in a FSTD;

(ii) for the LAFI for helicopters: at least 25 hours of dual flight instruction, of which 5 hours may be conducted in a FSTD.

(4) Pilots holding a LAFI or a FI certificate of any category of aircraft shall be credited with 30 hours towards the 50 hours in (a)(1).

(b) For the LAFI for sailplanes or balloons:

(1) 30 hours of theoretical knowledge instruction and instructional techniques, including progress tests;

(2) (i) for the LAFI for sailplanes, 10 hours of dual flight instruction or at least 20 take-offs;

(ii) for the LAFI for balloons 3 hours of dual flight instruction, including at least 3 take-offs;

(3) Pilots holding a LAFI or a FI certificate on any category of aircraft shall be credited with 10 hours towards the requirement in (b) (1).

FCL.935.LAFI LAFI - Skill test

An applicant for an LAFI certificate shall pass a skill test to demonstrate to an examiner the ability to instruct a student pilot to the level required for the issue of a LPL, including pre-flight, post-flight and theoretical knowledge instruction, in accordance with the requirements of Appendix 12 to this Part.

FCL.940.LAFI LAFI - Revalidation and renewal

(a) For revalidation of a LAFI certificate the holder shall fulfil two of the following three requirements:

(1) complete at least:

(i) In the case of a LAFI for aeroplanes or helicopters, 45 hours of flight instruction in the appropriate aircraft category as LAFI, FI, TRI, CRI, IRI, SFI or as Examiner during the period of validity of the certificate, including at least 15 hours of flight instruction within the 12 months preceding the expiry date of the certificate;

(ii) in the case of a LAFI for sailplanes, 30 hours or 60 take-offs of flight instruction in sailplanes, powered sailplanes or TMG as LAFI, FI or as Examiner during the period of validity of the certificate, including at least 10 hours or 20 take-offs of flight instruction within the 12 months preceding the expiry date of the certificate;

(iii) in the case of a LAFI for balloons, 6 hours of flight instruction in balloons as LAFI, FI or as Examiner during the period of validity of the certificate, including at least 2 hours of flight instruction within the 12 months preceding the expiry date of the certificate;

(2) attend an instructor refresher seminar, within the validity period of the certificate;

(3) pass proficiency check in accordance with Appendix 12 to this Part within the 12 months preceding the expiry date of the LAFI certificate;

(b) For at least each third revalidation of a LAFI certificate, the holder shall pass a proficiency check in accordance with Appendix 12 to this Part.

(c) Renewal. If the certificate has lapsed, the applicant shall, within a period of 12 months before the renewal:

(1) attend an instructor refresher seminar;

(3) pass a proficiency check in accordance with Appendix 12 to this Part.

SECTION 3

Specific requirements for the flight instructor - FI

FCL.905.FI FI - Privileges and conditions

The privileges of a FI are to conduct flight instruction for the issue, revalidation or renewal of:

(a) a PPL, SPL, BPL and LPL in the appropriate aircraft category;

(b) class and type ratings for single-pilot, single-engine aircraft and class and group extensions, in the case of balloons;

(c) type ratings for single or multi-pilot airship;

(d) a CPL in the appropriate aircraft category, provided that the FI has completed at least 500 hours of flight time as a pilot in that aircraft category, including at least 200 hours of flight instruction;

(e) the night rating, provided that the FI:

(1) is qualified to fly at night in the appropriate aircraft category;

(2) has demonstrated the ability to instruct at night to an FI qualified in accordance with (j) below; and

(3) complies with the night experience requirement of FCL.060(b)(2).

(f) a towing rating, provided such privileges are held;

(g) an aerobatic rating, provided that the FI holds such a rating and has completed 20 hours of experience in aerobatic flying;

(h) an IR in the appropriate aircraft category, provided that the FI has:

(1) At least 200 hours flight time under IFR, of which up to 50 hours may be instrument ground time in a FFS, an FTD 2/3 or FNPT II;

(2) completed as a student the IRI training course and has passed the skill test for the IRI certificate; and

(3) in addition:

(i) for multi-engine aeroplanes, met the requirements for the issue of a CRI certificate;

(ii) for multi-engine helicopters, meet the requirements for the issue of a TRI certificate.

(i) a single-pilot multi-engine type or class rating, provided that the FI meets:

(1) In the case of aeroplanes, the pre-requisites for the CRI training course established in FCL.915.CRI (a) and the requirements of FCL.930.CRI and FCL.935.CRI;

(2) In the case of helicopters, the requirements established in FCL.910.TRI (c)(1) and the pre-requisites for the TRI(H) training course established in FCL.915.TRI (b)(2);

(j) an FI, IRI, CRI or LAFI certificate provided that the FI has:

(1) completed at least:

(i) in the case of a FI(S) or FI(B), at least 50 hours of instruction in the appropriate aircraft category;

(ii) in all other cases, 500 hours of instruction in the appropriate aircraft category;

(2) passed a skill test to demonstrate to an instructor examiner the ability to instruct for the FI certificate, during a skill test conducted in accordance with Appendix 12 to this Part in the appropriate aircraft category;

(k) an MPL, provided that the FI:

(1) for the core flying phase of training, has completed at least 500 hours of flight time as a pilot of aeroplanes, including at least 200 hours of flight instruction;

(2) for the basic phase of training:

(i) holds a multi-engine aeroplane instrument rating and the privilege to instruct for an instrument rating; and

(ii) has at least 1500 hours of flight time in multi-crew operations.

(3) In the case of an FI already qualified to instruct on ATPL(A) or CPL(A)/IR integrated courses, the requirement of (2)(ii) may be replaced by the completion of a structured course of training consisting of:

(i) MCC qualification;

(ii) observing 5 sessions of instruction in Phase 3 of an MPL course;

(iii) observing 5 sessions of instruction in Phase 4 of a MPL course;

(iv) observing 5 operator recurrent line oriented flight training sessions;

(v) the content of the MCCI instructor course;

In this case, the FI shall conduct its first 5 instructor sessions under the supervision of a TRI(A), MCCI(A) or SFI(A) qualified for MPL instruction.

(l) the instruction required to conduct flight tests, provided that the FI is qualified to conduct such flight tests.

FCL.910.FI FI - Restricted privileges

(a) An FI shall have his/her privileges limited to conducting flight instruction under the supervision of an FI for the same category of aircraft nominated by the training organisation for this purpose, in the following cases:

(1) for the issue of the PPL, SPL, BPL and LPL;

(2) in all integrated courses at PPL level, in case of aeroplanes and helicopters;

(3) for class and type ratings for single-pilot, single-engine aircraft;

(4) for the night rating.

(b) While conducting training under supervision, in accordance with (a), the FI shall not have the privilege to authorise student pilots to conduct solo flights.

(c) The limitations in (a) and (b) shall be removed from the certificate when the FI has completed:

(1) For FI(A), 100 hours flight instruction in aeroplanes and, in addition has supervised at least 25 student solo flights;

(2) For FI(H) 100 hours flight instruction in helicopters and, in addition has supervised at least 25 student solo exercises.

(3) For FI(As), FI(S) and FI(B), 15 hours or 50 take-offs flight instruction covering the full training syllabus for the issue of a PPL(As), SPL or BPL in the appropriate aircraft category.

FCL.915.FI Pre-requisites for the FI training course

Before attending the FI training course, an applicant for an FI certificate shall:

(a) have passed a specific pre-entry flight test with an FI qualified in accordance with FCL.905.FI (j) within the six months preceding the start of the course, to assess the ability of the applicant to undertake the course;

(b) in the case of the FI(A) and FI(H):

(1) have received at least 10 hours of instrument flight instruction in the appropriate aircraft category, of which at least 5 hours may be instrument ground time in an FSTD;

(2) have completed 20 hours of cross-country flight in the appropriate aircraft category as pilot-in-command; and

(c) additionally, for the FI(A):

(1) hold at least a CPL(A) or completed at least 200 hours of flight time, of which 150 hours as pilot-in-command;

(2) have completed at least 30 hours on single-engine piston powered aeroplanes of which at least 5 hours shall have been completed during the 6 months preceding the pre-entry flight test set out in (a) above;

(3) have completed a cross-country flight as pilot-in-command, including a flight of at least 540 km (300 NM) in the course of which full stop landings at two different aerodromes shall be made;

(d) additionally, for the FI(H), have completed 250 hours of helicopter flight time, of which:

(1) at least 100 hours shall be as pilot-in-command, if the applicant holds an ATPL(H) or a CPL(H); or

(2) at least 200 hours as pilot-in-command, if the applicant holds a PPL(H);

(e) for an FI(As), have completed 500 hours of flight time in airships as pilot-in-command, of which 400 hours shall be as pilot-in-command holding a CPL(As);

(f) for a FI(S), have completed 100 hours of flight time and 200 launches as pilot-in-command on sailplanes. Additionally, where the applicant wishes to give instruction on touring motor gliders, he/she shall have completed 30 hours of flight time as pilot-in-command on TMG.

(g) for a FI (B), have completed 75 hours of balloon flight time as pilot in-in-command, of which at least 15 have to be in the class and group for which instruction will be given.

FCL.930.FI FI -Training course

(a) Applicants for the FI certificate shall have completed a course of theoretical knowledge and flight instruction at an approved training organisation.

(b) The course shall include:

(1) (i) In the case of an FI (A), (H) and (As), at least 125 hours of theoretical knowledge instruction, including progress tests;

(ii) In the case of an FI(B) or FI(S) at least 30 hours of theoretical knowledge instruction, including progress tests;

(2) (i) In the case of an FI (A) and (H), at least 30 hours of flight instruction, of which 25 hours shall be dual instruction, of which 5 may be conducted in a FFS, an FNPT I or II or an FTD 2/3;

(ii) In the case of an FI(As), at least 20 hours of flight instruction, of which 15 hours shall be dual instruction;

(iii) In the case of an FI (S), at least 10 hours or 20 take-offs;

(iv) In the case of an FI(B), at least 3 hours including 3 take-offs;

(3) Pilots holding or having held an FI certificate on any other category of aircraft shall be credited towards the requirement of (b)(1) above with:

(i) 75 hours, in the case of aeroplanes, helicopters and airships;

(ii) 10 hours in the case of sailplanes and balloons.

FCL.935.FI FI - Skill test

An applicant for an FI certificate shall pass a skill test to demonstrate to an examiner the ability to instruct a student pilot to the level required for the issue of a PPL, SPL or BPL including pre-flight, post-flight and theoretical knowledge instruction, in accordance with the requirements of Appendix 12 to this Part.

FCL.940.FI FI - Revalidation and renewal

(a) For revalidation of an FI certificate, the holder shall fulfil two of the following three requirements:

(1) complete:

(i) in the case of an FI(A) and (H), at least 50 hours of flight instruction in the appropriate aircraft category during the period of validity of the certificate as FI, TRI, CRI, IRI, SFI or Examiner. 15 hours of flight instruction shall have been completed within the 12 months preceding the expiry date of the FI certificate. If the privileges to instruct for the IR are to be revalidated, 10 of these 15 hours shall be instruction for an IR;

(ii) in the case of an FI (As), at least 20 hours of flight instruction in airships as FI or as Examiner during the period of validity of the certificate, including at least 6 hours of flight instruction within the 12 months preceding the expiry date of the FI certificate. If the privileges to instruct for the IR are to be revalidated, 10 of these 20 hours shall be instruction for an IR;

(iii) In the case of an FI(S), at least 30 hours or 60 take-offs of flight instruction in sailplanes, powered sailplanes or TMG as FI, LAFI or as Examiner during the period of validity of the certificate, including at least 10 hours or 20 take-offs of flight instruction within the 12 months preceding the expiry date of the FI certificate;

(iv) In the case of an FI(B), at least 6 hours of flight instruction in balloons as FI, LAFI or as Examiner during the period of validity of the certificate, including at least 2 hours of flight instruction within the 12 months preceding the expiry date of the FI certificate;

(2) attend an instructor refresher seminar, within the validity period of the FI certificate;

(3) pass a proficiency check in accordance with Appendix 12 to this Part, within the 12 months preceding the expiry date of the FI certificate.

(b) For the first and at least each alternate subsequent revalidation in the case of FI(A) or FI(H), or each third revalidation, in the case of FI(As), (S) and (B), the holder shall have to pass a proficiency check in accordance with Appendix 12 to this Part.

(c) *Renewal*. If the FI certificate has lapsed, the applicant shall, within a period of 12 months before renewal:

(2) attend an instructor refresher seminar;

(3) pass a proficiency check in accordance with Appendix 12 to this Part.

SECTION 4

Specific requirements for the type rating instructor - TRI

FCL.905.TRI TRI - Privileges and conditions

(a) *General.* The privileges of the a type rating instructor (TRI) are to instruct for:

(1) the issue, revalidation and renewal of a multi-pilot aircraft type rating;

(2) the revalidation of instrument ratings, provided the TRI holds a valid instrument rating;

(3) the issue of a TRI certificate, provided that the holder has 3 years of experience as a TRI.

(b) *Additional privileges of the TRI of multi-pilot aeroplanes*. The privileges of a TRI for multi-pilot aeroplanes shall include instruction for:

(1) multi-crew cooperation training;

(2) the MPL course on the basic, intermediate and advanced phases, provided that, for the basic phase, they hold or have held an FI(A) or IRI(A) certificate

(c) *Additional privileges of TRI of helicopters.* The privileges of a TRI(H) shall include instruction for:

(1) the issue, revalidation and renewal of a single-pilot helicopter type rating;

(2) multi-crew cooperation training, provided he/she holds a multi-pilot helicopter type rating;

(3) the extension of the single-engine IR(H) to multi-engine IR(H).

FCL.910.TRI TRI - Restricted privileges

(a) *General*. If the TRI training is carried out in a FFS only, the privileges of the TRI shall be restricted to training in FFS.

(b) *TRI for multi-pilot aeroplanes and for powered-lift aircraft - TRI(MPA) and TRI(PL)*. The privileges of a TRI are restricted to the type of multi-powered aeroplane or powered-lift aircraft in which the skill test was taken. The privileges of the TRI shall be extended to further types when the TRI has completed:

(1) within the 12 months preceding the application, at least 15 route sectors, including take-offs and landings on the applicable aircraft type, of which at least 7 sectors may be completed in a FFS;

(2) the instructional techniques and flight instruction parts of the relevant TRI course;

(3) in the case of the TRI(PL), that holder shall additionally pass, as a proficiency check, the relevant sections of the skill test in accordance with Appendix 12 to this Part in order to demonstrate to an FIE his ability to instruct a pilot to the level required for the issue of a type rating, including pre-flight, post-flight and theoretical knowledge instruction

(c) *TRI for helicopters - TRI(H).*

(1) The privileges of a TRI(H) are restricted to the type of helicopter in which the skill test for the issue of the certificate was taken. The privileges of the TRI shall be extended to further types when the TRI has:

(i) conducted the appropriate type technical part of the TRI course on the applicable type of helicopter or an FSTD representing that type;

(ii) conducted at least 2 hours of flight instruction on the applicable type; and

(iii) passed, as a proficiency check, the relevant sections of the skill test in accordance with Appendix 12 to this Part in order to demonstrate to an FIE his ability to instruct a pilot to the level required for the issue of a type rating, including pre-flight, post-flight and theoretical knowledge instruction.

(2) Before the privileges of a TRI(H) are extended from single-pilot to multi-pilot privileges on the same type of helicopters, the holder shall have at least 100 hours in multi-pilot helicopters on this type.

FCL.915.TRI Pre-requisites for the TRI training course

Before attending the TRI training course, an applicant for a TRI certificate shall have:

(a) For TRI(MPA):

(1) completed 1500 hours flight time as a pilot of multi-pilot aeroplanes; and

(2) completed, within the 12 months preceding the date of application, 30 route sectors, including take-offs and landings, as pilot-in-command or co-pilot on the applicable aeroplane type, of which 15 sectors may be completed in a FFS representing that type;

(b) *For TRI(H)*:

(1) For a TRI(H) certificate for single-pilot single-engine helicopters, completed 250 hours as a pilot of helicopters;

(2) For a TRI(H) certificate for single-pilot multi-engine helicopters, completed 500 hours as pilot of helicopters, including 100 hours as pilot-in-command of single-pilot multi-engine helicopters;

(3) For a TRI(H) certificate for multi-pilot helicopters, completed 1000 hours flight time as a pilot of helicopters, including:

(i) 350 hours as a pilot of multi-pilot helicopters; or

(ii) for applicants already holding a TRI(H) certificate for single-pilot multi-engine helicopters, 100 hours as pilot of that type of multi-pilot helicopter.

(4) Holders of a FI(H) certificate shall be fully credited towards the requirements of (1) and (2) in the relevant single-pilot helicopter.

(c) For TRI(PL):

(1) completed 1500 hours flight time as a pilot of multi-pilot aeroplanes, powered-lift, or helicopters; and

(2) completed, within the 12 months preceding the application, 30 route sectors, including take-offs and landings, as pilot-in-command or co-pilot on the applicable powered-lift type, of which 15 sectors may be completed in a FFS representing that type;

FCL.930.TRI TRI - Training course

(a) An applicant for a TRI certificate shall have completed at an approved training organisation a course of theoretical knowledge instruction and flight training.

(b) The course shall include, at least:

(1) 25 hours of theoretical knowledge;

(2) 10 hours of instructional techniques, including revision of technical knowledge, the preparation of lesson plans and the development of classroom / simulator instructional skills;

(3) 5 hours of flight instruction in the appropriate aircraft or a simulator representing that aircraft for single-pilot aircraft and 10 hours for multi-pilot multi-engine aircraft or a simulator representing that aircraft.

(c) Applicants holding or having held an instructor certificate shall be fully credited towards the requirement of (b)(1).

FCL.935.TRI TRI - Skill test

(a) An applicant for a TRI certificate shall pass a skill test to demonstrate, to a type rating examiner qualified for this purpose, his ability to instruct a pilot to the level required for the issue of a type rating, including pre-flight, post-flight and theoretical knowledge instruction in accordance with the requirements of Appendix 12 to this Part.

(b) If the test is conducted in a simulator, the TRI certificate shall be restricted to instruction in simulators.

FCL.940.TRI TRI - Revalidation and renewal

(a) *Revalidation*. For revalidation of a TRI certificate, the applicant shall, within the validity period of the certificate, fulfil 2 of the following requirements:

(1) complete 50 hours of flight instruction in the appropriate aircraft category or FSTDs, of which at least 15 hours shall be within the 12 months preceding the expiry date of the TRI certificate.

In the case of TRI(MPA) and TRI(PL), these hours of flight instruction shall be flown as a type rating instructor or examiner, or synthetic flight instructor or examiner. In the case of TRI(H) time flown as flight instructor, instrument rating instructor, synthetic training instructor or as any kind of examiner shall also be relevant for this purpose;

(2) attend an instructor refresher seminar;

(3) pass, as a proficiency check, the relevant sections of the skill test in accordance with Appendix 12 to this Part.

(b) For the first and at least each alternate subsequent revalidation of a TRI certificate, the holder shall have to pass a proficiency check in accordance with Appendix 12 to this Part.

(c) *Specific requirements for revalidation of a TRI(H)*.

(1) A TRI(H) holding a FI(H) certificate on the relevant type shall have full credit towards the requirements in (a) above. In this case, the TRI(H) certificate will be valid until the expiry date of the FI(H) certificate.

(2) If a person holds a TRI(H) certificate on more than one type of single-engine or multi-engine helicopter, the proficiency check of (a)(3) above taken on one of those types shall revalidate the TRI(H) certificate for the other types held.

(d) *Renewal*. If the certificate has lapsed, the applicant shall, within a period of 12 months before renewal:

(1) attend an instructor refresher seminar;

(3) pass, as a proficiency check, the relevant sections of the skill test set out Appendix 12 to this Part.

SECTION 5

Specific requirements for the class rating instructor - CRI

FCL.905.CRI CRI - Privileges and conditions

(a) The privileges of a CRI are to instruct for the issue, revalidation or renewal of a type or class rating for single-pilot aeroplanes.

(b) The privileges of a CRI are restricted to the type or class of aeroplane in which the instructor skill test was taken. The privileges of the CRI shall be extended to further types or classes when the CRI has completed, within the last 12 months:

(1) 10 hours flight time on aeroplanes of the applicable class or type of aeroplane;

(2) one training flight from the right hand seat under the supervision of another CRI qualified for that class or type.

FCL.915.CRI Pre-requisites for the CRI training course

Before attending the CRI training course, an applicant for a CRI certificate shall have completed at least:

(a) *For multi-engine aeroplanes:*

(1) 500 hours flight time as a pilot of aeroplanes;

(2) 30 hours as pilot-in-command on the applicable type or class of aeroplane;

(b) *For single-engine aeroplanes:*

(1) 300 hours flight time as a pilot of aeroplanes;

(2) 30 hours as pilot-in-command on the applicable type or class of aeroplane.

FCL.930.CRI CRI - Training course

(a) An applicant for the CRI certificate shall have completed at an approved training organisation a course of theoretical knowledge and flight instruction.

(b) The course shall include, at least:

(1) 25 hours of theoretical knowledge instruction;

(2) 10 hours of instructional techniques, including revision of technical knowledge, the preparation of lesson plans and the development of classroom/simulator instructional skills;

(3) 5 hours of flight instruction for multi-engine aeroplanes, or 3 hours of flight instruction for single-engine aeroplanes, given by an instructor nominated by a training organisation for this purpose.

(c) Applicants holding or having held an instructor certificate shall be fully credited towards the requirement of (b)(1).

FCL.935.CRI CRI - Skill test

An applicant for a CRI certificate shall pass a skill test to demonstrate his ability to instruct a pilot to the level required for the issue of a type rating or class rating for single-pilot aeroplanes, including pre-flight, post-flight and theoretical knowledge instruction, in accordance with the requirements of Appendix 12 to this Part.

FCL.940.CRI CRI - Revalidation and renewal

(a) For revalidation of a CRI certificate the applicant shall, within the 12 months preceding the expiry date of the certificate:

(1) conduct at least 10 hours of flight instruction in the role of a CRI. If the applicant has CRI privileges on both single-engine and multi-engine aeroplanes, the 10 hours of instruction shall be equally divided between single-engine and multi-engine aeroplanes; or

(2) receive refresher training as a CRI at an approved training organisation; or

(3) pass, as a proficiency check, the relevant sections of the skill test in accordance with Appendix 12 to this Part.

(b) For the first and at least each alternate subsequent revalidation of a CRI certificate, the holder shall have to pass a proficiency check in accordance with Appendix 12 to this Part.

(d) *Renewal*. If the certificate has lapsed, the applicant shall, within a period of 12 months before renewal:

(1) receive refresher training as a CRI at an approved training organisation;

(3) pass, as a proficiency check, the relevant sections of the skill test set out Appendix 12 to this Part.

SECTION 6

Specific requirements for the instrument rating instructor - IRI

FCL.905.IRI IRI - Privileges and conditions

(a) The privileges of an IRI are to instruct for the issue, revalidation and renewal of an instrument rating on the appropriate aircraft category, provided that the instructor meets the requirements to instruct on the specific type or class of aircraft.

(b) *Specific requirements for the MPL course*. To instruct for the basic phase of training on an MPL course, the IRI(A) shall:

(1) hold an instrument rating for multi-engine aeroplanes; and

(2) have completed at least 1500 hours of flight time in multi-crew operations.

(3) In the case of IRI already qualified to instruct on ATPL(A) or CPL(A)/IR integrated courses, the requirement of (b)(2) may be replaced by the completion of the course provided for in paragraph FCL.905.FI(k)(3).

FCL.915.IRI Pre-requisites for the IRI training course

Before attending the IRI training course, an applicant for an IRI certificate shall:

(a) for an IRI for aeroplanes - IRI(A):

(1) have completed at least 800 hours of flight time under IFR, of which at least 400 hours shall be in aeroplanes; and

(2) in the case of applicants of an IRI(A) for multi-engine aeroplanes, meet the requirements of paragraph FCL.915.CRI (a);

(b) For an IRI(H), have completed at least 500 hours of flight time under IFR, of which at least 250 hours shall be in helicopters;

(c) For an IRI(As), have completed at least 300 hours of flight time under IFR, of which at least 100 hours shall be instrument flight time in airships.

FCL.930.IRI IRI - Training course

(a) An applicant for the IRI certificate shall have successfully completed at an approved training organisation a course of theoretical knowledge and flight instruction.

(b) The course shall include, at least:

(1) 25 hours of theoretical knowledge instruction;

(2) 10 hours of instructional techniques, including revision of instrument theoretical knowledge, the preparation of lesson plans and the development of classroom instructional skills;

(3) (i) for the IR(A), at least 10 hours of flight instruction on an aeroplane, FFS, FTD 2/3 or FPNT II. In the case of applicants holding an FI(A) certificate, these hours are reduced to 5;

(ii) for the IRI(H), at least 10 hours of flight instruction in a helicopter, FFS, FTD 2/3 or FNPT II;

(iii) for the IRI(As), at least 10 hours of flight instruction in an airships, FFS, FTD 2/3 or FNPT II.

(c) Flight instruction shall be given by an instructor nominated by a training organisation for this purpose.

(c) Applicants holding or having held an instructor certificate shall be fully credited towards the requirement of (b)(1).

FCL.935.IRI IRI - Skill test

An applicant for an IRI certificate shall pass a skill test to demonstrate his ability to instruct a pilot to the level required for the issue of an instrument rating, including pre-flight, post-flight and theoretical knowledge instruction, in accordance with the requirements of Appendix 12 to this Part.

FCL.940.IRI IRI - Revalidation and renewal

For revalidation and renewal of an IRI certificate, the holder shall meet the requirements for revalidation and renewal of an FI certificate, in accordance with FCL.940.FI.

SECTION 7

Specific requirements for the synthetic flight instructor - SFI

FCL.905.SFI SFI - Privileges and conditions

(a) *General*. The privileges of an SFI are to carry out synthetic flight instruction for:

(1) the initial issue, revalidation and renewal of type ratings;

(2) multi-crew cooperation; and

(3) the issue, revalidation or renewal of an instrument rating, provided he/she has completed an IRI training course.

(b) *Additional privileges for the SFI(A)*. Additionally, the privileges of an SFI(A) are to carry out synthetic flight instruction for the MPL course on the basic, intermediate and advanced phases, provided that, for the basic phase of training, he/she holds or has held an FI(A) or an IRI(A) certificate.

(c) The privileges of the SFI shall be restricted to the FTD 2/3 or FS of the aircraft type in which the SFI training course was taken.

The privileges may be extended to other FSTDs representing further types of aircraft when the holder has:

(1) fulfilled the pre-requisites for the applicable type of aircraft; and

(2) satisfactorily completed the simulator content of the corresponding SFI course.

FCL.915.SFI Pre-requisites for the SFI training course

Before attending the SFI training course, an applicant for an SFI certificate shall:

(a) hold or have held a CPL, MPL or ATPL in the appropriate aircraft category;

(b) have completed the proficiency check for the issue of the specific aircraft type rating on a FFS representing the applicable type, within the 12 months preceding the application; and

(c) additionally, for an SFI(A) or SFI(PL), have:

(1) at least 1500 hours flight time as a pilot of multi-pilot aeroplanes or powered-lift, as applicable;

(2) completed, as an observer, within the 12 months preceding the application, at least

(i) 3 route sectors on the flight deck of the applicable aircraft type; or

(ii) 2 line orientated flight training based simulator sessions conducted by qualified flight crew on the flight deck of the applicable type. These simulator sessions shall include 2 flights between 2 different aerodromes with a duration of at least 2 hours each, and the associated pre-flight planning and de-briefing.

(d) additionally, for a SFI(H), have:

(1) at least 1000 hours flying experience as a pilot of helicopters, including at least 350 hours as a pilot of multi-pilot helicopters;

(2) completed, as an observer, at least 1 hour of flight time on the flight deck of the applicable type, within the 12 months preceding the application.

FCL.930.SFI SFI - Training course

(a) An applicant for an SFI certificate shall have completed a training course at an approved training organisation.

(b) The course shall include:

(1) the FFS content of the applicable type rating course;

(2) the content of the TRI training course.

FCL.935.SFI SFI - Skill test

An applicant for an SFI certificate shall pass a skill tests to demonstrate to a synthetic flight or type rating examiner his ability to instruct a pilot to the level required for the issue of a type rating, including pre-flight, post-flight and theoretical knowledge instruction, in accordance with Appendix 12 to this Part.

The assessment shall consist of at least 3 hours of flight instruction related to the duties of an SFI on the applicable FFS or FTD 2/3.

FCL.940.SFI SFI - Revalidation and renewal

(a) *Revalidation*. For revalidation of an SFI certificate the applicant shall, within the validity period of the certificate, fulfil 2 of the following requirements:

(1) complete 50 hours as an instructor or an examiner in FSTDs, of which at least 15 hours shall be within the 12 months preceding the expiry date of the certificate;

(2) attend an instructor refresher seminar;

(3) pass, as a proficiency check, the relevant sections of the SFI skill test, in accordance with FCL.935.SFI.

(b) For the first and at least each alternate subsequent revalidation of an SFI certificate, the holder shall have to pass, as a proficiency check, the relevant sections of the SFI skill test, in accordance with FCL.935.SFI.

(c) *Renewal*. If the certificate has lapsed, the applicant shall, within the 12 months preceding the application:

(1) complete the simulator content of the SFI training course;

(2) pass a proficiency check for the specific aircraft type rating on an FSTD of the applicable type;

(3) pass, as a proficiency check, the relevant sections of the SFI skill test, in accordance with FCL.935.SFI.

SECTION 8

Specific requirements for the multi-crew cooperation instructor - MCCI

FCL.905.MCCI MCCI - Privileges and conditions

(a) The privileges of an MCCI are to carry out instruction during:

(1) the practical part of MCC courses when not combined with type rating training; and

(2) in the case of MCCI(A), the basic phase of the MPL integrated training course, provided he/she holds or has held an FI(A) certificate.

(b) The privileges of the holder of an MCCI certificate shall be restricted to the FNPT II, FTD 2/3 or FS in which the MCCI training course was taken.

The privileges may be extended to other FSTDs representing further types of aircraft when the holder has completed the practical training of the MCCI course on that type of FNPT II, FTD 2/3 or FFS.

FCL.915.MCCI Pre-requisites for the MCCI training course

Before attending the MCCI training course, an applicant shall:

(a) hold or have held a CPL, MPL or ATPL in the appropriate aircraft category;

(b) have at least

(1) in the case of aeroplanes and powered-lift aircraft, 1500 hours of flying experience as a pilot on multi-crew operations;

(2) in the case of helicopters, 1000 hours of flying experience as a pilot in multi-crew operations, of which at least 350 hours in multi-pilot helicopters.

FCL.930.MCCI MCCI - Training course

(a) An applicant for an MCCI certificate shall have completed at an approved training organisation a course of theoretical knowledge instruction and flight training.

(b) The course shall include, at least:

(1) 25 hours of theoretical knowledge instruction, including instructional techniques;

(2) Technical training related to the type of FSTD where the applicant wishes to instruct;

(3) 3 hours of practical instruction, which may be flight instruction or MCC instruction on the relevant FNPT, FTD 2/3 or FFS, under the supervision of a TRI, SFI or MCCI nominated by the training organisation for that purpose. These hours of instruction under supervision shall include the assessment of the applicant's competence as described in FCL.920(a).

(c) Applicants holding or having held an FI, TRI, CRI, IRI or SFI certificate shall be fully credited towards the requirement of (b)(1).

FCL.940.MCCI MCCI - Revalidation and renewal

(a) For revalidation of an MCCI certificate the applicant shall have completed the practical training of the MCCI course on the relevant type of FNPT II, FTD 2/3 or FFS, within the last 12 months of the validity period of the certificate.

(b) *Renewal*. If the certificate has lapsed, the applicant shall complete the parts of the MCCI course referred to in FCL.930.MCCI(b)(2) and(3) on the relevant type of FNPT II, FTD 2/3 or FFS.

SECTION 9

Specific requirements for the synthetic training instructor - STI

FCL.905.STI STI - Privileges and conditions

(a) The privileges of the an STI are to carry out synthetic flight instruction in the appropriate aircraft category for:

(1) the issue of a licence;

(2) the issue, revalidation or renewal of an instrument rating and a class or type rating for single-pilot aircraft.

(b) *Additional privileges for the STI(A)*. The privileges of an STI(A) shall include synthetic flight instruction during the core flying skills training of the MPL integrated training course.

(c) *Restriction of privileges for the STI(H)*. The privileges of an STI(H) shall be restricted to the FNPT II, FTD 2/3 or FFS in which the STI training course was taken.

The privileges may be extended to other FSTDs representing further types of helicopter when the holder has:

(1) completed a TRI(H) course on the applicable type;

(2) passed the proficiency check for the specific aircraft type rating on a FFS of the applicable type, within the 12 months preceding the application;

(3) conducted, on a type rating course, at least one FSTD session related to the duties of an STI(H) with a minimum duration of 3 hours on the applicable type of helicopter, under the supervision of a flight instructor examiner.

FCL.915.STI Pre-requisites for the STI training course

Before attending the STI training course the applicant shall:

(a) hold, or have held within the 3 years prior to the application, a pilot licence and instructional privileges appropriate to the courses on which instruction is intended;

(b) have completed in an FNPT the relevant proficiency check for the class or type rating, within a period of 12 months preceding the application.

An applicant for a STI(A) wishing to instruct on BITDs only, shall complete only the exercises appropriate for a skill test for the issue of a PPL(A).

(c) additionally, for an STI(H), have completed at least 1 hour of flight time as an observer on the flight deck of the applicable type of helicopter, within the 12 months preceding the application.

FCL.930.STI STI - Training course

(a) An applicant for an STI certificate shall have completed a training course at an approved training organisation.

(b) The course shall comprise at least 3 hours of flight instruction related to the duties of a STI in a FFS, FTD 2/3 or FNPT II, under the supervision of a flight instructor examiner. These hours of instruction under supervision shall include the assessment of the applicant's competence as described in FCL.920(a).

Applicants for a STI(A) wishing to instruct on a BITD only, shall complete the instruction on a BITD.

(c) For applicants for an STI(H), the course shall also include the FFS content of the applicable TRI course.

FCL.940.STI Revalidation and renewal of the STI certificate

(a) *Revalidation*. For revalidation of an STI certificate the applicant shall have, within the last 12 months of the validity period of the certificate:

(1) conducted at least 3 hours of instruction in a FFS or FNPT II or BITD, as part of a complete CPL, IR, PPL or class or type rating course; and

(2) passed in the FFS, FTD 2/3 or FNPT II on which instruction is routinely conducted, the applicable sections of the proficiency check in accordance with Appendix 9 to this Part for the appropriate type or class of aircraft.

For an STI(A) instructing on BITDs only, the proficiency check shall include only the exercises appropriate for a skill test for the issue of a PPL(A).

(b) *Renewal*. If the certificate has lapsed the applicant shall:

(1) pass in the FFS, FTD 2/3 or FNPT II on which instruction is routinely conducted, the applicable sections of the proficiency check in accordance with Appendix 9 to this Part for the appropriate type or class of aircraft.

For an STI(A) instructing on BITDs only, the proficiency check shall include only the exercises appropriate for a skill test for the issue of a PPL(A).

(2) conduct on a complete CPL, IR, PPL or class or type rating course, at least 3 hours of instruction under the supervision of an FI(A), CRI(A), IRI(A), TRI(A) or SFI(A) nominated by the training organisation for this purpose. At least one hour of instruction shall be supervised by an FIE(A).

SECTION 10

Mountain rating instructor - MI

FCL.905.MI MI - privileges and conditions

The privileges of an MI are to carry out instruction for the issue of a mountain rating.

FCL.915.MI Pre-requisites for the MI training course

Before attending the MI training course the applicant shall:

(a) hold a valid FI, TRI or CRI certificate;

(b) hold a valid mountain rating;

(c) have completed at least 100 landings at a minimum of 3 different surfaces that require a mountain rating.

FCL.930.MI MI - Training course

An applicant for the MI certificate shall have completed an appropriate course at an approved training organisation. This course shall include the assessment of the applicant’s competence as described in FCL.920(a).

FCL.940.MI Validity of the MI certificate

The validity of the MI certificate is dependent on the validity of the FI, TRI or CRI certificate and the mountain rating.

SUBPART K
EXAMINERS

SECTION 1
Common requirements

FCL.1000 Examiner certificates

(a) *General*. Holders of an examiner certificate shall:

(1) hold a licence and rating at least equal to the licence or rating for which they are authorised to conduct skill tests or proficiency checks and the privilege to instruct for this licence or rating;

(2) be qualified to act as pilot-in-command of the aircraft during a skill test or proficiency check.

(b) *Special conditions*.

(1) In the case of introduction of new aircraft, when compliance with the requirements established in this Subpart is not possible, the competent authority shall issue a specific certificate giving privileges for the conduct of skill tests and proficiency checks. Such a certificate shall be limited to the skill tests and proficiency checks necessary for the introduction of the new type of aircraft and its validity shall not, in any case, exceed 3 years.

(2) The holder of a certificate issued in accordance with (b)(1) who wishes to apply for an examiner certificate shall comply with the pre-requisites and revalidation requirements established for that category of examiner.

FCL.1005 Limitation of privileges in case of vested interests

Examiners shall not conduct skill tests or proficiency checks for applicants whom they have instructed for that licence or rating.

FCL.1010 Pre-requisites for examiners

Applicants for an examiner certificate shall demonstrate:

(a) relevant knowledge, background and appropriate experience related to the privileges of an examiner;

(b) that they have not had their licence suspended, limited or revoked during the last 3 years;

(c) that they have not been subject to the application of any sanctions for non compliance with this Part or Part-OPS during the last 3 years.

FCL.1015 Examiner standardisation

(a) Applicants for an examiner certificate shall undertake a standardisation course provided by the competent authority or by an approved training organisation and approved by the competent authority.

(b) The standardisation course shall include, at least:

(1) 1 day of theoretical instruction;

(2) observation of 1 skill test or proficiency test for the licences or ratings for which the applicant seeks the privilege to conduct tests and checks.

(c) The standardisation course shall contain instruction on the applicable requirements of Part-FCL and Part-OPS, the conduct of skill tests and proficiency checks, and their documentation and reporting.

Examiners shall also be briefed on the protection requirements for personal data, liability, accident insurance and fees, as applicable in the Member State where they exercise their privileges.

FCL.1020 Examiners assessment of competence

Applicants for an examiner certificate shall demonstrate their competence to the competent authority through the conduct of a skill test or proficiency check in the examiner role for which privileges are sought, including briefing, conduct of the skill test or proficiency check, and assessment of the person to whom the test or check is given, debriefing and recording documentation.

FCL.1025 Validity, revalidation and renewal of examiner certificates

(a) *Validity*. An examiner certificate shall be valid for 3 years.

(b) *Revalidation*. An examiner certificate shall be revalidated when the holder has, during the validity period of the certificate:

(1) conducted at least 3 skill tests or proficiency checks every year or, in the case of FE(S), FE(B), and FE for the LPL(S) or LPL(B), 3 skill tests or proficiency checks during the validity period;

(2) attended an examiner refresher seminar provided by the competent authority or by an approved training organisation and approved by the competent authority.

(3) One of the skill tests or proficiency checks completed in accordance with (1) shall have been observed by an inspector from the competent authority or by a senior examiner specifically tasked by the competent authority to do so, in accordance with the applicable national legislation.

(c) *Renewal*. If the certificate has expired, the applicant shall comply with the requirements in FCL.1015 and FCL.1020 before he/she can resume the exercise of the privileges.

(d) An examiner certificate shall only be revalidated or renewed if the applicant demonstrates continued compliance with the requirements in FCL.1010 and FCL.1030.

FCL.1030 Obligations for examiners

(a) When conducting skill tests and proficiency checks, examiners shall:

(1) ensure that communication with the applicant can be established without language barriers;

(2) verify that the applicant complies with all the experience or instruction requirements established by this Part for the issue, revalidation or renewal of the licence, rating or certificate for which the skill test or proficiency check is taken;

(3) make the applicant aware of the consequences of providing incomplete, inaccurate or false information related to their training and flight experience.

(b) After completion of the skill test or proficiency check, the examiner shall:

(1) inform the applicant whether he passed or not the test or check. When the applicant hasn't passed the test or check, the examiner shall also inform him/her of the consequences of that fact, of the requirements he/she will have to comply with in order to exercise the privileges sought, and of his/her right of appeal to the competent authority that issued, or to whom the pilot has applied for the issue of, the licence, rating or certificate for which the skill test or proficiency check was performed;

(2) in the case of proficiency checks for revalidation or renewal, endorse the pilot's licence or certificate with the new expiry date of the rating or certificate;

(3) provide the pilot with a signed report of the skill test or proficiency check and submit without delay copies of the report to the authority referred to in (1), and to the competent authority that issued the examiner certificate. The report shall include:

(i) a declaration that the examiner has received information from the pilot regarding his/her experience and instruction, and found that experience and instruction complying with the applicable requirements of this Part;

(ii) information on the exercises and manoeuvres performed during the skill test or proficiency check, and the verbal theoretical knowledge examination, when applicable;

(iii) the assessment of the applicant's knowledge and skill.

(c) Examiners shall maintain records with details of skill tests and proficiency checks performed and their results.

(d) Upon request by the competent authority, or the authority referred to in (b)(1), examiners shall submit all records and reports, and any other information, as required for oversight activities.

SECTION 2

Specific requirements for flight examiners - FE

FCL.1005.FE FE - Privileges and conditions

(a) *FE(A)*. The privileges of an FE for aeroplanes are to conduct:

(1) skill tests for the issue of the PPL(A) and skill tests and proficiency checks for associated single-pilot class and type ratings, provided that the examiner has completed at least 1000 hours of flight time as a pilot of aeroplanes, including at least 250 hours of flight instruction;

(2) skill tests for the issue of the CPL(A) and skill tests and proficiency checks for the associated single-pilot class and type ratings, provided that the examiner has completed at least 2000 hours of flight time as a pilot of aeroplanes, including at least 250 hours of flight instruction;

(3) skill tests and proficiency checks for the LPL(A), provided that the examiner has completed at least 500 hours of flight time as a pilot of aeroplanes or touring motor gliders, including at least 150 hours of flight instruction;

(4) skill tests for the issue of a mountain rating;

(b) *FE(H)*. The privileges of an FE for helicopters are to conduct:

(1) skill tests for the issue of the PPL(H) and CPL(H);

(2) skill tests and proficiency checks for:

(i) single-pilot single-engine helicopter type ratings inserted in a PPL(H), provided that the examiner has completed 1000 hours of flight time as a pilot of helicopters, including at least 250 hours of flight instruction;

(ii) single-pilot single-engine helicopter type ratings inserted in a CPL(H), provided the examiner has completed 2000 hours of flight time as a pilot of helicopters, including at least 250 hours of flight instruction

(iii) single-pilot multi-engine helicopter type ratings inserted in a PPL(H) or a CPL(H), provided that the examiner has completed 1000 hours of flight time as a pilot of helicopters, of which at least 500 hours shall be as pilot-in-command;

(iv) for the LPL(H).

(c) *FE(As)*. The privileges of an FE for airships are to conduct:

(1) skill tests for the issue of the PPL(As) and CPL(As);

(2) skill tests and proficiency checks for the associated airship type ratings, provided that the examiner has completed 500 hours of flight time as a pilot of airships, including 100 hours of flight instruction;

(e) *FE(S)*. The privileges of an FE for sailplanes are to conduct:

(1) skill tests for the issue of the SPL and the LPL(S);

(2) proficiency checks for the SPL and for the LPL(S), provided that the examiner has completed 300 hours of flight time as a pilot of sailplanes or powered sailplanes, including 150 hours or 300 launches of flight instruction;

(3) proficiency checks for the extension of the SPL privileges to commercial operations, provided that the examiner has completed 300 hours of flight time as a pilot of sailplanes, powered sailplanes or touring motor gliders, including 90 hours of flight instruction;

(4) skill tests for the extension of the SPL or LPL(S) privileges to TMG, provided that the examiner has completed 300 hours of flight time as a pilot of sailplanes, powered sailplanes or touring motor gliders, including 90 hours of flight instruction on TMG;

(f) *FE(B)*. The privileges of an FE for balloons are to conduct:

(1) skill tests for the issue of the BPL and the LPL(B);

(2) skill tests and proficiency checks for the extension of the privileges to another balloon class or group, provided that the examiner has completed 250 hours of flight time as a pilot of balloons, including 75 hours of flight instruction;

(3) proficiency checks for the extension of the BPL privileges to commercial operations, provided that the examiner has completed 300 hours of flight time as a pilot of balloons, including 90 hours of flight instruction;

(g) *FE(LPL-S)*. The privileges of an FE for the LPL for sailplanes are to conduct:

(1) skill tests for the issue of the LPL(S);

(2) proficiency checks for the LPL(S), provided that the examiner has completed 300 hours of flight time as a pilot of sailplanes or powered sailplanes, including 150 hours or 300 launches flight instruction;

(3) skill tests for the extension of the LPL(S) privileges to TMG, provided that the examiner has completed 300 hours of flight time as a pilot of sailplanes, powered sailplanes or touring motor gliders, including 90 hours of flight instruction on TMG;

(h) *FE(LPL-B)*. The privileges of an FE for the LPL for balloons are to conduct:

(1) skill tests for the issue of the LPL(B);

(2) skill tests and proficiency checks for the extension of the LPL(B) privileges to another class of balloons, provided that the examiner has completed 250 hours of flight time as a pilot of balloons, including 75 hours of flight instruction;

FCL.1010.FE FE - Pre-requisites

(a) Before attending the examiner standardisation course, an applicant for an FE certificate shall:

(1) (i) in the case of aeroplanes, helicopters and airships, hold a CPL in the appropriate aircraft category;

(ii) In the case of sailplanes and balloons, hold a SPL or BPL in the appropriate aircraft category;

(2) hold an FI certificate in the appropriate aircraft category.

(b) Applicants whishing to conduct examinations only for the issue, revalidation and renewal of LPL shall be required to hold only a LPL and a LAFI certificate in the appropriate aircraft category.

SECTION 3

Specific requirements for type rating examiners - TRE

FCL.1005.TRE TRE - Privileges and conditions

(a) *TRE(A) and TRE(PL)* . The privileges of a TRE for aeroplanes or powered-lift are to conduct:

(1) skill tests for the initial issue of type ratings for multi-pilot aeroplanes or powered-lift, as applicable;

(2) proficiency checks for revalidation or renewal of multi-pilot type and instrument ratings;

(3) skill tests for ATPL(A) issue;

(4) skill tests for MPL issue;

(5) skill tests for the issue, revalidation or renewal of a TRI or SFI certificate in the applicable aircraft category, provided that the examiner has completed at least 4 skill tests or proficiency checks for the issue, revalidation or renewal of a type rating on the applicable type.

(b) *TRE(H)*. The privileges of a TRE(H) are to conduct :

(1) skill tests and proficiency checks for the issue, revalidation or renewal of helicopter type ratings;

(2) proficiency checks for the revalidation or renewal of instrument ratings, or for the extension of the IR(H) from single-pilot helicopters to multi-pilot helicopters, provided the TRE(H) holds a valid IR(H);

(3) skill tests for ATPL(H) issue;

(5) skill tests for the issue, revalidation or renewal of a TRI(H) or SFI(H) certificate, provided that the examiner has completed at least 4 skill tests or proficiency checks for the issue, revalidation or renewal of a type rating on the applicable helicopter type.

FCL.1010.TRE TRE - Pre-requisites

(a) TRE(A) and TRE(PL). Before attending the examiner standardisation course, applicants for a TRE certificate for aeroplanes and powered-lift aircraft shall:

(1) have completed 1500 hours of flight time as a pilot of multi-pilot aeroplanes or powered-lift, as applicable, of which at least 500 hours shall be as pilot-in-command;

(2) hold a TRI certificate for the applicable type;

(3) have completed at least 50 hours of flight instruction as a TRI in the appropriate type.

(b) TRE(H). Before attending the examiner standardisation course, applicants for a TRE (H) certificate for helicopters shall:

(1) hold a TRI(H) certificate or, in the case of single-pilot single-engine helicopters, a valid FI(H) certificate, for the applicable type;

(2) have completed 50 hours of flight instruction as a TRI in the appropriate type;

(3) in the case of multi-pilot helicopters, have completed 1500 hours of flight as a pilot on multi-pilot helicopters, of which at least 500 hours shall be as pilot-in-command;

(4) in the case of single-pilot multi-engine helicopters:

(i) have completed 1000 hours of flight as pilot of helicopters, of which at least 500 hours shall be as pilot-in-command;

(ii) hold a professional helicopter pilot licence and, when applicable, a valid IR(H);

(5) in the case of single-pilot single-engine helicopters:

(i) have completed 750 hours of flight as a pilot of helicopters, of which at least 500 hours shall be as pilot-in-command;

(ii) hold a professional helicopter pilot licence.

(6) Before the privileges of a TRE(H) are extended from single-pilot multi-engine to multi-pilot multi-engine privileges on the same type of helicopter, the holder shall have at least 100 hours in multi-pilot helicopters on this type.

(7) In the case of applicants for the first multi-pilot multi-engine TRE certificate, the 1500 hours of flight experience in multi-pilot helicopters required in (b)(3) may be considered to have

been met if they have completed the 500 hours of flight time as pilot-in-command on a multi-pilot helicopter of the same type.

SECTION 4

Specific requirements for Class Rating Examiner - CRE

FCL.1005.CRE CRE - Privileges

The privileges of a CRE are to conduct, for single-pilot aeroplanes:

(a) skill tests for the issue of class and type ratings;

(b) proficiency checks for:

(1) revalidation or renewal of class and type ratings;

(2) revalidation and renewal of instrument ratings, provided that the CRE holds an IR(A).

FCL.1010.CRE CRE– Pre-requisites

Before attending the examiner standardisation course, an applicant for a CRE certificate shall:

(a) hold a CPL, MPL or ATPL for aeroplanes or hold a PPL(A) and have held a professional licence for aeroplanes;

(b) have completed 500 hours of flight time as a pilot of aeroplanes.

SECTION 5

Specific requirements for Instrument Rating Examiner - IRE

FCL.1005.IRE IRE - Privileges

The privileges of the holder of an IRE certificate are to conduct skill tests for the issue, and proficiency checks for the revalidation or renewal of instrument ratings.

FCL.1010.IRE IRE - Pre-requisites

(a) *IRE(A).* Before attending the examiner standardisation course, applicants for an IRE certificate for aeroplanes shall hold an IRI(A) and have completed:

(1) 2000 hours of flight time as a pilot of aeroplanes; and

(2) 450 hours of flight time under IFR, of which 250 hours shall be as an instructor with privileges for flight instruction.

(b) *IRE(H).* Before attending the examiner standardisation course, applicants for an IRE certificate for helicopters shall hold an IRI(H) and have completed:

(1) 2000 hours of flight time as a pilot of helicopters; and

(2) 300 hours of instrument flight time in helicopters, of which 200 hours shall be as an instructor.

(c) *IRE(As).* Before attending the examiner standardisation course, applicants for an IRE certificate for airships shall hold an IRI(AS) and have completed:

(1) 500 hours of flight time as a pilot of airships; and

(2) 100 hours of instrument flight time in airships, of which 50 hours shall be as an instructor.

SECTION 6

Specific requirements for Synthetic Flight Examiner - SFE

FCL.1005.SFE SFE - privileges and conditions

(a) SFE(A) and SFE(PL). The privileges of an SFE for aeroplanes or powered-lift aircraft are to conduct in a FFS:

(1) skill tests for the issue of type ratings for multi-pilot aeroplanes or powered-lift aircraft, as applicable;

(2) proficiency checks for revalidation or renewal of multi-pilot type and instrument ratings;

(3) skill tests and proficiency checks for the issue, revalidation or renewal of an SFI certificate in the relevant aircraft category, provided that the examiner has completed 4 skill tests or proficiency checks for the issue, revalidation or renewal of a type rating on the applicable type.

(b) SFE(H). The privileges of an SFE for helicopters are to conduct in a FFS:

(1) skill tests for the issue of type ratings; and

(2) proficiency checks for the revalidation and renewal of type and instrument ratings.

(3) skill tests and proficiency checks for the issue, revalidation or renewal of an SFI(H) certificate, provided that the examiner has completed 4 skill tests or proficiency checks for the issue, revalidation or renewal of a type rating on the applicable helicopter type.

(c) SFE(As). The privileges of an SFE for airships are to conduct in a FFS:

(1) skill tests for the issue of type ratings;

(2) proficiency checks for revalidation or renewal of instrument ratings

(3) skill tests and proficiency checks for the issue, revalidation or renewal of an SFI(AS) certificate, provided that the examiner has completed four skill tests or proficiency checks for the issue, revalidation or renewal of an airship type rating on the applicable type.

FCL.1010.SFE SFE - Pre-requisites

(a) *SFE(A).* Before attending the examiner standardisation course, applicants for an SFE certificate for aeroplanes shall:

(1) Hold an ATPL(A);

(2) Have at least 1500 hours of flight time as a pilot of multi-pilot aeroplanes;

(b) *SFE(H).* Before attending the examiner standardisation course, applicants for an SFE certificate for helicopters shall:

(1) Hold an ATPL(H) and an IR(H) on the applicable type;

(2) Have at least 1000 hours of flight time as a pilot of multi-pilot helicopters.

(c) *SFE(As).* Before attending the examiner standardisation course, applicants for an SFE certificate for airships shall:

(1) Hold a CPL(AS) and an IR(AS);

(2) Have 500 hours of flight time as a pilot of large airships~~.~~

SECTION 7

Specific requirements for the flight instructor examiner - FIE

FCL.1005.FIE FIE - Privileges and conditions

(a) FIE(A). The privileges of an FIE for aeroplanes are to conduct skill tests or proficiency checks for the issue, revalidation or renewal of certificates for LAFI(A), FI(A), TRI(A), CRI(A), IRI(A), SFI(A) and assessments of competence for the STI(A) and the MI(A).

(b) FIE(H). The privileges of an FIE for helicopters are to conduct, skill tests or proficiency checks for the issue, revalidation or renewal of certificates for LAFI(H), FI(H), TRI(H), IRI(H) or SFI(H) and assessments of competence for the STI(H) and the MI(H), on single-pilot helicopters.

(c) FIE (As), (S), (B). The privileges of an FIE for sailplanes, balloons and airships are to conduct skill tests or proficiency checks for the issue, revalidation or renewal of instructor certificates in the appropriate aircraft category.

FCL.1010.FIE FIE - Pre-requisites

(a) FIE(A). Before attending the examiner standardisation course, applicants for an FIE certificate for aeroplanes shall:

 (1) Hold an FE(A), TRE(A) or IRE(A) certificate, as applicable;

 (2) Have completed 2000 hours of flight time as a pilot of aeroplanes; and

 (3) Have at least 100 hours of flight time instructing applicants for an FI(A) certificate.

(b) FIE(H). Before attending the examiner standardisation course, applicants for an FIE certificate for helicopters shall:

 (1) Hold an FE(H), TRE(H) or IRE(H) certificate, as applicable;

 (2) Have completed 2000 hours of flight time as pilot of helicopters;

 (4) Have at least 100 hours of flight time instructing applicants for an FI(H), TRI(H) or IRI(H) certificate;

(c) FIE(As). Before attending the examiner standardisation course, applicants for an FIE certificate for airships shall:

 (1) Have completed 500 hours of flight time as a pilot of airships;

 (2) Have at least 20 hours of flight time instructing applicants for an FI(AS) certificate;

 (3) Hold an FE(As) certificate;

(d) FIE(S). Before attending the examiner standardisation course, applicants for an FIE certificate for sailplanes shall:

 (1) Have completed 500 hours of flight time as a pilot of sailplanes or powered sailplanes,

 (2) Have completed 15 hours or 50 launches instructing applicants for an FI(S) or LAFI(S) certificate;

 (3) Hold a certificate as FE(S) or FE(LPL-S).

(e) FIE(B). Before attending the examiner standardisation course, applicants for an FIE certificate for balloons shall:

 (1) Have completed 350 hours of flight time as a pilot of balloons

 (2) have completed 15 hours instructing applicants for an LAFI(B) or FI(B) certificate;

 (3) Hold a certificate as FE(B) or FE(LPL-B).

APPENDIX 1

CREDITING OF THEORETICAL KNOWLEDGE

A. Crediting of theoretical knowledge for the issue of a pilot licence in another category of aircraft– Bridge instruction and examination requirements

1. LPL, PPL, BPL and SPL

1.1 For the issue of a LPL, the holder of a LPL in another category of aircraft shall be fully credited with theoretical knowledge on the common subjects established in FCL.120(a)(1).

1.1 Without prejudice to the paragraph above, for the issue of a LPL, PPL, BPL or SPL, the holder of a licence in another category of aircraft shall pass theoretical knowledge examinations to the appropriate level in the following topics:

- Aircraft General Knowledge;
- Flight Performance and Planning;
- Operational Procedures and Principles of Flight.

1.1.2 For the issue of a PPL, BPL or SPL, the holder of a LPL in the same category of aircraft shall be credited in full.

2. CPL

2.1 An applicant for a CPL holding a CPL in another category of aircraft shall have received theoretical knowledge bridge instruction on an approved course according to the differences identified between the CPL syllabi for different aircraft categories.

2.2. The applicant shall pass theoretical knowledge examinations as defined in Part-FCL for the following subjects in the appropriate aircraft category:

021 - Aircraft General Knowledge: Airframe and Systems, Electrics, Power plant, Emergency Equipment

022 – Aircraft General Knowledge: Instrumentation

032 – Performance

070 – Operational Procedures, and

080 – Principles of Flight.

2.3. An applicant for a CPL having passed the relevant theoretical examinations for an IR in the same category of aircraft is credited towards the theoretical knowledge requirements in the following subjects:

- Human Performance
- Meteorology.

3. ATPL

3.1. An applicant for an ATPL holding an ATPL in another category of aircraft shall have received theoretical knowledge bridge instruction at an approved training organisation according to the differences identified between the ATPL syllabi for different aircraft categories.

3.2 The applicant shall pass theoretical knowledge examinations as defined in Part-FCL for the following subjects in the appropriate aircraft category:

021 - Aircraft General Knowledge: Airframe and Systems, Electrics, Power plant, Emergency Equipment

022 – Aircraft General Knowledge: Instrumentation

032 – Performance

070 – Operational Procedures, and

081 – Principles of Flight.

3.3 An applicant for an ATPL(A) having passed the relevant theoretical examination for a CPL(A) is credited towards the theoretical knowledge requirements in subject VFR Communications.

3.4. An applicant for an ATPL(H), having passed the relevant theoretical examinations for a CPL(H) is credited towards the theoretical knowledge requirements in the following subjects:

- Air Law
- Principles of Flight (Helicopter)
- VFR Communications

3.5 An applicant for an ATPL(A) having passed the relevant theoretical examination for an IR(A) is credited towards the theoretical knowledge requirements in subject IFR Communications.

3.6 An applicant for an ATPL(H) with an IR(H), having passed the relevant theoretical examinations for a CPL(H) is credited towards the theoretical knowledge requirements in the following subjects:

- Principles of Flight (Helicopter)
- VFR Communications

4. IR

4.1 An applicant for an IR having passed the relevant theoretical examinations for a CPL in the same aircraft category is credited towards the theoretical knowledge requirements in the following subjects:

- Human Performance
- Meteorology.

4.2. An applicant for an IR(H) having passed the relevant theoretical examinations for an ATPL(H) VFR is required to pass the following examination subjects:

- Air Law
- Flight Planning and Flight Monitoring
- Radio Navigation
- IFR Communications

APPENDIX 2

THEORETICAL KNOWLEDGE SYLLABUS FOR THE ATPL, CPL AND IR

The following tables contain the detailed theoretical knowledge syllabus for the ATPL, CPL and IR. The applicable items for each licence or rating are marked with 'X'. An 'X' on the main title of a subject means that all the sub-divisions are applicable.

Aspects related to non-technical skills shall be included in an integrated manner, taking into account the particular risks associated to the licence and the activity.

A. Aeroplanes and helicopters

		Aeroplane		*Helicopter*			*IR*
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
021 00 00 00	**AIRCRAFT GENERAL KNOWLEDGE – AIRFRAME AND SYSTEMS, ELECTRICS, POWERPLANT, EMERGENCY EQUIPMENT**	x	x	x	x	x	x
021 01 00 00	SYSTEM DESIGN, LOADS, STRESSES, MAINTENANCE						
021 02 00 00	AIRFRAME						
021 03 00 00	HYDRAULICS						
021 04 00 00	LANDING GEAR, WHEELS, TYRES, BRAKES						
021 05 00 00	FLIGHT CONTROLS						
021 06 00 00	PNEUMATICS – PRESSURISATION AND AIR CONDITIONING						
021 07 00 00	ANTI AND DE-ICING SYSTEMS						
021 08 00 00	FUEL SYSTEM						
021 09 00 00	ELECTRICS						
021 10 00 00	PISTON ENGINES						
021 11 00 00	TURBINE ENGINES						
021 12 00 00	PROTECTION AND DETECTION SYSTEMS						
021 13 00 00	OXYGEN SYSTEMS						
021 14 00 00	HELICOPTER: MISCELLANEOUS SYSTEMS						
021 15 00 00	HELICOPTER: ROTOR HEADS						
021 16 00 00	HELICOPTER: TRANSMISSION						
021 17 00 00	HELICOPTER: BLADES						
022 00 00 00	**AIRCRAFT GENERAL KNOWLEDGE – INSTRUMENTATION**	x	x	x	x	x	x
022 01 00 00	SENSORS AND INSTRUMENTS						
022 02 00 00	MEASUREMENT OF AIR DATA PARAMETERS						
022 03 00 00	MAGNETISM – DIRECT READING COMPASS AND FLUX VALVE						
022 04 00 00	GYROSCOPIC INSTRUMENTS						
022 05 00 00	INERTIAL NAVIGATION AND REFERENCE SYSTEMS						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/IR	ATPL	CPL	
022 06 00 00	AEROPLANE: AUTOMATIC FLIGHT CONTROL SYSTEMS						
022 07 00 00	HELICOPTER: AUTOMATIC FLIGHT CONTROL SYSTEMS						
022 08 00 00	TRIMS – YAW DAMPER – FLIGHT ENVELOPE PROTECTION						
022 09 00 00	AUTOTHROTTLE – AUTOMATIC THRUST CONTROL SYSTEM						
022 10 00 00	COMMUNICATION SYSTEMS						
022 11 00 00	FLIGHT MANAGEMENT SYSTEM (F.M.S.)						
022 12 00 00	ALERTING SYSTEMS, PROXIMITY SYSTEMS						
022 13 00 00	INTEGRATED INSTRUMENTS – ELECTRONIC DISPLAYS						
022 14 00 00	MAINTENANCE, MONITORING AND RECORDING SYSTEMS						
022 15 00 00	DIGITAL CIRCUITS AND COMPUTERS						
030 00 00 00	**FLIGHT PERFORMANCE AND PLANNING**	x	x	x	x	x	
031 00 00 00	**MASS AND BALANCE – AEROPLANES/HELICOPTERS**	x	x	x	x	x	
031 01 00 00	PURPOSE OF MASS AND BALANCE CONSIDERATIONS						
031 02 00 00	LOADING						
031 03 00 00	FUNDAMENTALS OF CG CALCULATIONS						
031 04 00 00	MASS AND BALANCE DETAILS OF AIRCRAFT						
031 05 00 00	DETERMINATION OF CG POSITION						
031 06 00 00	CARGO HANDLING						
032 00 00 00	**PERFORMANCE – AEROPLANES**	x	x				
032 01 00 00	GENERAL						
032 02 00 00	PERFORMANCE CLASS B – SINGLE-ENGINE AEROPLANES						
032 03 00 00	PERFORMANCE CLASS B – MULTI-ENGINE AEROPLANES						
032 04 00 00	PERFORMANCE CLASS A – AEROPLANES CERTIFICATED UNDER CS 25 ONLY						
033 00 00 00	**FLIGHT PLANNING AND FLIGHT MONITORING**	x	x	x	x	x	x
033 01 00 00	FLIGHT PLANNING FOR VFR FLIGHTS						
033 02 00 00	FLIGHT PLANNING FOR IFR FLIGHTS						
033 03 00 00	FUEL PLANNING						
033 04 00 00	PRE-FLIGHT PREPARATION						
033 05 00 00	ATS FLIGHT PLAN						
033 06 00 00	FLIGHT MONITORING AND IN-FLIGHT RE-PLANNING						
040 00 00 00	**HUMAN PERFORMANCE**	x	x	x	x	x	x
040 01 00 00	HUMAN FACTORS: BASIC CONCEPTS						
040 02 00 00	BASIC AVIATION PHYSIOLOGY AND HEALTH MAINTENANCE						
040 03 00 00	BASIC AVIATION PSYCHOLOGY						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
050 00 00 00	**METEOROLOGY**	x	x	x	x	x	x
050 01 00 00	THE ATMOSPHERE						
050 02 00 00	WIND						
050 03 00 00	THERMODYNAMICS						
050 04 00 00	CLOUDS AND FOG						
050 05 00 00	PRECIPITATION						
050 06 00 00	AIR MASSES AND FRONTS						
050 07 00 00	PRESSURE SYSTEMS						
050 08 00 00	CLIMATOLOGY						
050 09 00 00	FLIGHT HAZARDS						
050 10 00 00	METEOROLOGICAL INFORMATION						
060 00 00 00	**NAVIGATION**	x	x	x	x	x	x
061 00 00 00	**GENERAL NAVIGATION**	x	x	x	x	x	x
061 01 00 00	BASICS OF NAVIGATION						
061 02 00 00	MAGNETISM AND COMPASSES						
061 03 00 00	CHARTS						
061 04 00 00	DEAD RECKONING NAVIGATION (DR)						
061 05 00 00	IN-FLIGHT NAVIGATION						
062 00 00 00	**RADIO NAVIGATION**	x	x	x	x	x	x
062 01 00 00	BASIC RADIO PROPAGATION THEORY						
062 02 00 00	RADIO AIDS						
062 03 00 00	RADAR						
062 04 00 00	*Intentionally left blank*						
062 05 00 00	AREA NAVIGATION SYSTEMS, RNAV/FMS						
062 06 00 00	GLOBAL NAVIGATION SATELLITE SYSTEMS						
070 00 00 00	**OPERATIONAL PROCEDURES**	x	x	x	x	x	
071 01 00 00	GENERAL REQUIREMENTS						
071 02 00 00	SPECIAL OPERATIONAL PROCEDURES AND HAZARDS (GENERAL ASPECTS)						
071 03 00 00	HELICOPTER EMERGENCY PROCEDURES						
080 00 00 00	**PRINCIPLES OF FLIGHT**	x	x	x	x	x	
081 00 00 00	**PRINCIPLES OF FLIGHT – AEROPLANE**	x	x				
081 01 00 00	SUBSONIC AERODYNAMICS						
081 02 00 00	HIGH SPEED AERODYNAMICS						
081 03 00 00	*Intentionally left blank*						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
081 04 00 00	STABILITY						
081 05 00 00	CONTROL						
081 06 00 00	LIMITATIONS						
081 07 00 00	PROPELLERS						
081 08 00 00	FLIGHT MECHANICS						
090 00 00 00	**COMMUNICATIONS**	x	x	x	x	x	x
091 00 00 00	**VFR COMMUNICATIONS**						
091 01 00 00	DEFINITIONS						
091 02 00 00	GENERAL OPERATING PROCEDURES						
091 03 00 00	RELEVANT WEATHER INFORMATION TERMS (VFR)						
091 04 00 00	ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE						
091 05 00 00	DISTRESS AND URGENCY PROCEDURES						
091 06 00 00	GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES						
092 00 00 00	**IFR COMMUNICATIONS**						
092 01 00 00	DEFINITIONS						
092 02 00 00	GENERAL OPERATING PROCEDURES						
092 03 00 00	ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE						
092 04 00 00	DISTRESS AND URGENCY PROCEDURES						
092 05 00 00	RELEVANT WEATHER INFORMATION TERMS (IFR)						
092 06 00 00	GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES						
092 07 00 00	MORSE CODE						

B. Airships

		CPL	IR
010 00 00 00	**AIR LAW AND ATC PROCEDURES**		
010 01 00 00	INTERNATIONAL LAW: CONVENTIONS, AGREEMENTS AND ORGANISATIONS	X	
010 02 00 00	AIRWORTHINESS OF AIRCRAFT	X	
010 03 00 00	AIRCRAFT NATIONALITY AND REGISTRATION MARKS	X	
010 04 00 00	PERSONNEL LICENSING	X	X
010 05 00 00	RULES OF THE AIR	X	X
010 06 00 00	PROCEDURES FOR AIR NAVIGATION SERVICES – AIRCRAFT	X	X

		CPL	IR
	OPERATIONS		
010 07 00 00	AIR TRAFFIC SERVICES AND AIR TRAFFIC MANAGEMENT	X	X
010 08 00 00	AERONAUTICAL INFORMATION SERVICE	X	X
010 09 00 00	AERODROMES	X	X
010 10 00 00	FACILITATION	X	
010 11 00 00	SEARCH AND RESCUE	X	
010 12 00 00	SECURITY	X	
010 13 00 00	AIRCRAFT ACCIDENT AND INCIDENT INVESTIGATION	X	
023 00 00 00	**AIRSHIP GENERAL KNOWLEDGE – ENVELOPE, AIRFRAME AND SYSTEMS, ELECTRICS, POWERPLANT, EMERGENCY EQUIPMENT**		
023 01 00 00	DESIGN, MATERIALS,LOADS, STRESSES	X	
023 02 00 00	ENVELOPE AND AIRBAGS	X	
023 03 00 00	FRAMEWORK	X	
023 04 00 00	GONDOLA	X	
023 05 00 00	FLIGHT CONTROLS	X	
023 06 00 00	LANDING GEAR	X	
023 07 00 00	HYDRAULICS AND PNEUMATICS	X	
023 08 00 00	HEATING AND AIR CONDITIONING	X	
023 09 00 00	FUEL SYSTEM	X	
023 10 00 00	PISTON ENGINES	X	
023 11 00 00	TURBINE ENGINES (BASICS)	X	
023 12 00 00	ELECTRICS	X	
023 13 00 00	FIRE PROTECTION AND DETECTION SYSTEMS	X	
023 14 00 00	MAINTENANCE	X	
030 00 00 00	FLIGHT PERFORMANCE AND PLANNING		
031 00 00 00	MASS AND BALANCE – AIRSHIPS		
024 00 00 00	**AIRSHIP GENERAL KNOWLEDGE – INSTRUMENTATION**		
024 01 00 00	SENSORS AND INSTRUMENTS	X	
024 02 00 00	MEASUREMENT OF AIR DATA AND GAS PARAMETERS	X	
024 03 00 00	MAGNETISM – DIRECT READING COMPASS AND FLUX VALVE	X	
024 04 00 00	GYROSCOPIC INSTRUMENTS	X	
024 05 00 00	COMMUNICATION SYSTEMS	X	
024 06 00 00	ALERTING SYSTEMS	X	
024 07 00 00	INTEGRATED INSTRUMENTS – ELECTRONIC DISPLAYS	X	
024 08 00 00	FLIGHT MANAGEMENT SYSTEM (GENERAL BASICS)	X	
024 09 00 00	DIGITAL CIRCUITS AND COMPUTERS	X	
031 01 00 00	**PURPOSE OF MASS AND BALANCE CONSIDERATIONS**		

		CPL	IR
031 02 00 00	LOADING	X	
031 03 00 00	FUNDAMENTALS OF CG CALCULATIONS	X	
031 04 00 00	MASS AND BALANCE DETAILS OF AIRCRAFT	X	
031 05 00 00	DETERMINATION OF CG POSITION	X	
031 06 00 00	PASSENGER, CARGO AND BALLAST HANDLING	X	
033 00 00 00	**FLIGHT PLANNING AND FLIGHT MONITORING**		
033 01 00 00	FLIGHT PLANNING FOR VFR FLIGHTS	X	
033 02 00 00	FLIGHT PLANNING FOR IFR FLIGHTS		X
033 03 00 00	FUEL PLANNING	X	X
033 04 00 00	PRE-FLIGHT PREPARATION	X	X
033 05 00 00	ATS FLIGHT PLAN	X	X
033 06 00 00	FLIGHT MONITORING AND IN-FLIGHT RE-PLANNING	X	X
035 00 00 00	**PERFORMANCE – AIRSHIPS**		
035 01 00 00	AIRWORTHINESS REQUIREMENTS	X	
035 02 00 00	BASICS OF AIRSHIP PERFORMANCE	X	
035 03 00 00	DEFINITIONS AND TERMS	X	
035 04 00 00	STAGES OF FLIGHT	X	
035 05 00 00	USE OF FLIGHT MANUAL	X	
040 00 00 00	**HUMAN PERFORMANCE**		
040 01 00 00	HUMAN FACTORS: BASIC CONCEPTS	X	
040 02 00 00	BASIC AVIATION PHYSIOLOGY AND HEALTH MAINTENANCE	X	
040 03 00 00	BASIC AVIATION PSYCHOLOGY	X	
050 00 00 00	**METEOROLOGY**		
050 01 00 00	THE ATMOSPHERE	X	
050 02 00 00	WIND	X	
050 03 00 00	THERMODYNAMICS	X	
050 04 00 00	CLOUDS AND FOG	X	
050 05 00 00	PRECIPITATION	X	
050 06 00 00	AIR MASSES AND FRONTS	X	
050 07 00 00	PRESSURE SYSTEMS	X	
050 08 00 00	CLIMATOLOGY	X	
050 09 00 00	FLIGHT HAZARDS	X	
050 10 00 00	METEOROLOGICAL INFORMATION	X	
060 00 00 00	**NAVIGATION**		
061 00 00 00	GENERAL NAVIGATION		
061 01 00 00	BASICS OF NAVIGATION	X	

		CPL	IR
061 02 00 00	MAGNETISM AND COMPASSES	X	
061 03 00 00	CHARTS	X	
061 04 00 00	DEAD RECKONING NAVIGATION (DR)	X	
061 05 00 00	IN-FLIGHT NAVIGATION	X	
062 00 00 00	**RADIO NAVIGATION**		
062 01 00 00	BASIC RADIO PROPAGATION THEORY	X	X
062 02 00 00	RADIO AIDS	X	X
062 03 00 00	RADAR	X	X
062 04 00 00	AREA NAVIGATION SYSTEMS, RNAV/FMS		X
	GLOBAL NAVIGATION SATELLITE SYSTEMS	X	X
070 00 00 00	**OPERATIONAL PROCEDURES AIRSHIP**		
073 01 00 00	GENERAL REQUIREMENTS	X	
073 02 00 00	SPECIAL OPERATIONAL PROCEDURES AND HAZARDS (GENERAL ASPECTS)	X	
073 03 00 00	EMERGENCY PROCEDURES	X	
080 00 00 00	**PRINCIPLES OF FLIGHT**		
083 00 00 00	**PRINCIPLES OF FLIGHT – AIRSHIPS**		
083 01 00 00	BASICS OF AEROSTATICS	X	
083 02 00 00	BASICS OF SUBSONIC AERODYNAMICS	X	
083 03 00 00	AERODYNAMICS OF AIRSHIPS	X	
083 04 00 00	STABILITY	X	
083 05 00 00	CONTROLLABILITY	X	
083 06 00 00	LIMITATIONS	X	
083 07 00 00	PROPELLERS	X	
083 08 00 00	BASICS OF AIRSHIP FLIGHT MECHANICS	X	
090 00 00 00	**COMMUNICATIONS - AIRSHIPS**		
091 00 00 00	VFR COMMUNICATIONS	X	
091 01 00 00	DEFINITIONS	X	
091 02 00 00	GENERAL OPERATING PROCEDURES	X	
091 03 00 00	RELEVANT WEATHER INFORMATION TERMS (VFR)	X	
091 04 00 00	ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE	X	
091 05 00 00	DISTRESS AND URGENCY PROCEDURES	X	
091 06 00 00	GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES	X	

		CPL	IR
092 00 00 00	IFR COMMUNICATIONS		
092 01 00 00	DEFINITIONS		X
092 02 00 00	GENERAL OPERATING PROCEDURES		X
092 03 00 00	ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE		X
092 04 00 00	DISTRESS AND URGENCY PROCEDURES		X
092 05 00 00	RELEVANT WEATHER INFORMATION TERMS (IFR)		X
092 06 00 00	GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES		X
092 07 00 00	MORSE CODE		X

APPENDIX 3

TRAINING COURSES FOR THE ISSUE OF A CPL, AN ATPL AND AN IR

This appendix describes the requirements for the different types of training courses for the issue of a CPL, an ATPL and an IR.

A. ATP integrated course – aeroplanes

GENERAL

1 The aim of the ATP(A) integrated course is to train pilots to the level of proficiency necessary to enable them to operate as co-pilot on multi-pilot, multi-engine aeroplanes in commercial air transportation and to obtain the CPL(A)/IR.

2 An applicant wishing to undertake an ATP(A) integrated course shall complete all the instructional stages in one continuous course of training as arranged by an approved training organisation.

3 The applicant shall complete the course within a maximum period of 36 months.

4 An applicant may be admitted to training either as an ab-initio entrant, or as a holder of a PPL(A) or PPL(H) issued in accordance with ICAO Annex 1. In the case of a PPL(A) or PPL(H) entrant, 50% of the hours flown prior to the course shall be credited, up to a maximum of 40 hours flying experience, or 45 hours if an aeroplane night rating has been obtained, of which up to 20 hours may count towards the requirement for dual instruction flight time.

5 The course shall comprise:

(a) theoretical knowledge instruction to the ATPL(A) knowledge level;

(b) visual and instrument flying training; and

(c) training in multi-crew co-operation for the operation of multi-pilot aeroplanes.

6 An applicant failing or unable to complete the entire ATP(A) course may apply to the Authority for the theoretical knowledge examination and skill test for a lower licence and an instrument rating if the applicable requirements are met.

THEORETICAL KNOWLEDGE

7 An ATP(A) theoretical knowledge course shall comprise at least 750 hours of instruction.

8 The multi crew cooperation (MCC) course shall comprise at least 25 hours of theoretical knowledge instruction and exercises.

THEORETICAL KNOWLEDGE EXAMINATION

9 An applicant shall demonstrate the level of knowledge appropriate to the privileges granted to the holder of an ATPL(A).

FLYING TRAINING

10 The flying training, not including type rating training, shall comprise a total of at least 195 hours, to include all progress tests, of which up to 55 hours for the entire course may be instrument ground time. Within the total of 195 hours, applicants shall complete at least:

(a) 95 hours of dual instruction, of which up to 55 hours may be instrument ground time;

(b) 70 hours as pilot-in-command, including VFR flight and instrument flight time as student pilot-in-command (SPIC). The instrument flight time as SPIC shall only be counted as pilot in command flight time up to a maximum of 20 hours;

(c) 50 hours of cross-country flight as pilot-in-command, including a VFR cross-country flight of at least 540 km (300 NM), in the course of which full stop landings at two aerodromes different from the aerodrome of departure shall be made;

(d) 5 hours flight time shall be completed at night, comprising 3 hours of dual instruction, which will include at least 1 hour of cross-country navigation and 5 solo take-offs and 5 solo full stop landings; and

(e) 115 hours of instrument time comprising, at least:

(1) 20 hours as SPIC;

(2) 15 hours multi-crew co-operation, for which a flight simulator or FNPT II may be used;

(3) 50 hours of instrument flight instruction, of which up to:

(i) 25 hours may be instrument ground time in a FNPT I, or

(ii) 40 hours may be instrument ground time in a FNPT II or flight simulator, of which up to 10 hours may be conducted in a FNPT I.

An applicant holding a course completion certificate for the basic instrument flight module shall be credited with up to 10 hours towards the required instrument instruction time. Hours done in a BITD shall not be credited.

SKILL TEST

11 On completion of the related flying training the applicant shall take the CPL(A) skill test on either a single-engine or a multi-engine aeroplane and the instrument rating skill test on a multi-engine aeroplane.

B. CPL/IR integrated course - aeroplanes

GENERAL

1 The aim of the CPL(A) and IR(A) integrated course is to train pilots to the level of proficiency necessary to operate single-pilot single-engine or multi-engine aeroplanes in commercial air transportation and to obtain the CPL(A)/IR.

2 An applicant wishing to undertake a CPL(A)/IR integrated course shall complete all the instructional stages in one continuous course of training as arranged by an approved training organisation.

3 The applicant shall complete the course within a maximum period of 30 months.

4 An applicant may be admitted to training either as an ab-initio entrant, or as a holder of a PPL(A) or PPL(H) issued in accordance with ICAO Annex 1. In the case of a PPL(A) or PPL(H) entrant, 50% of the hours flown prior to the course shall be credited, up to a maximum of 40 hours flying experience, or 45 hours if an aeroplane night rating has been obtained, of which up to 20 hours may count towards the requirement for dual instruction flight time.

5 The course shall comprise:

(a) theoretical knowledge instruction to CPL(A) and IR knowledge level; and

(b) visual and instrument flying training.

6 An applicant failing or unable to complete the entire CPL/IR(A) course may apply to the Authority for the theoretical knowledge examination and skill test for a lower licence and an instrument rating if the applicable requirements are met.

THEORETICAL KNOWLEDGE

7 A CPL(A)/IR theoretical knowledge course shall comprise at least 500 hours of instruction.

THEORETICAL KNOWLEDGE EXAMINATION

8 An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of a CPL(A) and an instrument rating.

FLYING TRAINING

9 The flying training, not including type rating training, shall comprise a total of at least 180 hours, to include all progress tests, of which up to 40 hours for the entire course may be instrument ground time. Within the total of 180 hours, applicants shall complete at least:

(a) 80 hours of dual instruction, of which up to 40 hours may be instrument ground time;

(b) 70 hours as pilot-in-command, including VFR flight and instrument flight time which may be flown as student pilot-in-command (SPIC). The instrument flight time as SPIC shall only be counted as pilot in command flight time up to a maximum of 20 hours;

(c) 50 hours of cross-country flight as pilot-in-command, including a VFR cross-country flight of at least 540 km (300 NM), in the course of which full stop landings at two aerodromes different from the aerodrome of departure shall be made;

(d) 5 hours flight time shall be completed at night, comprising 3 hours of dual instruction, which shall include at least 1 hour of cross-country navigation and 5 solo take-offs and 5 solo full stop landings; and

(e) 100 hours of instrument time comprising, at least:

(1) 20 hours as SPIC; and

(2) 50 hours of instrument flight instruction, of which up to:

(i) 25 hours may be instrument ground time in an FNPT I, or

(ii) 40 hours may be instrument ground time in an FNPT II or flight simulator, of which up to 10 hours may be conducted in an FNPT I.

An applicant holding a course completion certificate for the basic instrument flight module shall be credited with up to 10 hours towards the required instrument instruction time. Hours done in a BITD shall not be credited.

SKILL TESTS

10 On completion of the related flying training the applicant shall take the CPL(A) skill test and the instrument rating skill test on either a multi-engine aeroplane or a single-engine aeroplane.

C. CPL integrated course - aeroplanes

GENERAL

1 The aim of the CPL(A) integrated course is to train pilots to the level of proficiency necessary for the issue of a CPL(A).

2 An applicant wishing to undertake a CPL(A) integrated course shall complete all the instructional stages in one continuous course of training as arranged by an approved training organisation.

3 The applicant shall complete the course within a maximum period of 24 months.

4 An applicant may be admitted to training either as an ab-initio entrant, or as a holder of a PPL(A) or PPL(H) issued in accordance with ICAO Annex 1. In the case of a PPL(A) or PPL(H) entrant, 50% of the hours flown prior to the course shall be credited, up to a maximum of 40 hours flying experience, or 45 hours if an aeroplane night rating has been obtained, of which up to 20 hours may count towards the requirement for dual instruction flight time.

5 The course shall comprise:

(a) theoretical knowledge instruction to CPL(A) knowledge level; and

(b) visual and instrument flying training.

6 An applicant failing or unable to complete the entire CPL(A) course may apply to the Authority for the theoretical knowledge examination and skill test for a lower licence, if the applicable requirements are met.

THEORETICAL KNOWLEDGE

7 A CPL(A) theoretical knowledge course shall comprise at least 350 hours of instruction.

THEORETICAL KNOWLEGDE EXAMINATION

8 An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of a CPL(A)

FLYING TRAINING

9 The flying training, not including type rating training, shall comprise a total of at least 150 hours, to include all progress tests, of which up to 5 hours for the entire course may be instrument ground time. Within the total of 150 hours, applicants shall complete at least:

(a) 80 hours of dual instruction, of which up to 5 hours may be instrument ground time;

(b) 70 hours as pilot-in-command;

(c) 20 hours of cross-country flight as pilot-in-command, including a VFR cross-country flight of at least 540 km (300 NM), in the course of which full stop landings at two aerodromes different from the aerodrome of departure shall be made;

(d) 5 hours flight time shall be completed at night, comprising 3 hours of dual instruction, which shall include at least 1 hour of cross-country navigation and 5 solo take-offs and 5 solo full stop landings; and

(e) 10 hours of instrument flight instruction, of which up to 5 hours may be instrument ground time in a FNPT I, or FNPT II or flight simulator. An applicant holding a course completion certificate for the basic instrument flight module shall be credited with up to 10 hours towards the required instrument instruction time. Hours done in a BITD shall not be credited.

(f) 5 hours to be carried out in an aeroplane certificated for the carriage of at least four persons that has a variable pitch propeller and retractable landing gear.

SKILL TEST

10 On completion of the flying training the applicant shall take the CPL(A) skill test on a single-engine or a multi-engine aeroplane.

D. CPL modular course - aeroplanes

1 The aim of the CPL(A) modular course is to train PPL(A) holders to the level of proficiency necessary for the issue of a CPL(A).

2 Before commencing a CPL(A) modular course an applicant shall be the holder of a PPL(A) issued in accordance with ICAO Annex 1.

3 Before commencing the flight training the applicant shall:

(a) have completed 150 hours flight time,

(b) have complied with the pre-requisites for the issue of a class or type rating for multi-engine aeroplanes if a multi-engine aeroplane is to be used on the skill test.

4 An applicant wishing to undertake a modular CPL(A) course shall complete all the flight instructional stages in one continuous course of training as arranged by an approved training organisation. The theoretical knowledge instruction may be given at an approved training organisation conducting theoretical knowledge instruction only.

5 The course of theoretical knowledge shall be completed within 18 months. The flight instruction and skill test shall be completed within the period of validity of the pass in the theoretical examinations.

6 The course shall comprise:

(a) theoretical knowledge instruction to CPL(A) knowledge level; and

(b) visual and instrument flying training.

THEORETICAL KNOWLEDGE

7 An approved CPL(A) theoretical knowledge course shall comprise at least 250 hours of instruction.

THEORETICAL KNOWLEDGE EXAMINATION

8 An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of a CPL(A).

FLYING TRAINING

9 Applicants without an instrument rating shall be given at least 25 hours dual flight instruction, including 10 hours of instrument instruction of which up to 5 hours may be instrument ground time in a BITD or a FNPT I or II or a flight simulator.

10 Applicants holding a valid IR(A) shall be fully credited towards the dual instrument instruction time. Applicants holding a valid IR(H) shall be credited up to 5 hours of the dual instrument instruction time, in which case at least 5 hours dual instrument instruction time shall be given in an aeroplane. An applicant holding a Course Completion Certificate for the Basic Instrument Flight module shall be credited with up to 10 hours towards the required instrument instruction time.

11 (a) Applicants with a valid instrument rating shall be given at least 15 hours dual visual flight instruction.

(b) Applicants without a night rating aeroplane shall be given additionally at least 5 hours night flight instruction, comprising 3 hours of dual instruction, which shall include at least 1 hour of cross-country navigation and 5 solo take-offs and 5 solo full stop landings

12 At least 5 hours of the flight instruction shall be carried out in an aeroplane certificated for the carriage of at least 4 persons and have a variable pitch propeller and retractable landing gear.

EXPERIENCE

13 The applicant for a CPL(A) shall have completed at least 200 hours flight time, including 100 hours as pilot-in-command, of which 20 hours of cross-country flight as pilot-in-command, which shall include a VFR cross-country flight of at least 540 km (300 NM), in the course of which full stop landings at two aerodromes different from the aerodrome of departure shall be made.

Hours as pilot in command of other categories of aircraft may count towards the 200 hours flight time, in the following cases:

(a) 30 hours in helicopter, if the applicant holds a PPL(H); or

(b) 100 hours in helicopters, if the applicant holds a CPL(H); or

(c) 30 hours in touring motor gliders or gliders.

(d) 30 hours in airships, if the applicant holds a PPL(As);

(e) 60 hours in airships, if the applicant holds a CPL(As);

SKILL TEST

13 On completion of the flying training and relevant experience requirements the applicant shall take the CPL(A) skill test on either a single-engine or a multi-engine aeroplane.

E. ATP/IR integrated course - helicopters

GENERAL

1 The aim of the ATP(H)/IR integrated course is to train pilots to the level of proficiency necessary to enable them to operate as co-pilot on multi-pilot, multi-engine helicopters in commercial air transportation and to obtain the CPL(H)/IR.

2 An applicant wishing to undertake an ATP(H)/IR integrated course shall complete all the instructional stages in one continuous course of training as arranged by an approved training organisation.

3 The applicant shall complete the course within a period of 36 months.

4 An applicant may be admitted to training either as an ab-initio entrant, or as a holder of a PPL(H) or PPL(A) issued in accordance with ICAO Annex 1. In the case of a PPL(H) or PPL(A) entrant, 50% of the relevant experience shall be credited, up to a maximum of:

(a) 40 hours, of which up to 20 hours may be dual instruction, or

(b) 50 hours, of which up to 25 hours may be dual instruction, if a helicopter night rating has been obtained.

5 The course shall comprise:

(a) theoretical knowledge instruction to the ATPL(H) and IR knowledge level;

(b) visual and instrument flying training; and

(c) training in multi-crew co-operation for the operation of multi-pilot helicopters.

6 An applicant failing or unable to complete the entire ATP(H) /IR course may apply to the Authority for the theoretical knowledge examination and skill test for a lower licence and an instrument rating, if the applicable requirements are met.

THEORETICAL KNOWLEDGE

7 An ATP(H)/IR theoretical knowledge course shall comprise at least 750 hours of instruction.

8 The MCC course shall comprise at least 25 hours of theoretical knowledge instruction exercises.

THEORETICAL KNOWLEDGE EXAMINATION

9 An applicant shall demonstrate the level of knowledge appropriate to the privileges granted to the holder of an ATPL(H) and an IR.

FLYING TRAINING

10 The flying training shall comprise a total of at least 195 hours, to include all progress tests. Within the total of 195 hours, applicants shall complete at least:

(a) 140 hours of dual instruction, of which:

(1) 75 hours visual instruction may include:

(i) 30 hours in a helicopter FS level C/D, or

(ii) 25 hours in a FTD 2,3 or

(iii) 20 hours in a helicopter FNPT II/III, or

(iv) 20 hours in an aeroplane or TMG

(2) 50 hours instrument instruction may include:

(i) up to 20 hours in a helicopter FS or FTD 2,3 or FNPT II/III, or

(ii) 10 hours in at least a helicopter FTD 1 or FNPT 1 or aeroplane.

(3) 15 hours multi-crew co-operation, for which a helicopter FS or helicopter FTD 2,3(MCC) or FNPT II/III(MCC) may be used.

If the helicopter used for the flying training is of a different type from the helicopter flight simulator used for the visual training, the maximum credit shall be limited to that allocated for the helicopter FNPT II/III.

(b) 55 hours as pilot-in-command, of which 40 hours may be as SPIC. At least 14 hours solo day and 1 hour solo night shall be made.

(c) 50 hours of cross-country flight, including at least 10 hours of cross country flight as SPIC including a VFR cross country flight of at least 185 km (100 nm) in the course of which landings at two different aerodromes from the aerodrome of departure shall be made;

(d) 5 hours flight time in helicopters shall be completed at night comprising 3 hours of dual instruction including at least 1 hour of cross-country navigation and 5 solo night circuits. Each circuit shall include a take-off and a landing;

(e) 50 hours of dual instrument time comprising:

(i) 10 hours Basic Instrument instruction time; and

(ii) 40 hours Instrument Rating Training, which shall include at least 10 hours in a multi-engine IFR-certificated helicopter;

(f) 15 hours of multi-crew co-operation.

SKILL TESTS

11 On completion of the related flying training the applicant shall take the CPL(H) skill test on a multi-engine helicopter and the instrument rating skill test on either a multi-engine or a single-engine helicopter and shall comply with the requirements for MCC training.

F. ATP integrated course - Helicopters

GENERAL

1 The aim of the ATP(H) integrated course is to train pilots to the level of proficiency necessary to enable them to operate as co-pilot on multi-pilot, multi-engine helicopters limited to VFR privileges in commercial air transportation and to obtain the CPL(H).

2 An applicant wishing to undertake an ATP(H) integrated course shall complete all the instructional stages in one continuous course of training as arranged by an approved training organisation.

3 The applicant shall complete the course within a period of 36 months.

4 An applicant may be admitted to training either as an ab-initio entrant, or as a holder of a PPL(H) or PPL(A) issued in accordance with ICAO Annex 1. In the case of a PPL(H) or PPL(A) entrant, 50% of the relevant experience shall be credited, up to a maximum of:

(a) 40 hours, of which up to 20 hours may be dual instruction, or

(b) 50 hours, of which up to 25 hours may be dual instruction, if a helicopter night rating has been obtained.

.5 The course shall comprise:

(a) theoretical knowledge instruction to the ATPL(H) knowledge level;

(b) visual and basic instrument flying training; and

(c) training in multi-crew co-operation for the operation of multi-pilot helicopters

6 An applicant failing or unable to complete the entire ATP(A) course may apply to the Authority for the theoretical knowledge examination and skill test for a lower licence, if the applicable requirements are met.

THEORETICAL KNOWLEDGE

7 An ATP(H) theoretical knowledge course shall comprise at least 650 hours of instruction.

8 The MCC course shall comprise at least 20 hours of theoretical knowledge instruction exercises.

THEORETICAL KNOWLEDGE EXAMINATION

9 An applicant shall demonstrate the level of knowledge appropriate to the privileges granted to the holder of an ATPL (H).

FLYING TRAINING

10 The flying training shall comprise a total of at least 150 hours, to include all progress tests. Within the total of 150 hours, applicants shall complete at least:

(a) 95 hours of dual instruction, of which

(i) 75 hours visual instruction may include:

(1) 30 hours in a helicopter FS level C/D, or

(2) 25 hours in a helicopter FTD 2,3 or

(3) 20 hours in a helicopter FNPT II/III, or

(4) 20 hours in an aeroplane or TMG.

(ii) 10 hours basic instrument instruction may include 5 hours in at least a helicopter FTD 1 or FNPT I or aeroplane.

(iii) 10 hours multi-crew co-operation, for which a helicopter: FS or FTD 2,3(MCC) or FNPT II/III(MCC) may be used.

If the helicopter used for the flying training is of a different type from the helicopter FS used for the visual training, the maximum credit shall be limited to that allocated for the helicopter FNPT II/III.

(b) 55 hours as pilot-in-command, of which 40 hours may be as SPIC. At least 14 hours solo day and 1 hour solo night shall be made;

(c) 50 hours of cross-country flight, including at least 10 hours of cross country flight as SPIC, including a VFR cross country flight of at least 185 km (100 NM) in the course of which landings at two different aerodromes from the aerodrome of departure shall be made;

(d) 5 hours flight time in helicopters shall be completed at night comprising 3 hours of dual instruction including at least 1 hour of cross-country navigation and 5 solo night circuits. Each circuit shall include a take-off and a landing;

(e) 10 hours of dual basic instrument instruction time;

(f) 10 hours multi-crew co-operation.

SKILL TESTS

11 On completion of the related flying training the applicant shall take the CPL(H) skill test on a multi-engine helicopter and comply MCC requirements.

G. CPL/IR integrated course – Helicopters

GENERAL

1 The aim of the CPL(H)/IR integrated course is to train pilots to the level of proficiency necessary to operate single-pilot multi engine helicopters and to obtain the CPL(H)/IR multi-engine helicopter .

2 An applicant wishing to undertake a CPL(H)/IR integrated course shall complete all the instructional stages in one continuous course of training as arranged by an approved training organisation.

3 The applicant shall complete the course within a period of 30 months.

4 An applicant may be admitted to training either as an ab-initio entrant, or as a holder of a PPL(H) or PPL(A) issued in accordance with ICAO Annex 1. In the case of an entrant holding avPPL(H) or PPL(A), 50% of the relevant experience shall be credited, up to a maximum of :

(a) 40 hours, of which up to 20 hours may be dual instruction, or

(b) 50 hours, of which up to 25 hours may be dual instruction, if a helicopter night rating has been obtained.

5 The course shall comprise:

(a) theoretical knowledge instruction to CPL(H) and IR knowledge level, and the initial multi-engine helicopter type rating; and

(b) visual and instrument flying training.

6 An applicant failing or unable to complete the entire CPL(H)/IR course may apply to the Authority for the theoretical knowledge examination and skill test for a lower licence and an instrument rating, if the applicable requirements are met.

THEORETICAL KNOWLEDGE

7 A CPL(H)/IR theoretical knowledge course shall comprise at least 500 hours of instruction.

THEORETICAL KNOWLEDGE EXAMINATION

8 An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of a CPL(H) and an instrument rating.

FLYING TRAINING

9 The flying training shall comprise a total of at least 180 hours including all progress tests. Within the 180 hours, applicants shall complete at least:

(a) 125 hours of dual instruction, of which:

(i) 75 hours visual instruction, which may include:

(1) 30 hours in a helicopter FS level C/D, or

(2) 25 hours in a helicopter FTD 2,3, or

(3) 20 hours in a helicopter FNPT II/III, or

(4) 20 hours in an aeroplane or TMG.

(ii) 50 hours instrument instruction which may include :

(1) up to 20 hours in a helicopter FS or FTD 2,3 or FNPT II,III, or

(2) 10 hours in at least a helicopter FTD 1 or FNPT I or aeroplane.

If the helicopter used for the flying training is of a different type from the FS used for the visual training, the maximum credit shall be limited to that allocated for the FNPT II/III.

(b) 55 hours as pilot-in-command, of which 40 hours may be as SPIC. At least 14 hours solo day and 1 hour solo night shall be made;

(c) 10 hours of cross-country flight as pilot-in-command, including a VFR cross-country flight of at least 185km (100 NM) in the course of which full stop landings at two different aerodromes from the aerodrome of departure shall be made;

(d) 5 hours flight time in helicopters shall be completed at night comprising 3 hours of dual instruction including at least 1 hour of cross-country navigation and 5 solo night circuits. Each circuit shall include a take-off and a landing;

(e) 50 hours of dual instrument time comprising:

(i) 10 hours Basic Instrument instruction time; and

(ii) 40 hours Instrument Rating Training, which shall include at least 10 hours in a multi-engine IFR-certificated helicopter

SKILL TEST

10 On completion of the related flying training, the applicant shall take the CPL(H) skill test on either a multi-engine or a single-engine helicopter and the instrument rating skill test on an IFR-certificated multi-engine helicopter.

H. CPL integrated course - Helicopters

GENERAL

1 The aim of the CPL(H) integrated course is to train pilots to the level of proficiency necessary for the issue of a CPL(H).

2 An applicant wishing to undertake a CPL(H) integrated course shall complete all the instructional stages in one continuous course of training as arranged by an approved training organisation.

3 The applicant shall complete the course within a period of 24 months.

4 An applicant may be admitted to training either as an ab-initio entrant, or as a holder of a PPL(H) or PPL(A) issued in accordance with ICAO Annex 1. In the case of an entrant holding a PPL(H) or PPL(A), 50% of the relevant experience shall be credited, up to a maximum of :

(a) 40 hours, of which up to 20 hours may be dual instruction, or

(b) 50 hours, of which up to 25 hours may be dual instruction if a helicopter night rating has been obtained

5 The course shall comprise:

(a) theoretical knowledge instruction to CPL(H) knowledge level; and

(b) visual and instrument flying training.

6 An applicant failing or unable to complete the entire CPL(H) course may apply to the Authority for the theoretical knowledge examination and skill test for a lower licence, if the applicable requirements are met.

THEORETICAL KNOWLEDGE

7 An approved CPL(H) theoretical knowledge course shall comprise at least 350 hours of instruction or 200 hours if the applicant is the holder of a PPL.

THEORETICAL KNOWLEDGE EXAMINATION

8 An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of a CPL(H).

FLYING TRAINING

9 The flying training shall comprise a total of at least 135 hours, to include all progress tests, of which up to 5 hours may be instrument ground time. Within the 135 hours total, applicants shall complete at least:

(a) 85 hours of dual instruction, of which:

(i) up to 75 hours may be visual instruction, and may include:

(1) 30 hours in a helicopter FS level C/D, or

(2) 25 hours in a helicopter FTD 2,3, or

(3) 20 hours in a helicopter FNPT II/III, or

(4) 20 hours in an aeroplane or TMG.

(ii) up to 10 hours may be instrument instruction, and may include 5 hours in at least a helicopter FTD I or FNPT I or aeroplane.

If the helicopter used for the flying training is of a different type from the FS used for the visual training, the maximum credit shall be limited to that allocated for the FNPT II/III.

(b) 50 hours as pilot-in-command, of which 35 hours may be as SPIC. At least 14 hours solo day and 1 hour solo night shall be made;

(c) 10 hours dual cross-country flying;

(d) 10 hours of cross-country flight as pilot-in-command including a VFR cross-country flight of at least 185km (100 NM) in the course of which full stop landings at two different aerodromes from the aerodrome of departure shall be made;

(e) 5 hours flight time in helicopters shall be completed at night comprising 3 hours of dual instruction including at least 1 hour of cross-country navigation and 5 solo night circuits. Each circuit shall include a take-off and a landing;

(f) 10 hours of instrument dual instruction time, including at least 5 hours in a helicopter.

SKILL TEST

10 On completion of the related flying training, the applicant shall take the CPL(H) skill test.

I. CPL modular course - Helicopters

1 The aim of the CPL(H) modular course is to train PPL(H) holders to the level of proficiency necessary for the issue of a CPL(H).

2 Before commencing a CPL(H) modular course an applicant shall:

(a) be the holder of a PPL(H) issued in accordance with ICAO Annex 1;

(b) have completed 155 hours flight time as a pilot in helicopters, including 50 hours as pilot in command of which 10 hours shall be cross-country.

(c) have complied with FCL.725 and FCL.720.H if a multi-engine helicopter is to be used on the skill test.

3 An applicant wishing to undertake a modular CPL(H) course shall complete all the flight instructional stages in one continuous course of training as arranged by an approved training organisation. The theoretical knowledge instruction may be given at an approved ATO that conducts theoretical knowledge instruction only.

4 The course of theoretical knowledge shall be completed within 18 months. The flight instruction and skill test shall be completed within the period of validity of the pass in theoretical examinations.

5 The course shall comprise:

(a) theoretical knowledge instruction to CPL(H) knowledge level; and

(b) visual and instrument flying training.

THEORETICAL KNOWLEDGE

6 An approved CPL(H) theoretical knowledge course shall comprise at least 250 hours of instruction.

THEORETICAL KNOWLEDGE EXAMINATION

7 An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of a CPL(H).

FLYING TRAINING

8 Applicants without an instrument rating shall be given at least 30 hours dual flight instruction, of which:

(a) 20 hours visual instruction, which may include 5 hours in a helicopter flight simulator or FTD 2,3 or FNPT II,III and

(b) 10 hours instrument instruction, which may include 5 hours in at least a helicopter FTD 1 or FNPT I or aeroplane.

9 Applicants holding a valid IR(H) shall be fully credited towards the dual instrument instruction time. Applicants holding a valid IR(A) shall complete at least 5 hours of the dual instrument instruction time in a helicopter.

10 Applicants without a night rating helicopter shall be given additionally at least 5 hours night flight instruction comprising 3 hours of dual instruction including at least 1 hour of cross-country navigation and 5 solo night circuits. Each circuit shall include a take-off and a landing.

EXPERIENCE

11 The applicant for a CPL(H) shall have completed at least 185 hours flight time, including 50 hours as pilot-in-command, of which 10 hours of cross-country flight as pilot-in-command, including a VFR cross-country flight of at least 185 km (100 NM), in the course of which full stop landings at two aerodromes different from the aerodrome of departure shall be made.

Hours as pilot in command of other categories of aircraft may count towards the 185 hours flight time, in the following cases:

(a) 20 hours in aeroplanes, if the applicant holds a PPL(A); or

(b) 50 hours in aeroplanes, if the applicant holds a CPL(A); or

(c) 10 hours in touring motor gliders or gliders.

(d) 20 hours in airships, if the applicant holds a PPL(As);

(e) 50 hours in airships, if the applicant holds a CPL(As);

SKILL TEST

12 On completion of the related flying training and relevant experience, the applicant shall take the CPL(H) skill test.

J. CPL/IR integrated course – Airships

GENERAL

1 The aim of the CPL(As)/IR integrated course is to train pilots to the level of proficiency necessary to operate airships and to obtain the CPL(As)/IR.

2 An applicant wishing to undertake a CPL(As)/IR integrated course shall complete all the instructional stages in one continuous course of training as arranged by an approved training organisation.

3 The applicant shall complete the course within a period of 30 months.

4 An applicant may be admitted to training either as an ab-initio entrant, or as a holder of a PPL(As), PPL(A) or PPL(H) issued in accordance with ICAO Annex 1. In the case of an entrant holding a PPL(As), PPL(A) or PPL(H) shall be credited up to a maximum of :

(a) 10 hours, of which up to 5hours may be dual instruction, or

(b) 15 hours, of which up to 7 hours may be dual instruction, if a airship night rating has been obtained.

5 The course shall comprise:

(a) theoretical knowledge instruction to CPL(As) and IR knowledge level, and the initial airship type rating; and

(b) visual and instrument flying training.

6 An applicant failing or unable to complete the entire CPL/IR(As) course may apply to the Authority for the theoretical knowledge examination and skill test for a lower licence and an instrument rating, if the applicable requirements are met.

THEORETICAL KNOWLEDGE

7 A CPL(As)/IR theoretical knowledge course shall comprise at least 500 hours of instruction.

THEORETICAL KNOWLEDGE EXAMINATION

8 An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of a CPL(As) and an instrument rating.

FLYING TRAINING

9 The flying training shall comprise a total of at least 80 hours including all progress tests. Within the 80 hours, applicants shall complete at least:

(a) 60hours of dual instruction, of which:

(i) 30 hours visual instruction, which may include:

(1) 12 hours in an airship FS, or

(2) 10 hours in an airship FTD, or

(3) 8 hours in an airship FNPT II/III, or

(4) 8 hours in an aeroplane, helicopter or TMG.

(ii) 30 hours instrument instruction which may include :

(1) up to 12 hours in an airship FS or FTD or FNPT II,III, or

(2) 6 hours in at least a airship FTD 1 or FNPT I or aeroplane.

If the airship used for the flying training is of a different type from the FS used for the visual training, the maximum credit shall be limited to 8 hours.

(b) 20 hours as pilot-in-command, of which 40 hours may be as SPIC. At least 14 hours solo day and 1 hour solo night shall be made;

(c) 5 hours of cross-country flight as pilot-in-command including a VFR cross-country flight of at least 90km (50NM) in the course of which two full stop landings at the destination aerodrome shall be made;

(d) 5 hours flight time in airships shall be completed at night comprising 3 hours of dual instruction including at least 1 hour of cross-country navigation and 5 solo night circuits. Each circuit shall include take-off and landing;

(e) 30 hours of dual instrument time comprising:

(i) 10 hours Basic Instrument instruction time; and

(ii) 20 hours Instrument Rating Training, which shall include at least 10 hours in a multi-engine IFR-certificated airship

SKILL TEST

10 On completion of the related flying training, the applicant shall take the CPL(As) skill test on either a multi-engine or a single-engine airship and the instrument rating skill test on an IFR-certificated multi-engine airship.

K. CPL integrated course - airships

GENERAL

1 The aim of the CPL(As) integrated course is to train pilots to the level of proficiency necessary for the issue of a CPL(AS).

2 An applicant wishing to undertake a CPL(As) integrated course shall complete all the instructional stages in one continuous course of training as arranged by an approved training organisation.

3 The applicant shall complete the course within a period of 24 months.

4 An applicant may be admitted to training either as an ab-initio entrant, or as a holder of a PPL(As), PPL(A) or PPL(H) issued in accordance with ICAO Annex 1. In the case of an entrant holding a PPL(As), PPL(A) or PPL(H) shall be credited, up to a maximum of:

(a) 10 hours, of which up to 5 hours may be dual instruction, or

(b) 15 hours, of which up to 7 hours may be dual instruction if a airship night rating has been obtained

5 The course shall comprise:

(a) theoretical knowledge instruction to CPL(As) knowledge level; and

(b) visual and instrument flying training.

6 An applicant failing or unable to complete the entire CPL(As) course may apply to the Authority for the theoretical knowledge examination and skill test for a lower licence, if the applicable requirements are met.

THEORETICAL KNOWLEDGE

7 An approved CPL(As) theoretical knowledge course shall comprise at least 350 hours of instruction or 200 hours if the applicant is the holder of a PPL.

THEORETICAL KNOWLEDGE EXAMINATION

8 An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of a CPL(As).

FLYING TRAINING

9 The flying training shall comprise a total of at least 50 hours, to include all progress tests, of which up to 5 hours may be instrument ground time. Within the 50 hours total, applicants shall complete at least:

(a) 30 hours of dual instruction, of which up to 5 hours may be instrument ground time;

(b) 20 hours as pilot-in-command;

(c) 5 hours dual cross-country flying;

(d) 5 hours of cross-country flight as pilot-in-command including a VFR cross-country flight of at least 90km (50NM) in the course of which two full stop landings at the destination aerodrome shall be made;

(e) 5 hours flight time in airships shall be completed at night comprising 3 hours of dual instruction including at least 1 hour of cross-country navigation and 5 solo night circuits. Each circuit shall include take-off and landing;

(f) 10 hours of instrument dual instruction time, including at least 5 hours in an airship.

SKILL TEST

10 On completion of the related flying training, the applicant shall take the CPL(As) skill test.

L. CPL modular course - airships

1 The aim of the CPL(As) modular course is to train PPL(As) holders to the level of proficiency necessary for the issue of a CPL(As).

2 Before commencing a CPL(As) modular course an applicant shall:

(a) be the holder of a PPL(As) issued in accordance with ICAO Annex 1;

(b) have completed 200 hours flight time as a pilot in airships, including 100 hours as pilot in command of which 50 hours shall be cross-country.

3 An applicant wishing to undertake a modular CPL(As) course shall complete all the flight instructional stages in one continuous course of training as arranged by an approved training organisation. The theoretical knowledge instruction may be given at an approved ATO that conducts theoretical knowledge instruction only.

4 The course of theoretical knowledge shall be completed within 18 months. The flight instruction and skill test shall be completed within the period of validity of the pass in theoretical examinations.

5 The course shall comprise:

(a) theoretical knowledge instruction to CPL(As) knowledge level; and

(b) visual and instrument flying training.

THEORETICAL KNOWLEDGE

6 An approved CPL(As) theoretical knowledge course shall comprise at least 250 hours of instruction.

THEORETICAL KNOWLEDGE EXAMINATION

7 An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of a CPL(As).

FLYING TRAINING

8 Applicants without an instrument rating shall be given at least 20 hours dual flight instruction, of which:

(a) 10 hours visual instruction, which may include 5 hours in an airship flight simulator or FTD 2,3 or FNPT II,III and

(b) 10 hours instrument instruction, which may include 5 hours in at least an airship FTD 1 or FNPT I or aeroplane.

9 Applicants holding a valid IR(As) shall be fully credited towards the dual instrument instruction time. Applicants holding a valid IR in another category of aircraft shall complete at least 5 hours of the dual instrument instruction time in an airship

10 Applicants without a night rating airship shall be given additionally at least 5 hours night flight instruction comprising 3 hours of dual instruction including at least 1 hour of cross-country navigation and 5 solo night circuits. Each circuit shall include a take-off and a landing.

EXPERIENCE

11 The applicant for a CPL(As) shall have completed at least 250hours flight time in airships, including 125 hours as pilot-in-command, of which 50 hours of cross-country flight as pilot-in-command, including a VFR cross-country flight of at least 90km (50 NM), in the course of which a full stop landing at destination aerodrome.

Hours as pilot in command of other categories of aircraft may count towards the 185 hours flight time, in the following cases:

(a) 30 hours in aeroplanes or helicopters, if the applicant holds a PPL(A) or PPL(H) respectively; or

(b) 60 hours in aeroplanes or helicopters, if the applicant holds a CPL(A) or CPL(H) respectively; or

(c) 10 hours in touring motor gliders or gliders.

(d) 10 hours in balloons.

SKILL TEST

12 On completion of the related flying training and relevant experience, the applicant shall take the CPL(As) skill test.

APPENDIX 4

SKILL TEST FOR THE ISSUE OF A CPL

A. General

1 An applicant for a skill test for the CPL shall have received instruction on the same type or class of aircraft to be used in the test.

2 An applicant shall pass all the relevant sections of the skill test. If any item in a section is failed, that section is failed. Failure in more than one section will require the applicant to take the entire test again. An applicant failing only one section shall only repeat the failed section. Failure in any section of the retest, including those sections that have been passed on a previous attempt, will require the applicant to take the entire test again. All sections of the skill test shall be completed within six months. Failure to achieve a pass in all sections of the test in two attempts will require further training.

3 Further training may be required following any failed skill test. There is no limit to the number of skill tests that may be attempted.

CONDUCT OF THE TEST

4 Should the applicant choose to terminate a skill test for reasons considered inadequate by the flight examiner (FE), the applicant shall retake the entire skill test. If the test is terminated for reasons considered adequate by the FE, only those sections not completed shall be tested in a further flight.

5 Any manoeuvre or procedure of the test may be repeated once by the applicant. The flight examiner may stop the test at any stage if it is considered that the applicant's demonstration of flying skill requires a complete re-test.

6 An applicant shall be required to fly the aircraft from a position where the pilot-in-command functions can be performed and to carry out the test as if no other crew member is present. Responsibility for the flight shall be allocated in accordance with national regulations.

7 An applicant shall indicate to the flight examiner the checks and duties carried out, including the identification of radio facilities. Checks shall be completed in accordance with the check list for the aircraft on which the test is being taken. During pre-flight preparation for the test the applicant is required to determine power settings and speeds. Performance data for take-off, approach and landing shall be calculated by the applicant in compliance with the operations manual or flight manual for the aircraft used.

8 The flight examiner shall take no part in the operation of the aircraft except where intervention is necessary in the interests of safety or to avoid unacceptable delay to other traffic.

B. Contents of the skill test for the issue of a CPL – aeroplanes

1 The aeroplane used for the skill test shall meet the requirements for training aeroplanes, and shall be certificated for the carriage of at least four persons, have a variable pitch propeller and retractable landing gear.

2 The route to be flown shall be chosen by the FE and the destination shall be a controlled aerodrome. The applicant shall be responsible for the flight planning and shall ensure that all equipment and documentation for the execution of the flight are on board. The duration of the flight shall be at least 90 minutes.

3 The applicant shall demonstrate the ability to:

- operate the aeroplane within its limitations
- complete all manoeuvres with smoothness and accuracy;
- exercise good judgement and airmanship;
- apply aeronautical knowledge; and

– maintain control of the aeroplane at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

FLIGHT TEST TOLERANCES

4 The following limits shall apply, corrected to make allowance for turbulent conditions and the handling qualities and performance of the aeroplane used.

Height

normal flight ±100 feet
with simulated engine failure ±150 feet

Tracking on radio aids ±5°

Heading

normal flight ±10°
with simulated engine failure ±15°

Speed

take-off and approach ±5 knots
all other flight regimes ±10 knots

CONTENT OF THE TEST

5 Items in Section 2 paragraphs c and e(iv), and the whole of Sections 5 and 6 may be performed in an FNPT II or a flight simulator.

Use of the aeroplane checklists , airmanship, control of aeroplane by external visual reference, anti/de-icing procedures and principles of threat and error management apply in all sections.

SECTION 1 **PRE-FLIGHT OPERATIONS AND DEPARTURE**	
a	Pre-flight, including: Flight planning, Documentation, Mass and balance determination, Weather brief
b	Aeroplane inspection and servicing
c	Taxiing and take-off
d	Performance considerations and trim
e	Aerodrome and traffic pattern operations
f	Departure procedure, altimeter setting, collision avoidance (lookout)
g	ATC liaison – compliance, R/T procedures
SECTION 2 **GENERAL AIRWORK**	
a	Control of the aeroplane by external visual reference, including straight and level, climb, descent, look out
b	Flight at critically low airspeed including recognition of and recovery from incipient and full stalls
c	Turns, including turns in landing configuration. Steep turns 45°
d	Flight at critically high airspeeds, including recognition of and recovery from spiral dives

e	Flight by reference solely to instruments, including: i. Level flight, cruise configuration, control of heading, altitude and airspeed ii. Climbing and descending turns with 10°– 30° bank iii. Recoveries from unusual attitudes iv. Limited panel instruments
f	ATC liaison – compliance, R/T procedures
SECTION 3 **EN ROUTE PROCEDURES**	
a	Control of aeroplane by external visual reference, including cruise configuration Range / Endurance considerations
b	Orientation, map reading
c	Altitude, speed, heading control, lookout
d	Altimeter setting. ATC liaison – compliance, R/T procedures
e	Monitoring of flight progress, flight log, fuel usage, assessment of track error and re-establishment of correct tracking
f	Observation of weather conditions, assessment of trends, diversion planning
g	Tracking, positioning (NDB or VOR), identification of facilities (instrument flight). Implementation of diversion plan to alternate aerodrome (visual flight)
SECTION 4 **APPROACH AND LANDING PROCEDURES**	
a	Arrival procedures, altimeter setting, checks, lookout
b	ATC liaison: compliance, R/T procedures
c	Go-around action from low height
d	Normal landing, crosswind landing (if suitable conditions)
e	Short field landing
f	Approach and landing with idle power (single-engine only)
g	Landing without use of flaps
h	Post flight actions
SECTION 5 **ABNORMAL AND EMERGENCY PROCEDURES**	
This section may be combined with sections 1 through 4.	
a	Simulated engine failure after take-off (at a safe altitude), fire drill
b	Equipment malfunctions Including alternative landing gear extension, electrical and brake failure
c	Forced landing (simulated)
d	ATC liaison: compliance, R/T procedures
e	Oral questions

SECTION 6 SIMULATED ASYMMETRIC FLIGHT AND RELEVANT CLASS/TYPE ITEMS	
This section may be combined with Sections 1 through 5.	
a	Simulated engine failure during take-off (at a safe altitude unless carried out in a flight simulator)
b	Asymmetric approach and go-around
c	Asymmetric approach and full stop landing
d	Engine shutdown and restart
e	ATC liaison – compliance, R/T procedures, Airmanship
f	As determined by the Flight Examiner – any relevant items of the class/type rating skill test to include, if applicable: i. Aeroplane systems including handling of autopilot ii. Operation of pressurisation system iii. Use of de-icing and anti-icing system
g	Oral questions

C. Content of the skill test for the issue of the CPL - Helicopters

1 The helicopter used for the skill test shall meet the requirements for training helicopters.

2 The area and route to be flown shall be chosen by the FE and all low level and hover work shall be at an approved aerodrome/site. Routes used for section 3 may end at the aerodrome of departure or at another aerodrome and one destination shall be a controlled aerodrome. The skill test may be conducted in 2 flights. The total duration of the flight(s) shall be at least 90 minutes.

3 The applicant shall demonstrate the ability to:

- operate the helicopter within its limitations;
- complete all manoeuvres with smoothness and accuracy;
- exercise good judgement and airmanship;
- apply aeronautical knowledge; and
- maintain control of the helicopter at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

FLIGHT TEST TOLERANCES

4 The following limits shall apply, corrected to make allowance for turbulent conditions and the handling qualities and performance of the helicopter used.

Height	
normal flight	±100 feet
simulated major emergency	±150 feet
Tracking on radio aids	±10°
Heading	
normal flight	±10°
simulated major emergency	±15°
Speed	
take-off and approach multi-engine	±5 knots

all other flight regimes	±10 knots
Ground drift	
T.O. hover I.G.E.	±3 feet
landing	no sideways or backwards movement

CONTENT OF THE TEST

5 Items in Section 4 may be performed in an FNPT (H) or a flight simulator (H). Use of helicopter checklists, airmanship, control of helicopter by external visual reference, anti-icing procedures, and principles of threat and error management apply in all sections.

	SECTION 1 PRE-FLIGHT/POST-FLIGHT CHECKS AND PROCEDURES
a	Helicopter knowledge, (e.g. technical log, fuel, mass and balance, performance), Flight Planning, Documentation, NOTAMS, Weather
b	Pre-flight inspection/action, location of parts and purpose
c	Cockpit inspection, Starting procedure
d	Communication and navigation equipment checks, selecting and setting frequencies
e	Pre-take-off procedure, R/T procedure, ATC liaison-compliance
f	Parking, Shutdown and Post-flight procedure
	SECTION 2 HOVER MANOEUVRES, ADVANCED HANDLING AND CONFINED AREAS
a	Take-off and landing, (lift off and touch down)
b	Taxi, hover taxi
c	Stationary hover with head/cross/tail wind
d	Stationary hover turns, 360º left and right (spot turns)
e	Forward, sideways and backwards hover manoeuvring
f	Simulated engine failure from the hover
g	Quick stops into and downwind
h	Sloping ground/unprepared sites landings and take-offs
i	Take-offs (various profiles)
j	Crosswind, downwind take-off (if practicable)
k	Take-off at maximum take-off mass (actual or simulated)
l	Approaches (various profiles)
m	Limited power take-off and landing
n	Autorotations (FE to select two items from - Basic, range, low speed, and 360° turns)
o	Autorotative landing
p	Practice forced landing with power recovery
q	Power checks, reconnaissance technique, approach and departure technique
	SECTION 3 NAVIGATION - EN ROUTE PROCEDURES

a	Navigation and orientation at various altitudes/heights, map reading
b	Altitude/height, speed, heading control, observation of airspace, altimeter setting
c	Monitoring of flight progress, flight log, fuel usage, endurance, ETA, assessment of track error and re-establishment of correct track, instrument monitoring
d	Observation of weather conditions, diversion planning
e	Tracking, positioning (NDB and/or VOR), identification of facilities
f	ATC liaison and observance of regulations, etc.
SECTION 4 FLIGHT PROCEDURES AND MANOEUVRES BY SOLE REFERENCE TO INSTRUMENTS	
a	Level flight, control of heading, altitude/height and speed
b	Rate 1 level turns onto specified headings, 180º to 360º left and right
c	Climbing and descending, including turns at rate 1 onto specified headings
d	Recovery from unusual attitudes
e	Turns with 30º bank, turning up to 90º left and right
SECTION 5 ABNORMAL AND EMERGENCY PROCEDURES (SIMULATED WHERE APPROPRIATE)	
Note (1) Where the test is conducted on a multi-engine helicopter a simulated engine failure drill, including a single engine approach and landing shall be included in the test.	
Note (2) The FE shall select 4 items from the following:	
a	Engine malfunctions, including governor failure, carburetor/engine icing, oil system, as appropriate
b	Fuel system malfunction
c	Electrical system malfunction
d	Hydraulic system malfunction, including approach and landing without hydraulics, as applicable
e	Main rotor and/or anti-torque system malfunction (flight simulator or discussion only)
f	Fire drills, including smoke control and removal, as applicable
g	Other abnormal and Emergency procedures as outlined in appropriate flight manual, including for multi-engine helicopters: - Simulated engine failure at take-off: - rejected take-off at or before TDP or safe forced landing at or before DPATO - shortly after TDP or DPATO - Landing with simulated engine failure: - landing or go-around following engine failure before LDP or DPBL - following engine failure after LDP or safe forced landing after DPBL

D. Content of the skill test for the issue of a CPL – airships

1 The airship used for the skill test shall meet the requirements for training airships.

2 The area and route to be flown shall be chosen by the FE. Routes used for section 3 may end at the aerodrome of departure or at another aerodrome and one destination shall be a controlled aerodrome. The skill test may be conducted in 2 flights. The total duration of the flight(s) shall be at least 60 minutes.

3 The applicant shall demonstrate the ability to:

- operate the airship within its limitations;
- complete all manoeuvres with smoothness and accuracy;
- exercise good judgement and airmanship;
- apply aeronautical knowledge; and
- maintain control of the airship at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

FLIGHT TEST TOLERANCES

4 The following limits shall apply, corrected to make allowance for turbulent conditions and the handling qualities and performance of the airship used.

Height

normal flight	±100 feet
simulated major emergency	±150 feet

Tracking on radio aids	±10°

Heading

normal flight	±10°
simulated major emergency	±15°

CONTENT OF THE TEST

5 Items in Sections 5 and 6 may be performed in an FNPT (As) or a flight simulator (As). Use of airship checklists, airmanship, control of airship by external visual reference, anti-icing procedures, and principles of threat and error management apply in all sections.

SECTION 1 PRE-FLIGHT OPERATIONS AND DEPARTURE	
a	Pre-flight, including: Flight planning, Documentation, Mass and balance determination, Weather brief
b	Airship inspection and servicing
c	Off-mast procedure, ground manoeuvring and take-off
d	Performance considerations and trim
e	Aerodrome and traffic pattern operations
f	Departure procedure, altimeter setting, collision avoidance (lookout)

g	ATC liaison – compliance, R/T procedures
SECTION 2 GENERAL AIRWORK	
a	Control of the airship by external visual reference, including straight and level, climb, descent, lookout
b	Flight at pressure height
c	Turns
d	Steep descents and climbs
e	Flight by reference solely to instruments, including: i. Level flight, control of heading, altitude and airspeed ii. Climbing and descending turns iii. Recoveries from unusual attitudes iv. Limited panel instruments
f	ATC liaison – compliance, R/T procedures
SECTION 3 EN ROUTE PROCEDURES	
a	Control of airship by external visual reference, Range / Endurance considerations
b	Orientation, map reading
c	Altitude, speed, heading control, lookout
d	Altimeter setting. ATC liaison – compliance, R/T procedures
e	Monitoring of flight progress, flight log, fuel usage, assessment of track error and re-establishment of correct tracking
f	Observation of weather conditions, assessment of trends, diversion planning
g	Tracking, positioning (NDB or VOR), identification of facilities (instrument flight). Implementation of diversion plan to alternate aerodrome (visual flight)
SECTION 4 APPROACH AND LANDING PROCEDURES	
a	Arrival procedures, altimeter setting, checks, lookout
b	ATC liaison: compliance, R/T procedures
c	Go-around action from low height
d	Normal landing,
e	Short field landing

f	Approach and landing with idle power (single-engine only)
g	Landing without use of flaps
h	Post flight actions
SECTION 5 **ABNORMAL AND EMERGENCY PROCEDURES**	
This section may be combined with sections 1 through 4.	
a	Simulated engine failure after take-off (at a safe altitude), fire drill
b	Equipment malfunctions
c	Forced landing (simulated)
d	ATC liaison: compliance, R/T procedures
e	Oral questions
SECTION 6 **RELEVANT CLASS/TYPE ITEMS**	
This section may be combined with Sections 1 through 5.	
a	Simulated engine failure during take-off (at a safe altitude unless carried out in a flight simulator)
b	approach and go-around with failed engine(s)
c	approach and full stop landing with failed engine(s)
d	Malfunctions in the envelope pressure system
e	ATC liaison – compliance, R/T procedures, Airmanship
f	As determined by the Flight Examiner – any relevant items of the class/type rating skill test to include, if applicable: i. Airship systems ii. Operation of envelope pressure system
g	Oral questions

APPENDIX 5
INTEGRATED MPL TRAINING COURSE

GENERAL

1 The aim of the MPL integrated course is to train pilots to the level of proficiency necessary to enable them to operate as co-pilot of a multi-engine multi-pilot turbine-powered air transport aeroplane under VFR and IFR and to obtain an MPL.

2 Approval for an MPL training course shall only be given to an approved training organisation that is part of a commercial air transport operator certificated in accordance with Part-MS and Part-OPS or having a specific arrangement with such an operator. The licence shall be restricted to that specific operator until completion of the airline operator's conversion course,

3 An applicant wishing to undertake an MPL integrated course shall complete all the instructional stages in one continuous course of training at an approved training organisation. The training shall be competency based and conducted in a multi-crew operational environment.

4 Only ab-initio applicants shall be admitted to the course.

5 The course shall comprise:

(a) theoretical knowledge instruction to the ATPL(A) knowledge level;

(b) visual and instrument flying training;

(c) training in multi-crew co-operation for the operation of multi-pilot aeroplanes; and

(d) type rating training.

6 An applicant failing or unable to complete the entire MPL course may apply to the Authority for the theoretical knowledge examination and skill test for a lower licence and an instrument rating, if the applicable requirements are met.

THEORETICAL KNOWLEDGE

7 An approved MPL theoretical knowledge course shall comprise at least 750 hours of instruction.

FLYING TRAINING

8 The flying training shall comprise a total of at least 240 hours, composed of hours as pilot flying and pilot not flying, in actual and simulated flight, and covering the following 4 phases of training:

(a) Phase 1 - Core flying skills.

Specific basic single pilot training in an aeroplane.

(b) Phase 2 - Basic.

Introduction of multi-crew operations and instrument flight.

(c) Phase 3 - Intermediate.

Application of multi-crew operations to a multi-engine turbine aeroplane certified as a high performance aeroplane in accordance with Part-21 .

(d) Phase 4 - Advanced.

Type rating training within an airline oriented environment.

Flight experience in actual flight shall include all the experience requirements of Subpart C of Part-FCL, upset recovery training, night flying, flight solely by reference to instruments and the experience required to achieve the relevant airmanship.

MCC requirements shall be incorporated into the relevant phases above.

Training in asymmetric flight shall be given either in an aeroplane or a flight simulator.

9 Each phase of training in the flight instruction syllabus shall be composed of both instruction in the underpinning knowledge and in practical training segments.

10 The training course shall include a continuous evaluation process of the training syllabus and a continuous assessment of the students following the syllabus. Evaluation shall ensure that:

(a) the competencies and related assessment are relevant to the task of a co-pilot of a multi-pilot aeroplane; and

(b) the students acquire the necessary competencies in a progressive and satisfactory manner.

11 The training course shall include at least 12 take-offs and landings to ensure competency. These take-offs and landings shall be performed under the supervision of an instructor in an aeroplane for which the type rating shall be issued.

ASSESSMENT LEVEL

12 The applicant for the MPL shall have demonstrated performance in all the 9 competency units specified in paragraph 13 below, at the advanced level of competency required to operate and interact as a co-pilot in a turbine-powered multi pilot aeroplane, under visual and instrument conditions. Assessment shall confirm that control of the aeroplane or situation is maintained at all times, to ensure the successful outcome of a procedure or manoeuvre. The applicant shall consistently demonstrate the knowledge, skills and attitudes required for the safe operation of the applicable aeroplane type, in accordance with the MPL performance criteria.

COMPETENCY UNITS

13 The applicant shall demonstrate competency in the following 9 competency units:

- 1. apply human performance principles, including principles of threat and error management;
- 2. perform aeroplane ground operations;
- 3. perform take-off;
- 4. perform climb;
- 5. perform cruise;
- 6. perform descent;
- 7. perform approach;
- 8. perform landing; and
- 9. perform after landing and aeroplane post-flight operations.

SIMULATED FLIGHT

14 Minimum requirements for FSTDs:

(a) Phase 1- Core flying skills.

E-training and part tasking devices approved by the Authority that have the following characteristics:

- involve accessories beyond those normally associated with desktop computers, such as functional replicas of a throttle quadrant, a side-stick controller, or an FMS keypad; and
- involve psychomotor activity with appropriate application of force and timing of responses.

(b) Phase 2 - Basic.

A FNPT II MCC that represents a generic multi-engine turbine powered aeroplane.

(c) Phase 3 - Intermediate.

An FSTD that represents a multi-engine turbine powered aeroplane required to be operated with a co-pilot and qualified to an equivalent standard to level B, additionally including:

- A daylight/twilight/night visual system continuous cross-cockpit minimum collimated visual field of view providing each pilot with 180 degrees horizontal and 40 degrees vertical field of view, and
- ATC environment simulation

(d) Phase 4 - Advanced.

A FFS which is fully equivalent to level D or level C with an enhanced daylight visual system, including ATC environment simulation.

APPENDIX 6

MODULAR TRAINING COURSES FOR THE INSTRUMENT RATING

A. IR(A) – Modular flying training course

GENERAL

1 The aim of the IR(A) modular flying training course is to train pilots to the level of proficiency necessary to operate aeroplanes under IFR and in IMC. The course consists of two modules, which may be taken separately or combined:

(a) Basic Instrument Flight Module.

This comprises 10 hours of instrument time under instruction, of which up to 5 hours can be instrument ground time in a BITD, FNPT I or II, or a flight simulator. Upon completion of the Basic Instrument Flight Module, the candidate shall be issued a Course Completion Certificate.

(b) Procedural Instrument Flight Module.

This comprises the remainder of the training syllabus for the IR(A), 40 hours single-engine or 45 hours multi-engine instrument time under instruction, and the theoretical knowledge course for the IR(A).

2 An applicant for a modular IR(A) course shall be the holder of a PPL(A) or a CPL(A), including the privileges to fly at night. An applicant for the Procedural Instrument Flight Module, who does not hold a CPL(A), shall be holder of a Course Completion Certificate for the Basic Instrument Flight Module.

The training organisation shall ensure that the applicant for a multi-engine IR(A) course who has not held a multi-engine aeroplane class or type rating has received the multi-engine training specified in Subpart H prior to commencing the flight training for the IR(A) course.

3 An applicant wishing to undertake the Procedural Instrument Flight Module of a modular IR(A) course shall be required to complete all the instructional stages in one continuous approved course of training. Prior to commencing the Procedural Instrument Flight Module, the training organisation shall ensure the competence of the applicant in basic Instrument flying skills. Refresher training shall be given as required.

4 The course of theoretical instruction shall be completed within 18 months. The Procedural Instrument Flight Module and the skill test shall be completed within the period of validity of the pass in theoretical examinations.

5 The course shall comprise:

(a) theoretical knowledge instruction to the instrument rating knowledge level;

(b) instrument flight instruction.

THEORETICAL KNOWLEDGE

6 An approved modular IR(A) course shall comprise at least 150 hours of theoretical knowledge instruction.

FLYING TRAINING

7 A single-engine IR(A) course shall comprise at least 50 hours instrument time under instruction of which up to 20 hours may be instrument ground time in an FNPT I, or up to 35 hours in a flight simulator or FNPT II. A maximum of 10 hours of FNPT II or flight simulator instrument ground time may be conducted in an FNPT I.

8 A multi-engine IR(A) course shall comprise at least 55 hours instrument time under instruction, of which up to 25 hours may be instrument ground time in a FNPT I, or up to 40 hours in a flight simulator or FNPT II. A maximum of 10 hours of FNPT II or flight simulator instrument ground time may be conducted in a FNPT I. The remaining instrument flight instruction shall include at least 15 hours in multi-engine aeroplanes.

9 The holder of a single-engine IR(A) who also holds a multi-engine type or class rating wishing to obtain a multi-engine IR(A) for the first time shall complete a course at an approved training organisation comprising at least 5 hours instruction in instrument flying in multi-engine aeroplanes, of which 3 hours may be in a flight simulator or FNPT II.

10

10.1 The holder of a CPL(A) or of a Course Completion Certificate for the Basic Instrument Flight Module may have the total amount of training required in paragraphs 9 or 10 above reduced by 10 hours.

10.2 The holder of an IR(H) may have the total amount of training required in paragraphs 9 or 10 above reduced to 10 hours.

10.3 The total instrument flight instruction in aeroplane shall comply with paragraph 9 or 10, as appropriate.

11 The flying exercises up to the IR(A) skill test shall comprise:

(a) Basic Instrument Flight Module:

Procedure and manoeuvre for basic instrument flight covering at least :

- Basic instrument flight without external visual cues
  - Horizontal flight
  - Climbing
  - Descent
  - Turns in level flight, climbing, descent
- Instrument pattern
- Steep turn
- Radionavigation
- Recovery from unusual attitudes
- Limited panel
- Recognition and recovery from incipient and full stalls

(b) Procedural Instrument Flight Module:

(1) pre-flight procedures for IFR flights, including the use of the flight manual and appropriate air traffic services documents in the preparation of an IFR flight plan;

(2) procedure and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least:

- transition from visual 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, including circling;

(3) in flight manoeuvres and particular flight characteristics;

(4) if required, operation of a multi-engine aeroplane in the above exercises, including operation of the aeroplane solely by reference to instruments with one engine simulated inoperative and engine shut down and restart (the latter exercise to be carried out at a safe altitude unless carried out in a flight simulator or FNPT II).

B. IR(H) – Modular flying training course

1 The aim of the IR(H) modular flying training course is to train pilots to the level of proficiency necessary to operate helicopters under IFR and in IMC.

2 An applicant for a modular IR(H) course shall be the holder of a PPL(H) with night rating, or a CPL(H) or an ATPL(H). Prior to commencing the aircraft instruction phase of the IR(H) course, the applicant shall be the holder of the helicopter type rating used for the IR(H) skill test, or have completed approved type rating training on that type. The applicant shall hold a certificate of satisfactory completion of MCC if the skill test is to be conducted in Multi-Pilot conditions.

3 An applicant wishing to undertake a modular IR(H) course shall be required to complete all the instructional stages in one continuous approved course of training.

4 The course of theoretical instruction shall be completed within 18 months. The flight instruction and the skill test shall be completed within the period of validity of the pass in the theoretical examinations.

5 The course shall comprise:

(a) theoretical knowledge instruction to the instrument rating knowledge level;

(b) instrument flight instruction.

THEORETICAL KNOWLEDGE

6 An approved modular IR(H) course shall comprise at least 150 hours of instruction.

FLYING TRAINING

7 A single-engine IR(H) course shall comprise at least 50 hours instrument time under instruction, of which:

(a) up to 20 hours may be instrument ground time in an FNPT I(H) or (A). These 20 hours instruction time in FNPT I (H) or (A) may be substituted by 20 hours instruction time for IR(H) in an aeroplane, approved for this course; or

(b) up to 35 hours may be instrument ground time in a helicopter FNPT II/III or FS.

The instrument flight instruction shall include at least 10 hours in an IFR-certificated helicopter.

8 A multi-engine IR(H) course shall comprise at least 55 hours instrument time under instruction of which;

(a) up to 20 hours may be instrument ground time in an FNPT I (H) or (A). These 20 hours instruction time in FNPT I (H) or (A) may be substituted by 20 hours instruction time for IR(H) in an aeroplane, approved for this course, or

(b) up to 40 hours may be instrument ground time in a helicopter FNPT II/III or FS.

The instrument flight instruction shall include at least 10 hours in an IFR-certificated multi-engine helicopter.

9 The holder of a PPL(H) with a night rating or a CPL(H) shall have the total amount of training required in paragraphs 7 or 8 above reduced by 5 hours. Holders of an ATPL(H) shall have the theoretical knowledge instruction hours reduced by 50 hours.

10 The flying exercises up to the IR(H) skill test shall comprise:

(a) pre-flight procedures for IFR flights, including the use of the flight manual and appropriate air traffic services documents in the preparation of an IFR flight plan;

(b) procedure and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least

– transition from visual 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, including circling;

(c) in flight manoeuvres and particular flight characteristics;

(d) if required, operation of a multi-engine helicopter in the above exercises, including operation of the helicopter solely by reference to instruments with one engine simulated inoperative and engine shut down and restart (the latter exercise to be carried out in a flight simulator or FNPT II).

C. IR(As) – Modular flying training course

GENERAL

1 The aim of the IR(As) modular flying training course is to train pilots to the level of proficiency necessary to operate airships under IFR and in IMC. The course consists of two modules, which may be taken separately or combined:

(a) Basic Instrument Flight Module.

This comprises 10 hours of instrument time under instruction, of which up to 5 hours can be instrument ground time in a BITD, FNPT I or II, or a flight simulator. Upon completion of the Basic Instrument Flight Module, the candidate shall be issued a Course Completion Certificate.

(b) Procedural Instrument Flight Module.

This comprises the remainder of the training syllabus for the IR(As), 25 hours instrument time under instruction, and the theoretical knowledge course for the IR(As).

2 An applicant for a modular IR(As) course shall be the holder of a PPL(As) including the privileges to fly at night or a CPL(As). An applicant for the Procedural Instrument Flight Module, who does not hold a CPL(As), shall be holder of a Course Completion Certificate for the Basic Instrument Flight Module.

3 An applicant wishing to undertake the Procedural Instrument Flight Module of a modular IR(As) course shall be required to complete all the instructional stages in one continuous approved course of training. Prior to commencing the Procedural Instrument Flight Module, the training organisation shall ensure the competence of the applicant in basic Instrument flying skills. Refresher training shall be given as required.

4 The course of theoretical instruction shall be completed within 18 months. The Procedural Instrument Flight Module and the skill test shall be completed within the period of validity of the pass in theoretical examinations.

5 The course shall comprise:

(a) theoretical knowledge instruction to the instrument rating knowledge level;

(b) instrument flight instruction.

THEORETICAL KNOWLEDGE

6 An approved modular IR(As) course shall comprise at least 150 hours of theoretical knowledge instruction.

FLYING TRAINING

7 A IR(AS) course shall comprise at least 35 hours instrument time under instruction of which up to 15 hours may be instrument ground time in an FNPT I, or up to 20 hours in a flight simulator or FNPT II. A maximum of 5 hours of FNPT II or flight simulator instrument ground time may be conducted in an FNPT I.

8 The holder of a CPL(As) or of a Course Completion Certificate for the Basic Instrument Flight Module may have the total amount of training required in paragraph 7 reduced by 10 hours. The total instrument flight instruction in airship shall comply with paragraph 7.

9 If the applicant is the holder of an IR in another category of aircraft the total amount of flight instruction required may be reduced to 10 hours on airships.

10 The flying exercises up to the IR(As) skill test shall comprise:

(a) Basic Instrument Flight Module:

Procedure and manoeuvre for basic instrument flight covering at least :

- Basic instrument flight without external visual cues
  - Horizontal flight
  - Climbing
  - Descent
  - Turns in level flight, climbing, descent
- Instrument pattern
- Radionavigation
- Recovery from unusual attitudes
- Limited panel

(b) Procedural Instrument Flight Module:

(1) pre-flight procedures for IFR flights, including the use of the flight manual and appropriate air traffic services documents in the preparation of an IFR flight plan;

(2) procedure and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least:

- transition from visual 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, including circling;

(3) in flight manoeuvres and particular flight characteristics;

(4) operation of airship in the above exercises, including operation of the airship solely by reference to instruments with one engine simulated inoperative and engine shut down and restart (the latter exercise to be carried out at a safe altitude unless carried out in a flight simulator or FNPT II).

APPENDIX 7

IR SKILL TEST

1 An applicant for an IR shall have received instruction on the same type or class of aircraft to be used in the test.

2 An applicant shall pass all the relevant sections of the skill test. If any item in a section is failed, that section is failed. Failure in more than one section will require the applicant to take the entire test again. An applicant failing only one section shall only repeat the failed section. Failure in any section of the retest, including those sections that have been passed on a previous attempt, will require the applicant to take the entire test again. All sections of the skill test shall be completed within 6 months. Failure to achieve a pass in all sections of the test in two attempts will require further training.

3 Further training may be required following a failed skill test. There is no limit to the number of skill tests that may be attempted.

CONDUCT OF THE TEST

4 The test is intended to simulate a practical flight. The route to be flown shall be chosen by the examiner. An essential element is the ability of the applicant to plan and conduct the flight from routine briefing material. The applicant shall undertake the flight planning and shall ensure that all equipment and documentation for the execution of the flight are on board. The duration of the flight shall be at least 1 hour.

5 Should the applicant choose to terminate a skill test for reasons considered inadequate by the examiner, the applicant shall retake the entire skill test. If the test is terminated for reasons considered adequate by the examiner, only those sections not completed shall be tested in a further flight.

6 Any manoeuvre or procedure of the test may be repeated once by the applicant. The examiner may stop the test at any stage if it is considered that the applicant's demonstration of flying skill requires a complete retest.

7 An applicant shall fly the aircraft from a position where the pilot-in-command functions can be performed and to carry out the test as if there is no other crew member. The examiner shall take no part in the operation of the aircraft, except when intervention is necessary in the interests of safety or to avoid unacceptable delay to other traffic. Responsibility for the flight shall be allocated in accordance with national regulations.

8 Decision heights/altitude, minimum descent heights/altitudes and missed approach point shall be determined by the applicant and agreed by the examiner.

9 An applicant for an IR shall indicate to the examiner the checks and duties carried out, including the identification of radio facilities. Checks shall be completed in accordance with the authorised checklist for the aircraft on which the test is being taken. During pre-flight preparation for the test the applicant is required to determine power settings and speeds. Performance data for take-off, approach and landing shall be calculated by the applicant in compliance with the operations manual or flight manual for the aircraft used.

FLIGHT TEST TOLERANCES

10 The applicant shall demonstrate the ability to:

- operate the aircraft within its limitations;
- complete all manoeuvres with smoothness and accuracy;
- exercise good judgment and airmanship;
- apply aeronautical knowledge; and
- maintain control of the aircraft at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

11 The following limits shall apply, corrected to make allowance for turbulent conditions and the handling qualities and performance of the aircraft used

Height

Generally	±100 feet
Starting a go-around at decision height/altitude	+50 feet/–0 feet
Minimum descent height/MAP/altitude	+50 feet/–0 feet

Tracking

on radio aids	±5°
Precision approach	half scale deflection, azimuth and glide path

Heading

all engines operating	±5°
with simulated engine failure	±10°

Speed

all engines operating	±5 knots
with simulated engine failure	+10 knots/–5 knots

CONTENT OF THE TEST

A. Aeroplanes

	SECTION 1 **PRE-FLIGHT OPERATIONS AND DEPARTURE**
	Use of checklist, airmanship, anti/de-icing procedures, etc., apply in all sections.
a	Use of flight manual (or equivalent) especially a/c performance calculation, mass and balance
b	Use of Air Traffic Services document, weather document
c	Preparation of ATC flight plan, IFR flight plan/log
d	Pre-flight inspection
e	Weather Minima
f	Taxing
g	Pre-take off briefing, Take-off
h	Transition to instrument flight
i	Instrument departure procedures, altimeter setting
j	ATC liaison - compliance, R/T procedures
	SECTION 2 **GENERAL HANDLING**
a	Control of the aeroplane by reference solely to instruments, including: level flight at various speeds, trim
b	Climbing and descending turns with sustained Rate 1 turn
c	Recoveries from unusual attitudes, including sustained 45° bank turns and steep descending turns
d*	Recovery from approach to stall in level flight, climbing/descending turns and in landing

A	configuration – only applicable to aeroplanes
e A	Limited panel, stabilised climb or descent at Rate 1 turn onto given headings, recovery from unusual attitudes. – only applicable to aeroplanes
SECTION 3 **EN-ROUTE IFR PROCEDURES**	
a	Tracking, including interception, e.g. NDB, VOR, RNAV
b	Use of radio aids
c	Level flight, control of heading, altitude and airspeed, power setting, trim technique
d	Altimeter settings
e	Timing and revision of ETAs (En-route hold – if required)
f	Monitoring of flight progress, flight log, fuel usage, systems management
g	Ice protection procedures, simulated if necessary
h	ATC liaison and compliance, R/T procedures
SECTION 4 **PRECISION APPROACH PROCEDURES**	
a	Setting and checking of navigational aids, identification of facilities
b	Arrival procedures, altimeter checks
c	Approach and landing briefing, including descent/approach/landing checks
d+	Holding procedure
e	Compliance with published approach procedure
f	Approach timing
g	Altitude, speed heading control, (stabilised approach)
h+	Go-around action
i+	Missed approach procedure / landing
j	ATC liaison – compliance, R/T procedures
SECTION 5 **NON-PRECISION APPROACH PROCEDURES**	
a	Setting and checking of navigational aids, identification of facilities
b	Arrival procedures, altimeter settings
c	Approach and landing briefing, including descent/approach/landing checks
d+	Holding procedure
e	Compliance with published approach procedure
f	Approach timing
g	Altitude, speed, heading control, (stabilised approach)
h+	Go-around action
i+	Missed approach procedure/landing
j	ATC liaison – compliance, R/T procedures

SECTION 6 (multi-engine aeroplanes only) Flight with one engine inoperative	
a	Simulated engine failure after take-off or on go-around
b	approach and procedural go-around with one engine inoperative
c	approach and landing, missed approach procedure, with one engine inoperative
d	ATC liaison: compliance, R/T procedures

* May be performed in a Flight Simulator, FTD 2/3 or FNPT II
\+ May be performed in either Section 4 or Section 5

B. Helicopters

SECTION 1 DEPARTURE	
a	Use of flight manual (or equivalent) especially aircraft performance calculation; mass and balance
b	Use of Air Traffic Services document, weather document
c	Preparation of ATC flight plan, IFR flight plan/log
d	Pre-flight inspection
e	Weather minima
f	Taxing/Air taxy in compliance with ATC or instructions of instructor
g	Pre-take off briefing, procedures and checks
h	Transition to instrument flight
i	Instrument departure procedures
SECTION 2 GENERAL HANDLING	
a	Control of the helicopter by reference solely to instruments, including:
b	Climbing and descending turns with sustained rate one turn
c	Recoveries from unusual attitudes, including sustained 30° bank turns and steep descending turns
SECTION 3 EN-ROUTE IFR PROCEDURES	
a	Tracking, including interception, e.g. NDB, VOR, RNAV
b	Use of radio aids
c	Level flight, control of heading, altitude and airspeed, power setting
d	Altimeter settings
e	Timing and revision of ETAs
f	Monitoring of flight progress, flight log, fuel usage, systems management
g	Ice protection procedures, simulated if necessary and applicable
h	ATC liaison and compliance, R/T procedures

SECTION 4 **PRECISION APPROACH**	
a	Setting and checking of navigational aids, identification of facilities
b	Arrival procedures, altimeter checks
c	Approach and landing briefing, including descent/approach/landing checks
d*	Holding procedure
e	Compliance with published approach procedure
f	Approach timing
g	Altitude, speed, heading control, (stabilised approach)
h*	Go-around action
i*	Missed approach procedure / landing
j	ATC liaison – compliance, R/T procedures
** to be performed in Section 4 or Section 5*	
SECTION 5 **NON-PRECISION APPROACH**	
a	Setting and checking of navigational aids, identification of facilities
b	Arrival procedures, altimeter checks
c	Approach and landing briefing, including descent/approach/landing checks
d*	Holding procedure
e	Compliance with published approach procedure
f	Approach timing
g	Altitude, speed, heading control, (stabilised aproach)
h*	Go around action
i*	Missed approach procedure*/landing
j	ATC liaison – compliance, R/T procedures
** to be performed in Section 4 or Section 5*	
SECTION 6 **ABNORMAL AND EMERGENCY PROCEDURES**	
This section may be combined with sections 1 through 5. The test shall have regard to control of the helicopter, identification of the failed engine, immediate actions (touch drills), follow up actions and checks, and flying accuracy, in the following situations:	
a	Simulated engine failure after take-off and on/during approach* (at a safe altitude unless carried out in a flight simulator or FNPT II/III, FTD 2,3) **Multi-engine helicopter only*
b	Failure of stability augmentation devices/hydraulic system (if applicable)
c	Limited panel
d	Autorotation and recovery to a pre-set altitude
e	Precision approach manually without flight director* Precision approach manually with flight director*

	**Only one item to be tested*

C. Airships

SECTION 1 **PRE-FLIGHT OPERATIONS AND DEPARTURE**	
Use of checklist, airmanship, ATC liaison - compliance, R/T procedures, apply in all sections.	
a	Use of flight manual (or equivalent) especially a/c performance calculation, mass and balance
b	Use of Air Traffic Services document, weather document
c	Preparation of ATC flight plan, IFR flight plan/log
d	Pre-flight inspection
e	Weather Minima
f	Pre-take off briefing, Off Mast procedure, Manoeuvring on ground
g	Take-off
h	Transition to instrument flight
i	Instrument departure procedures, altimeter setting
j	ATC liaison - compliance, R/T procedures
SECTION 2 **GENERAL HANDLING**	
a	Control of the airship by reference solely to instruments
b	Climbing and descending turns with sustained rate of turn
c	Recoveries from unusual attitudes
e	Limited panel
SECTION 3 **EN-ROUTE IFR PROCEDURES**	
a	Tracking, including interception, e.g. NDB, VOR, RNAV
b	Use of radio aids
c	Level flight, control of heading, altitude and airspeed, power setting, trim technique
d	Altimeter settings
e	Timing and revision of ETAs
f	Monitoring of flight progress, flight log, fuel usage, systems management
g	ATC liaison and compliance, R/T procedures
SECTION 4 **PRECISION APPROACH PROCEDURES**	
a	Setting and checking of navigational aids, identification of facilities
b	Arrival procedures, altimeter checks
c	Approach and landing briefing, including descent/approach/landing checks
d+	Holding procedure
e	Compliance with published approach procedure

f	Approach timing
g	Stabilised approach (altitude, speed and heading control)
h+	Go-around action
i+	Missed approach procedure / landing
k	ATC liaison and compliance, R/T procedures
SECTION 5 **NON-PRECISION APPROACH PROCEDURES**	
a	Setting and checking of navigational aids, identification of facilities
b	Arrival procedures, altimeter settings
c	Approach and landing briefing, including descent/approach/landing checks
d+	Holding procedure
e	Compliance with published approach procedure
f	Approach timing
g	Stabilised approach (altitude, speed and heading control)
h+	Go-around action
i+	Missed approach procedure/landing
k	ATC liaison and compliance, R/T procedures
SECTION 6 **Flight with one engine inoperative** *This section may be combined with sections 1 through 5. The test shall have regard to control of the airship, identification of the failed engine, immediate actions, follow up actions, checks and flying accuracy in the following situations:*	
a	Simulated engine failure after take-off or on go-around
b	approach and procedural go-around with one engine inoperative
c	approach and landing, missed approach procedure, with one engine inoperative
d	ATC liaison and compliance, R/T procedures

\+ May be performed in either Section 4 or Section 5

APPENDIX 8

CROSS-CREDITING OF THE IR PART OF A TYPE OR CLASS RATING PROFICIENCY CHECK

A. Aeroplanes

Credits shall be granted only when the holder is revalidating IR privileges for single-engine and single-pilot multi-engine aeroplanes, as appropriate.

When a proficiency check including IR is performed, and the holder has a valid:	Credit is valid towards the IR part in a proficiency check for:	
(1)	(2)	
MP type rating	a. SE class * and b. SE type rating *, and c. SP ME class and type rating, only credits for Section 3b of the skill test in Point B.1 of Appendix 9	
SP ME type rating, operated as single-pilot	a. SP ME class and type rating, and b. SE class and type rating	
SP ME type rating, restricted to MP operation	a. SP ME class and type rating *, and b. SE class and type rating *	
SP ME class rating, operated as single-pilot	a. SE class and type rating, and b. SP ME class and type rating	
SP ME class rating, restricted to MP operation	a. SE class and type rating *, and b. SP ME class and type rating *	
SP SE class rating	SE class and type rating	
SP SE type rating	SE class and type rating	

* Provided within the preceding 12 months the applicant has flown at least 3 IFR departures and approaches on an SP class or type of aeroplane in single pilot operations, or, for multi-engine aeroplanes, the applicant has passed Section 6 of the skill test for single-pilot aeroplanes flown solely by reference to instruments in single-pilot operation.

B. Helicopters

Credits shall be granted only when the holder is revalidating IR privileges for single-engine and single-pilot multi-engine helicopters as appropriate.

When a proficiency check, including IR is performed and the holder has a valid:	Credit is valid towards the IR part in a proficiency check for:	
(1)	(2)	
MPH type rating	a. SE type rating*, and b. SP ME type rating,	
SP ME type rating, operated as single-pilot	a. SE type rating b. SP ME type rating	
SP ME type rating, restricted to multi-pilot operation	a. SE type rating b. SP ME type rating	

* Provided that within the preceding 12 months at least 3 IFR departures and approaches have been performed on an SP type of helicopter in an SP operation.

APPENDIX 9

SKILL TEST AND PROFICIENCY CHECK FOR ATPL, TYPE AND CLASS RATINGS, AND PROFICIENCY CHECK FOR INSTRUMENT RATINGS

A. GENERAL

1 An applicant for a skill test shall have received instruction on the same type or class of aircraft to be used in the test.

2 Failure to achieve a pass in all sections of the test in two attempts will require further training.

3 There is no limit to the number of skill tests that may be attempted.

CONTENT OF THE SKILL TEST/PROFICIENCY CHECK

4 The syllabus of flight instruction shall comply with the syllabus approved in accordance with Part-21. When relevant, the syllabus may be reduced to give credit for previous experience on similar aircraft types.

5 Except in the case of skill tests for the issue of an ATPL, when established by the syllabus approved in accordance with Part-21, credit may be given for skill test items common to other types or variants where the pilot is qualified.

CONDUCT OF THE TEST

6 The examiner may choose between different skill test/proficiency check scenarios containing simulated line operations developed and approved by the competent authority.

7 During the proficiency check, the examiner shall verify that the holder of the type/class rating maintains an adequate level of theoretical knowledge.

8 Should the applicant choose to terminate a skill test for reasons considered inadequate by the examiner, the applicant shall retake the entire skill test. If the test is terminated for reasons considered adequate by the examiner, only those sections not completed shall be tested in a further flight.

9 Any manoeuvre or procedure of the test may be repeated once by the applicant. The examiner may stop the test at any stage if it is considered that the applicant's demonstration of flying skill requires a complete re-test.

10 An applicant shall be required to fly the aircraft from a position where the pilot-in-command functions can be performed and to carry out the test as if there is no other crew member. Responsibility for the flight shall be allocated in accordance with national regulations.

11 An applicant shall indicate to the examiner the checks and duties carried out, including the identification of radio facilities. Checks shall be completed in accordance with the check list for the aircraft on which the test is being taken and, if applicable, with the MCC concept. Performance data for take-off, approach and landing shall be calculated by the applicant in compliance with the operations manual or flight manual for the aircraft used. Decision heights/altitude, minimum descent heights/altitudes and missed approach point shall be agreed with the examiner

12 During pre-flight preparation for the test the applicant is required to determine power settings and speeds. Performance data for take-off, approach and landing shall be calculated by the applicant in compliance with the operations manual or flight manual for the aircraft used.

13 The examiner shall take no part in the operation of the aircraft except where intervention is necessary in the interests of safety or to avoid unacceptable delay to other traffic.

SPECIFIC REQUIREMENTS FOR THE SKILL TEST FOR MULTI-PILOT AIRCRAFT TYPE RATINGS AND FOR ATPL

14 The skill test for a multi-pilot aircraft shall be performed in a multi-crew environment. Another applicant or another qualified pilot may function as second pilot. If an aircraft is used, the second pilot shall be the instructor.

15 The applicant shall operate as 'pilot flying' (PF) during all sections of the skill test, except for abnormal and emergency procedures, which may be conducted as PF or pilot not flying (PNF) in accordance with multi-crew cooperation. The applicant for the initial issue of a multi-pilot aircraft type rating or ATPL shall also demonstrate the ability to act as PNF. The applicant may choose either the left hand or the right hand seat for the skill test if all items can be executed from the selected seat.

16 The following matters shall be specifically checked by the examiner for applicants for the ATPL or a type rating for multi-pilot aircraft extending to the duties of a pilot-in-command, irrespective of whether the applicant acts as PF or PNF:

(a) management of crew co-operation;

(b) maintaining a general survey of the aircraft operation by appropriate supervision; and

(c) setting priorities and making decisions in accordance with safety aspects and relevant rules and regulations appropriate to the operational situation, including emergencies.

17 The test/check should be accomplished under IFR, if the IR-rating is included, and as far as possible be accomplished in a simulated commercial air transport environment. An essential element to be checked is the ability to plan and conduct the flight from routine briefing material.

18 When the type rating course has included less than 2 hours flight training on the aircraft, the skill test may be conducted in a flight simulator only and may be completed before the flight training on the aircraft. In that case, a certificate of completion of the type rating course including the flight training on the aircraft shall be forwarded to the Authority before the new type rating is entered in the applicant's licence

B. Specific requirements for the aeroplane category

PASS MARKS

1 In the case of single pilot aeroplanes, the applicant shall pass all sections of the skill test/proficiency check. If any item in a section is failed, that section is failed. Failure in more than one section will require the applicant to take the entire test/check again. Any applicant failing only one section shall take the failed section again. Failure in any section of the re-test/re-check including those sections that have been passed at a previous attempt will require the applicant to take the entire test/check again.

2 In the case of multi-pilot aeroplanes, the applicant shall pass all sections of the skill test/proficiency check. Failure of more than five items will require the applicant to take the entire test/check again. Any applicant failing 5 or less items shall take the failed items again. Failure in any item on the re-test/check including those items that have been passed at a previous attempt will require the applicant to take the entire check/test again.

3 If the applicant only fails or does not take Section 6, the type rating will be issued without Cat II or III privileges. Section 6 is not part of the ATPL or MPL skill test.

FLIGHT TEST TOLERANCE

4 The applicant shall demonstrate the ability to:

(a) operate the aeroplane within its limitations;

(b) complete all manoeuvres with smoothness and accuracy;

(c) exercise good judgement and airmanship;

(d) apply aeronautical knowledge;

(e) maintain control of the aeroplane at all times in such a manner that the successful outcome of a procedure or manoeuvre is never in doubt;

(f) understand and apply crew co-ordination and incapacitation procedures, if applicable; and

(g) communicate effectively with the other crew members, if applicable.

5 The following limits shall apply, corrected to make allowance for turbulent conditions and the handling qualities and performance of the aeroplane used

Height

Generally	±100 feet
Starting a go-around at decision height	+ 50 feet/-0 feet
Minimum descent height/ altitude	+ 50 feet/-0 feet

Tracking

on radio aids	± 5°
Precision approach	half scale deflection, azimuth and glide path

Heading

all engines operating	± 5°
with simulated engine failure	± 10°

Speed

all engines operating	± 5 knots
with simulated engine failure	+10 knots/ -5 knots

CONTENT OF THE SKILL TEST/PROFICIENCY CHECK

1. Single-pilot aeroplanes

The following symbols mean:

P = Trained as Pilot-in-Command for the issue of the class/type rating as applicable.

X = Flight simulators shall be used for this exercise, if available, otherwise an aeroplane shall be used if appropriate for the manoeuvre or procedure.

The practical training shall be conducted at least at the training equipment level shown as (P), or may be conducted on any higher level of equipment shown by the arrow (---->)

The following abbreviations are used to indicate the training equipment used:

A = Aeroplane

FS = Flight Simulator

FTD = Flight Training Device (including FNPT II for ME class rating)

The starred (*) items of section 3B and, for multi-engine Section 6, shall be flown solely by reference to instruments if revalidation/renewal of an instrument rating is included in the skill test or proficiency check. If the starred (*) items are not flown solely by reference to instruments during the skill test or proficiency check, and when there is no crediting of instrument rating privileges, the type/class rating will be restricted to VFR only.

Section 3A shall be completed to revalidate a type or multi-engine class rating, VFR only, where the required experience of 10 route sectors within the previous 12 months has not been completed. Section 3A is not required if section 3B is completed.

Where the letter 'M' appears in the skill test/proficiency check column this will indicate the mandatory exercise or a choice where more than one exercise appears.

When a proficiency check on a single-pilot aeroplane is performed in a multi-pilot operation in accordance with Part-OPS, the type/class rating will be restricted to multi-pilot.

An FSTD shall be used for practical training for type or multi-engine class ratings if the FSTD forms part of an approved type or class rating course. The following considerations will apply to the approval of the course:

(a) the qualification of the FSTD as set out in Part-MS;

(b) the qualifications of the instructors;

(c) the amount of FSTD training provided on the course; and

(d) the qualifications and previous experience on similar types of the pilot under training.

	PRACTICAL TRAINING				**TYPE/CLASS RATING SKILL TEST/ PROF CHECK**	
Manoeuvres/Procedures				Instructors initials when training completed	Chkd in	Examiners initials when test completed
SECTION 1						
1 **Departure** 1.1 Pre-flight including: Documentation Mass and Balance Weather briefing						
1.2 Pre-start checks External/internal			P		M	
1.3 Engine starting: Normal Malfunctions	P---->	---->	---->		M	
1.4 Taxiiing		P---->	---->		M	
1.5 Pre-departure checks: Engine run-up (if applicable)	P---->	---->	---->		M	
1.6 Take-off procedure: Normal with Flight Manual flap settings Crosswind (if conditions available)		P---->	---->		M	
1.7 Climbing: Vx/Vy Turns onto headings Level off		P---->	---->		M	
1.8 ATC liaison – Compliance, R/T procedure						
SECTION 2						
2 **Airwork ([VMC])** 2.1 Straight and level flight at various airspeeds including flight at critically low airspeed with and without flaps (including approach to V_{MCA} when applicable)		P---->	---->			
2.2 Steep turns (360° left and right at 45° bank)		P---->	---->		M	
2.3 Stalls and recovery: i. clean stall ii. Approach to stall in descending turn with bank with approach configuration and power iii. Approach to stall in landing configuration and power iv. Approach to stall, climbing turn with take-off flap and climb power (single engine aeroplane only)		P---->	---->		M	
2.4 Handling using autopilot and flight director (may be conducted in Section 3) if applicable		P---->	---->		M	
2.5 ATC liaison – Compliance, R/T procedure						

	PRACTICAL TRAINING				**TYPE/CLASS RATING SKILL TEST/ PROF CHECK**	
Manoeuvres/Procedures				Instructors initials when training completed	Chkd in	Examiners initials when test completed
SECTION 3A						
3A En route procedures VFR (see B.1, note 3 and 4) 3A.1 Flight plan, dead reckoning and map reading						
3A.2 Maintenance of altitude, heading and speed						
3A.3 Orientation, timing and revision of ETAs						
3A.4 Use of radio navigation aids (if applicable)						
3A.5 Flight management (flight log, routine c fuel, systems and icing						
3A.6 ATC liaison – Compliance, R/T procedure						
SECTION 3B						
3B Instrument flight 3B.1* Departure IFR		P---->	---->		M	
3B.2* En route IFR		P---->	---->		M	
3B.3* Holding procedures		P---->	---->		M	
3B.4* ILS to DH/A of 200′ (60 m) or to procedure minima (autopilot may be used to glideslope intercept)		P---->	---->		M	
3B.5* Non-precision approach to MDH/A and MAP		P---->	---->		M	
3B.6* Flight exercises including simulated failure of the compass and attitude indicator: Rate 1 turns Recoveries from unusual attitudes	P---->	---->	---->		M	
3B.7* Failure of localiser or glideslope	P---->	---->	---->			
3B.8* ATC liaison – Compliance, R/T procedure						
SECTION 4						
4 Arrival and landings 4.1 Aerodrome arrival procedure		P---->	---->		M	
4.2 Normal landing		P---->	---->		M	
4.3 Flapless landing		P---->	---->		M	
4.4 Crosswind landing (if suitable conditions)		P---->	---->			
4.5 Approach and landing with idle power from up to 2000′ above the runway (single engine aeroplane only)		P---->	---->			
4.6 Go-around from minimum height		P---->	---->		M	
4.7 Night go-around and landing (if applicable)	P---->	---->	---->			
4.8 ATC liaison – Compliance, R/T procedure						
SECTION 5						
5 Abnormal and emergency procedures (This Section may be combined with Sections 1 through 4)						
5.1 Rejected take-off at a reasonable speed		P---->	---->		M	

Manoeuvres/Procedures	PRACTICAL TRAINING				TYPE/CLASS RATING SKILL TEST/ PROF CHECK	
				Instructors initials when training completed	Chkd in	Examiners initials when test completed
5.2 Simulated engine failure after take-off (single engine aeroplanes only)			P		M	
5.3 Simulated forced landing without power (single engine aeroplanes only)			P		M	
5.4 Simulated emergencies: i. Fire or smoke in flight ii. Systems malfunctions as appropriate	P---->	---->	---->			
5.5 Engine shutdown and restart (ME skill test only)	P---->	---->	---->			
5.6 ATC liaison – Compliance, R/T procedure						
SECTION 6						
6 Simulated asymmetric flight 6.1* (This Section may be combined with Sections 1 through 5) Simulated engine failure during take-off (at a safe altitude unless carried out in FS or FNPT II)	P---->	---->	--->X		M	
6.2* Asymmetric approach and go-around	P---->	---->	---->		M	
6.3* Asymmetric approach and full stop landing	P---->	---->	---->		M	
6.4 ATC liaison – Compliance, R/T procedure						

2. Multi pilot aeroplanes

The following symbols mean:

P = Trained as Pilot-in-command or Co-pilot and as Pilot Flying (PF) and Pilot Not Flying (PNF) for the issue of a type rating as applicable.

X = Simulators shall be used for this exercise, if available; otherwise an aircraft shall be used if appropriate for the manoeuvre or procedure.

P# = the training shall be complemented by supervised aeroplane inspection

The practical training shall be conducted at least at the training equipment level shown as (P), or may be conducted up to any higher equipment level shown by the arrow (----->).

The following abbreviations are used to indicate the training equipment used:

A = Aeroplane
FS = Flight Simulator
FTD = Flight Training Device
OTD = Other Training Devices

The starred items (*) shall be flown solely by reference to instruments. If this condition is not met during the skill test or proficiency check, the type rating will be restricted to VFR only.

Where the letter 'M' appears in the skill test/proficiency check column this will indicate the mandatory exercise.

A flight simulator shall be used for practical training and testing if the simulator forms part of an approved type-rating course. The following considerations will apply to the approval of the course:

(a) the qualification of the flight simulator or FNPTII;

(b) the qualifications of the instructor

	PRACTICAL TRAINING					ATPL/MPL/TYPE RATING SKILL TEST/PROF CHECK	
Manoeuvres/Procedures (including Multi-Crew Cooperation)					Instructor's initials when training completed	Chkd in	Examiner's initials when test completed
SECTION 1							
1 Flight preparation 1.1 Performance calculation	P						
1.2 Aeroplane ext. visual inspect.; location of each item and purpose of inspection	P#			P			
1.3 Cockpit inspection		P					
1.4 Use of checklist prior to starting engines, starting procedures, radio and navigation equipment check, selection and setting of navigation and communication frequencies	P----->	----->	----->	----->		M	
1.5 Taxiing in compliance with air traffic control or instructions of instructor			P----->	----->			
1.6 Before take-off checks		P----->	----->	----->		M	
SECTION 2							
2 Take-offs 2.1 Normal take offs with different flap settings, including expedited take off			P----->	----->			
2.2* Instrument take-off; transition to instrument flight is required during rotation or immediately after becoming airborne			P----->	----->			
2.3 Cross wind take-off			P----->	----->			
2.4 Take-off at maximum take-off mass (actual or simulated maximum take-off mass)			P----->	----->			
2.5 Take-offs with simulated engine failure 2.5.1* shortly after reaching V_2,			P----->	----->			
(In aeroplanes which are not certificated as transport category aeroplanes, the engine failure shall not be simulated until reaching a minimum height of 500ft above runway end. In aeroplanes having the same performance as a transport category aeroplane regarding take-off mass and density altitude, the instructor may simulate the engine failure shortly after reaching V_2.)							
2.5.2* between V_1 and V_2			P	X		M FS Only	

	PRACTICAL TRAINING					**ATPL/MPL/TYPE RATING SKILL TEST/PROF CHECK**	
Manoeuvres/Procedures (including Multi-Crew Cooperation)					Instructor's initials when training completed	Chkd in	Examiner's initials when test completed
2.6 Rejected take-off at a reasonable speed before reaching V_1 .			P----->			M	
SECTION 3 **3 Flight Manoeuvres and Procedures** 3.1 Turns with and without spoilers			P**----->**	----->			
3.2 Tuck under and Mach buffets after reaching the critical Mach number, and other specific flight characteristics of the aeroplane (e.g. Dutch Roll)			P----->	----->X An aircraft may not be used for this exercise			
3.3 Normal operation of systems and controls engineer's panel	P----->	----->	----->	----->			
3.4 Normal and abnormal operations of following systems:						M	A mandatory minimum of 3 abnormal shall be selected from 3.4.0 to 3.4.14 inclusive.
3.4.0 Engine (if necessary propeller)	P----->	----->	----->	----->			
3.4.1 Pressurisation and air-conditioning	P----->	----->	----->	----->			
3.4.2 Pitot/static system	P----->	----->	----->	----->			
3.4.3 Fuel system	P----->	----->	----->	----->			
3.4.4 Electrical system	P----->	----->	----->	----->			
3.4.5 Hydraulic system	P----->	----->	----->	----->			
3.4.6 Flight control and Trim-system	P----->	----->	----->	----->			
3.4.7 Anti- and de-icing system, Glare shield heating	P----->	----->	----->	----->			
3.4.8 Autopilot/Flight director	P----->	----->	----->	----->			
3.4.9 Stall warning devices or stall avoidance devices, and stability augmentation devices	P----->	----->	----->	----->			
3.4.10 Ground proximity warning system Weather radar, radio altimeter, transponder		P----->	----->	----->			
3.4.11 Radios, navigation equipment, instruments, flight management system	P----->	----->	----->	----->			
3.4.12 Landing gear and brake	P----->	----->	----->	----->			
3.4.13 Slat and flap system	P----->	----->	----->	----->			
3.4.14 Auxiliary power unit	P----->	----->	----->	----->			

	PRACTICAL TRAINING					**ATPL/MPL/TYPE RATING SKILL TEST/PROF CHECK**	
Manoeuvres/Procedures (including Multi-Crew Cooperation)					Instructor's initials when training completed	Chkd in	Examiner's initials when test completed
3.6 Abnormal and emergency procedures:						M	A mandatory minimum of 3 items shall be selected from 3.6.1 to 3.6.9 inclusive
3.6.1 Fire drills e.g. Engine, APU, cabin, cargo compartment, flight deck, wing and electrical fires including evacuation.		P----->	----->	----->			
3.6.2 Smoke control and removal		P----->	----->	----->			
3.6.3 Engine failures, shut-down and restart at a safe height		P----->	----->	----->			
3.6.4 Fuel dumping (simulated)		P----->	----->	----->			
3.6.5 Windshear at Take off/ landing			P	X		FS only	
3.6.6 Simulated cabin pressure failure/Emergency descent			P----->	----->			
3.6.7 Incapacitation of flight crew member		P----->	----->	----->			
3.6.8 Other emergency procedures as outlined in the appropriate Aeroplane Flight Manual		P----->	----->	----->			
3.6.9 ACAS event	P→	----->	- - >	**An Aircraft May not be used**		FS only	
3.7 Steep turns with 45° bank, 180° to 360° left and right		P----->	----->	----->			
3.8 Early recognition and counter measures on approaching stall (up to activation of stall warning device) in take-off configuration (flaps in take-off position), in cruising flight configuration and in landing configuration (flaps in landing position, gear extended)			P----->	----->			
3.8.1 Recovery from full stall or after activation of stall warning device in climb, cruise and approach configuration			P	X			

3. Class ratings - sea

Section 6 shall be completed to revalidate a multi-engine class rating sea, VFR only, where the required experience of 10 route sectors within the previous 12 months has not been completed.

		PRACTICAL TRAINING	
Manoeuvres/Procedures		Instructors initials when training completed	Examiners initials when test completed
SECTION 1			
1 1.1	Departure Pre-flight including: Documentation Mass and Balance Weather briefing		
1.2	Pre-start checks External/internal.		
1.3	Engine start up and shut down Normal Malfunctions		
1.4	Taxiing		
1.5	Step taxiing		
1.6	Mooring: Beach Jetty pier Buoy		
1.7	Engine off sailing		
1.8	Pre-departure checks: Engine run-up (if applicable)		
1.9	Take-off procedure: Normal with Flight Manual flap settings Crosswind (if conditions available)		
1.10	Climbing Turns onto headings Level off		
1.11	ATC liaison – Compliance, R/T procedure		
SECTION 2			
2.1	Airwork (VFR) Straight and level flight at various airspeeds including flight at critically low airspeed with and without flaps (including approach to VMCA when applicable)		
2.2	Steep turns (360° left and right at 45° bank)		
2.3	Stalls and recovery: i. Clean stall ii. approach to stall in descending turn with bank with approach configuration and power iii. Approach to stall in landing configuration and power iv. Approach to stall, climbing turn with take-off		

	PRACTICAL TRAINING	
Manoeuvres/Procedures	Instructors initials when training completed	Examiners initials when test completed
flap and climb power (single engine aeroplane only		
2.4 ATC liaison – Compliance, R/T procedure		
SECTION 3		
3 **En route procedures** 3.1 **VFR** Flight plan, dead reckoning and map reading		
3.2 Maintenance of altitude, heading and speed		
3.3 Orientation, timing and revision of ETAs		
3.4 Use of radio navigation aids (if applicable)		
3.5 Flight management (flight log, routine checks including fuel, systems and icing		
3.6 ATC liaison – Compliance, R/T procedure.		
SECTION 4		
4 Arrivals and landings 4.1 Aerodrome arrival procedure		
4.2 Normal landing.		
4.3 Flapless landing		
4.4 Crosswind landing (if suitable conditions)		
4.5 Approach and landing with idle power from up to 2000´ above the water (single engine aeroplane only)		
4.6 Go-around from minimum height		
4.7 Glassy water landing Rough water landing		
4.8 ATC liaison – Compliance, R/T procedure		
SECTION 5		
5 Abnormal and emergency procedures (This Section may be combined with Sections 1 through 4)		
5.1 Rejected take-off at a reasonable speed		
5.2 Simulated engine failure after take-off (single engine aeroplanes only)		
5.3 Simulated forced landing without power (single engine aeroplanes only)		
5.4 Simulated emergencies: i. Fire or smoke in flight		

	PRACTICAL TRAINING	
Manoeuvres/Procedures	Instructors initials when training completed	Examiners initials when test completed
ii. Systems malfunctions as appropriate		
5.5 ATC liaison – Compliance, R/T procedure		
SECTION 6		
6 Simulated asymmetric flight (This Section may be combined with Sections 1 through 5) 6.1 Simulated engine failure during take-off (at a safe altitude unless carried out in FS and FNPTII)		
6.2 Engine shutdown and restart (ME skill test only)		
6.3 Asymmetric approach and go-around		
6.4 Asymmetric approach and full stop landing		
6.5 ATC liaison – Compliance, R/T procedure		

C. Specific requirements for the helicopter category

1 In case of skill test/ proficiency check for type ratings and the ATPL the applicant shall pass sections 1 to 4 and 6 (as applicable) of the skill test/proficiency check. Failure in more than 5 items will require the applicant to take the entire test/check again. An applicant failing not more than 5 items shall take the failed items again. Failure in any item of the re-test/re-check or failure in any other items already passed will require the applicant to take the entire test/check again. All sections of the skill test/proficiency check shall be completed within six months.

2 In case of proficiency check for an instrument rating the applicant shall pass section 5 of the proficiency check. Failure in more than 3 items will require the applicant to take the entire check again. An applicant failing not more than 3 items shall take the failed items again. Failure in any item of the re-check or failure in any other items already passed will require the applicant to take the entire check again.

FLIGHT TEST TOLERANCE

3 The applicant shall demonstrate the ability to:

a) operate the helicopter within its limitations;

b) complete all manoeuvres with smoothness and accuracy;

c) exercise good judgement and airmanship;

d) apply aeronautical knowledge;

e) maintain control of the helicopter at all times in such a manner that the successful outcome of a procedure or manoeuvre is never in doubt;

f) understand and apply crew co-ordination and incapacitation procedures, if applicable; and

g) communicate effectively with the other crew members, if applicable.

4 The following limits shall apply, corrected to make allowance for turbulent conditions and the handling qualities and performance of the aeroplane used.

IFR flight limits;

Height	
Generally	± 100 feet
Starting a go-around at decision height/ altitude	+ 50 feet/-0 feet
Minimum descent height/altitude	+ 50 feet/-0 feet
Tracking	
On radio aids	± 5°
Precision approach	half scale deflection, azimuth and glide path
Heading	
normal operations	± 5°
abnormal operations/emergencies	±10°
Speed	
generally	± 10 knots
with simulated engine failure	+10 knots/-5 knots
VFR flight limits;	
Height	
generally	± 100 feet
Heading	
normal operations	± 5°
abnormal operations/emergencies	±10°
Speed	
generally	± 10 knots
with simulated engine failure	+10 knots/-5 knots
Ground drift	
T.O. hover I.G.E.	± 3 feet
Landing	± 2 feet (with 0 feet rearward or lateral flight)

CONTENT OF THE SKILL TEST/PROFICIENCY CHECK

GENERAL

The following symbols mean:

P = Trained as Pilot-in-command for the issue of a type rating.

The practical training shall be conducted at least at the training equipment level shown as (P), or may be conducted up to any higher equipment level shown by the arrow (---->).

The following abbreviations are used to indicate the training equipment used:

FS = Flight Simulator

FTD = Flight Training Device

H = Helicopter

The starred items (*) shall be flown in actual or simulated IMC, only by applicants wishing to renew or revalidate an IR(H), or extend the privileges of that rating to another type.

Instrument flight procedures (Section 5) shall be performed only by applicants wishing to renew or revalidate an IR(H) or extend the privileges of that rating to another type. An FS or FTD 2/3 may be used for this purpose.

Where the letter 'M' appears in the skill test/proficiency check column this will indicate the mandatory exercise.

An FSTD shall be used for practical training and testing if the FSTD forms part of an approved type-rating course. The following considerations will apply to the approval of the course:

a) the qualification of the FSTD as set out in Part-MS;

b) the qualifications of the instructor and examiner;

c) the amount of FSTD training provided on the course;

d) the qualifications and previous experience in similar types of the pilot under training; and

e) the amount of supervised flying experience provided after the issue of the new type rating.

MULTI-PILOT HELICOPTERS

Applicants for the skill test for the issue of the multi-pilot helicopter type rating and ATPL(H) shall take only Sections 1 to 4 and, if applicable, Section 6.

Applicants for the revalidation or renewal of the multi-pilot helicopter type rating proficiency check shall take only Sections 1 to 4 and, if applicable Section 6.

		Practical Training				*Skill Test/ Proficiency Check*	
Manoeuvres/Procedures (Including MCC)		*Instructor's initials when training completed*				*Chkd. in*	*Examiner's initials when test/check passed*
		FTD	*FS*	*H*		*FS, H*	
SECTION 1 Pre-flight preparations and checks							
1.1	Helicopter exterior visual inspection; location of each item and purpose of inspection			P		M	
1.2	Cockpit inspection		P	---->		M	
1.3	Starting procedures, radio and navigation equipment check, selection and setting of navigation and communication frequencies	P	---->	---->		M	
1.4	Taxiing/air taxiing in compliance with air traffic control instructions or on instructions of an instructor		P	---->		M	
1.5	Pre take-off procedures and checks	P	---->	---->		M	
SECTION 2 Flight manoeuvres and procedures							
2.1	Take-offs (various profiles)		P	---->		M	
2.2	Sloping ground take-offs & landings		P	---->			
2.3	Take-off at maximum take-off mass (actual or simulated maximum take-off mass)	P	---->	---->			
2.4.1	Take off with simulated engine failure		P	---->		M	

		Practical Training				*Skill Test/ Proficiency Check*	
Manoeuvres/Procedures (Including MCC)		*Instructor's initials when training completed*				*Chkd. in*	*Examiner's initials when test/check passed*
		FTD	*FS*	*H*		*FS, H*	
	shortly before reaching TDP, or DPATO						
2.4.2	Take off with simulated engine failure shortly after reaching TDP, or DPATO		P	---->		M	
2.5	Climbing and descending turns to specified headings,	P	---->	---->		M	
2.5.1	Turns with 30 degrees bank, 180 degrees to 360 degrees left and right, by sole reference to instruments	P	---->	---->		M	
2.6	Autorotative descent	P	---->	---->		M	
2.6.1	Autorotative landing (SHE only) or power recovery		P	---->		M	
2.7	Landings, various profiles		P	---->		M	
2.7.1	Go-around or landing following simulated engine failure before LDP or DPBL		P	---->		M	
2.7.2	Landing following simulated engine failure after LDP or DPBL		P	---->		M	
SECTION 3 Normal and abnormal operations of the following systems and procedures:							
3	Normal and abnormal operations of the following systems and procedures:					M	A mandatory minimum of 3 items shall be selected from this section
3.1	Engine	P	---->	---->			
3.2	Air conditioning (heating, ventilation)	P	---->	---->			
3.3	Pitot/static system	P	---->	---->			
3.4	Fuel System	P	---->	---->			
3.5	Electrical system	P	---->	---->			
3.6	Hydraulic system	P	---->	---->			
3.7	Flight control and Trim-system	P	---->	---->			
3.8	Anti- and de-icing system	P	---->	---->			
3.9	Autopilot/Flight director	P	--->	--->			
3.10	Stability augmentation devices	P	---->	---->			
3.11	Weather radar, radio altimeter, transponder	P	---->	---->			
3.12	Area Navigation System	P	---->	---->			

		Practical Training				*Skill Test/ Proficiency Check*	
Manoeuvres/Procedures (Including MCC)		*Instructor's initials when training completed*				*Chkd. in*	*Examiner's initials when test/check passed*
		FTD	*FS*	*H*		*FS, H*	
3.13	Landing gear system	P	----->	----->			
3.14	Auxiliary power unit	P	---->	---->			
3.15	Radio, navigation equipment, instruments flight management system	P	---->	---->			
SECTION 4 Abnormal and emergency procedures							
4	Abnormal and emergency procedures					M	A mandatory minimum of 3 items shall be selected from this section
4.1	Fire drills (including evacuation if applicable)	P	---->	---->			
4.2	Smoke control and removal	P	---->	---->			
4.3	Engine failures, shut down and restart at a safe height	P	---->	---->			
4.4	Fuel dumping (simulated)	P	---->	---->			
4.5	Tail rotor control failure (if applicable)	P	---->	---->			
4.5.1	Tail rotor loss (if applicable)	P	---->	Helicopter shall not be used for this exercise			
4.6	Incapacitation of crew member	P	---->	---->			
4.7	Transmission malfunctions	P	---->	---->			
4.8	Other emergency procedures as outlined in the appropriate Flight Manual	P	---->	---->			
SECTION 5 Instrument Flight Procedures (To be performed in IMC or simulated IMC)							
5.1	Instrument take-off: transition to instrument flight is required as soon as possible after becoming airborne	P*	---->*	---->*			
5.1.1	Simulated engine failure during departure	P*	---->*	---->*		M*	
5.2	Adherence to departure and arrival	P*	---->*	---->*		M*	

		Practical Training				*Skill Test/ Proficiency Check*	
Manoeuvres/Procedures (Including MCC)		*Instructor's initials when training completed*				*Chkd. in*	*Examiner's initials when test/check passed*
		FTD	*FS*	*H*		*FS, H*	
	routes and ATC instructions						
5.3	Holding procedures	P*	---->*	---->*			
5.4	ILS-approaches down to CAT 1 decision height	P*	---->*	---->*			
5.4.1	Manually, without flight director	P*	---->*	---->*		M* (Skill test only)	
5.4.2	Manually, with flight director	P*	---->*	---->*			
5.4.3	With coupled autopilot	P*	---->*	---->*			
5.5	Non-precision approach down to the minimum descent altitude MDA/H	P*	---->*	---->*		M*	
5.6	Manually flown approach, with one engine simulated inoperative. (Engine failure has to be simulated during final approach before passing the outer marker (OM) orequivalent position and continued either to touchdown or until completion of the missed approach procedure)	P*	---->*	---->*		M*	
5.7	Go-around with all engines operating on reaching DA/DH or MDA/MDH	P*	---->*	---->*			
5.7.1	Other missed approach procedures	P*	---->*	---->*			
5.7.2	Go-around with one engine simulated inoperative on reaching DA/DH or MDA/MDH	P*				M*	
5.8	IMC autorotation with power recovery	P*	---->*	---->*		M*	
5.9	Recovery from unusual attitudes	P*	---->*	---->*		M*	
SECTION 6 Use of Optional Equipment							
6	Use of optional equipment	P	---->	---->			

D. Specific requirements for the powered-lift category

1. In the case of skill tests or proficiency checks for powered-lift type ratings the applicant shall pass sections 1 to 5 and 6 (as applicable) of the skill test/proficiency check. Failure in more than 5 items will require the applicant to take the entire test/check again. An applicant failing not more than 5 items shall take the failed items again. Failure in any item of the re-test/re-check or failure in any other items already passed will require the applicant to take the entire test/check again. All sections of the skill test/proficiency check shall be completed within six months.

FLIGHT TEST TOLERANCE

2. The applicant shall demonstrate the ability to:
   a) operate the powered-lift within its limitations;
   b) complete all manoeuvres with smoothness and accuracy;
   c) exercise good judgement and airmanship;
   d) apply aeronautical knowledge;
   e) maintain control of the powered-lift at all times in such a manner that the successful outcome of a procedure or manoeuvre is never in doubt;
   f) understand and apply crew co-ordination and incapacitation procedures; and
   g) communicate effectively with the other crew members.
3. The following limits shall apply, corrected to make allowance for turbulent conditions and the handling qualities and performance of the powered-lift used.

   IFR flight limits;

Height:	
Generally	± 100 feet
Starting a go-around at decision height/altitude	+ 50 feet/-0 feet
Minimum descent height/altitude	+ 50 feet/-0 feet
Tracking:	
On radio aids	± 5°
Precision approach	half scale deflection, azimuth and glide path
Heading:	
Normal operations	± 5°
Abnormal operations/emergencies	±10°
Speed:	
Generally	± 10 knots
With simulated engine failure	+10 knots/-5 knots

VFR flight limits;

Height:	
Generally	± 100 feet
Heading:	
Normal operations	± 5°
Abnormal operations/emergencies	±10°
Speed:	
Generally	± 10 knots

With simulated engine failure	+10 knots/-5 knots
Ground drift:	
T.O. hover I.G.E.	± 3 feet
Landing	± 2 feet (with 0 feet rearward or lateral flight)

CONTENT OF THE SKILL TEST/PROFICIENCY CHECK

4 The following symbols mean:

P = Trained as Pilot-in-command or Co-pilot and as Pilot Flying (PF) and Pilot Not Flying (PNF) for the issue of a type rating as applicable.

5 The practical training shall be conducted at least at the training equipment level shown as (P), or may be conducted up to any higher equipment level shown by the arrow (---->).

6 The following abbreviations are used to indicate the training equipment used:

FFS = Full Flight Simulator

FTD = Flight Training Device

OTD = Other Training Device

PL = Powered-lift aircraft

6.1 Applicants for the skill test for the issue of the powered-lift type rating shall take Sections 1 to 5 and, if applicable, Section 6.

6.2 Applicants for the revalidation or renewal of the powered-lift type rating proficiency check shall take Sections 1 to 5 and, if applicable Section 6 and/or 7.

6.3 The starred items (*) shall be flown solely by reference to instruments. If this condition is not met during the skill test or proficiency check, the type rating will be restricted to VFR only.

7 Where the letter 'M' appears in the skill test/ proficiency check column this will indicate the mandatory exercise.

8 Flight Simulation Training Devices shall be used for practical training and testing if they form part of an approved type-rating course. The following considerations will apply to the approval of the course:

a) the qualification of the flight simulation training devices as set out in Part FSTD;

b) the qualifications of the instructor;

		Practical Training				*Skill Test/ Proficiency Check*	
Manoeuvres/Procedures		*Instructor's initials when training completed*				*Chkd. in*	*Examiner's Initials when test/check passed*
		OTD	*FTD*	*FFS*	*PL*	*FFS, PL*	
SECTION 1 Pre-flight preparations and checks							
1.1	Powered-lift exterior visual inspection; location of each item and purpose of inspection				P		
1.2	Cockpit inspection	P	---->	---->	---->		

		Practical Training				Skill Test/ Proficiency Check	
Manoeuvres/Procedures		Instructor's initials when training completed				Chkd. in	Examiner's Initials when test/check passed
		OTD	FTD	FFS	PL	FFS, PL	
1.3	Starting procedures, radio and navigation equipment check, selection and setting of navigation and communication frequencies	P	---->	---->	---->	M	
1.4	Taxiing in compliance with air traffic control instructions or on instructions of an instructor		P	---->	---->		
1.5	Pre take-off procedures and checks including Power Check	P	---->	---->	---->	M	
SECTION 2 Flight manoeuvres and procedures							
2.1	Normal VFR take-off profiles; a. Runway operations (STOL and VTOL) including cross wind b. Elevated heliports c. Ground level heliports		P	---->	---->	M	
2.2	Take-off at maximum take-off mass (actual or simulated maximum take-off mass)		P	---->			
2.3.1	Rejected take-off; a. During runway operations b. During elevated heliport operations c. During ground level operations		P	---->		M	
2.3.2	Take off with simulated engine failure after passing decision point; a. During runway operations b. During elevated heliport operations c. During ground level operations		P	---->		M	
2.4	Autorotative descent in helicopter mode to ground *(An aircraft shall not be used for this exercise)*	P	---->	---->		M FS only	
2.4.1	Windmill descent in aeroplane mode *(An aircraft shall not be used for this exercise)*		P	---->		M FS only	
2.5.1	Normal VFR landing profiles; a. Runway operations (STOL and VTOL) b. Elevated heliports c. Ground level heliports		P	---->	---->	M	

		Practical Training				Skill Test/ Proficiency Check	
Manoeuvres/Procedures		Instructor's initials when training completed				Chkd. in	Examiner's Initials when test/check passed
		OTD	FTD	FFS	PL	FFS, PL	
2.5.2	Landing with simulated engine failure after reaching decision point; a. During runway operations b. During elevated heliport operations c. During ground level operations						
2.6.1	Go-around or landing following simulated engine failure before decision point		P	---->		M	
SECTION 3 Normal and abnormal operations of the following systems and procedures:							
3	Normal and abnormal operations of the following systems and procedures: *(may be completed in an FSTD if qualified for the exercise)*					M	A mandatory minimum of 3 items shall be selected from this section
3.1	Engine	P	---->	---->			
3.2	Pressurisation and air conditioning (heating, ventilation)	P	---->	---->			
3.3	Pitot/static system	P	---->	---->			
3.4	Fuel System	P	---->	---->			
3.5	Electrical system	P	---->	---->			
3.6	Hydraulic system	P	---->	---->			
3.7	Flight control and Trim-system	P	---->	---->			
3.8	Anti- and de-icing system, glare shield heating (if fitted)	P	---->	---->			
3.9	Autopilot/Flight director	P	--->	--->			
3.10	Stall warning devices or stall avoidance devices and stability augmentation devices	P	---->	---->			
3.11	Weather radar, radio altimeter, transponder, ground proximity warning system (if fitted)	P	---->	---->			
3.12	Landing gear system	P	----->	----->			
3.13	Auxiliary power unit	P	---->	---->			
3.14	Radio, navigation equipment, instruments and flight management system	P	---->	---->			
3.15	Flap system	P	---->	---->			
SECTION 4 Abnormal and emergency procedures							

		Practical Training				*Skill Test/ Proficiency Check*	
Manoeuvres/Procedures		*Instructor's initials when training completed*				*Chkd. in*	*Examiner's Initials when test/check passed*
		OTD	*FTD*	*FFS*	*PL*	*FFS, PL*	
4	Abnormal and emergency procedures *(may be completed in an FSTD if qualified for the exercise)*					M	A mandatory minimum of 3 items shall be selected from this section
4.1	Fire drills, engine, APU, cargo compartment, flight deck & electrical fires including evacuation if applicable	P	---->	---->			
4.2	Smoke control and removal	P	---->	---->			
4.3	Engine failures, shut down and restart *(An aircraft shall not be used for this exercise)* including OEI conversion from helicopter to aeroplane modes and vice versa.	P	---->	---->		FFS only	
4.4	Fuel dumping (simulated, if fitted)	P	---->	---->			
4.5	Windshear at take-off and landing. *(An aircraft shall not be used for this exercise)*			P		FFS only	
4.6	Simulated cabin pressure failure/emergency descent *(An aircraft shall not be used for this exercise)*	P	---->	---->		FFS only	
4.7	ACAS event *(An aircraft shall not be used for this exercise)*	P	---->	---->		FFS only	
4.8	Incapacitation of crew member	P	---->	---->			
4.9	Transmission malfunctions	P	---->	---->		FFS only	
4.10	Recovery from a full stall (power on and off) or after activation of stall warning devices in climb, cruise and approach configurations. *(An aircraft shall not be used for this exercise)*	P	---->	---->		FFS only	
4.11	Other emergency procedures as detailed in the appropriate Flight Manual	P	---->	---->			
SECTION 5 Instrument Flight Procedures (To be performed in IMC or simulated IMC)							
5.1	Instrument take-off: transition to instrument flight is required as soon as possible after becoming airborne	P*	---->*	---->*			
5.1.1	Simulated engine failure during departure after decision point	P*	---->*	---->*		M*	

Manoeuvres/Procedures		Practical Training Instructor's initials when training completed				Skill Test/ Proficiency Check	
		OTD	FTD	FFS	PL	Chkd. in FFS, PL	Examiner's Initials when test/check passed
5.2	Adherence to departure and arrival routes and ATC instructions	P*	---->*	---->*		M*	
5.3	Holding procedures	P*	---->*	---->*			
5.4	Precision approach down to a decision height not less than 60 m(200 ft)	P*	---->*	---->*			
5.4.1	Manually, without flight director	P*	---->*	---->*		M* (Skill test only)	
5.4.2	Manually, with flight director	P*	---->*	---->*			
5.4.3	With use of autopilot	P*	---->*	---->*			
5.4.4	Manually, with one engine simulated inoperative; engine failure has to be simulated during final approach before passing the outer marker (OM) and continued either to touchdown, or through to the completion of the missed approach procedure)	P*	---->*	---->*		M*	
5.5	Non-precision approach down to the minimum descent altitude MDA/H	P*	---->*	---->*		M*	
5.6	Go-around with all engines operating on reaching DA/DH or MDA/MDH	P*	---->*	---->*			
5.6.1	Other missed approach procedures	P*	---->*	---->*			
5.6.2	Go-around with one engine simulated inoperative on reaching DA/DH or MDA/MDH	P*				M*	
5.7	IMC autorotation with power recovery to land on runway in helicopter mode only *(An aircraft shall not be used for this exercise)*	P*	---->*	---->*		M* FFS only	
5.8	Recovery from unusual attitudes *(this one depends on the quality of the simulator)*	P*	---->*	---->*		M*	
SECTION 6 Additional authorisation on a type rating for instrument approaches down to a decision height of less than 60m (CAT II/III)							

		Practical Training				*Skill Test/ Proficiency Check*	
Manoeuvres/Procedures		*Instructor's initials when training completed*				*Chkd. in*	*Examiner's Initials when test/check passed*
		OTD	*FTD*	*FFS*	*PL*	*FFS, PL*	
6	Additional authorisation on a type rating for instrument approaches down to a decision height of less than 60m (CAT II/III). The following manoeuvres and procedures are the minimum training requirements to permit instrument approaches down to a DH of less than 60m (200 FT). During the following instrument approaches and missed approach procedures all powered-lift equipment required for the type certification of instrument approaches down to a DH of less than 60m (200ft) shall be used.						
6.1	Rejected take-off at minimum authorised RVR.		P	---->		M*	
6.2	ILS approaches In simulated instrument flight conditions down to the applicable DH, using flight guidance system. Standard procedures of crew co-ordination (SOPs) shall be observed.		P	---->	---->	M*	
6.3	Go-around After approaches as indicated in 6.2 on reaching DH. The training shall also include a go-around due to (simulated) insufficient RVR, windshear, aircraft deviation in excess of approach limits for a successful approach, and ground/airborne equipment failure prior to reaching DH and, go-around with simulated airborne equipment failure.		P	---->	---->	M*	
6.4	Landing(s) With visual reference established at D instrument approach. Depending on the guidance system, an automatic landing shall performed.		P	---->		M*	
Section 7 – Optional equipment							
7	Use of optional equipment		P	---->	---->		

E. Specific requirements for the airship category

1. In the case of skill tests or proficiency checks for airship type ratings the applicant shall pass sections 1 to 5 and 6 (as applicable) of the skill test/proficiency check. Failure in more than 5 items

will require the applicant to take the entire test/check again. An applicant failing not more than 5 items shall take the failed items again. Failure in any item of the re-test/re-check or failure in any other items already passed will require the applicant to take the entire test/check again. All sections of the skill test/proficiency check shall be completed within six months.

FLIGHT TEST TOLERANCE

2. The applicant shall demonstrate the ability to:

a) operate the airship within its limitations;

b) complete all manoeuvres with smoothness and accuracy;

c) exercise good judgement and airmanship;

d) apply aeronautical knowledge;

e) maintain control of the airship at all times in such a manner that the successful outcome of a procedure or manoeuvre is never in doubt;

f) understand and apply crew co-ordination and incapacitation procedures; and

g) communicate effectively with the other crew members.

3. The following limits shall apply, corrected to make allowance for turbulent conditions and the handling qualities and performance of the airship used.

IFR flight limits;

Height:	
Generally	± 100 feet
Starting a go-around at decision height/altitude	+ 50 feet/-0 feet
Minimum descent height/altitude	+ 50 feet/-0 feet
Tracking:	
On radio aids	± 5°
Precision approach	half scale deflection, azimuth and glide path
Heading:	
Normal operations	± 5°
Abnormal operations/emergencies	±10°

VFR flight limits;

Height:	
Generally	± 100 feet
Heading:	
Normal operations	± 5°
Abnormal operations/emergencies	±10°

CONTENT OF THE SKILL TEST/PROFICIENCY CHECK

1 The following symbols mean:

P = Trained as Pilot-in-command or Co-pilot and as Pilot Flying (PF) and Pilot Not Flying (PNF) for the issue of a type rating as applicable.

2 The practical training shall be conducted at least at the training equipment level shown as (P), or may be conducted up to any higher equipment level shown by the arrow (---->).

3 The following abbreviations are used to indicate the training equipment used:

FS = Flight Simulator

FTD = Flight Training Device

OTD = Other Training Device

AS = Airship

3.1 a) Applicants for the skill test for the issue of the airship type rating shall take Sections 1 to 5 and, if applicable, Section 6.

b) Applicants for the revalidation or renewal of the airship type rating proficiency check shall take Sections 1 to 5 and, if applicable Section 6.

3.2 The starred items (*) shall be flown solely by reference to instruments. If this condition is not met during the skill test or proficiency check, the type rating will be restricted to VFR only.

4 Where the letter 'M' appears in the skill test/ proficiency check column this will indicate the mandatory exercise.

5 Flight Simulation Training Devices shall be used for practical training and testing if they form part of an approved type-rating course. The following considerations will apply to the approval of the course:

a) the qualification of the flight simulation training devices as set out in Part FSTD;

b) the qualifications of the instructor;

		Practical Training				*Skill Test/ Proficiency Check*	
Manoeuvres/Procedures		*Instructor's initials when training completed*				*Chkd. in*	*Examiner's initials when test/check passed*
		OTD	*FTD*	*FS*	*AS*	*FS, AS*	
SECTION 1 Pre-flight preparations and checks							
1.1	Pre-flight Inspection				P		
1.2	Cockpit inspection	P	---->	---->	---->		
1.3	Starting procedures, radio and navigation equipment check, selection and setting of navigation and communication frequencies		P	---->	---->	M	
1.4	Off Mast procedure and Ground Manoeuvring			P	---->	M	
1.5	Pre take-off procedures and checks	P	---->	---->	---->	M	
SECTION 2 Flight manoeuvres and procedures							

		Practical Training				Skill Test/ Proficiency Check	
Manoeuvres/Procedures		*Instructor's initials when training completed*				*Chkd. in*	*Examiner's initials when test/check passed*
		OTD	*FTD*	*FS*	*AS*	*FS, AS*	
2.1	Normal VFR take-off profile			P	---->	M	
2.2	Take off with simulated engine failure			P	---->	M	
2.3	Take off with heaviness > 0 (Heavy T/O)			P	---->		
2.4	Take off with heaviness < 0 (Light/TO)			P	---->		
2.5	Normal climb procedure			P	---->		
2.6	Climb to Pressure Height			P	---->		
2.7	Recognising of Pressure Height			P	---->		
2.8	Flight at or close to Pressure Height			P	---->	M	
2.9	Normal descent and approach			P	---->		
2.10	Normal VFR landing profile			P	---->	M	
2.11	Landing with heaviness > 0 (Heavy Ldg.)			P	---->	M	
2.12	Landing with heaviness < 0 (Light Ldg.)			P	---->	M	
	Intentionally left blank						
SECTION 3 Normal and abnormal operations of the following systems and procedures:							
3	Normal and abnormal operations of the following systems and procedures: *(may be completed in an FSTD if qualified for the exercise)*					M	A mandatory minimum of 3 items shall be selected from this section
3.1	Engine	P	---->	---->	---->		
3.2	Envelope Pressurisation	P	---->	---->	---->		
3.3	Pitot/static system	P	---->	---->	---->		
3.4	Fuel System	P	---->	---->	---->		
3.5	Electrical system	P	---->	---->	---->		
3.6	Hydraulic system	P	---->	---->	---->		
3.7	Flight control and Trim-system	P	---->	---->	---->		
3.8	Ballonet system	P	---->	---->	---->		
3.9	Autopilot/Flight director	P	--->	--->	---->		
3.10	Stability augmentation devices	P	---->	---->	---->		
3.11	Weather radar, radio altimeter, transponder, ground proximity warning system (if fitted)	P	---->	---->	---->		
3.12	Landing gear system	P	----->	----->	---->		

		Practical Training				Skill Test/ Proficiency Check	
Manoeuvres/Procedures		Instructor's initials when training completed				Chkd. in	Examiner's initials when test/check passed
		OTD	FTD	FS	AS	FS, AS	
3.13	Auxiliary power unit	P	---->	---->	---->		
3.14	Radio, navigation equipment, instruments and flight management system	P	---->	---->	---->		
	Intentionally left blank						
SECTION 4 Abnormal and emergency procedures							
4	Abnormal and emergency procedures *(may be completed in an FSTD if qualified for the exercise)*					M	A mandatory minimum of 3 items shall be selected from this section
4.1	Fire drills, engine, APU, cargo compartment, flight deck & electrical fires including evacuation if applicable	P	---->	---->	---->		
4.2	Smoke control and removal	P	---->	---->	---->		
4.3	Engine failures, shut down and restart In particular phases of flight, inclusive multiple engine failure	P	---->	---->	---->		
4.4	Incapacitation of crew member	P	---->	---->	---->		
4.5	Transmission/Gearbox malfunctions	P	---->	---->	---->	FS only	
4.6	Other emergency procedures as outlined in the appropriate Flight Manual	P	---->	---->	---->		
SECTION 5 Instrument Flight Procedures (To be performed in IMC or simulated IMC)							
5.1	Instrument take-off: transition to instrument flight is required as soon as possible after becoming airborne	P*	---->*	---->*	---->*		
5.1.1	Simulated engine failure during departure	P*	---->*	---->*	---->*	M*	
5.2	Adherence to departure and arrival routes and ATC instructions	P*	---->*	---->*	---->*	M*	
5.3	Holding procedures	P*	---->*	---->*	---->*		
5.4	Precision approach down to a decision height not less than 60 m(200 ft)	P*	---->*	---->*	---->*		
5.4.1	Manually, without flight director	P*	---->*	---->*	---->*	M* (Skill test only)	
5.4.2	Manually, with flight director	P*	---->*	---->*	---->*		
5.4.3	With use of autopilot	P*	---->*	---->*	---->*		

		Practical Training				*Skill Test/ Proficiency Check*	
Manoeuvres/Procedures		*Instructor's initials when training completed*				*Chkd. in*	*Examiner's initials when test/check passed*
		OTD	*FTD*	*FS*	*AS*	*FS, AS*	
5.4.4	Manually, with one engine simulated inoperative; engine failure has to be simulated during final approach before passing the outer marker (OM) and continued to touchdown, or until completion of the missed approach procedure)	P*	---->*	---->*	---->*	M*	
5.5	Non-precision approach down to the minimum descent altitude MDA/H	P*	---->*	---->*	---->*	M*	
5.6	Go-around with all engines operating on reaching DA/DH or MDA/MDH	P*	---->*	---->*	---->*		
5.6.1	Other missed approach procedures	P*	---->*	---->*	---->*		
5.6.2	Go-around with one engine simulated inoperative on reaching DA/DH or MDA/MDH	P*				M*	
5.7	Recovery from unusual attitudes *(this one depends on the quality of the simulator)*	P*	---->*	---->*	---->*	M*	
SECTION 6 Additional authorisation on a type rating for instrument approaches down to a decision height of less than 60m (CAT II/III)							
6	Additional authorisation on a type rating for instrument approaches down to a decision height of less than 60m (CAT II/III). The following manoeuvres and procedures are the minimum training requirements to permit instrument approaches down to a DH of less than 60m (200 FT). During the following instrument approaches and missed approach procedures all airship equipment required for the type certification of instrument approaches down to a DH of less than 60m (200ft) shall be used.						
6.1	Rejected take-off at minimum authorised RVR.		P	---->		M*	
6.2	ILS approaches In simulated instrument flight conditions down to the applicable DH, using flight guidance system. Standard procedures of crew co-ordination (SOPs) shall be observed.		P	---->		M*	
6.3	Go-around After approaches as indicated in 6.2 on reaching DH.		P	---->		M*	

		Practical Training				*Skill Test/ Proficiency Check*	
Manoeuvres/Procedures		*Instructor's initials when training completed*				*Chkd. in*	*Examiner's initials when test/check passed*
		OTD	*FTD*	*FS*	*AS*	*FS, AS*	
	The training shall also include a go-around due to (simulated) insufficient RVR, windshear, aircraft deviation in excess of approach limits for a successful approach, and ground/airborne equipment failure prior to reaching DH and, go-around with simulated airborne equipment failure.						
6.4	Landing(s) With visual reference established at DH following an instrument approach. Depending on the specific flight guidance system, an automatic landing shall be performed.		P	---->		M*	
Section 7 – Optional equipment							
7	Use of optional equipment		P	---->			

APPENDIX 10

COURSE OF ADDITIONAL THEORETICAL KNOWLEDGE FOR A CLASS OR TYPE RATING FOR HIGH PERFORMANCE SINGLE-PILOT AEROPLANES

COURSE SYLLABUS

1 The course shall cover at least the following items of the aeroplane syllabus to the ATPL(A) level:

Subject Ref:	**Syllabus Content:**
021 00 00 00	AIRFRAME AND SYSTEMS, ELECTRICS, POWERPLANT
021 02 02 01 to 021 02 02 03	Alternating current - general Generators AC power distribution
021 01 08 03	Pressurisation (Air driven systems - piston engines)
021 01 09 04	Pressurisation (Air driven systems - turbojet and turbo propeller)
021 03 01 06 021 03 01 07 021 03 01 08 021 03 01 09	Engine performance - piston engines Power augmentation (turbo/supercharging) Fuel Mixture
021 03 02 00 to 021 03 04 09	Turbine engines
021 04 05 00	Aircraft oxygen equipment
032 02 00 00	PERFORMANCE CLASS B - ME AEROPLANES
032 02 01 00 to 032 02 04 01	Performance of multi-engine aeroplanes not certificated under JAR/FAR 25 – Entire subject
040 02 00 00	HUMAN PERFORMANCE
040 02 01 00 to 040 02 01 03	Basic human physiology and High altitude environment
050 00 00 00	METEOROLOGY - WINDS AND FLIGHT HAZARDS
050 02 07 00 to 050 02 08 01	Jet streams CAT Standing waves
050 09 01 00 to 050 09 04 05	Flight hazards Icing and turbulence Thunderstorms
062 02 00 00	BASIC RADAR PRINCIPLES
062 02 01 00 to 062 02 05 00	Basic radar principles Airborne radar SSR

081 00 00 00	PRINCIPLES OF FLIGHT – AEROPLANES
081 02 01 00 to 081 02 03 02	Transonic aerodynamics - Entire subject Mach number/shockwaves buffet margin/aerodynamic ceiling

2 A pass in any theoretical knowledge subjects as part of the HPA course will not be credited against meeting future theoretical examination requirements for issue of a CPL(A), IR(A) or ATPL(A).

APPENDIX 11

CROSS-CREDITING OF PROFICIENCY CHECKS FOR REVALIDATION OF TYPE RATINGS - HELICOPTERS

Manufacturer	Helicopter Type and Licence Endorsement
Agusta-Bell	
- SE piston	Bell47
Bell Helicopters	
- SE piston	Bell47
Brantley	
-SE piston	BrantleyB2
Breda Nardi	
- SE piston	HU269
Enstrom	
- SE piston	ENF28
Hiller	
- SE piston	UH12
Hughes/Schweitzer	
- SE piston	HU269
Westland	
- SE piston	Bell47

APPENDIX 12

SKILL TEST, PROFICIENCY CHECK AND VERBAL THEORETICAL KNOWLEDGE EXAMINATION FOR THE INSTRUCTOR CERTIFICATE

GENERAL

1 The format and application form for the skill test shall be determined by the Authority.

2 The instructor skill test shall comprise oral theoretical examinations on the ground, pre-flight and post flight briefings and in-flight demonstrations during skill tests in the appropriate aircraft category.

3 An applicant for the skill test shall have received instruction on the same type or class as of the aircraft used for the test. The aircraft used for the test shall meet the requirements set out in Appendix 4, B.1, C.1 and D.1.

3 Before taking the skill test an applicant shall have completed the required training. The approved training organisation shall produce the applicant's training records when required by the examiner.

4 The examiner shall be the pilot-in-command, except in circumstances agreed upon by the examiner when another instructor is designated as pilot-in-command for the flight.

5 During the skill test the applicant shall occupy the seat normally occupied by the instructor, except in the case of balloons. The examiner or another instructor shall function as the 'student'. The applicant shall be required to explain the relevant exercises and to demonstrate their conduct to the 'student', where appropriate. Thereafter, the 'student' shall execute the same manoeuvres including typical mistakes of inexperienced students. The applicant is expected to correct mistakes orally or, if necessary, by intervening.

CONTENT

6 The content of the skill test shall, in addition to the competencies described in FCL.920, include the following:

SECTION 1 **THEORETICAL KNOWLEDGE ORAL**	
	Air law
	Aircraft General Knowledge
	Flight Performance and Planning
	Human Performance and Limitations
	Meteorology
	Navigation
	Operational Procedures
	Principles of Flight
	Training Administration

SECTIONS 2 AND 3 SELECTED MAIN EXERCISE:

SECTION 2 **PRE-FLIGHT BRIEFING**	
	Visual Presentation
	Technical Accuracy

	Clarity of Explanation
	Clarity of Speech
	Instructional Technique
	Use of Models and Aids
	Student Participation
SECTION 3 **FLIGHT**	
	Arrangement of Demo
	Synchronisation of Speech with Demo
	Correction of Faults
	Aircraft Handling
	Instructional Technique
	General Airmanship/Safety
	Positioning, use of Airspace
SECTION 4 **MULTI-ENGINE EXERCISES**	
	[1]Actions following an Engine failure shortly after take-off
	[1]A single-engine approach and go around
	[1]A single-engine approach and landing

[1] These exercises shall be demonstrated at the skill test for the single-pilot multi-engine CRI rating and for any airship instructor certificate.

SECTION 5 **POSTFLIGHT DE-BRIEFING**	
	Visual Presentation
	Technical Accuracy
	Clarity of Explanation
	Clarity of Speech
	Instructional Technique
	Use of Models and Aids
	Student Participation

(a) Section 1, the oral theoretical knowledge examination part of the skill test, is for all instructor certificates and shall be subdivided into two parts:

(i) the applicant is required to give a lecture under test conditions to other 'student(s)', one of whom will be the examiner. The test lecture is to be selected from items a-i of Section 1. The amount of time for preparation of the test lecture shall be agreed upon beforehand with the examiner. Appropriate literature may be used by the applicant. The test lecture should not exceed 45 minutes.

(ii) the applicant is tested orally by an examiner for knowledge of items a–i of Section 1 and the 'core instructor competencies - teaching and learning' content given in the instructor courses.

(b) Section 2, 3 and 5 are for all instructor certificates. These sections comprise exercises to demonstrate the ability to be an FI (i.e. instructor demonstration exercises) chosen by the examiner from the flight syllabus of the FI training courses. The applicant will be required to demonstrate FI abilities, including briefing, flight instruction and de-briefing.

(c) Section 4 comprises additional instructor demonstration exercises for an instructor certificate for multi-engine aircraft. This section, if required, shall use a multi-engine aircraft, or a simulator or FNPT II simulating a multi-engine aircraft. This section shall be completed in addition to Section 2, 3 and 5.

7 The skill test shall also include additional demonstration exercises, as decided by the examiner and agreed upon with the applicant before the skill test. For an instructor certificate for instrument ratings (IR), these additional exercises shall be related to the training requirements for the initial issue of an IR.

8 All relevant Sections shall be completed within a period of 6 months. However, all Sections should, where possible, be completed on the same day. Failure in any exercise requires a retest covering all exercises, with the exception of those in Sections 1 and 5, which, if failed, may be retaken separately. The examiner shall terminate the test at any stage if they consider that a retest is required.

PROFICIENCY CHECK

9 An applicant who fails to achieve a pass in all sections of a proficiency check before the expiry date of an instructor certificate shall not exercise the privileges of that certificate until the proficiency check has successfully been completed.

ANNEX III TO THE IMPLEMENTING REGULATION

REQUIREMENTS FOR THE ACCEPTANCE OF LICENCES ISSUED BY OR ON BEHALF OF THIRD COUNTRIES

1. A pilot licence issued in compliance with the requirements of ICAO Annex 1 by a third country may be accepted by the competent authority of a Member State in the case of pilots involved in the operation of aircraft registered in a third country and used by an operator for which any Member State ensures oversight of operations or used into, within or out of the Community by an operator established or residing in the Community.

2. In the case of pilot licences for commercial air transport and other professional activities, the holder shall comply with the following requirements:

   (a) complete, as a skill test, the type or class rating revalidation requirements of Part-FCL relevant to the privileges of the licence held;

   (b) demonstrate that he has acquired knowledge of the relevant parts of Part-OPS and Part-FCL;

   (c) demonstrate knowledge of English in accordance with FCL.055.

   (d) hold a valid Class 1 medical certificate, issued in accordance with Part-Medical;

   (e) In the case of aeroplanes, comply with the experience requirements set out in the following:

Licence held	Total flying hours experience	Privileges	
(1)	(2)	(3)	
ATPL(A)	>1 500 hours as PIC on multi-pilot aeroplanes	Commercial air transport in multi-pilot aeroplanes as PIC	(a)
ATPL(A) or CPL(A)/IR*	>1 500 hours as PIC or co-pilot on multi-pilot aeroplanes according to operational requirements	Commercial air transport in multi-pilot aeroplanes as co-pilot	(b)
CPL(A)/IR	>1 000 hours as PIC in commercial air transport since gaining an IR	Commercial air transport in single-pilot aeroplanes as PIC	(c)
CPL(A)/IR	>1 000 hours as PIC or as co-pilot in single-pilot aeroplanes according to operational requirements	Commercial air transport in single-pilot aeroplanes as co-pilot according to Part-OPS	(d)
CPL(A)	>700 hours in aeroplanes other than TMGs, including 200 hours in the activity role for which acceptance is sought, and 50 hours in that role in the last 12 months	Activities in aeroplanes other than commercial air transport	(e)

*CPL(A)/IR holders on multi-pilot aeroplanes shall have demonstrated ICAO ATPL(A) level knowledge before acceptance.

   (f) In the case of helicopters, comply with the experience requirements set out in the following table:

Licence held	Total flying hours experience	Privileges	
(1)	(2)	(3)	
ATPL(H) valid IR	>1000 hours as PIC on multi-pilot helicopters	Commercial air transport in multi-pilot helicopters as PIC in VFR and IFR operations	(a)
ATPL(H) no IR privileges	>1000 hours as PIC on multi-pilot helicopters	Commercial air transport in multi-pilot helicopters as PIC in VFR operations	(b)
ATPL(H) valid IR	>1000 hours as pilot on multi-pilot helicopters	Commercial air transport in multi-pilot helicopters as co-pilot in VFR and IFR operations	(c)
ATPL(H) no IR privileges	>1000 hours as pilot on multi-pilot helicopters	Commercial air transport in multi-pilot helicopters as co-pilot in VFR operations	(d)
CPL(H)/IR*	>1000 hours as pilot on multi-pilot helicopters	Commercial air transport in multi-pilot helicopters as co-pilot	(e)
CPL(H)/IR	>1000 hours as PIC in commercial air transport since gaining an IR	Commercial air transport in single-pilot helicopters as PIC	(f)
CPL(H)	>700 hours in helicopters other than those certificated under CS - 27/29 or equivalent, including 200 hours in the activity role for which acceptance is sought, and 50 hours in that role in the last 12 months	Activities in helicopters other than commercial air transport	(g)

*CPL(H)/IR holders on multi-pilot helicopters shall have demonstrated ICAO ATPL level knowledge before acceptance

3 In the case of private pilot licences with an instrument rating, the holder shall comply with the following requirements:

(a) complete the skill test for instrument rating and the type or class ratings relevant to the privileges of the licence held, in accordance with Appendix 7 and Appendix 9 to Part-FCL;

(b) demonstrate knowledge of Air Law, Aeronautical Weather codes, Flight Planning and Performance (IR), and Human Performance;

(c) demonstrate knowledge of English in accordance with FCL.055;

(d) hold at least a valid Class 2 medical certificate issued in accordance with ICAO Annex 1;

(f) have a minimum experience of at least 100 hours of instrument flight time as pilot-in-command in the relevant category of aircraft.

4. In the case of private pilot licences, the holder shall comply with the following requirements:

(a) demonstrate knowledge of Air Law and Human Performance;

(b) pass the PPL skill test as set out Part-FCL;

(c) fulfil the relevant requirements of Part-FCL for the issuance of a type or class rating as relevant to the privileges of the licence held;

(d) hold at least a Class 2 medical certificate issued in accordance with ICAO Annex 1;

(e) demonstrate language proficiency in accordance with FCL.055;

(f) have a minimum experience of at least 100 hours as pilot in the relevant category of aircraft.

5. The period of acceptance of a licence shall not exceed one year, provided that the basic licence remains valid.

   The user of a licence accepted by a Member State shall comply with the requirements stated in Part-FCL.

6. Notwithstanding the provisions of the paragraphs above, in the case of introduction of new aircraft types Member States may accept a licence issued in accordance with ICAO Annex 1 by third countries for a maximum of 12 months in the case of specific tasks of limited duration, such as instruction flights for initial entry into service, demonstration, ferry or test flights, provided the applicant complies with the following requirements:

   (a) holds an appropriate licence and medical certificate and associated ratings or qualifications issued in accordance with ICAO Annex 1;

   (b) is employed, directly or indirectly, by an aeroplane manufacturer;

   In this case, the privileges of the holder shall be limited to performing flight instruction and testing for initial issue of type ratings, the supervision of initial line flying by the operators' pilots, delivery or ferry flights, initial line flying, flight demonstrations or test flights.

ANNEX IV TO THE IMPLEMENTING REGULATION

REQUIREMENTS FOR THE CONVERSION OF NATIONAL LICENCES AND RATINGS FOR AEROPLANES AND HELICOPTERS

A. Aeroplanes

1 Pilot licences

A pilot licence issued by a Member State in accordance with national requirements shall be converted into a Part-FCL licence provided the applicant complies with the following requirements:

(a) for ATPL(A) and CPL(A), complete as a proficiency check the revalidation requirements of Part-FCL for type/class and instrument rating, relevant to the privileges of the licence held;

(b) demonstrate knowledge of the relevant parts of Part-OPS and Part-FCL;

(c) demonstrate language proficiency in accordance with FCL.055;

(d) comply with the requirements set out in the table below:

National licence held	Total flying hours experience	Any further requirements	Replacement Part-FCL licence and conditions *(where applicable)*	Removal of conditions	
(1)	(2)	(3)	(4)	(5)	
ATPL(A)	>1500 as PIC on multi-pilot aeroplanes	None	ATPL(A)	Not applicable	(a)
ATPL(A)	>1500 on multi-pilot aeroplanes	None	as in (c)(4)	as in (c)(5)	(b)
ATPL(A)	>500 on multi-pilot aeroplanes	demonstrate knowledge of flight planning and performance as required by Appendix 2 to Part-FCL	ATPL(A), with type rating restricted to co-pilot	Demonstrate ability to act as PIC as required by Appendix 9 to Part-FCL	(c)
CPL/IR(A) and passed an ICAO ATPL theory test in the Member State of licence issue		(i) demonstrate knowledge of flight planning and performance as required by Appendix 2 to Part-FCL (ii) meet remaining requirements of FCL.720.A (c)	CPL/IR(A) with ATPL theory credit	Not applicable	(d)

National licence held	Total flying hours experience	Any further requirements	Replacement Part-FCL licence and conditions *(where applicable)*	Removal of conditions	
(1)	(2)	(3)	(4)	(5)	
CPL/IR(A)	>500 on multi-pilot aeroplanes, or in multi-pilot operations on single-pilot aeroplanes CS- 23 commuter category or equivalent in accordance with the requirements of Part-OPS for commercial air transport .	(i) to pass an examination for ATPL(A) knowledge in the Member State of licence issue * (ii) meet remaining requirements of FCL.720.A (c)	CPL/IR(A) with ATPL theory credit	Not applicable	(e)
CPL/IR(A)	>500 as PIC on single-pilot aeroplanes	none	CPL/IR(A) with type/class ratings restricted to single-pilot aeroplanes		(f)
CPL/IR(A)	<500 as PIC on single-pilot aeroplanes	demonstrate knowledge of flight planning and flight performance as required by Appendix 2 to Part-FCL	as (4)(f)	Obtain multi-pilot type rating in accordance with Part-FCL	(g)
CPL(A)	>500 as PIC on single-pilot aeroplanes	night rating, if applicable	CPL(A), with type/ class ratings restricted to single- pilot aeroplanes		(h)
CPL(A)	<500 as PIC on single-pilot aeroplanes	(i) night rating, if applicable; (ii) demonstrate knowledge of flight performance and planning as required by Appendix 2 to Part-FCL	as (4)(h)		(i)
PPL/IR(A)	≥75 in accordance with IFR	night rating if night flying privileges are not included in the instrument rating	PPL/IR(A) (the IR restricted to PPL)	demonstrate knowledge of flight performance and planning as required by Appendix 2 to Part-FCL	(j)
PPL(A)	≥70 on aeroplanes	demonstrate the use of radio navigation aids	PPL(A)		(k)

* CPL holders already holding a type rating for a multi-pilot aeroplane are not required to have passed an examination for ATPL(A) theoretical knowledge whilst they continue to operate that same aeroplane type, but will not be given ATPL(A) theory credit for a Part-FCL licence. If they require another type rating for a different multi-pilot aeroplane, they must comply with column (3), row (e) (i) of the above table.

2 Instructor certificates

An instructor certificate issued by a Member State in accordance with national requirements shall be converted into a Part-FCL certificate provided the applicant complies with the following requirements:

National certificate or privileges held	Experience	Any further requirements	Replacement Part-FCL certificate
(1)	(2)	(3)	(4)
FI(A)/IRI(A)/TRI(A)/ CRI(A)	as required under Part-FCL for the relevant rating	demonstrate knowledge of the relevant parts of Part-FCL and Part-OPS	FI(A)/IRI(A)/TRI(A)/CRI(A)

3 SFI certificate

A SFI certificate issued by a Member State in accordance with national requirements shall be converted into a Part-FCL certificate provided that the holder complies with the following requirements:

National certificate held	Experience	Any further requirements	Replacement Part-FCL certificate
(1)	(2)	(3)	(4)
SFI(A)	>1500 hrs as pilot of MPA	(i) hold or have held a CPL, MPL or ATPL for aeroplanes issued by a Member State; (ii) have completed the flight simulator content of the applicable type rating course including MCC.	SFI(A)
SFI(A)	3 years recent experience as a SFI	have completed the flight simulator content of the applicable type rating course including MCC	SFI(A)

The conversion shall be valid for a maximum period of 3 years. Revalidation shall be subject to the completion of the relevant requirements set out in Part-FCL.

B. Helicopters

1 Pilot licences

A pilot licence issued by a Member State in accordance with national requirements shall be converted into a Part-FCL licence provided the applicant complies with the following requirements:

(a) complete as a proficiency check the revalidation requirements of Part-FCL for type and instrument rating, relevant to the privileges of the licence held;

(b) demonstrate knowledge of the relevant parts of Part-OPS and Part-FCL;

(c) demonstrate language proficiency in accordance with FCL.055;

(d) comply with the requirements set out in the table below:

National licence held	Total flying hours experience	Any further requirements	Replacement Part-FCL licence and conditions (where applicable)	Removal of conditions	
(1)	(2)	(3)	(4)	(5)	
ATPL(H) valid IR(H)	>1000 as PIC on multi-pilot helicopters	none	ATPL(H) and IR	Not applicable	(a)
ATPL(H) no IR(H) privileges	>1000 as PIC on multi-pilot helicopters	none	ATPL(H)		(b)
ATPL(H) valid IR(H)	>1000 on multi-pilot helicopters	None	ATPL(H), and IR with type rating restricted to co-pilot	demonstrate ability to act as PIC as required by Appendix 9 to Part-FCL	(c)
ATPL(H) no IR(H) privileges	>1000 on multi-pilot helicopters	None	ATPL(H) type rating restricted to co-pilot	demonstrate ability to act as PIC as required by Appendix 9 to Part-FCL	(d)
ATPL(H) valid IR(H)	>500 on multi-pilot helicopters	Demonstrate knowledge of flight planning and flight performance as required by Appendix 2 to Part-FCL	as (4)(c)	as (5)(c)	(e)
ATPL(H) no IR(H) privileges	>500 on multi-pilot helicopters	as (3)(e)	as (4)(d)	as (5)(d)	(f)
CPL/IR(H) and passed an ICAO ATPL(H) theory test in the Member State of licence issue*		(i) demonstrate knowledge of flight planning and flight performance as required by Appendix2 to Part-FCL; (ii) meet remaining requirements of FCL.720.H (b)	CPL/IR(H) with ATPL(H) theory credit, provided that the ICAO ATPL(H) theory test is assessed as being at Part-FCL ATPL level	Not applicable	(g)

National licence held	Total flying hours experience	Any further requirements	Replacement Part-FCL licence and conditions (where applicable)	Removal of conditions	
(1)	(2)	(3)	(4)	(5)	
CPL/IR(H)	>500 hrs on multi-pilot helicopters	(i) to pass an examination for Part-FCL ATPL(H) theoretical knowledge in the Member State of licence issue. (ii) meet remaining requirements of FCL.720.H (b)	CPL/IR(H) with Part-FCL ATPL(H) theory credit	Not applicable	(h)
CPL/IR(H)	>500 as PIC on single-pilot helicopters	None	CPL/IR(H) with type ratings restricted to single-pilot helicopters	obtain multi-pilot type rating as required by Part-FCL	(i)
CPL/IR(H)	<500 as PIC on single-pilot helicopters	Demonstrate knowledge of flight planning and flight performance as required by Appendix 2 to Part-FCL	as (4)(h)		(j)
CPL(H)	>500 as PIC on single-pilot helicopters	night rating	CPL(H), with type ratings restricted to single-pilot helicopters		(k)
CPL(H)	<500 as PIC on single-pilot helicopters	night rating~~,~~ demonstrate knowledge of flight performance and planning as required by Appendix 2 to Part-FCL	as (4) (j)		(l)
CPL(H) Without night rating	>500 as PIC on single-pilot helicopters		As (4) (k) and restricted to day VFR operations	Obtain multi-pilot type rating as required by Part-FCL and a night rating	(m)
CPL(H) Without night rating	<500 as PIC on single-pilot helicopters	Demonstrate knowledge of flight planning and flight performance as required by Appendix 2 to Part-FCL	As (4) (k) and restricted to day VFR operations		(n)

National licence held	Total flying hours experience	Any further requirements	Replacement Part-FCL licence and conditions (where applicable)	Removal of conditions	
(1)	(2)	(3)	(4)	(5)	
PPL/IR(H)	≥ 75 in accordance with IFR	night rating; if night flying privileges are not included in the instrument rating	PPL/IR(H) (the IR restricted to PPL)	demonstrate knowledge of flight performance and planning as required by Appendix 2 to Part-FCL.	(o)
PPL(H)	≥ 75 on helicopters	demonstrate the use of radio navigation aids.	PPL (H)		(p)

2 Instructor certificates

An instructor certificate issued by a Member State in accordance with national requirements shall be converted into a Part-FCL rating provided the applicant complies with the following requirements

National certificate or privileges held	Experience	Any further requirements	Replacement certificate
(1)	(2)	(3)	(4)
FI(H)/IRI(H)/TRI(H)	as required under Part-FCL for the relevant rating	demonstrate a knowledge of the relevant parts of Part-FCL and Part-OPS	FI(H)/IRI(H)/TRI(H)*

Revalidation of the certificate shall be subject to the completion of the relevant requirements set out in Part-FCL.

3 SFI certificate

A SFI certificate issued by a Member State in accordance with national requirements shall be converted into a Part-FCL certificate provided that the holder complies with the following requirements:

National certificate held	Experience	Any further requirements	Replacement certificate
(1)	(2)	(3)	(4)
SFI(H)	>1 000 hrs as pilot of MPH	(i) hold or have held a CPL, MPL or ATPL issued by a Member State; (ii) have completed the flight simulator content of the applicable type rating course including MCC.	SFI(H)

National certificate held	Experience	Any further requirements	Replacement certificate
(1)	(2)	(3)	(4)
SFI(H)	3 years recent experience as a SFI.	have completed the simulator content of the applicable type rating course including MCC	SFI(H)

Revalidation of the certificate shall be subject to the completion of the relevant requirements set out in Part-FCL.

4 STI certificate

A STI certificate issued by a Member State in accordance with the national requirements of that State may be converted into a Part-FCL certificate provided that the holder complies with the requirements set out in the table below:

National certificate held	Experience	Any further requirements	Replacement certificate
(1)	(2)	(3)	(4)
STI(H)	> 500 hrs as pilot on SPH	(i) hold or have held a pilot licence issued by a Member State; (ii) have completed a proficiency check in accordance with Appendix 9 to Part-FCL in a FSTD appropriate to the instruction intended	STI(H)
STI(H)	3 years recent experience as a STI.	have completed a proficiency check in accordance with Appendix 9 to Part-FCL in a FSTD appropriate to the instruction intended	STI(H)

Revalidation of the certificate shall be subject to the completion of the relevant requirements set out in Part-FCL.

II Draft Decision AMC and GM for Part-FCL

Acceptable Means of Compliance and Guidance material
to
Part-FCL

Subpart A
GENERAL REQUIREMENTS

GM to FCL.010
Definitions and Abbreviations

A. Interpretative material

1. Whenever licences, ratings, approvals or certificates are mentioned in Part-FCL, these are meant to be licences, ratings, approvals or certificates issued in accordance with Part-FCL. In all other cases these documents are specified as e.g. ICAO or national licences.
2. Whenever a reference is made to Member State for the purpose of mutual recognition of licences, ratings, approvals or certificates, this means an European Union Member State and States associated to EASA in accordance with article 55 of the Basic Regulation.

B. Definitions

Airmanship

The consistent use of good judgement and well-developed knowledge, skills and attitudes to accomplish flight objectives.

Competency element

An action that constitutes a task that has a triggering event and a terminating event that clearly defines its limits, and an observable outcome.

Competency unit

A discrete function consisting of a number of competency elements.

Credit

Recognition of alternative means or prior qualifications.

Error

An action or inaction by the flight crew that leads to deviations from organizational or flight intentions or expectations.

Error management

The process of detecting and responding to errors with countermeasures that reduce or eliminate the consequences of errors, and mitigate the probability of errors or undesired aircraft states.

Instrument time

Instrument flight time or instrument ground time.

Multi-pilot operation

An operation approved by the Authority requiring at least two pilots using multi-crew co-operation on multi-pilot helicopters.

Other training devices

Training aids other than flight simulators, flight training devices or flight and navigation procedures trainers which provide means for training where a complete flight deck environment is not necessary.

Performance criteria

A simple, evaluative statement on the required outcome of the competency element and a description of the criteria used to judge if the required level of performance has been achieved.

Private pilot

A pilot who holds a licence which prohibits the piloting of aircraft in operations for which remuneration is given.

Proficiency checks

Demonstrations of skill to revalidate or renew ratings, and including such oral examination as the examiner may require.

Renewal (of e.g. a rating or approval)

The administrative action taken after a rating or approval has lapsed that renews the privileges of the rating or approval for a further specified period consequent upon the fulfilment of specified requirements.

Revalidation (of e.g. a rating or approval)

The administrative action taken within the period of validity of a rating or approval that allows the holder to continue to exercise the privileges of a rating or approval for a further specified period consequent upon the fulfilment of specified requirements.

Skill tests

Skill tests are demonstrations of skill for licence or rating issue, including such oral examination as the examiner may require.

Student pilot-in-command (SPIC)

Flight time during which the flight instructor will only observe the student acting as pilot-in-command and shall not influence or control the flight of the aircraft.

Threat

Events or errors that occur beyond the influence of the flight crew, increase operational complexity and which must be managed to maintain the margin of safety.

Threat management

The process of detecting and responding to the threats with countermeasures that reduce or eliminate the consequences of threats, and mitigate the probability of errors or undesired aircraft states.

C. Abbreviations

A	Aeroplane
A/C	Aircraft
AIS	Aeronautical Information Services
AMC	Acceptable Means of Compliance
AeMC	Aeromedical Centre

AME	Authorised Medical Examiner
As	Airship
ATC	Air Traffic Control
ATO	Approved Training Organisation
ATP	Airline Transport Pilot
ATPL	Airline Transport Pilot Licence
B	Balloon
BPL	Balloon Pilot Licence
CFI	Chief Flying Instructor
CGI	Chief Ground Instructor
CP	Co-pilot
CPL	Commercial Pilot Licence
CRE	Class Rating Examiner
CRI	Class Rating Instructor
CRM	Crew Resource Management
CQB	Central Question Bank
FCL	Flight Crew Licensing
FE	Flight Examiner
F/E	Flight Engineer
FI	Flight Instructor
FIE	Flight Instructor Examiner
FNPT	Flight and Navigation Procedures Trainer
FS	Flight Simulator
FTD	Flight Training Device
H	Helicopter
HPA	High Performance Aeroplane
HT	Head of Training
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
IR	Instrument Rating
IRE	Instrument Rating Examiner
IRI	Instrument Rating Instructor

LPL	Leisure Pilot Licence
LOFT	Line Orientated Flight Training
MCC	Multi Crew Co-operation
ME	Multi-engine
MEL	Minimum Equipment List
MEP	Multi-engine Piston
MET	Multi-engine Turbo-prop
MPA	Multi-pilot Aeroplane
MPL	Multi-crew Pilot Licence
MPH	Multi-pilot Helicopter
nm	Nautical Miles
OML	Operational Multi-crew Limitation
OSL	Operational Safety Pilot Limitation
OTD	Other Training Devices
PF	Pilot Flying
PIC	Pilot-In-Command
PICUS	Pilot-In-Command Under Supervision
PL	Powered-lift
PNF	Pilot Not Flying
PPL	Private Pilot Licence
R/T	Radiotelephony
SE	Single-engine
SEP	Single Engine Piston
SET	Single-engine Turbo-prop
SFE	Synthetic Flight Examiner
SFI	Synthetic Flight Instructor
SPA	Single-pilot Aeroplane
SPH	Single-pilot Helicopter
SPIC	Student Pilot-In-Command
SPL	Sailplane Pilot Licence
STD	Synthetic Training Devices
STI	Synthetic Training Instructor
TEM	Threat and Error Management

TMG	Touring Motor Glider
TR	Type Rating
TRE	Type Rating Examiner
TRI	Type Rating Instructor
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
ZFTT	Zero Flight Time Training

AMC to FCL.050

Recording of flight time

1. The record of the flights flown should contain at least the following information:

   1.1 Personal details - Name and address of the pilot;

   1.2 For each flight:

      a. Name of Pilot-in-command;

      b. Date of flight;

      c. Place and time of departure and arrival;

      d. Type, including make, model and variant, and registration of the aircraft;

      e. Indication if the aircraft is single engine or multi engine;

      f. Total time of flight;

      g. Accumulated total time of flight;

   1.3 For each flight simulator or FNPT session:

      a. Type and qualification number of the training device;

      b. Synthetic training device instruction;

      c. Date;

      d. Total time of session;

      e. Accumulated total time;

   1.4 Details on pilot function, namely pilot-in-command, including solo, student pilot-in-command and pilot in command under supervision time, co-pilot, dual, flight instructor or flight examiner;

   1.5 Operational conditions, namely if the operation takes place at night, or is conducted under instrument flight rules.

2. Logging of time

   2.1. Pilot-in-command flight time

      a. The holder of a licence may log as pilot-in-command time all of the flight time during which he is the pilot-in-command.

      b. The applicant for or the holder of a pilot licence may log as pilot-in-command time all solo flight time and flight time as student pilot-in-command provided that such SPIC time is countersigned by the instructor.

c. The holder of an instructor certificate may log as pilot-in-command all flight time during which he acts as an instructor in an aircraft..

d. The holder of an examiner's certificate may log as pilot-in-command all flight time during which he occupies a pilot's seat and acts as an examiner in an aircraft.

e. A co-pilot acting as pilot-in-command under supervision on an aircraft on which more than one pilot is required under the type certification of the aircraft or as required by Part-OPS provided such pilot-in-command time under supervision is countersigned by the pilot-in-command.

f. If the holder of a licence carries out a number of flights upon the same day returning on each occasion to the same place of departure and the interval between successive flights does not exceed thirty minutes, such series of flights may be recorded as a single entry.

2.2. Co-pilot flight time. The holder of a pilot licence occupying a pilot seat as co-pilot may log all flight time as co-pilot flight time on an aircraft on which more than one pilot is required under the type certification of the aircraft, or the regulations under which the flight is conducted.

2.3. Cruise relief co-pilot flight time. A cruise relief co-pilot pilot may log all flight time as co-pilot when occupying a pilot's seat.

2.4. Instruction time. A summary of all time logged by an applicant for a licence or rating as flight instruction, instrument flight instruction, instrument ground time, etc. may be logged if certified by the appropriately rated and/or authorised instructor from whom it was received.

2.5. PICUS (Pilot-in-command under supervision). Provided that the method of supervision is acceptable to the Authority, a co-pilot may log as PIC flight time flown as PICUS, when all of the duties and functions of PIC on that flight were carried out, such that the intervention of the PIC in the interest of safety was not required.

3. Format of the record.

Details of flights flown under commercial air transport may be recorded in a computerised format maintained by the operator. In this case an operator should make the records of all flights operated by the pilot, including differences and familiarisation training, available on request to the flight crew member concerned.

For other types of flight, the pilot should record the details of the flights flown in the following logbook format.

PILOT LOGBOOK

Holder's name

Holder's licence number

HOLDER'S ADDRESS:	
____________________ ____________________ ____________________	____________________ ____________________ ____________________ *[space for address change]*
____________________ ____________________ ____________________ *[space for address change]*	____________________ ____________________ ____________________ *[space for address change]*
____________________ ____________________ ____________________ *[space for address change]*	____________________ ____________________ ____________________ *[space for address change]*

1	2		3		4		5			6	7	8	
DATE (dd/mm/yy)	DEPARTURE		ARRIVAL		AIRCRAFT		SINGLE PILOT TIME		MULTI-PILOT TIME	TOTAL TIME OF FLIGHT	NAME PIC	LANDINGS	
	PLACE	*TIME*	*PLACE*	*TIME*	*MAKE, MODEL, VARIANT*	*REGISTRATION*	*SE*	*ME*				*DAY*	*NIGHT*
							TOTAL THIS PAGE						
							TOTAL FROM PREVIOUS PAGES						
							TOTAL TIME						

9				**10**								**11**				**12**
OPERATIONAL CONDITION TIME				PILOT FUNCTION TIME								SYNTHETIC TRAINING DEVICES SESSION				REMARKS AND ENDORSEMENTS
NIGHT		*IFR*		*PILOT-IN-COMMAND*		*CO-PILOT*		*DUAL*		*INSTRUCTOR*		*DATE (dd/mm/yy)*	*TYPE*	*TOTAL TIME OF SESSION*		
																I certify that the entries in this log are true.
TOTAL THIS PAGE																______________________
TOTAL FROM PREVIOUS PAGES																**PILOT'S SIGNATURE**
TOTAL TIME																

INSTRUCTIONS FOR USE

1. FCL.050 requires holders of a pilot licence to record details of all flights flown. This logbook enables pilot licence holders to record flying experience in a manner which will facilitate this process while providing a permanent record of the licence holders flying. Pilots who fly regularly aeroplanes and helicopters or other aircraft types are recommended to maintain separate logbooks for each type of flying.

2. Flight crew logbook entries should be made as soon as practicable after any flight undertaken. All entries in the logbook should be made in ink or indelible pencil.

3. The particulars of every flight in the course of which the holder of a flight crew licence acts as a member of the operating crew of an aircraft are to be recorded in the appropriate columns using one line for each flight, provided that if an aircraft carries out a number of flights upon the same day returning on each occasion to the same place of departure and the interval between successive flights does not exceed thirty minutes, such series of flights may be recorded as a single entry.

4. Flight time is recorded:

   (i) for aeroplanes, touring motor gliders and powered lift, from the moment an aircraft first moves for the purpose of taking off until the moment it finally comes to rest at the end of the flight.

   (ii) for helicopters, from the moment a helicopter's rotor blades start turning until the moment the helicopter finally comes to rest at the end of the flight, and the rotor blades are stopped.

   (iii) for airships, from the moment an airship is released from the mast for the purpose of taking off until the moment the airship finally comes to rest at the end of the flight, and is secured on the mast;

5. When an aircraft carries two or more pilots as members of the operating crew, one of them shall, before the flight commences, be designated by the operator as the aircraft pilot-in-command, in accordance with Part-OPS, who may delegate the conduct of the flight to another suitable qualified pilot. All flying carried out as pilot-in-command is entered in the log book as 'pilot-in-command'. A pilot flying as 'pilot-in-command under supervision' or 'student pilot-in-command' enters flying times as 'pilot-in-command' but all such are certified by the pilot-in-command or flight instructor in the 'Remarks' column of the logbook.

6. **Notes on recording of flight time:**

   - Column 1: enter date (dd/mm/yy) on which the flight commences.
   - Column 2/3: enter place of departure and destination either in full or the internationally recognised three or four letter designator. All times should be UTC.
   - Column 5: Indicate whether the operation was single or multi-pilot, and for single-pilot operation whether single or multi-engine.

Example:

1	**2**		**3**		**4**		**5**				**6**		**7**	**8**	
DATE (dd/mm/yy)	DEPARTURE		ARRIVAL		AIRCRAFT		SINGLE PILOT TIME		MULTI-PILOT TIME		TOTAL TIME OF FLIGHT		NAME PIC	LANDINGS	
	PLACE	*TIME*	*PLACE*	*TIME*	*MAKE, MODEL, VARIANT*	*REGISTRATION*	*SE*	*ME*						*DAY*	*NIGHT*
14/11/98	LFAC	1025	EGBJ	1240	PA34-250	G-SENE		✓			2	15	SELF	1	
15/11/98	EGBJ	1810	EGBJ	1930	C152	G-NONE	✓				1	20	SELF		2
22/11/98	LGW	1645	LAX	0225	B747-400	G-ABCD			9	40	9	40	SPEAKIN		1

- Column 6: total time of flight may be entered in hours and minutes or decimal notation as desired.
- Column 7: enter name of pilot-in-command or SELF as appropriate.
- Column 8: indicate number of landings as pilot flying by day and/or night.
- Column 9: enter flight time undertaken at night or under instrument flight rules if applicable.
- Column 10: Pilot function time:
  - enter flight time as pilot-in-command (PIC), student pilot-in-command (SPIC) and pilot-in-command under supervision (PICUS) as PIC.
  - all time recorded as SPIC or PICUS is countersigned by the aircraft pilot-in-command/flight instructor in the Remarks (column 12).
  - instructor time should be recorded as appropriate and also entered as PIC.
- Column 11: Flight Simulator (FS) or Flight Navigation Procedures Trainer (FNPT):
  - for FS enter type of aircraft and qualification number of the device. For other flight training devices enter either FNPT I or FNPT II as appropriate.

Total time of session includes all exercises carried out in the device, including pre- and after-flight checks.

Enter type of exercise performed in the Remarks (column 12), e.g. operator proficiency check, revalidation.

- Column 12: the Remarks column may be used to record details of the flight at the holder's discretion. The following entries, however, should always be made:

    - instrument flight time undertaken as part of training for a licence or rating
    - details of all skill tests and proficiency checks
    - signature of PIC if the pilot is recording flight time as SPIC or PICUS
    - signature of instructor if flight is part of a single-engine piston or touring motor glider class rating revalidation

7. When each page is completed, accumulated flight times should be entered in the appropriate columns and certified by the pilot in the Remarks column.

Example:

9				**10**								**11**				**12**
OPERATIONAL CONDITION TIME				PILOT FUNCTION TIME								SYNTHETIC TRAINING DEVICES SESSION				REMARKS AND ENDORSEMENTS
NIGHT		*IFR*		*PILOT-IN-COMMAND*		*CO-PILOT*		*DUAL*		*INSTRUCTOR*		*DATE (dd/mm/yy)*	*TYPE*	*TOTAL TIME OF SESSION*		
		2	15	2	15											
1	20			1	20					1	20					Night rating training (A L Pilot)
												20/11/98	B747-400 (Q1234)	4	10	Revalidation Prof Check
8	10	9	40	9	40											PIC(US) C Speaking

AMC No 1 to FCL.055

Language proficiency

1. The language proficiency assessment should be designed to reflect a range of tasks undertaken by pilots but with the specific focus on language rather than operational procedures.

2. The assessment should determine the applicant's ability to:

   - communicate effectively using standard radiotelephony phraseology; and
   - deliver and understand messages in plain language in both usual and unusual situations that necessitate departure from standard radiotelephony phraseology.

Refer to the 'Manual on the Implementation of ICAO Language Proficiency Requirements' (ICAO Doc 9835), Appendix A Part III and Appendix B for further guidance.

ASSESSMENT

3. The assessment may be subdivided into three elements, as follows:

   i. Listening – assessment of comprehension

   ii. Speaking – assessment of pronunciation, fluency, structure and vocabulary

   iii. Interaction

   3.1 The three elements mentioned above may be combined and they can be covered by using a wide variety of means/technologies.

   3.2 Where appropriate, some or all of these elements may be achieved through the use of the radiotelephony testing arrangements.

   3.3 When the elements of the testing are assessed separately, the final assessment should be consolidated in the language proficiency endorsement issued by the Authority.

   3.4 The assessment may be conducted during one of the several existing checking or training activities, such as licence issue or rating issue and revalidation, line training, operator line checks or proficiency checks.

4. The Authority may use its own resources in developing or conducting the language proficiency assessment, or may delegate this task to language assessment bodies.

5. The Authority should establish an appeal procedure for applicants.

6. The licence holder should receive a statement containing the level and validity of the language endorsements

7 Where the assessment method for English language established by the competent authority are equivalent to those established for the assessment of use of English language in accordance with AMC No 2 to FCL.055, the same assessment may be used for both purposes.

BASIC ASSESSMENT REQUIREMENTS

7. The aim of the assessment is to determine the ability of an applicant for a pilot licence or a licence holder to speak and understand the language used for radiotelephony communications.

   7.1 The assessment should determine the ability of the applicant to use both:

   - standard radiotelephony phraseology; and
   - plain language, in situations when standardised phraseology cannot serve an intended transmission.

   7.2 The assessment should include:

   - voice-only and/or face-to face situations
   - common, concrete and work-related topics for pilots.

7.3 The applicants should demonstrate their linguistic ability in dealing with an unexpected turn of events, and in solving apparent misunderstandings.

7.4 The assessment should determine the applicant's speaking and listening abilities. Indirect assessments, of grammatical knowledge, reading and writing, are not appropriate.

7.5 The assessment should determine the language skills of the applicant in the following areas:

a. Pronunciation:

- the extent to which the pronunciation, stress, rhythm and intonation are influenced by the applicant's first language or national variations; and
- how much they interfere with ease of understanding.

b. Structure:

- the ability of the applicant to use both basic and complex grammatical structures; and
- the extent to which the applicant's errors interfere with the meaning.

c. Vocabulary:

- the range and accuracy of the vocabulary used; and
- the ability of the applicant to paraphrase successfully when lacking vocabulary

d. Fluency:

- tempo
- hesitancy
- rehearsed versus spontaneous speech
- use of discourse markers and connectors

e. Comprehension:

- on common, concrete and work-related topics; and
- when confronted with a linguistic or situational complication or an unexpected turn of events,

NOTE: The accent or variety of accents used in the test material should be sufficiently intelligible for an international community of users.

f. Interactions

- quality of response (immediate, appropriate, and informative)
- the ability to initiate and maintain exchanges:
  - on common, concrete and work-related topics; and
  - when dealing with an unexpected turn of events
- the ability to deal with apparent misunderstandings by checking, confirming or clarifying.

NOTE: The assessment of the language skills in the areas mentioned above is conducted using the Rating Scale bellow.

7.6 When the assessment is not conducted in a face-to-face situation, it should use appropriate technologies for the assessment of the applicant's abilities in listening and speaking, and for enabling interactions (for example: simulated pilot/controller communication).

ASSESSORS

8. It is essential that the persons responsible for language proficiency assessment ('assessors') are suitably trained and qualified. They should be either aviation specialists (i.e. current or

former flight crew members or air traffic controllers), or language specialists with additional aviation-related training. An alternative approach would be to form an assessment team consisting of an operational expert and a language expert.

8.1 The assessors should be trained on the specific requirements of the assessment.

8.2 Assessors should not test applicants to whom they have given language training.

CRITERIA FOR THE ACCEPTABILITY OF LANGUAGE ASSESSMENT BODIES

9. In order to ensure an impartial assessment process, the language assessment should be independent of the language training.

9.1 In order to be accepted, the language assessment bodies should demonstrate:

a. Appropriate management and staffing, and

b. Quality System established and maintained to ensure compliance with, and adequacy of, assessment requirements, standards and procedures.

9.2 The Quality system established by a language assessment body should address the following:

a. Management

b. Policy and strategy

c. Processes

d. The relevant provisions of ICAO / JAR-FCL, standards and assessment procedures

e. Organisational structure

f. Responsibility for the development, establishment and management of the Quality System

g. Documentation

h. Quality Assurance Programme

i. Human Resources and training (initial, recurrent)

j. Assessment requirements

k. Customer satisfaction

9.3 The assessment documentation and records should be kept for a period of time determined by the Authority and made available to the Authority, on request.

9.4 The assessment documentation should include at least the following:

a. Assessment objectives

b. Assessment layout, time scale, technologies used, assessment samples, voice samples

c. Assessment criteria and standards (at least for the levels 4, 5 and 6 of the Rating Scale bellow)

d. Documentation demonstrating the assessment validity, relevance and reliability

e. Assessment procedures and responsibilities

- Preparation of individual assessment
- Administration: location(s), identity check and invigilation, assessment discipline, confidentiality/security
- Reporting and documentation provided to the Authority and/or to the applicant, including sample certificate
- Retention of documents and records

NOTE: Refer to the 'Manual on the Implementation of ICAO Language Proficiency Requirements' (ICAO Doc 9835) for further guidance.

Language Proficiency Rating Scale

LEVEL	PRONUNCIATION	STRUCTURE	VOCABULARY	FLUENCY	COMPREHENSION	INTERACTIONS
	Assumes a dialect and/or accent intelligible to the aeronautical community	Relevant grammatical structures and sentence patterns are determined by language functions appropriate to the task				
Expert (Level 6)	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.	Both basic and complex grammatical structures and sentence patterns are consistently well controlled.	Vocabulary range and accuracy are sufficient to communicate effectively on a wide variety of familiar and unfamiliar topics. Vocabulary is idiomatic, nuanced and sensitive to register.	Able to speak at length with a natural, effortless flow. Varies speech flow for stylistic effect, e.g. to emphasize a point. Uses appropriate discourse markers and connectors spontaneously	Comprehension is consistently accurate in nearly all contexts and includes comprehension of linguistic and cultural subtleties.	Interacts with ease in nearly all situations. Is sensitive to verbal and non-verbal cues, and responds to them appropriately.
Extended (Level 5)	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Basic grammatical structures and sentence patterns are consistently well controlled. Complex structures are attempted but with errors which sometimes interfere with meaning.	Vocabulary range and accuracy are sufficient to communicate effectively on common, concrete, and work related topics. Paraphrases consistently and successfully. Vocabulary is sometimes idiomatic.	Able to speak at length with relative ease on familiar topics, but may not vary speech flow as a stylistic device. Can make use of appropriate discourse markers or connectors.	Comprehension is accurate on common, concrete, and work related topics and mostly accurate when the speaker is confronted with a linguistic or situational complication or an unexpected turn of events. Is able to comprehend a range of speech varieties (dialect and/or accent) or registers.	Responses are immediate, appropriate, and informative. Manages the speaker/listener relationship effectively.
Operational (Level 4)	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Basic grammatical structures and sentence patterns are used creatively and are usually well controlled. Errors may occur, particularly in unusual or unexpected circumstances,	Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete, and work related topics. Can often paraphrase successfully	Produces stretches of language at an appropriate tempo. There may be occasional loss of fluency on transition from rehearsed or formulaic speech to spontaneous interaction, but	Comprehension is mostly accurate on common, concrete, and work related topics when the accent or variety used is sufficiently intelligible for an international community of users.	Responses are usually immediate, appropriate, and informative. Initiates and maintains exchanges even when dealing with an unexpected turn of events. Deals adequately with

LEVEL	PRONUNCIATION	STRUCTURE	VOCABULARY	FLUENCY	COMPREHENSION	INTERACTIONS
	Assumes a dialect and/or accent intelligible to the aeronautical community	Relevant grammatical structures and sentence patterns are determined by language functions appropriate to the task				
		but rarely interfere with meaning.	when lacking vocabulary particularly in unusual or unexpected circumstances.	this does not prevent effective communication. Can make limited use of discourse markers and connectors. Fillers are not distracting.	When the speaker is confronted with a linguistic or situational complication or an unexpected turn of events, comprehension may be slower or require clarification strategies.	apparent misunderstandings by checking, confirming, or clarifying.
Pre-operational (Level 3)	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation and frequently interfere with ease of understanding.	Basic grammatical structures and sentence patterns associated with predictable situations are not always well controlled. Errors frequently interfere with meaning.	Vocabulary range and accuracy are often sufficient to communicate effectively on common, concrete, and work related topics but range is limited and the word choice often inappropriate. Is often unable to paraphrase successfully when lacking vocabulary.	Produces stretches of language, but phrasing and pausing are often inappropriate. Hesitations or slowness in language processing may prevent effective communication. Fillers are sometimes distracting.	Comprehension is often accurate on common, concrete, and work related topics when the accent or variety used is sufficiently intelligible for an international community of users. May fall to understand a linguistic or situational complication or an unexpected turn of events.	Responses are sometimes immediate, appropriate, and informative. Can initiate and maintain exchanges with reasonable ease on familiar topics and in predictable situations. Generally inadequate when dealing with an unexpected turn of events.
Elementary (Level 2)	Pronunciation, stress, rhythm, and intonation are heavily influenced by the first language or regional variation and usually interfere with ease of understanding.	Shows only limited control of few simple memorized grammatical structures and sentence patterns.	Limited vocabulary range consisting only of isolated words and memorized phrases.	Can produce very short, isolated, memorized utterances with frequent pausing and a distracting use of filers to search for expressions and articulate less familiar words.	Comprehension is limited to isolated, memorized phrases when they are carefully and slowly articulated.	Response time is slow, and often inappropriate. Interaction is limited to simple routine exchanges.
Pre-elementary (Level 1)	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.	Performs at a level below the Elementary level.

NOTE: The Operational Level (Level 4) is the minimum required proficiency level for radiotelephony communication.

Levels 1 through 3 describe Pre-elementary, Elementary and Pre-operational levels of language proficiency respectively, all of which describe a level below the language proficiency requirement.

Levels 5 and 6 describe Extended and Expert levels at levels of proficiency more advanced than the minimum required standard.

AMC No 2 to FCL.055

Language proficiency – Specific requirements for holders of an IR

USE OF ENGLISH LANGUAGE

1. The requirement of FCL.055(d) includes the ability to use the English language for the following purposes:

   (a) flight:

   Radio telephony relevant to all phases of flight, including emergency situations.

   (b) ground:

   All information relevant to the accomplishment of a flight, e.g.

   * be able to read and demonstrate an understanding of technical manuals written in English, e.g. an Operations Manual, a Helicopter Flight Manual, etc.
   * pre-flight planning, weather information collection, NOTAMs, ATC Flight Plan, etc.
   * use of all aeronautical en-route, departure and approach charts and associated documents written in English.

   (c) communication:

   Be able to communicate with other crew members in English during all phases of flight, including flight preparation.

2. Alternatively, the items in 1. above may be demonstrated:

   2.1 By having passed a specific examination given by the Authority after having undertaken a course of training enabling the applicant to meet all the objectives listed in 1(a), (b) and (c) above; or

   2.2. The item in 1.(a) above is considered to be fulfilled, if the applicant has passed an IR, MPL or ATPL skill test or proficiency check during which the two-way radiotelephony communication is performed in English.

   2.3 The item in 1.(b) above is considered to be fulfilled if the applicant has graduated from a IR, MPL or ATP course given in English or if he/she has passed the theoretical IR or ATPL examination in English;

   2.4 The item in (c) above is considered to be fulfilled, if the applicant for or the holder of an IR has graduated from a MCC course given in English and is holding a certificate of satisfactory completion of that course in accordance or if he has passed a multi-pilot skill test/proficiency check for the issue of a class or type rating during which the two-way radiotelephony communication and the communication with other crew members are performed in English.

3. Where the examination methods referred above meet are equivalent to those established for the language proficiency requirements in accordance with AMC No 1 to

FCL.055, the examination may be used for the purpose of issuing a Language Proficiency endorsement.

AMC to FCL.060(b)(4)

Recent experience – non-complex helicopters

Grouping of non-complex helicopters with similar handling and operational characteristics:

- Group 1: Bell 206/206L, Bell 407;
- Group 2: Hughes 369, MD 500N, MD 520N, MD 600;
- Group 3: SA 341/342, EC 120, EC 130;
- Group 4: SA 313/318, SA 315/316/319, AS 350;
- Group 5: all types listed in Appendix 11 to Part-FCL, R22, R44.

SUBPART B
LEISURE PILOT LICENCE – LPL

AMC to FCL.115 and FCL.120

SYLLABUS OF THEORETICAL KNOWLEDGE FOR THE LEISURE PILOT LICENCE

The following tables contain the syllabi for the courses of theoretical knowledge, as well as for the theoretical knowledge examinations for the LPL. The training and examination should cover aspects related to non-technical skills in an integrated manner, taking into account the particular risks associated to the licence and the activity.

I. COMMON SUBJECTS

(FOR BASIC LPL, LPL(A), LPL(H), LPL(S) AND LPL(B))

1.	**AIR LAW AND ATC PROCEDURES**
1.1.	INTERNATIONAL LAW: CONVENTIONS, AGREEMENTS AND ORGANISATIONS
1.2.	AIRWORTHINESS OF AIRCRAFT
1.3.	AIRCRAFT NATIONALITY AND REGISTRATION MARKS
1.4.	PERSONNEL LICENSING
1.5.	RULES OF THE AIR
1.6.	PROCEDURES FOR AIR NAVIGATION – AIRCRAFT OPERATIONS
1.7.	AIR TRAFFIC REGULATIONS – AIRSPACE STRUCTURE
1.8.	AIR TRAFFIC SERVICES AND AIR TRAFFIC MANAGEMENT
1.9.	AIR TRAFFIC REGULATIONS – AIRSPACE STRUCTURE
1.10.	AERONAUTICAL INFORMATION SERVICE
1.11.	AERODROMES, EXTERNAL TAKE OFF SITES
1.12.	SEARCH AND RESCUE
1.13.	SECURITY
1.14.	ACCIDENT REPORTING
1.15.	NATIONAL LAW
2.	**HUMAN PERFORMANCE**
2.1.	HUMAN FACTORS: BASIC CONCEPTS
2.2.	BASIC AVIATION PHYSIOLOGY AND HEALTH MAINTENANCE
2.3.	BASIC AVIATION PSYCHOLOGY
3.	**EOROLOGY**
3.1.	THE ATMOSPHERE
3.2.	WIND
3.3.	THERMODYNAMICS
3.4.	CLOUDS AND FOG
3.5.	PRECIPITATION
3.6.	AIR MASSES AND FRONTS
3.7.	**19. PRESSURE SYSTEMS**

3.8.	CLIMATOLOGY
3.9.	FLIGHT HAZARDS
3.10.	METEOROLOGICAL INFORMATION
4.	**COMMUNICATIONS**
4.1.	VFR COMMUNICATIONS
4.2.	DEFINITIONS
4.3.	GENERAL OPERATING PROCEDURES
4.4.	RELEVANT WEATHER INFORMATION TERMS (VFR)
4.5.	ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE
4.6.	DISTRESS AND URGENCY PROCEDURES
4.7.	GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES

II. ADDITIONAL SUBJECTS FOR EACH CATEGORY

II.A. AEROPLANES

5.	**PRINCIPLES OF FLIGHT**
5.1.	SUBSONIC AERODYNAMICS
5.2.	STABILITY
5.3.	CONTROL
5.4.	LIMITATIONS
5.5.	PROPELLERS
5.6.	FLIGHT MECHANICS
6.	**OPERATIONAL PROCEDURES - AEROPLANE**
6.1.	GENERAL REQUIREMENTS
6.2.	SPECIAL OPERATIONAL PROCEDURES AND HAZARDS (GENERAL ASPECTS)
6.3.	EMERGENCY PROCEDURES
7.	**FLIGHT PERFORMANCE AND PLANNING - AEROPLANES**
7.1.	MASS AND BALANCE - AEROPLANES
7.1.2.	PURPOSE OF MASS AND BALANCE CONSIDERATIONS
7.1.3.	LOADING
7.1.4.	FUNDAMENTALS OF CG CALCULATIONS
7.1.5.	MASS AND BALANCE DETAILS OF AIRCRAFT
7.1.6.	DETERMINATION OF CG POSITION
7.2.	PERFORMANCE – AEROPLANES
7.2.1.	GENERAL
7.2.2.	SINGLE-ENGINE AEROPLANES
7.3.	FLIGHT PLANNING AND FLIGHT MONITORING

7.3.1.	FLIGHT PLANNING FOR VFR FLIGHTS
7.3.2.	FUEL PLANNING
7.3.3.	PRE-FLIGHT PREPARATION
7.3.4.	ICAO FLIGHT PLAN (ATS Flight Plan)
7.3.5.	FLIGHT MONITORING AND IN-FLIGHT RE-PLANNING
8.	**AIRCRAFT GENERAL KNOWLEDGE – AIRFRAME AND SYSTEMS, ELECTRICS, POWERPLANT, EMERGENCY EQUIPMENT**
8.1.1.	SYSTEM DESIGN, LOADS, STRESSES, MAINTENANCE
8.1.2.	AIRFRAME
8.1.3.	HYDRAULICS
8.1.4.	LANDING GEAR, WHEELS, TYRES, BRAKES
8.1.5.	FLIGHT CONTROLS
8.1.6.	ANTI-ICING SYSTEMS
8.1.7.	FUEL SYSTEM
8.1.8.	ELECTRICS
8.1.9.	PISTON ENGINES
8.2.	AIRCRAFT INSTRUMENTATION
8.2.1	SENSORS AND INSTRUMENTS
8.2.2.	MEASUREMENT OF AIR DATA PARAMETERS
8.2.3.	MAGNETISM – DIRECT READING COMPASS
8.2.4.	GYROSCOPIC INSTRUMENTS
8.2.5.	COMMUNICATION SYSTEMS
8.2.6.	ALERTING SYSTEMS, PROXIMITY SYSTEMS
8.2.7.	INTEGRATED INSTRUMENTS – ELECTRONIC DISPLAYS
9.	**NAVIGATION - AEROPLANE**
9.1.	GENERAL NAVIGATION
9.2.	BASICS OF NAVIGATION
9.3.	MAGNETISM AND COMPASSES
9.4.	CHARTS
9.5.	DEAD RECKONING NAVIGATION (DR)
9.6.	IN-FLIGHT NAVIGATION
9.7.	RADIO NAVIGATION (BASICS)
9.7.1.	BASIC RADIO PROPAGATION THEORY
9.7.2.	RADIO AIDS
9.7.3.	RADAR

9.7.4.	GLOBAL NAVIGATION SATELLITE SYSTEMS

II.B. HELICOPTERS

5.	**PRINCIPLES OF FLIGHT - HELICOPTERS**
5.1.	SUBSONIC AERODYNAMICS
5.2.	TRANSONIC AERODYNAMICS and COMPRESSIBILITY EFFECTS
5.3.	ROTORCRAFT TYPES
5.4.	MAIN ROTOR AERODYNAMICS
5.5.	MAIN ROTOR MECHANICS
5.6.	TAIL ROTORS
5.7.	EQUILIBRIUM, STABILITY AND CONTROL
5.8.	HELICOPTER PERFORMANCES

6.	**OPERATIONAL PROCEDURES - HELICOPTER**
6.1.	GENERAL REQUIREMENTS
6.2.	SPECIAL OPERATIONAL PROCEDURES AND HAZARDS (GENERAL ASPECTS)
6.3.	EMERGENCY PROCEDURES
7.	**FLIGHT PERFORMANCE AND PLANNING - HELICOPTER**
7.1.	MASS AND BALANCE - HELICOPTERS
7.1.1.	PURPOSE OF MASS AND BALANCE CONSIDERATIONS
7.1.2.	LOADING
7.1.3.	FUNDAMENTALS OF CG CALCULATIONS
7.1.4.	MASS AND BALANCE DETAILS OF AIRCRAFT
7.1.5.	DETERMINATION OF CG POSITION
7.2.	PERFORMANCE – HELICOPTERS
7.2.1.	GENERAL
7.2.2.	SINGLE-ENGINE HELICOPTERS
7.3.	FLIGHT PLANNING AND FLIGHT MONITORING
7.3.1.	FLIGHT PLANNING FOR VFR FLIGHTS
7.3.2.	FUEL PLANNING
7.3.3.	PRE-FLIGHT PREPARATION
7.3.4.	ICAO FLIGHT PLAN (ATS Flight Plan)
7.3.5.	FLIGHT MONITORING AND IN-FLIGHT RE-PLANNING
8.	**AIRCRAFT GENERAL KNOWLEDGE – AIRFRAME AND SYSTEMS, ELECTRICS, POWERPLANT, EMERGENCY EQUIPMENT**
8.1.1.	SYSTEM DESIGN, LOADS, STRESSES, MAINTENANCE
8.1.2.	AIRFRAME

8.1.3.	HYDRAULICS
8.1.4.	LANDING GEAR, WHEELS, TYRES, BRAKES
8.1.5.	FLIGHT CONTROLS
8.1.6.	ANTI-ICING SYSTEMS
8.1.7.	FUEL SYSTEM
8.1.8.	ELECTRICS
8.1.9.	PISTON ENGINES
8.1.10.	TURBINE ENGINES
8.1.11.	PROTECTION AND DETECTION SYSTEMS
8.1.12.	MISCELLANEOUS SYSTEMS
8.1.13.	ROTOR HEADS
8.1.14.	TRANSMISSION
8.1.15.	BLADES
8.2.	AIRCRAFT INSTRUMENTATION
8.2.1	INSTRUMENT AND INDICATION SYSTEMS
8.2.2.	MEASUREMENT OF AERODYNAMIC PARAMETERS
8.2.3.	MAGNETISM – DIRECT READING COMPASS
8.2.4.	GYROSCOPIC INSTRUMENTS
8.2.5.	COMMUNICATION SYSTEMS
8.2.6.	ALERTING SYSTEMS, PROXIMITY SYSTEMS
8.2.7.	INTEGRATED INSTRUMENTS – ELECTRONIC DISPLAYS
9.	**NAVIGATION - HELICOPTER**
9.1.	GENERAL NAVIGATION
9.2.	BASICS OF NAVIGATION
9.3.	MAGNETISM AND COMPASSES
9.4.	CHARTS
9.5.	DEAD RECKONING NAVIGATION (DR)
9.6.	INFLIGHT NAVIGATION
9.7.	RADIO NAVIGATION (BASICS)
9.7.1.	BASIC RADIO PROPAGATION THEORY
9.7.2.	RADIO AIDS
9.7.3.	RADAR
9.7.4.	GLOBAL NAVIGATION SATELLITE SYSTEMS

II.C. SAILPLANES

5.	**PRINCIPLES OF FLIGHT - SAILPLANE**
5.1.	AERODYNAMICS (AIRFLOW)

5.2.	FLIGHT MECHANICS
5.3.	STABILITY
5.4.	CONTROL
5.5.	LIMITATIONS (LOAD FACTOR AND MANOEUVRES)
5.6.	STALLING AND SPINNING
6.	**OPERATIONAL PROCEDURES - SAILPLANE**
6.1.	GENERAL REQUIREMENTS
6.2.	LAUNCH METHODS
6.3.	SOARING TECHNIQUES
6.4.	CIRCUITS AND LANDING
6.5.	OUTLANDING
6.6.	SPECIAL OPERATIONAL PROCEDURES AND HAZARDS)
6.7.	EMERGENCY PROCEDURES
7.	**FLIGHT PERFORMANCE AND PLANNING - SAILPLANE**
7.1.	VERIFYING MASS AND BALANCE
7.2.	SPEED POLAR OF SAILPLANES / CRUISING SPEED
7.3.	FLIGHT PLANNING AND TASK SETTING
7.4.	ICAO FLIGHT PLAN (ATS Flight Plan)
7.5.	FLIGHT MONITORING AND IN-FLIGHT RE-PLANNING
8.	**AIRCRAFT GENERAL KNOWLEDGE – AIRFRAME AND SYSTEMS, EMERGENCY EQUIPMENT**
8.1.	AIRFRAME
8.2.	SYSTEM DESIGN, LOADS, STRESSES
8.3.	LANDING GEAR, WHEELS, TYRES, BRAKES
8.4.	MASS AND BALANCE
8.5.	FLIGHT CONTROLS
8.6.	INSTRUMENTS
8.7.	MANUALS AND DOCU MENTS
8.8.	AIRWOTHINESS, MAINTENANCE
9.	**NAVIGATION - SAILPLANE**
9.1.	BASICS OF NAVIGATION
9.2.	MAGNETISM AND COMPASSES
9.3.	CHARTS
9.4.	DEAD RECKONING NAVIGATION (DR)
9.5.	IN-FLIGHT NAVIGATION
9.6.	GLOBAL NAVIGATION SATELLITE SYSTEMS

II.D. BALLOONS

5.	**PRINCIPLES OF FLIGHT - BALLOON**
5.1.	PRINCIPLES OF FLIGHT – BALLOONS
5.2.	AEROSTATICS
5.3.	LOADING LIMITATIONS
5.4.	OPERATIONAL LIMITATIONS
6.	**OPERATIONAL PROCEDURES - BALLOON**
6.1.	GENERAL REQUIREMENTS
6.2.	SPECIAL OPERATIONAL PROCEDURES AND HAZARDS (GENERAL ASPECTS)
6.3.	EMERGENCY PROCEDURES
7.	**FLIGHT PERFORMANCE AND PLANNING - BALLOON**
7.1.	MASS - BALLOONS
7.1.1.	PURPOSE OF MASS CONSIDERATIONS
7.1.2.	LOADING
7.2.	PERFORMANCE – BALLOONS
7.2.1.	GENERAL
7.3.	FLIGHT PLANNING AND FLIGHT MONITORING
7.3.1.	FLIGHT PLANNING - GENERAL
7.3.2.	FUEL PLANNING
7.3.3.	PRE-FLIGHT PREPARATION
7.3.4.	ICAO FLIGHT PLAN (ATS Flight Plan)
7.3.5.	FLIGHT MONITORING AND IN-FLIGHT RE-PLANNING
8.	**AIRCRAFT GENERAL KNOWLEDGE – ENVELOPE AND SYSTEMS, EMERGENCY EQUIPMENT**
8.1.	SYSTEM DESIGN, LOADS, STRESSES, MAINTENANCE
8.2.	ENVELOPE
8.3.	BURNER (HOT AIR BALLOON, HOT AIR AIRSHIP)
8.4.	FUEL CYLINDERS (HOT AIR BALLOON / - AIRSHIP)
8.5.	BASKET / GONDOLA
8.6.	LIFTING GAS (GAS BALLOON)
8.7.	BURNING GAS (HOT AIR BALLOON, - AIRSHIP)
8.8.	BALLAST (GAS BALLOON)
8.9.	ENGINE (HOT AIR AIRSHIP ONLY)
8.10.	INSTRUMENTS
8.11.	EMERGENCY EQUIPMENT
9.	**NAVIGATION - BALLOON**
9.1.	GENERAL NAVIGATION

9.2.	BASICS OF NAVIGATION
9.3.	MAGNETISM AND COMPASSES
9.4.	CHARTS
9.5.	DEAD RECKONING NAVIGATION (DR)
9.6.	IN-FLIGHT NAVIGATION
9.7.	GLOBAL NAVIGATION SATELLITE SYSTEMS

AMC to FCL.120 and FCL.125

Theoretical knowledge examination and skill test for the LPL

1. THEORETICAL KNOWLEDGE EXAMINATION

 1.1 The examinations should be in written form and should comprise a total of 120 multiple choice questions covering all the subjects.

 1.2 Communication practical classroom testing may be conducted.

 1.3 The competent authority should inform applicants of the language(s) in which the examinations will be conducted.

 1.4 The period of 18 months mentioned in FCL.025(b) should be counted from the end of the calendar month when the applicant first attempted an examination.

2. SKILL TEST

 2.1 Further training may be required following any failed skill test or part thereof. There should be no limit to the number of skill tests that may be attempted.

3. CONDUCT OF THE TEST

 3.1 If the applicant chooses to terminate a skill test for reasons considered inadequate by the flight examiner, the applicant should retake the entire skill test. If the test is terminated for reasons considered adequate by the flight examiner, only those sections not completed should be tested in a further flight.

 3.2 Any manoeuvre or procedure of the test may be repeated once by the applicant. The flight examiner may stop the test at any stage if it is considered that the applicant's demonstration of flying skill requires a complete retest.

 3.3 An applicant should be required to fly the aircraft from a position where the pilot-in-command functions can be performed and to carry out the test as if there is no other crew member. Responsibility for the flight should be allocated in accordance with national regulations.

AMC No 1 to FCL.125

Contents of the skill test for the issue of a Basic LPL(A) and a LPL(A)

1. The route to be flown for the skill test should be chosen by the flight examiner (FE). The route should end at the aerodrome of departure (Basic LPL(A)) or at another aerodrome (LPL(A)). The applicant should be responsible for the flight planning and should ensure that all equipment and documentation for the execution of the flight are on board. The navigation section of the test for the LPL(A) should have a duration of at least 30 minutes which allows the pilot to demonstrate his/her ability to complete a route with at least two identified waypoints and may, as agreed between applicant and FE, be flown as a separate test.

2. An applicant should indicate to the FE the checks and duties carried out, including the identification of radio facilities. Checks should be completed in accordance with the flight

manual and/or the authorised check list for the aeroplane or touring motor glider on which the test is being taken. During pre-flight preparation for the test the applicant should be required to determine power settings and speeds. Performance data for take-off, approach and landing should be calculated by the applicant in compliance with the operations manual or flight manual for the aeroplane / touring motor glider used.

FLIGHT TEST TOLERANCE

3. The applicant should demonstrate the ability to:

- operate the aeroplane / touring motor glider within its limitations;
- complete all manoeuvres with smoothness and accuracy;
- exercise good judgment and airmanship;
- apply aeronautical knowledge; and
- maintain control of the aeroplane / touring motor glider at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

4. The following limits are for general guidance. The FE should make allowance for turbulent conditions and the handling qualities and performance of the aeroplane / touring motor glider used.

Height	
normal flight	± 150 feet
with simulated engine failure	± 200 feet
Speed	
take-off and approach	+15/–5 knots
all other flight regimes	± 15 knots

5. Contents of the skill test for the issue of a Basic LPL(A)

SECTION 1 **PRE-FLIGHT OPERATIONS AND DEPARTURE**	
Use of checklist, airmanship (control of aeroplane by external visual reference, anti/de-icing procedures, etc.) apply in all sections.	
a	Pre-flight documentation and weather brief
b	Mass and balance and performance calculation
c	Aeroplane / touring motor glider inspection and servicing
d	Engine starting and after starting procedures
e	Taxiing and aerodrome procedures, pre take-off procedures
f	Take-off and after take-off checks
g	Aerodrome departure procedure
h	ATC liaison – compliance
SECTION 2 **GENERAL AIRWORK**	
a	ATC liaison – compliance

b	Straight and level flight, with speed changes
c	Climbing: i. Best rate of climb ii. Climbing turns iii. Levelling off
d	Medium (30° bank) turns, look out procedures and collision avoidance
e	Flight at critically low airspeed with and without flaps
f	Stalling: i. Clean stall and recover with power ii. Approach to stall descending turn with bank angle 20°, approach configuration iii. Approach to stall in landing configuration
g	Descending: i. With and without power ii. Descending turns (steep gliding turns) iii. Levelling off
	SECTION 3 **EN-ROUTE PROCEDURES**
a	Dead reckoning and map reading
b	Maintenance of altitude, heading and speed
c	Orientation, airspace structure,
d	Diversion to alternate aerodrome (planning and implementation)
e	Flight management (checks, fuel systems and carburettor icing, etc.) ATC liaison – compliance
	SECTION 4 **APPROACH AND LANDING PROCEDURES**
a	Aerodrome arrival procedure
b	Collision avoidance (look out procedures)
c	* Precision landing (short field landing), cross wind, if suitable conditions available
d	* Flapless landing (if applicable)
e	* Approach to landing with idle power
f	Touch and go
g	Go-around from low height
h	ATC liaison – compliance
i	Actions after flight
	SECTION 5

ABNORMAL AND EMERGENCY PROCEDURES	
This section may be combined with Sections 1 through 4.	
a	Simulated engine failure after take-off
b	* Simulated forced landing
c	* Simulated precautionary landing
d	Simulated emergencies
e	Oral questions

* These items may be combined, at the discretion of the FE.

6. Contents of the skill test for the issue of a LPL(A)

SECTION 1 PRE-FLIGHT OPERATIONS AND DEPARTURE	
Use of checklist, airmanship (control of aeroplane by external visual reference, anti/de-icing procedures, etc.) apply in all sections.	
a	Pre-flight documentation and weather brief
b	Mass and balance and performance calculation
c	Aeroplane / touring motor glider inspection and servicing
d	Engine starting and after starting procedures
e	Taxiing and aerodrome procedures, pre take-off procedures
f	Take-off and after take-off checks
g	Aerodrome departure procedures
h	ATC liaison – compliance
SECTION 2 GENERAL AIRWORK	
a	ATC liaison – compliance
b	Straight and level flight, with speed changes
c	Climbing: i. Best rate of climb ii. Climbing turns iii. Leveling off
d	Medium (30° bank) turns, look out procedures and collision avoidance
e	Steep (45° bank) turns
f	Flight at critically low airspeed with and without flaps
g	Stalling: i. Clean stall and recover with power ii. Approach to stall descending turn with bank angle 20°, approach configuration iii. Approach to stall in landing configuration

h	Descending: i. With and without power ii. Descending turns (steep gliding turns) iii. Levelling off
SECTION 3 **EN-ROUTE PROCEDURES**	
a	Flight plan, dead reckoning and map reading
b	Maintenance of altitude, heading and speed
c	Orientation, airspace structure, timing and revision of ETAs, log keeping
d	Diversion to alternate aerodrome (planning and implementation)
e	Flight management (checks, fuel systems and carburettor icing, etc.) ATC liaison – compliance
SECTION 4 **APPROACH AND LANDING PROCEDURES**	
a	Aerodrome arrival procedures
b	Collision avoidance (look out procedures)
c	* Precision landing (short field landing), cross wind, if suitable conditions available
d	* Flapless landing (if applicable)
e	* Approach to landing with idle power
f	Touch and go
g	Go-around from low height
h	ATC liaison – compliance
i	Actions after flight
SECTION 5 **ABNORMAL AND EMERGENCY PROCEDURES**	
This section may be combined with Sections 1 through 4.	
a	Simulated engine failure after take-off
b	* Simulated forced landing
c	Simulated precautionary landing
d	Simulated emergencies
e	Oral questions

* These items may be combined, at the discretion of the FE.

AMC No 2 to FCL.125

Contents of the skill test for the issue of a Basic LPL(H) and a LPL(H)

1. The area and route to be flown for the skill test should be chosen by the flight examiner (FE). The route should end at the aerodrome of departure (Basic LPL(H)) or at another aerodrome (LPL(H)). The applicant should be responsible for the flight planning and should ensure that all equipment and documentation for the execution of the flight are on board. The navigation section of the test for the LPL(H) should consist of at least two legs, each leg of a minimum duration of 10 minutes. The skill test may be conducted in 2 flights.
2. An applicant should indicate to the FE the checks and duties carried out, including the identification of radio facilities. Checks should be completed in accordance with the flight manual and/or the authorised check list or pilot operating handbook for the helicopter on which the test is being taken. During pre-flight preparation for the test the applicant should be required to determine power settings and speeds. Performance data for take-off, approach and landing should be calculated by the applicant in compliance with the operations manual or flight manual for the helicopter used.

FLIGHT TEST TOLERANCE

3. The applicant should demonstrate the ability to:
   - operate the helicopter within its limitations;
   - complete all manoeuvres with smoothness and accuracy;
   - exercise good judgment and airmanship;
   - apply aeronautical knowledge; and
   - maintain control of the helicopter at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.
4. The following limits are for general guidance. The FE should make allowance for turbulent conditions and the handling qualities and performance of the helicopter used.

Height	
normal forward flight	± 150 feet
with simulated major emergency	± 200 feet
hovering I.G.E. flight	± 2 feet
Speed	
take-off approach	– 10 knots/+15 knots
all other flight regimes	± 15 knots
Ground drift	
T.O. hover I.G.E.	± 3 feet
landing	no sideways or backwards movement

5. Contents of the skill test for the issue of a Basic LPL(H)

NOTE: Use of checklist, airmanship, control of helicopter by external visual reference, anti-icing procedures, etc., apply in all sections.

SECTION 1 PRE-FLIGHT/POST-FLIGHT CHECKS AND PROCEDURES	
a	Helicopter knowledge, (e.g. technical log, fuel, mass and balance, performance), Flight Planning, NOTAMS, Weather

b	Pre-flight inspection/action, location of parts and purpose
c	Cockpit inspection, Starting procedure
d	Communication and navigation equipment checks, selecting and setting frequencies
e	Pre-take-off procedure, ATC liaison
f	Parking, Shutdown and Post-flight procedure
SECTION 2 **HOVER MANOEUVRES, ADVANCED HANDLING AND CONFINED AREAS**	
a	Take-off and landing (lift off and touch down)
b	Taxi, hover taxi
c	Stationary hover with head/cross/tail wind
d	Stationary hover turns, 360º left and right (spot turns)
e	Forward, sideways and backwards hover manoeuvring
f	Simulated engine failure from the hover
g	Quick stops into and downwind
h	Take-offs (various profiles)
i	Crosswind, downwind take-off (if practicable)
j	Take-off at maximum take-off mass (actual or simulated)
k	Approaches (various profiles)
l	Limited power take-off and landing
m	Autorotations, (FE to select two items from - Basic, range, low speed, and 360º turns)
n	Autorotative landing
o	Practice forced landing with power recovery
p	Power checks, reconnaissance technique, approach and departure technique
SECTION 3 **NAVIGATION - EN ROUTE PROCEDURES**	
a	Navigation and orientation, map reading
b	Altitude/height, speed, heading control, observation of airspace, altimeter setting
c	Monitoring of flight progress, fuel usage, endurance, assessment of track error and reestablishment of correct track, instrument monitoring
d	Observation of weather conditions
e	Collision avoidance (look-out procedures)
f	ATC liaison
SECTION 4 **FLIGHT PROCEDURES AND MANOEUVRES**	
a	Level flight, control of heading, altitude/height and speed
b	Climbing and descending turns to specified headings
c	Level turns with up to 30ºbank, 180º to 360º left and right,
SECTION 5	

ABNORMAL AND EMERGENCY PROCEDURES (SIMULATED WHERE APPROPRIATE)	
Note: The FE selects 4 items from the following:	
a	Engine malfunctions, including governor failure, carburettor/engine icing, oil system, as appropriate
b	Fuel system malfunction
c	Electrical system malfunction
d	Hydraulic system malfunction, including approach and landing without hydraulics, as applicable
e	Main rotor and/or anti-torque system malfunction (flight simulator or discussion only)
f	Fire drills, including smoke control and removal, as applicable
g	Other abnormal and Emergency procedures as outlined in appropriate flight manual

6. Contents of the skill test for the issue of a LPL(H)

NOTE: Use of checklist, airmanship, control of helicopter by external visual reference, anti-icing procedures, etc., apply in all sections.

SECTION 1 PRE-FLIGHT/POST-FLIGHT CHECKS AND PROCEDURES	
a	Helicopter knowledge, (e.g. technical log, fuel, mass and balance, performance), Flight Planning, NOTAMS, Weather
b	Pre-flight inspection/action, location of parts and purpose
c	Cockpit inspection, Starting procedure
d	Communication and navigation equipment checks, selecting and setting frequencies
e	Pre-take-off procedure, ATC liaison
f	Parking, Shutdown and Post-flight procedure
SECTION 2 HOVER MANOEUVRES, ADVANCED HANDLING AND CONFINED AREAS	
a	Take-off and landing (lift off and touch down)
b	Taxi, hover taxi
c	Stationary hover with head/cross/tail wind
d	Stationary hover turns, 360º left and right (spot turns)
e	Forward, sideways and backwards hover manoeuvring
f	Simulated engine failure from the hover
g	Quick stops into and downwind
h	Sloping ground/unprepared sites landings and take-offs
I	Take-offs (various profiles)
j	Crosswind, downwind take-off (if practicable)
k	Take-off at maximum take-off mass (actual or simulated)

l	Approaches (various profiles)
m	Limited power take-off and landing
n	Autorotations, (FE to select two items from - Basic, range, low speed, and 360º turns)
o	Autorotative landing
p	Practice forced landing with power recovery
q	Power checks, reconnaissance technique, approach and departure technique
SECTION 3 NAVIGATION - EN ROUTE PROCEDURES	
a	Navigation and orientation at various altitudes / heights, map reading
b	Altitude/height, speed, heading control, observation of airspace, altimeter setting
c	Monitoring of flight progress, flight-log, fuel usage, endurance, ETA, assessment of track error and reestablishment of correct track, instrument monitoring
d	Observation of weather conditions, diversion planning
e	Collision avoidance (look-out procedures)
f	ATC liaison and observance of regulations, etc.
SECTION 4 FLIGHT PROCEDURES AND MANOEUVRES	
a	Level flight, control of heading, altitude/height and speed
b	Climbing and descending turns to specified headings
c	Level turns with up to 30ºbank, 180º to 360º left and right
SECTION 5 ABNORMAL AND EMERGENCY PROCEDURES (SIMULATED WHERE APPROPRIATE)	
Note: The FE selects 4 items from the following:	
a	Engine malfunctions, including governor failure, carburettor/engine icing, oil system, as appropriate
b	Fuel system malfunction
c	Electrical system malfunction
d	Hydraulic system malfunction, including approach and landing without hydraulics, as applicable
e	Main rotor and/or anti-torque system malfunction (flight simulator or discussion only)
f	Fire drills, including smoke control and removal, as applicable
g	Other abnormal and Emergency procedures as outlined in appropriate flight manual

AMC No 1 to FCL.125 and to FCL.235

Contents of the skill test for the issue of a LPL(S) and of an SPL

1. The applicant should be responsible for the flight planning and should ensure that all equipment and documentation for the execution of the flight are on board.

2. An applicant should indicate to the FE the checks and duties carried out. Checks should be completed in accordance with the flight manual and/or the authorised check list for the sailplane on which the test is being taken.

FLIGHT TEST TOLERANCE

3. The applicant should demonstrate the ability to:
   - operate the sailplane within its limitations;
   - complete all manoeuvres with smoothness and accuracy;
   - exercise good judgment and airmanship;
   - apply aeronautical knowledge; and
   - maintain control of the sailplane at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

SECTION 1 **PRE-FLIGHT OPERATIONS AND DEPARTURE**	
Use of checklist, airmanship (control of sailplane by external visual reference), lookout, apply in all sections.	
a	Pre-flight sailplane (daily) inspection, documentation and weather brief
b	Verifying in-limits mass and balance and performance calculation
c	Sailplane servicing compliance
d	Pre take-off checks
SECTION 2 **LAUNCH METHOD** Note: At least for one of the three launch methods all the mentioned items are fully exercised during the skill test.	
SECTION 2 (A) **WINCH OR CAR LAUNCH**	
a	Signals before and during launch, including messages to winch driver
b	Adequate profile of winch launch
c	Launch failures (simulated)
d	Situational awareness
SECTION 2 (B) **AEROTOW LAUNCH**	
a	Signals before and during launch, including signals to / communications with tow plane pilot for any problems
b	Initial roll, take-off climb
c	Launch abandonment (simulation only or 'talk-through')
d	Correct positioning during straight flight and turns
e	Out of position and recovery
f	Correct release from tow

g	Lookout and airmanship through whole launch phase
	SECTION 2 (C) **SELF LAUNCH** (powered sailplanes only)
a	ATC liaison – compliance
b	Aerodrome departure procedures
c	Initial roll, take-off climb
d	Lookout and airmanship during the whole take-off
e	Simulated engine failure after take off
f	Engine shut down and stowage
	SECTION 3 **GENERAL AIRWORK**
a	Maintain straight and level flight; attitude and speed control
b	Co-ordinated medium (30° bank) turns, look out procedures and collision avoidance
c	Turning on to selected headings visually and with use of compass
d	Flight at high angle of attack (critically low airspeed)
e	Clean stall and recovery
f	Spin avoidance and recovery
g	Steep (45° bank) turns, look out procedures and collision avoidance
	SECTION 4 **CIRCUIT, APPROACH AND LANDING**
a	Aerodrome circuit joining procedure
b	Collision avoidance - look out procedures
c	Pre landing checks
d	Circuit, approach control, landing
e	Precision landing (simulation of out-landing - short field)
f	Cross wind landing if suitable conditions available

AMC No 2 to FCL.125 and FCL.235

Contents of the skill test for the issue of a LPL(B) and a BPL

1. The take off site should be chosen by the applicant depending on the actual meteorological conditions, the area which has to be over flown and the possible options for suitable landing sites. The applicant should be responsible for the flight planning and should ensure that all equipment and documentation for the execution of the flight are on board.

2. An applicant should indicate to the FE the checks and duties carried out. Checks should be completed in accordance with the flight manual and/or the authorised check list for the balloon on which the test is being taken. During pre-flight preparation for the test the applicant should be required to perform crew and passenger briefings and demonstrate crowd control. The load calculation should be performed by the applicant in compliance with the operations manual or flight manual for the balloon used.

FLIGHT TEST TOLERANCE

3. The applicant should demonstrate the ability to:
   - operate the balloon within its limitations;
   - complete all manoeuvres with smoothness and accuracy
   - exercise good judgment and airmanship;
   - apply aeronautical knowledge; and
   - maintain control of the balloon at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.
4. The skill test contents and sections set out in this part of the AMC should be used for the skill test for the issue of a LPL(B) and BPL (HOT AIR BALLOON)

	SECTION 1 **PRE-FLIGHT OPERATIONS, INFLATION AND TAKE OFF**
	Use of checklist, airmanship, control of balloon by external visual reference, look out procedures, etc. apply in all sections.
a	Pre-flight documentation, flight planning and weather brief
b	Balloon inspection and servicing
c	Load calculation
d	Crowd control, crew and passenger briefings
e	Assembly and layout
f	Inflation and pre-take-off procedures
g	Take off
h	ATC liaison – compliance (if applicable)
	SECTION 2 **GENERAL AIRWORK**
a	Climb to level flight
b	Level flight
c	Descent to level flight
d	Operating at low level
e	ATC liaison – compliance (if applicable)
	SECTION 3 **EN-ROUTE PROCEDURES**
a	Dead reckoning and map reading
b	Marking positions and time
c	Orientation, airspace structure
d	Maintenance of altitude
e	Fuel management
f	Communication with retrieve crew
g	ATC liaison – compliance (if applicable)

SECTION 4 APPROACH AND LANDING PROCEDURES	
a	Approach from low level, missed approach / fly on
b	Approach from high level, missed approach / fly on
c	Pre landing checks
d	Selection of landing field
e	Landing, dragging and deflation
f	ATC liaison – compliance (if applicable)
g	Actions after flight
SECTION 5 **ABNORMAL AND EMERGENCY PROCEDURES**	
This section may be combined with Sections 1 through 4	
a	Simulated Fire on the ground and in the air
b	Simulated pilot light- and burner failures
c	Other abnormal and emergency procedures as outlined in the appropriate flight manual.
d	Oral questions

5. The skill test contents and sections set out in the following part of the AMC should be used for the skill test for the issue of a LPL(B) and BPL (GAS BALLOON).

SECTION 1 PRE-FLIGHT OPERATIONS, INFLATION AND TAKE OFF	
Use of checklist, airmanship, control of balloon by external visual reference, look out procedures, etc. apply in all sections.	
a	Pre-flight documentation, flight planning and weather brief
b	Balloon inspection and servicing
c	Load calculation
d	Crowd control, crew and passenger briefings
e	Assembly and layout
f	Inflation and pre-take-off procedures
g	Take off
h	ATC liaison – compliance (if applicable)
SECTION 2 **GENERAL AIRWORK**	
a	Climb to level flight
b	Level flight
c	Descent to level flight

d	Operating at low level
e	ATC liaison – compliance (if applicable)
	SECTION 3 **EN-ROUTE PROCEDURES**
a	Dead reckoning and map reading
b	Marking positions and time
c	Orientation, airspace structure
d	Maintenance of altitude
e	Ballast management
f	Communication with retrieve crew
g	ATC liaison – compliance (if applicable)
	SECTION 4 **APPROACH AND LANDING PROCEDURES**
a	Approach from low level, missed approach / fly on
b	Approach from high level, missed approach / fly on
c	Pre landing checks
d	Selection of landing field
e	Landing, dragging and deflation
f	ATC liaison – compliance (if applicable)
g	Actions after flight
	SECTION 5 **ABNORMAL AND EMERGENCY PROCEDURES**
This section may be combined with Sections 1 through 4.	
a	Simulated closed appendix during take off and climb
b	Simulated parachute/valve failure
c	Other abnormal and emergency procedures as outlined in the appropriate flight manual.
d	Oral questions

AMC No 1 to FCL.110.BA/H

FLIGHT INSTRUCTION FOR THE BASIC LEISURE PILOT LICENCE - BASIC LPL (A)

1. ENTRY TO TRAINING

    1.1 Before being accepted for training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

2. FLIGHT INSTRUCTION

    2.1 The Basic LPL(A) flight instruction syllabus should take into account the principles of threat and error management and also cover:

    (a) pre-flight operations, including mass and balance determination, aircraft inspection and servicing;

(b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;

(c) control of the aircraft by external visual reference;

(d) flight at critically low airspeeds, recognition of, and recovery from, incipient and full stalls;

(e) flight at critically high airspeeds, recognition of, and recovery from, spiral dive;

(f) normal and crosswind take-offs and landings;

(g) maximum performance (short field and obstacle clearance) take-offs, short-field landings;

(h) emergency operations, including simulated aeroplane equipment malfunctions; and

(i) compliance with air traffic services procedures

2.2 Before allowing the applicant for a Basic LPL(A) to undertake his/her first solo flight, the flight instructor should ensure that the applicant can operate the required systems and equipment.

3. SYLLABUS OF FLIGHT INSTRUCTION

3.1. The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide; therefore the demonstrations and practices need not necessarily be given I the order listed. The actual order and content will depend upon the following interrelated factors:

- The applicant's progress and ability
- The weather conditions affecting the flight
- The flight time available
- Instructional technique considerations
- The local operating environment
- Applicability of the exercises to the aeroplane / touring motor glider type

3.2. Each of the exercises involves the need for the pilot-under-training to be aware the needs of good airmanship and look-out, which should be emphasised at all times.

Exercise 1: Familiarisation with the aeroplane / touring motor glider

– characteristics of the aeroplane / touring motor glider
– cockpit layout
– systems
– check lists, drills, controls

Exercise 1E Emergency drills

– action in the event of fire on the ground and in the air
– engine cabin and electrical system fire
– systems failure
– escape drills, location and use of emergency equipment and exits

Exercise 2: Preparation for and action after flight

- flight authorisation and aeroplane / touring motor glider acceptance
- serviceability documents
- equipment required, maps, etc.
- external checks
- internal checks
- harness, seat or rudder panel adjustments
- starting and warm up checks
- power checks
- running down system checks and switching off the engine
- parking, security and picketing (e.g. tie down)
- completion of authorisation sheet and serviceability documents

Exercise 3: Air experience

- flight exercise

Exercise 4: Effects of controls

- primary effects when laterally level and when banked
- further effects of aileron and rudder
- effects of:
  - airspeed
  - slipstream
  - power
  - trimming controls
  - flaps
  - other controls, as applicable
- operation of:
  - mixture control
  - carburettor heat
  - cabin heating/ventilation

Exercise 5: Taxiing

- pre-taxi checks
- starting, control of speed and stopping
- engine handling
- control of direction and turning
- turning in confined spaces
- parking area procedure and precautions
- effects of wind and use of flying controls
- effects of ground surface
- freedom of rudder movement
- marshalling signals

- instrument checks
- air traffic control procedures

Exercise 5E: Emergencies

- Brake and steering failure

Exercise 6: Straight and level

- at normal cruising power, attaining and maintaining straight and level flight
- flight at critically high airspeeds
- demonstration of inherent stability
- control in pitch, including use of trim
- lateral level, direction and balance, trim
- at selected airspeeds (use of power)
- during speed and configuration changes
- use of instruments for precision

Exercise 7: Climbing

- entry, maintaining the normal and max rate climb, levelling off
- levelling off at selected altitudes
- en-route climb (cruise climb)
- climbing with flap down
- recovery to normal climb
- maximum angle of climb
- use of instruments for precision

Exercise 8: Descending

- entry, maintaining and levelling off
- levelling off at selected altitudes
- glide, powered and cruise descent (including effect of power and airspeed)
- side slipping (or suitable types)
- use of instruments for precision flight

Exercise 9: Turning

- entry and maintaining medium level turns
- resuming straight flight
- faults in the turn – (in correct pitch, bank, balance)
- climbing turns
- descending turns
- slipping turns (or suitable types)
- turns onto selected headings, use of gyro heading indicator and compass
- use of instruments for precision

Exercise 10A: Slow flight

NOTE: The objective is to improve the student's ability to recognise inadvertent flight at critically low speeds and provide practice in maintaining the aeroplane / touring motor glider in balance while returning to normal airspeed.

- safety checks
- introduction to slow flight
- controlled flight down to critically slow airspeed
- application of full power with correct attitude and balance to achieve normal climb speed

Exercise 10B: Stalling

- safety checks
- symptoms
- recognition
- clean stall and recovery without power and with power
- recovery when a wing drops
- approach to stall in the approach and in the landing configurations, with and without power, recovery at the incipient stage

NOTE 1: Additional and spin avoidance flight training should be completed during the additional training for the full LPL(A).

NOTE 2: Consideration of manoeuvre limitations and the need to refer to the aeroplane manual and mass and balance calculations.

Exercise 11: Take-off and climb to downwind position

- pre-take-off checks
- into wind take-off
- safeguarding the nosewheel
- crosswind take-off
- drills during and after take-off
- short take-off and soft field procedure/techniques including performance calculations
- noise abatement procedures

Exercise 12: Circuit, approach and landing

- circuit procedures, downwind, base leg
- powered approach and landing
- safeguarding the nosewheel
- effect of wind on approach and touchdown speeds, use of flaps
- crosswind approach and landing
- glide approach and landing
- short landing and soft field procedures/techniques
- flapless approach and landing
- wheel landing (tail wheel aeroplanes)
- missed approach/go around

- noise abatement procedures

Exercise 11/12E: Emergencies

- abandoned take-off
- engine failure after take-off
- mislanding / go-around
- missed approach

In the interests of safety it will be necessary for pilots trained on nosewheel aeroplanes to undergo dual conversion training before flying tail wheel aeroplanes, and vice-versa.

Exercise 13: First solo

- instructor's briefing including limitations
- use of the required equipment
- observation of flight and de-briefing by instructor

NOTE: During flights immediately following the solo circuit consolidation the following should be revised.

- procedures for leaving and rejoining the circuit
- the local area, restrictions, map reading
- turns using magnetic compass, compass errors

Exercise 14: Forced landing without power

- forced landing procedure
- choice of landing area, provision for change of plan
- gliding distance
- descent plan
- key positions
- engine cooling
- engine failure checks
- use of radio
- base leg
- final approach
- landing
- actions after landing

Exercise 15: Precautionary landing

- full procedure away from aerodrome to break-off height
- occasions necessitating
- in-flight conditions
- landing area selection
  - normal aerodrome
  - disused aerodrome
  - ordinary field
- circuit and approach

- actions after landing

Exercise 16A: Navigation (basics)

NOTE 1: Additional navigation flight training should be completed during the additional training for the full LPL(A). The following basic items should be trained:

Flight planning

- weather forecast and actuals
- calculations
  - magnetic heading(s) and time(s) en-route
  - fuel consumption
  - mass and balance
  - mass and performance
- flight information
  - NOTAMS etc.
  - radio frequencies
  - selection of alternate aerodromes
- aeroplane documentation
- notification of the flight
- pre flight administrative procedures

Departure

- organisation of cockpit workload
- departure procedures
  - altimeter settings
  - ATC liaison in regulated airspace
  - setting heading procedure
- maintenance of altitude and heading
- log keeping
- use of radio
- minimum weather conditions for continuation of flight
- in-flight decisions
- diversion procedures
- uncertainty of position procedure
- lost procedure

Arrival, aerodrome joining procedure

- ATC liaison in regulated airspace
- altimeter setting
- entering the traffic pattern
- circuit procedures
- parking
- security of aeroplane / touring motor glider

- refuelling
- post-flight administrative procedures

Exercise 16B: Navigation problems at lower levels and in reduced visibility

- actions prior to descending
- hazards (e.g. obstacles, and terrain)
- effects of wind and turbulence
- vertical situational awareness (avoidance of controlled flight into terrain)
- avoidance of noise sensitive areas
- joining the circuit
- bad weather circuit and landing

AMC No 2 to FCL.110.BA/H

FLIGHT INSTRUCTION FOR THE BASIC LEISURE PILOT LICENCE - BASIC LPL (H)

1. ENTRY TO TRAINING

1.1 Before being accepted for training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

2. FLIGHT INSTRUCTION

2.1 The Basic LPL(H) flight instruction syllabus should take into account the principles of threat and error management and also cover:

(a) pre-flight operations, including mass and balance determination, helicopter inspection and servicing;

(b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;

(c) control of the helicopter by external visual reference;

(d) take-offs, landings, hovering, look out turns and normal transitions from and to the hover;

(e) emergency procedures, basic autorotations, simulated engine failure, ground resonance recovery if relevant to type;

(f) sideways and backwards flight, turns on the spot;

(g) incipient vortex ring recognition and recovery;

(h) touchdown autorotations or powered recovery, simulated engine-off landings, practice forced landings. Simulated equipment malfunctions and emergency procedures relating to malfunctions of engines, controls, electrical and hydraulic circuits;

(i) steep turns;

(j) transitions, quick stops, out of wind manoeuvres and landings and take-offs;

(k) operations to and from aerodromes and compliance with air traffic services procedures.

2.2 Before allowing the applicant for a Basic LPL(H) to undertake his/her first solo flight, the flight instructor should ensure that the applicant can operate the required systems and equipment.

3. SYLLABUS OF FLIGHT INSTRUCTION

3.1. The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide; therefore the demonstrations and practices need not necessarily be given I the order listed. The actual order and content will depend upon the following interrelated factors:

- The applicant's progress and ability
- The weather conditions affecting the flight
- The flight time available
- Instructional technique considerations
- The local operating environment
- Applicability of the exercises to the helicopter type

3.2. Each of the exercises involves the need for the pilot-under-training to be aware the needs of good airmanship and look-out, which should be emphasised at all times.

Exercise 1a: Familiarisation with the helicopter

- characteristics of the helicopter, external features
- cockpit layout
- systems
- check lists, procedures, controls

Exercise 1b: Emergency procedures

- action in the event of fire on the ground and in the air
- engine, cabin and electrical system fire
- systems failures
- escape drills, location and use of emergency equipment and exits

Exercise 2: Preparation for and action after flight

- flight authorisation and helicopter acceptance
- serviceability documents
- equipment required, maps, etc.
- external checks
- internal checks
- seat, harness and flight controls adjustments
- starting and warm up checks clutch engagement, starting rotors
- power checks
- running down system checks and switching off the engine
- parking, security and picketing
- completion of authorisation sheet and serviceability documents

Exercise 3: Air experience

- to introduce the student to rotary wing flight
- flight exercise

Exercise 4: Effects of controls

- function of flight controls, primary and secondary effect
- effect of airspeed
- effect of power changes (torque)

- effect of yaw(sideslip)
- effect of disc loading (bank and flare)
- effect on controls of selecting hydraulics on/off
- effect of control friction
- instruments
- use of carburettor heat/anti-icing control

Exercise 5: Power and attitude changes

- relationship between cyclic control position, disc attitude, fuselage attitude, airspeed
- flapback
- power required diagram in relation to airspeed
- power and airspeed changes in level flight
- use of instruments for precision
- engine and airspeed limitations

Exercise 6a: Straight and level

- at normal cruising power, attaining and maintaining straight and level flight
- control in pitch, including use of control friction and/or trim
- maintaining direction and balance, (ball/yawstring use)
- setting power for selected airspeeds/speed changes
- use of instruments for precision

Exercise 6b: Climbing

- optimum climb speed, best angle/rate of climb from power required diagram
- initiation, maintaining the normal and maximum rate of climb, levelling off
- levelling off at selected altitudes/heights
- use of instruments for precision

Exercise 6c: Descending

- optimum descent speed, best angle/rate of descent from power required diagram
- initiation, maintaining and levelling off
- levelling off at selected altitudes/heights
- descent (including effect of power and airspeed)
- use of instruments for precision

Exercise 6d: Turning

- initiation and maintaining medium level turns
- resuming straight flight
- altitude, bank and co-ordination
- climbing and descending turns and effect on rate of climb/descent
- turns onto selected headings, use of gyro heading indicator and compass
- use of instruments for precision

Exercise 7: Basic autorotation

- safety checks, verbal warning, lookout
- entry, development and characteristics
- control of airspeed and RRPM, rotor and engine limitations
- effect of AUM, IAS, disc loading, G forces and density altitude
- re-engagement and go around procedures (throttle over-ride/ERPM control)
- vortex condition during recovery
- gentle/medium turns in autorotation
- demonstration of variable flare simulated engine off landing

Exercise 8a: Hovering

- demonstrate hover I.G.E, importance of wind effect and attitude, ground cushion, stability in the hover, effects of over controlling
- student holding cyclic stick only
- student handling collective lever (and throttle) only
- student handling collective lever, (throttle) and pedals
- student handling all controls
- demonstration of ground effect
- demonstration of wind effect
- demonstrate gentle forward running touchdown
- specific hazards e.g. snow, dust, litter

Exercise 8b: Hover taxiing, spot turns

- revise hovering
- precise ground speed/height control
- effect of wind direction on helicopter attitude and control margin
- control, co-ordination during spot turns
- carefully introduce gentle forward running touchdown

Exercise 8C: Hovering, taxiing emergencies

- revise hovering and gentle forward running touchdown, explain (demonstrate where applicable) effect of hydraulics failure in the hover
- demonstrate simulated engine failure in the hover and hover taxi
- demonstrate dangers of mishandling and over-pitching

Exercise 9: Take-off and landing

- pre-take off checks/drills
- lookout procedures
- lifting to hover
- after take-off checks
- danger of horizontal movement near ground
- danger of mishandling and overpitching
- landing (without sideways or backwards movement)
- after landing checks/drills
- take-off and landing cross wind, downwind

Exercise 10: Transitions from hover to climb and approach to hover

- lookout procedures
- revise take-off and landing
- ground effect, translational lift and its effects
- flapback and its effects
- effect of wind speed/direction during transitions from/to the hover
- the constant angle approach
- demonstration of variable flare simulated engine off landing

Exercise 11a: Circuit, approach and landing

- revise transitions from hover to climb and approach to hover
- circuit procedures, downwind, base leg
- approach and landing with power
- pre landing checks
- effect of wind on approach and I.G.E. hover
- crosswind approach and landing
- go around
- noise abatement procedures

Exercise 11b: Steep and limited power approaches and landings

- revise the constant angle approach
- the steep approach (explain danger of high sink rate and low air speed)
- limited power approach (explain danger of high speed at touch down)
- use of the ground effect
- variable flare simulated engine off landing

Exercise 11c: Emergency procedures

- abandoned take-off
- missed approach/go-around
- hydraulic OFF landing, (if applicable)
- tail rotor control or tail rotor drive failure (briefing only)
- simulated emergencies in the circuit to include:
  - hydraulics failure
  - simulated engine failure on take-off, cross wind, downwind and baseleg
- governor failure

Exercise 12: First solo

- instructor’s briefing including limitations
- warn of change of attitude from reduced and laterally displaced weight
- warn of low tail, low skid/wheel during hover, landing
- warn of dangers of loss of RRPM and overpitching
- pre take-off checks
- into wind take-off

- procedures during and after take-off
- normal circuit, approaches and landings
- action in the event of an Emergency
- observation of flight and debriefing by instructor

Exercise 13: Sideways and backwards hover manoeuvring

- manoeuvring sideways flight heading into wind
- manoeuvring backwards flight heading into wind
- combination of sideways and backwards manoeuvring
- manoeuvring sideways and backwards, heading out of wind
- stability, weathercocking
- recovery from backwards manoeuvring, (pitch nose down)
- groundspeed limitations for sideways and backwards manoeuvring

Exercise 14: Spot turns

- revise hovering into wind and downwind
- turn on spot through 360º:
    - around pilots position
    - around tail rotor
    - around helicopter geometric centre
    - square, safe visibility clearing turn
- rotor RPM control, torque effect, cyclic limiting stops due to C of G position and wind speed/direction

Exercise 15: Hover out of ground effect (OGE), vortex ring

- establishing hover O.G.E
- drift/height/power control
- demonstration of incipient stage of vortex ring, recognition and recovery (from a safe altitude)
- loss of tail rotor effectiveness

Exercise 16: Simulated engine off landings (EOL)

- the effect of weight, disc loading, density attitude, RRPM decay
- revise basic autorotation entry
- optimum use of cyclic and collective to control speed/RRPM
- variable flare simulated EOL
- demonstrate constant attitude simulated EOL
- demonstrate simulated EOL from hover/hover taxi
- demonstrate simulated EOL from transition and low level

Exercise 17: Advanced autorotation

- over a selected point at various height and speed
- revise basic autorotation - note ground distance covered
- range autorotation
- low speed autorotation

- constant attitude autorotation (terminate at safe altitude)
- ‘S’ turns
- turns through 180° and 360°
- effects on angles of descent, IAS, RRPM and effect of AUM

Exercise 18: Practice forced landings

- procedure and choice of the forced landing area
- forced landing checks and crash action
- re-engagement and go-around procedures

Exercise 19: Transitions

- revise ground effect, translational lift, flapback
- maintaining constant height, (20-30 feet AGL):
  - transition from hover to minimum 50 knots IAS and back to hover
- demonstrate effect of wind

Exercise 20: Quickstops

- use of power and controls
- effect of wind
- quickstops into wind
- quickstops from crosswind and downwind terminating into wind
- danger of vortex ring
- danger of high disc loading

Exercise 21a: Basic navigation

Flight planning

- weather forecast and actuals
- map selection and preparation and use
- calculations
  - magnetic heading(s) and time(s) en-route
  - fuel consumption
  - mass and balance
- flight information
  - NOTAMs etc
  - radio frequencies
  - selection of alternate landing sites
- helicopter documentation
- notification of the flight
- pre-flight administrative procedures

Departure

- organisation of cockpit workload
- departure procedures
  - altimeter settings

  - ATC liaison in controlled/regulated airspace
  - setting heading procedure
- maintenance of height/altitude and heading
- use of radio
- minimum weather conditions for continuation of flight
- in-flight decisions
- transiting controlled/regulated airspace
- uncertainty of position procedure
- lost procedure

Arrival, aerodrome joining procedure

- ATC liaison in controlled/regulated airspace
- altimeter setting
- entering the traffic pattern
- circuit procedures
- parking
- security of helicopter
- refuelling
- post-flight administrative procedures

Exercise 21b: Navigation problems at low heights and in reduced visibility

- actions prior to descending
- hazards (e.g. obstacles, other aircraft)
- difficulties of map reading
- effects of wind and turbulence
- avoidance of noise sensitive areas
- joining the circuit
- bad weather circuit and landing
- appropriate procedures and choice of landing area

Exercise 22: Advanced take-off, landings, transitions

- landing and take-off out of wind (performance reduction)
- ground effect, translational lift and directional stability variation when out of wind
- downwind transitions
- vertical takeoff over obstacles
- reconnaissance of landing site
- running landing
- zero speed landing
- cross wind and downwind landings
- steep approach
- go-around

Exercise 23: Limited power

- take-off power check
- vertical take-off over obstacles
- in flight power check
- running landing
- zero speed landing
- approach to low hover
- approach to hover
- approach to hover OGE
- steep approach
- go-around

AMC to FCL.110.A

FLIGHT INSTRUCTION FOR THE LEISURE PILOT LICENCE - LPL (A)

1. ENTRY TO TRAINING

1.1 Before being accepted for training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

2. FLIGHT INSTRUCTION

2.1 The LPL (A) flight instruction syllabus should take into account the principles of threat and error management and also cover:

(a) pre-flight operations, including mass and balance determination, aircraft inspection and servicing;

(b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;

(c) control of the aircraft by external visual reference;

(d) flight at critically low airspeeds, recognition of, and recovery from, incipient and full stalls;

(e) flight at critically high airspeeds, recognition of, and recovery from, spiral dive;

(f) normal and crosswind take-offs and landings;

(g) maximum performance (short field and obstacle clearance) take-offs, short-field landings;

(h) cross-country flying using visual reference, dead reckoning and radio navigation aids;

(i) emergency operations, including simulated aeroplane equipment malfunctions; and

(j) operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures and communication procedures

2.2 Before allowing the applicant for a LPL(A) to undertake his/her first solo flight, the flight instructor should ensure that the applicant can operate the required systems and equipment..

3. SYLLABUS OF FLIGHT INSTRUCTION

3.1. The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide; therefore the demonstrations and practices need not necessarily be given I the order listed. The actual order and content will depend upon the following interrelated factors:

- The applicant's progress and ability
- The weather conditions affecting the flight
- The flight time available
- Instructional technique considerations
- The local operating environment
- Applicability of the exercises to the aeroplane / touring motor glider type

3.2. Each of the exercises involves the need for the pilot-under-training to be aware the needs of good airmanship and look-out, which should be emphasised at all times.

Exercise 1: Familiarisation with the aeroplane / touring motor glider

- characteristics of the aeroplane / touring motor glider
- cockpit layout
- systems
- check lists, drills, controls

Exercise 1E: Emergency drills

- action in the event of fire on the ground and in the air
- engine cabin and electrical system fire
- systems failure
- escape drills, location and use of emergency equipment and exits

Exercise 2: Preparation for and action after flight

- flight authorisation and aeroplane / touring motor glider acceptance
- serviceability documents
- equipment required, maps, etc.
- external checks
- internal checks
- harness, seat or rudder panel adjustments
- starting and warm up checks
- power checks
- running down system checks and switching off the engine
- parking, security and picketing (e.g. tie down)
- completion of authorisation sheet and serviceability documents

Exercise 3: Air experience

- flight exercise

Exercise 4: Effects of controls

- primary effects when laterally level and when banked
- further effects of aileron and rudder

- effects of:
  - airspeed
  - slipstream
  - power
  - trimming controls
  - flaps
  - other controls, as applicable
- operation of:
  - mixture control
  - carburettor heat
  - cabin heating/ventilation

Exercise 5: Taxiing

- pre-taxi checks
- starting, control of speed and stopping
- engine handling
- control of direction and turning
- turning in confined spaces
- parking area procedure and precautions
- effects of wind and use of flying controls
- effects of ground surface
- freedom of rudder movement
- marshalling signals
- instrument checks
- air traffic control procedures

Exercise 5E: Emergencies

- Brake and steering failure

Exercise 6: Straight and level

- at normal cruising power, attaining and maintaining straight and level flight
- flight at critically high airspeeds
- demonstration of inherent stability
- control in pitch, including use of trim
- lateral level, direction and balance, trim
- at selected airspeeds (use of power)
- during speed and configuration changes
- use of instruments for precision–

Exercise 7: Climbing

- entry, maintaining the normal and max rate climb, levelling off
- levelling off at selected altitudes
- en-route climb (cruise climb)

- climbing with flap down
- recovery to normal climb
- maximum angle of climb
- use of instruments for precision

Exercise 8: Descending

- entry, maintaining and levelling off
- levelling off at selected altitudes
- glide, powered and cruise descent (including effect of power and airspeed)
- side slipping (or suitable types)
- use of instruments for precision flight

Exercise 9: Turning

- entry and maintaining medium level turns
- resuming straight flight
- faults in the turn – (in correct pitch, bank, balance)
- climbing turns
- descending turns
- slipping turns (or suitable types)
- turns onto selected headings, use of gyro heading indicator and compass
- use of instruments for precision

Exercise 10A: Slow flight

NOTE: The objective is to improve the student's ability to recognise inadvertent flight at critically low speeds and provide practice in maintaining the aeroplane / touring motor glider in balance while returning to normal airspeed.

- safety checks
- introduction to slow flight
- controlled flight down to critically slow airspeed
- application of full power with correct attitude and balance to achieve normal climb speed

Exercise 10B: Stalling

- safety checks
- symptoms
- recognition
- clean stall and recovery without power and with power
- recovery when a wing drops
- approach to stall in the approach and in the landing configurations, with and without power, recovery at the incipient stage

Exercise 11: Take-off and climb to downwind position

- pre-take-off checks
- into wind take-off
- safeguarding the nosewheel (if applicable)

- crosswind take-off
- drills during and after take-off
- short take-off and soft field procedure/techniques including performance calculations
- noise abatement procedures

Exercise 12: Circuit, approach and landing

- circuit procedures, downwind, base leg
- powered approach and landing
- safeguarding the nosewheel (if applicable)
- effect of wind on approach and touchdown speeds, use of flaps
- crosswind approach and landing
- glide approach and landing
- short landing and soft field procedures/techniques
- flapless approach and landing
- wheel landing (tail wheel aeroplanes)
- missed approach/go around
- noise abatement procedures

Exercise 11/12E: Emergencies

- abandoned take-off
- engine failure after take-off
- mislanding / go-around
- missed approach

In the interests of safety it will be necessary for pilots trained on nosewheel aeroplanes to undergo dual conversion training before flying tail wheel aeroplanes, and vice-versa.

Exercise 13: First solo

- instructor's briefing including limitations,
- use of required equipment
- observation of flight and de-briefing by instructor

NOTE: During flights immediately following the solo circuit consolidation the following should be revised.

- procedures for leaving and rejoining the circuit
- the local area, restrictions, map reading
- use of radio aids for homing
- turns using magnetic compass, compass errors

Exercise 14: Advanced turning

- steep turns (45°), level and descending
- stalling in the turn and recovery
- recoveries from unusual attitudes, including spiral dives

Exercise 15: Forced landing without power

- forced landing procedure

- choice of landing area, provision for change of plan
- gliding distance
- descent plan
- key positions
- engine cooling
- engine failure checks
- use of radio
- base leg
- final approach
- landing
- actions after landing

Exercise 16: Precautionary landing

- full procedure away from aerodrome to break-off height
- occasions necessitating
- in-flight conditions
- landing area selection
  - normal aerodrome
  - disused aerodrome
  - ordinary field
- circuit and approach
- actions after landing

Exercise 17A: Navigation

Flight planning

- weather forecast and actuals
- map selection and preparation
  - choice of route
  - airspace structure
  - safety altitudes
- calculations
  - magnetic heading(s) and time(s) en-route
  - fuel consumption
  - mass and balance
  - mass and performance
- flight information
  - NOTAMS etc.
  - radio frequencies
  - selection of alternate aerodromes
- aeroplane / touring motor glider documentation
- notification of the flight

  - pre-flight administrative procedures
  - flight plan form

Departure

- organisation of cockpit workload
- departure procedures
  - altimeter settings
  - ATC liaison in regulated airspace
  - setting heading procedure
  - noting of ETAs
- maintenance of altitude and heading
- revisions of ETA and heading
- log keeping
- use of radio
- minimum weather conditions for continuation of flight
- in-flight decisions
- transiting controlled/regulated airspace
- diversion procedures
- uncertainty of position procedure
- lost procedure

Arrival, aerodrome joining procedure

  - ATC liaison in regulated airspace
  - altimeter setting
  - entering the traffic pattern
  - circuit procedures
- parking
- security of aeroplane / touring motor glider
- refuelling
- closing of flight plan, if appropriate
- post-flight administrative procedures

Exercise 17B: Navigation problems at lower levels and in reduced visibility

- actions prior to descending
- hazards (e.g. obstacles, and terrain)
- difficulties of map reading
- effects of wind and turbulence
- vertical situational awareness (avoidance of controlled flight into terrain)
- avoidance of noise sensitive areas
- joining the circuit
- bad weather circuit and landing

Exercise 17C: Radio navigation (basics)

Use of Global Navigation Satellite Systems

- selection of waypoints
- to/from indications, orientation
- error messages

Use of VHF direction finding (VHF/DF)

- availability, AIP, frequencies
- R/T procedures and ATC liaison
- obtaining a QDM and homing

Use of en-route/terminal radar

- availability, AIP
- procedures and ATC liaison
- pilot's responsibilities
- secondary surveillance radar
- transponders
- code selection
- interrogation and reply

AMC to FCL.110.H

FLIGHT INSTRUCTION FOR THE LEISURE PILOT LICENCE - LPL (H)

1. ENTRY TO TRAINING

1.1 Before being accepted for training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

2. FLIGHT INSTRUCTION

2.1 The LPL(H) flight instruction syllabus should take into account the principles of threat and error management and also cover:

(a) pre-flight operations, including mass and balance determination, helicopter inspection and servicing;

(b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;

(c) control of the helicopter by external visual reference;

(d) take-offs, landings, hovering, look out turns and normal transitions from and to the hover;

(e) emergency procedures, basic autorotations, simulated engine failure, ground resonance recovery if relevant to type;

(f) sideways and backwards flight, turns on the spot;

(g) incipient vortex ring recognition and recovery;

(h) touchdown autorotations, simulated engine-off landings, practice forced landings. Simulated equipment malfunctions and emergency procedures relating to malfunctions of engines, controls, electrical and hydraulic circuits;

(i) steep turns;

(j) transitions, quick stops, out of wind manoeuvres, sloping ground landings and take-offs;

(k) limited power and confined area operations including selection of and operations to and from unprepared sites;

(l) cross-country flying by using visual reference, dead reckoning and, where available, radio navigation aids;

(m) operations to and from aerodromes; compliance with air traffic services procedures and communication procedures.

2.2 Before allowing the applicant for a LPL(H) to undertake his/her first solo flight, the flight instructor should ensure that the applicant can operate the required systems and equipment.

3. SYLLABUS OF FLIGHT INSTRUCTION

3.1. The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide; therefore the demonstrations and practices need not necessarily be given I the order listed. The actual order and content will depend upon the following interrelated factors:

- The applicant's progress and ability
- The weather conditions affecting the flight
- The flight time available
- Instructional technique considerations
- The local operating environment
- Applicability of the exercises to the helicopter type

3.2. Each of the exercises involves the need for the pilot-under-training to be aware the needs of good airmanship and look-out, which should be emphasised at all times.

Exercise 1a: Familiarisation with the helicopter

- characteristics of the helicopter, external features
- cockpit layout
- systems
- check lists, procedures, controls

Exercise 1b: Emergency procedures

- action in the event of fire on the ground and in the air
- engine, cabin and electrical system fire
- systems failures
- escape drills, location and use of emergency equipment and exits

Exercise 2: Preparation for and action after flight

- flight authorisation and helicopter acceptance
- serviceability documents
- equipment required, maps, etc.
- external checks
- internal checks
- seat, harness and flight controls adjustments
- starting and warm up checks clutch engagement, starting rotors
- power checks
- running down system checks and switching off the engine

- parking, security and picketing
- completion of authorisation sheet and serviceability documents

Exercise 3: Air experience

- to introduce the student to rotary wing flight
- flight exercise

Exercise 4: Effects of controls

- function of flight controls, primary and secondary effect
- effect of airspeed
- effect of power changes (torque)
- effect of yaw(sideslip)
- effect of disc loading (bank and flare)
- effect on controls of selecting hydraulics on/off
- effect of control friction
- instruments
- use of carburettor heat/anti-icing control

Exercise 5: Power and attitude changes

- relationship between cyclic control position, disc attitude, fuselage attitude, airspeed
- flapback
- power required diagram in relation to airspeed
- power and airspeed changes in level flight
- use of instruments for precision
- engine and airspeed limitations

Exercise 6a: Straight and level

- at normal cruising power, attaining and maintaining straight and level flight
- control in pitch, including use of control friction and/or trim
- maintaining direction and balance, (ball/yawstring use)
- setting power for selected airspeeds/speed changes
- use of instruments for precision

Exercise 6b: Climbing

- optimum climb speed, best angle/rate of climb from power required diagram
- initiation, maintaining the normal and maximum rate of climb, levelling off
- levelling off at selected altitudes/heights
- use of instruments for precision

Exercise 6c: Descending

- optimum descent speed, best angle/rate of descent from power required diagram
- initiation, maintaining and levelling off
- levelling off at selected altitudes/heights
- descent (including effect of power and airspeed)

- use of instruments for precision

Exercise 6d: Turning

- initiation and maintaining medium level turns
- resuming straight flight
- altitude, bank and co-ordination
- climbing and descending turns and effect on rate of climb/descent
- turns onto selected headings, use of gyro heading indicator and compass
- use of instruments for precision

Exercise 7: Basic autorotation

- safety checks, verbal warning, lookout
- entry, development and characteristics
- control of airspeed and RRPM, rotor and engine limitations
- effect of AUM, IAS, disc loading, G forces and density altitude
- re-engagement and go around procedures (throttle over-ride/ERPM control)
- vortex condition during recovery
- gentle/medium turns in autorotation
- demonstration of variable flare simulated engine off landing

Exercise 8a: Hovering

- demonstrate hover I.G.E, importance of wind effect and attitude, ground cushion, stability in the hover, effects of over controlling
- student holding cyclic stick only
- student handling collective lever (and throttle) only
- student handling collective lever, (throttle) and pedals
- student handling all controls
- demonstration of ground effect
- demonstration of wind effect
- demonstrate gentle forward running touchdown
- specific hazards e.g. snow, dust, litter

Exercise 8b: Hover taxiing, spot turns

- revise hovering
- precise ground speed/height control
- effect of wind direction on helicopter attitude and control margin
- control, co-ordination during spot turns
- carefully introduce gentle forward running touchdown

Exercise 8C: Hovering, taxiing emergencies

- revise hovering and gentle forward running touchdown, explain (demonstrate where applicable) effect of hydraulics failure in the hover
- demonstrate simulated engine failure in the hover and hover taxi
- demonstrate dangers of mishandling and over-pitching

Exercise 9: Take-off and landing

- pre-take off checks/drills
- lookout
- lifting to hover
- after take-off checks
- danger of horizontal movement near ground
- danger of mishandling and overpitching
- landing (without sideways or backwards movement)
- after landing checks/drills
- take-off and landing cross wind, downwind

Exercise 10: Transitions from hover to climb and approach to hover

- lookout
- revise take-off and landing
- ground effect, translational lift and its effects
- flapback and its effects
- effect of wind speed/direction during transitions from/to the hover
- the constant angle approach
- demonstration of variable flare simulated engine off landing

Exercise 11a: Circuit, approach and landing

- revise transitions from hover to climb and approach to hover
- circuit procedures, downwind, base leg
- approach and landing with power
- pre landing checks
- effect of wind on approach and I.G.E. hover
- crosswind approach and landing
- go around
- noise abatement procedures

Exercise 11b: Steep and limited power approaches and landings

- revise the constant angle approach
- the steep approach (explain danger of high sink rate and low air speed)
- limited power approach (explain danger of high speed at touch down)
- use of the ground effect
- variable flare simulated engine off landing

Exercise 11c: Emergency procedures

- abandoned take-off
- missed approach/go-around
- hydraulic OFF landing, (if applicable)
- tail rotor control or tail rotor drive failure (briefing only)
- simulated emergencies in the circuit to include:
  - hydraulics failure

  - simulated engine failure on take-off, cross wind, downwind and baseleg
- governor failure

Exercise 12: First solo

- instructor's briefing, observation of flight and debriefing
- warn of change of attitude from reduced and laterally displaced weight
- warn of low tail, low skid/wheel during hover, landing
- warn of dangers of loss of RRPM and overpitching
- pre take-off checks
- into wind take-off
- procedures during and after take-off
- normal circuit, approaches and landings
- action in the event of an Emergency

Exercise 13: Sideways and backwards hover manoeuvring

- manoeuvring sideways flight heading into wind
- manoeuvring backwards flight heading into wind
- combination of sideways and backwards manoeuvring
- manoeuvring sideways and backwards, heading out of wind
- stability, weathercocking
- recovery from backwards manoeuvring, (pitch nose down)
- groundspeed limitations for sideways and backwards manoeuvring

Exercise 14: Spot turns

- revise hovering into wind and downwind
- turn on spot through 360º:
  - around pilots position
  - around tail rotor
  - around helicopter geometric centre
  - square, safe visibility clearing turn
- rotor RPM control, torque effect, cyclic limiting stops due to C of G position and wind speed/direction

Exercise 15: Hover out of ground effect (OGE), vortex ring

- establishing hover O.G.E
- drift/height/power control
- demonstration of incipient stage of vortex ring, recognition and recovery (from a safe altitude)
- loss of tail rotor effectiveness

Exercise 16: Simulated engine off landings (EOL)

- the effect of weight, disc loading, density attitude, RRPM decay
- revise basic autorotation entry
- optimum use of cyclic and collective to control speed/RRPM
- variable flare simulated EOL

- demonstrate constant attitude simulated EOL
- demonstrate simulated EOL from hover/hover taxi
- demonstrate simulated EOL from transition and low level

Exercise 17: Advanced autorotation

- over a selected point at various height and speed
- revise basic autorotation - note ground distance covered
- range autorotation
- low speed autorotation
- constant attitude autorotation (terminate at safe altitude)
- 'S' turns
- turns through 180° and 360°
- effects on angles of descent, IAS, RRPM and effect of AUM

Exercise 18: Practice forced landings

- procedure and choice of the forced landing area
- forced landing checks and crash action
- re-engagement and go-around procedures

Exercise 19: Steep turns

- steep (level) turns (30° bank)
- maximum rate turns (45° bank if possible)
- steep autorotative turns
- faults in the turn - balance, attitude, bank and co-ordination
- RRPM control, disc loading
- vibration and control feedback
- effect of wind at low level

Exercise 20: Transitions

- revise ground effect, translational lift, flapback
- maintaining constant height, (20-30 feet AGL):
  - transition from hover to minimum 50 knots IAS and back to hover
- demonstrate effect of wind

Exercise 21: Quickstops

- use of power and controls
- effect of wind
- quickstops into wind
- quickstops from crosswind and downwind terminating into wind
- danger of vortex ring
- danger of high disc loading

Exercise 22a: Navigation

Flight planning

- weather forecast and actuals

- map selection and preparation and use
- choice of route
  - controlled airspace, danger and prohibited areas
  - safety altitudes and noise abatement considerations
- calculations
  - magnetic heading(s) and time(s) en-route
  - fuel consumption
  - mass and balance
- flight information
  - NOTAMs etc
  - radio frequencies
  - selection of alternate landing sites
- helicopter documentation
- notification of the flight
  - pre-flight administrative procedures
  - flight plan form (where appropriate)

Departure

- organisation of cockpit workload
- departure procedures
  - altimeter settings
  - ATC liaison in regulated airspace
  - setting heading procedure
  - noting of ETAs
- maintenance of height/altitude and heading
- revisions of ETA and heading
  - 10º line, double track and track error, closing angle
  - 1 in 60 rule
  - amending an ETA
- log keeping
- use of radio
- minimum weather conditions for continuation of flight
- in-flight decisions
- transiting controlled/regulated airspace
- uncertainty of position procedure
- lost procedure

Arrival, aerodrome joining procedure

  - ATC liaison in regulated airspace
  - altimeter setting
  - entering the traffic pattern

  - circuit procedures
- parking
- security of helicopter
- refuelling
- closing of flight plan, (if appropriate)
- post-flight administrative procedures

Exercise 22b: Navigation problems at low heights and in reduced visibility

- actions prior to descending
- hazards (e.g. obstacles, other aircraft)
- difficulties of map reading
- effects of wind and turbulence
- avoidance of noise sensitive areas
- joining the circuit
- bad weather circuit and landing
- **[**appropriate procedures and choice of landing area**]**

Exercise 22C : Radio navigation (basics)

Use of Global Positioning Systems

- Selection of waypoints
- to/from indications, orientation
- error messages

Use of VHF direction finding (VHF/DF)

- availability, AIP, frequencies
- R/T procedures and ATC liaison
- obtaining a QDM and homing

Use of en-route/terminal radar

- availability, AIP
- procedures and ATC liaison
- pilot's responsibilities
- secondary surveillance radar
  - transponders
  - code selection
  - interrogation and reply

Exercise 23: Advanced take-off, landings, transitions

- landing and take-off out of wind (performance reduction)
- ground effect, translational lift and directional stability variation when out of wind
- downwind transitions
- vertical takeoff over obstacles
- reconnaissance of landing site

- running landing
- zero speed landing
- cross wind and downwind landings
- steep approach
- go-around

Exercise 24: Sloping ground

- limitations, assessing slope angle
- wind and slope relationship - blade and control stops
- effect of C of G when on slope
- ground effect on slope, power required
- right skid up slope
- left skid up slope
- nose up slope
- avoidance of dynamic roll over, dangers soft ground and sideways movement on touchdown
- danger of striking main/tail rotor by harsh control movement near ground

Exercise 25: Limited power

- take-off power check
- vertical take-off over obstacles
- in flight power check
- running landing
- zero speed landing
- approach to low hover
- approach to hover
- approach to hover OGE
- steep approach
- go-around

Exercise 26: Confined areas

- landing capability, performance assessment
- locating landing site, assessing wind speed/direction
- reconnaissance of landing site
- select markers
- select direction and type of approach
- circuit
- approach to committed point and go around
- approach
- clearing turn
- landing
- power check, performance assessment in and out of ground effect

– normal take-off to best angle of climb speed

– vertical take-off from hover

AMC to FCL.110.S and to FCL.210.S

FLIGHT INSTRUCTION FOR THE LEISURE PILOT (SAILPLANES) AND THE SAILPLANE PILOT LICENCE (SPL)

1. ENTRY TO TRAINING

1.1 Before starting training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

2. FLIGHT INSTRUCTION

2.1 The LPL (S) / SPL flight instruction syllabus should take into account the principles of threat and error management and also cover:

(a) pre-flight operations, including verifying mass and balance, aircraft inspection and servicing;

(b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;

(c) control of the aircraft by external visual reference;

(d) flight at high angle of attack (critically low airspeeds), recognition of, and recovery from, incipient and full stalls and spins;

(e) flight at critically high airspeeds, recognition of, and recovery from spiral dive;

(f) normal and crosswind take-offs in respect with the different launch methods;

(g) normal and crosswind landings

(h) short field landings and outlandings – field selection, circuit and landing hazards and precautions

(i) cross-country flying using visual reference, dead reckoning and available navigation aids;

(j) soaring techniques as appropriate to site conditions

(k) emergency actions

(l) compliance with air traffic services procedures and communication procedures.

2.2 Before allowing the applicant for a LPL(S) / SPL to undertake his/her first solo flight, the flight instructor should ensure that the applicant can operate the required systems and equipment.

3. SYLLABUS OF FLIGHT INSTRUCTION

3.1. The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide; therefore the demonstrations and practices need not necessarily be given in the order listed. The actual order and content will depend upon the following interrelated factors:

- The applicant's progress and ability
- The weather conditions affecting the flight
- The flight time available
- Instructional technique considerations
- The local operating environment

- Applicability of the exercises to the sailplane type

3.2. At the discretion of the instructors some of the exercises may be combined and some other exercises may be done in several flights.

3.3. Each of the exercises involves the need for the pilot-under-training to be aware the needs of good airmanship and look-out, which should be emphasised at all times.

Exercise 1: Familiarisation with the sailplane

- characteristics of the sailplane
- cockpit layout – instruments and equipment
- flight controls – stick, pedals, airbrakes, flaps, cable release, undercarriage
- check lists, drills, controls

Exercise 2: Procedures in the event of emergencies

- use of safety equipment (parachute)
- action in the event of system failures
- bail-out procedures

Exercise 3: Preparation for flight

- pre-flight briefings
- required documents on board
- equipment required for the intended flight
- ground handling / movements/ tow out, parking, security
- pre-flight external and internal checks
- verifying in-limits mass and balance
- harness, seat and/or rudder panel adjustments
- pre-launch checks

Exercise 4: Initial air experience

- area familiarization
- lookout procedures

Exercise 5: Effects of controls

- lookout procedures
- use of visual references
- primary effects when laterally level and when banked
- reference attitude and effect of elevator
- relationship between attitude and speed
- effects of:
  - flaps (if available)
  - airbrakes

Exercise 6: Moderate Banking and Coordination

- lookout procedures
- further effects of aileron (adverse yaw) and rudder (roll)
- coordination

- banking at moderate angle, return to level flight

Exercise 7: Straight flying

- lookout procedures
- maintaining straight flight
- flight at critically high airspeeds
- demonstration of inherent pitch stability
- control in pitch, including use of trim
- lateral level, direction and balance, trim
- airspeed: instrument monitoring and control

Exercise 8: Turning

- lookout procedures
- demonstration and correction of adverse yaw
- entry to turn (medium level turns)
- stabilizing turns
- exiting turns
- faults in the turn (slipping / skidding)
- turns on to selected headings, use of compass
- use of instruments (ball indicator and/or slip string) for precision

Exercise 9A: Slow flight

NOTE: The objective is to improve the student's ability to recognise inadvertent flight at critically low speeds (high angle of attack) and to provide practice in maintaining the sailplane in balance while returning to normal attitude (speed).

- safety checks
- introduction to characteristics of slow flight
- controlled flight down to critically high angle of attack (slow airspeed)

Exercise 9B: Stalling

- safety checks
- pre-stall symptoms, recognition and recovery
- stall symptoms, recognition and recovery
- recovery when a wing drops
- approach to stall in the approach and in the landing configurations
- recognition and recovery from accelerated stalls

Exercise 10: Spin recognition and avoidance

- safety checks
- stalling and recovery at the incipient spin stage (stall with excessive wing drop, about 45°)
- Instructor induced distractions during the spin entry

NOTE: Consideration of manoeuvre limitations and the need to refer to the sailplane manual and mass and balance calculations.

Exercise 11: Take-off / Launch methods

NOTE: At least one launch method must be taught containing all the subject below.

Exercise 11A: Winch launch

- signals and /or communication before and during launch
- use of the launching equipment
- pre-take-off checks
- into wind take-off
- crosswind take-off
- optimum profile of winch launch and limitations
- launch failure procedures

Exercise 11B: Aero tow

- signals and/or communication before and during launch
- use of the launch equipment
- pre-take-off checks
- into wind take-off
- crosswind take-off
- on tow – straight flight / turning / slip stream
- out of position in tow and recovery
- descending on tow (towing aircraft and sailplane)
- launch failure and abandonment

Exercise 11C: Self-launch

- engine extending and retraction procedures
- engine starting and safety precautions
- pre-take-off checks
- noise abatement procedures
- checks during and after take off
- into wind take-off
- crosswind take-off
- power failures / procedures
- abandoned take-off
- maximum performance (short field and obstacle clearance) take-off
- short take-off and soft field procedure / techniques and performance calculations

Exercise 11D: Car launch

- signals before and during launch
- use of the launch equipment
- pre-take-off checks
- into wind take-off
- crosswind take-off
- optimum launch profile and limitations

- launch failure procedures

Exercise 11E: Bungee launch

- signals before and during launch
- use of the launch equipment
- pre-take-off checks
- into wind take-off

Exercise 12: Soaring techniques

Exercise 12A: Thermalling

- lookout procedures
- detection and recognition of thermals
- use of audio soaring instruments
- joining a thermal and giving way
- flying in close proximity to other sailplanes
- centring in thermals
- leaving thermals

Exercise 12B: Ridge flying (if applicable during training and if possible at training site)

- lookout procedures
- practical application of ridge flying rules
- optimisation of flight path
- speed control

Exercise 12C: Wave flying (if applicable during training and if possible at training site)

- lookout procedures
- wave access techniques
- speed limitations with increasing height
- use of oxygen

Exercise 13: Circuit, approach and landing

- procedures for rejoining the circuit
- collision avoidance, look out techniques and procedures
- circuit procedures, downwind, base leg
- effect of wind on approach and touchdown speeds
- use of flaps (if applicable)
- visualisation of an aiming point
- approach control and use of airbrakes
- normal and crosswind approach and landing
- short landing procedures/techniques

Exercise 14: First solo

- instructor’s briefing including limitations
- awareness of local area, restrictions
- use of required equipment

- observation of flight and debriefing by instructor

Exercise 15: Advanced turning

- steep turns (45°)
- stalling and spin avoidance in the turn and recovery
- recoveries from unusual attitudes, including spiral dives

Exercise 16: Out-landings

- gliding range
- re- start procedures (only for self-launching and self-sustaining sailplanes)
- selection of landing area
- circuit judgement and key positions
- circuit and approach procedures
- actions after landing

Exercise 17: Cross country flying

Exercise 17A: Flight Planning

- weather forecast and actuals
- NOTAMS, airspace considerations
- map selection and preparation
- route planning
- radio frequencies (if applicable)
- pre-flight administrative procedure
- flight plan where required
- mass and performance
- alternate aerodromes and landing areas
- safety altitudes

Exercise 17B: In-Flight Navigation

- maintaining track and re-routing considerations
- altimeter settings
- use of radio and phraseology
- in-flight planning
- procedures for transiting regulated airspace / ATC liaison where required
- uncertainty of position procedure
- lost procedure
- use of additional equipment where required
- joining, arrival and circuit procedures at remote aerodrome

Exercise 17C: Cross country techniques

- lookout procedures
- maximising potential cross-country performance
- risk reduction and threat reaction

AMC to FCL.135.S and FCL.225.S

Extension of privileges to touring motor gliders - LPL(S) and SPL

1. The aim of the flight training is to qualify LPL(S)/SPL holders to exercise the privileges of the licence on a TMG.
2. The approved training organisation should issue a certificate of satisfactory completion of the training.
3. THEORETICAL KNOWLEDGE

   The theoretical knowledge syllabus should cover the revision and/or explanation of:

   3.1. Principles of flight
   - operating limitations (addition touring motor gliders)
   - propellers
   - flight mechanics

   3.2. Operational Procedures for touring motor gliders
   - special operational procedures and hazards
   - emergency procedures

   3.3. Flight performance and planning
   - mass and balance considerations
   - loading
   - CG calculation
   - load and trim sheet
   - performance of touring motor gliders
   - flight planning for VFR flights
   - fuel planning
   - pre-flight preparation
   - ICAO flight plan
   - flight monitoring and in-flight re-planning

   3.4. Aircraft general knowledge
   - system designs, loads, stresses, maintenance
   - airframe
   - Hydraulics
   - landing gear, wheels, tyres, brakes
   - fuel system
   - electrics
   - piston engines
   - propellers
   - instrument and indication systems
   - measurement of aerodynamic parameters

   3.5. Navigation
   - dead reckoning navigation (addition powered flying elements)

- in flight navigation (addition powered flying elements)
- basic radio propagation theory
- radio aids (basics)
- radar (basics)
- global navigation satellite systems

4. FLIGHT INSTRUCTION

The flying exercises should cover the revision and/or explanation of the following exercises:

Exercise 1: Familiarisation with the touring motor glider

- characteristics of the touring motor glider
- cockpit layout
- systems
- check lists, drills, controls

Exercise 1E: Emergency drills

- action in the event of fire on the ground and in the air
- engine cabin and electrical system fire
- systems failure
- escape drills, location and use of emergency equipment and exits

Exercise 2: Preparation for and action after flight

- serviceability documents
- equipment required, maps, etc.
- external checks
- internal checks
- harness, seat or rudder panel adjustments
- starting and warm up checks
- power checks
- running down system checks and switching off the engine
- parking, security and picketing (e.g. tie down)
- completion of authorisation sheet and serviceability documents

Exercise 3: Taxiing

- pre-taxi checks
- starting, control of speed and stopping
- engine handling
- control of direction and turning
- turning in confined spaces
- parking area procedure and precautions
- effects of wind and use of flying controls
- effects of ground surface
- freedom of rudder movement

- marshalling signals
- instrument checks
- air traffic control procedures

Exercise 3E: Emergencies

- Brake and steering failure

Exercise 4: Straight and level

- at normal cruising power, attaining and maintaining straight and level flight
- flight at critically high airspeeds
- demonstration of inherent stability
- control in pitch, including use of trim
- lateral level, direction and balance, trim
- at selected airspeeds (use of power)
- during speed and configuration changes
- use of instruments for precision
- airmanship

Exercise 5: Climbing

- entry, maintaining the normal and max rate climb, levelling off
- levelling off at selected altitudes
- en-route climb (cruise climb)
- climbing with flap down
- recovery to normal climb
- maximum angle of climb
- use of instruments for precision
- airmanship

Exercise 6: Descending

- entry, maintaining and levelling off
- levelling off at selected altitudes
- glide, powered and cruise descent (including effect of power and airspeed)
- side slipping (or suitable types)
- use of instruments for precision flight
- airmanship

Exercise 7: Turning

- entry and maintaining medium level turns
- resuming straight flight
- faults in the turn – (in correct pitch, bank, balance)
- climbing turns
- descending turns
- slipping turns (or suitable types)
- turns onto selected headings, use of gyro heading indicator and compass

- use of instruments for precision

Exercise 8A: Slow flight

NOTE: The objective is to improve the pilot's ability to recognise inadvertent flight at critically low speeds and provide practice in maintaining the touring motor glider in balance while returning to normal airspeed.

- safety checks
- introduction to slow flight
- controlled flight down to critically slow airspeed
- application of full power with correct attitude and balance to achieve normal climb speed
- airmanship

Exercise 8B: Stalling

- airmanship
- safety checks
- symptoms
- recognition
- clean stall and recovery without power and with power
- recovery when a wing drops
- approach to stall in the approach and in the landing configurations, with and without power, recovery at the incipient stage

Exercise 9: Take-off and climb to downwind position

- pre-take-off checks
- into wind take-off
- safeguarding the nosewheel (if applicable)
- crosswind take-off
- drills during and after take-off
- short take-off and soft field procedure/techniques including performance calculations
- noise abatement procedures
- airmanship

Exercise 10: Circuit, approach and landing

- circuit procedures, downwind, base leg
- powered approach and landing
- safeguarding the nosewheel (if applicable)
- effect of wind on approach and touchdown speeds, use of flaps
- crosswind approach and landing
- glide approach and landing
- short landing and soft field procedures/techniques
- flapless approach and landing
- wheel landing (tail wheel aeroplanes)

- missed approach/go around
- noise abatement procedures
- airmanship

Exercise 9/10E: Emergencies

- abandoned take-off
- engine failure after take-off
- mislanding / go-around
- missed approach

In the interests of safety it will be necessary for pilots trained on nosewheel touring motor gliders to undergo dual conversion training before flying tail wheel touring motor gliders, and vice-versa.

Exercise 11: Advanced turning

- steep turns (45°), level and descending
- stalling in the turn and recovery
- recoveries from unusual attitudes, including spiral dives
- airmanship

Exercise 12: Forced landing without power

- forced landing procedure
- choice of landing area, provision for change of plan
- gliding distance
- descent plan
- key positions
- engine cooling
- engine failure checks
- use of radio
- base leg
- final approach
- landing
- actions after landing
- airmanship

Exercise 13: Precautionary landing

- full procedure away from aerodrome to break-off height
- occasions necessitating
- in-flight conditions
- landing area selection
  - normal aerodrome
  - disused aerodrome
  - ordinary field
- circuit and approach

- actions after landing
- airmanship

Exercise 14A: Navigation

Flight planning

- weather forecast and actuals
- map selection and preparation
  - choice of route
  - airspace structure
  - safety altitudes
- calculations
  - magnetic heading(s) and time(s) en-route
  - fuel consumption
  - mass and balance
  - mass and performance
- flight information
  - NOTAMS etc.
  - radio frequencies
  - selection of alternate aerodromes
- touring motor glider documentation
- notification of the flight
  - pre-flight administrative procedures
  - flight plan form

Departure

- organisation of cockpit workload
- departure procedures
  - altimeter settings
  - ATC liaison in regulated airspace
  - setting heading procedure
  - noting of ETAs
- maintenance of altitude and heading
- revisions of ETA and heading
- log keeping
- use of radio
- minimum weather conditions for continuation of flight
- in-flight decisions
- transiting controlled/regulated airspace
- diversion procedures
- uncertainty of position procedure
- lost procedure

Arrival, aerodrome joining procedure

  - ATC liaison in regulated airspace
  - altimeter setting
  - entering the traffic pattern
  - circuit procedures
- parking
- security of touring motor glider
- refuelling
- closing of flight plan, if appropriate
- post-flight administrative procedures

Exercise 14B: Navigation problems at lower levels and in reduced visibility

- actions prior to descending
- hazards (e.g. obstacles, and terrain)
- difficulties of map reading
- effects of wind and turbulence
- vertical situational awareness (avoidance of controlled flight into terrain)
- avoidance of noise sensitive areas
- joining the circuit
- bad weather circuit and landing

Exercise 14C: Radio navigation (basics)

Use of Global Navigation Satellite Systems

- Selection of waypoints
- to/from indications, orientation
- error messages

Use of VHF direction finding (VHF/DF)

- availability, AIP, frequencies
- R/T procedures and ATC liaison
- obtaining a QDM and homing

Use of en-route/terminal radar

- availability, AIP
- procedures and ATC liaison
- pilot’s responsibilities
- secondary surveillance radar
  - transponders
  - code selection
  - interrogation and reply

AMC to FCL.110.B and to FCL.210.B

FLIGHT INSTRUCTION FOR THE LEISURE PILOT LICENCE – BALLOON

FLIGHT INSTRUCTION FOR THE BALLOON PILOT LICENCE (BPL)

1. ENTRY TO TRAINING

1.1 Before being accepted for training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

2. FLIGHT INSTRUCTION

2.1 The LPL(B) / BPL flight instruction syllabus should take into account the principles of threat and error management and also cover:

(a) pre-flight operations, including load calculations, balloon inspection and servicing;

(b) crew and passenger briefings;

(c) inflation and crowd control;

(d) control of the balloon by external visual reference;

(e) take off in different wind conditions;

(f) approach from low and high level:

(g) landings in surface winds below and above 8 knots;

(h) cross-country flying using visual reference and dead reckoning;

(i) tethered flight (Hot air balloons only);

(j) emergency operations, including simulated balloon equipment malfunctions;

(k) compliance with air traffic services procedures and communication procedures

(l) landowner relations

2.2 Before allowing the applicant for a BPL / LPL(B) to undertake his/her first solo flight, the flight instructor should ensure that the applicant can operate the required systems and equipment.

3. SYLLABUS OF FLIGHT INSTRUCTION (HOT AIR BALLOON)

3.1. The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide; therefore the demonstrations and practices need not necessarily be given in the order listed. The actual order and content will depend upon the following interrelated factors:

- The applicant's progress and ability
- The weather conditions affecting the flight
- The flight time available
- Instructional technique considerations
- The local operating environment
- Applicability of the exercises to the balloon type

3.2. Each of the exercises involves the need for the pilot-under-training to be aware the needs of good airmanship and look-out, which should be emphasised at all times.

Exercise 1: Familiarisation with the balloon

- characteristics of the balloon

- the components / systems
- instruments and equipment
- use of check list(s) and procedures

Exercise 2: Preparation for flight

- documentation and equipment
- weather forecast and actuals
- flight Planning
  - Notam
  - Airspace structure
  - Sensitive areas
  - Expected track and distance
  - Pre-flight picture
  - Possible landing fields
- launch Field
  - Permission
  - Field selection
  - Behaviour
  - Adjacent Fields
- load Calculations

Exercise 3: Crew and Passenger Briefing

- clothing
- crew Briefing
- passenger Briefing

Exercise 4: Assembly and layout

- crowd control
- rigging envelope, basket and burner
- burner Test
- pre-inflation checks

Exercise 5: Inflation

- crowd control
- cold inflation
  - Use of restraint line
  - Use of the inflation fan
- hot inflation

Exercise 6: Take off in wind less than 8 knots

- pre take-off checks and briefings
- heating for controlled climb
- “Hands off / Hands on” procedure for ground crew
- use of quick release

- assessment of wind and obstacles

Exercise 7: Take off in wind without shelter

- pre take-off checks and briefings
- heating for controlled climb
- "Hands off / Hands on" procedure for ground crew
- use of quick release
- assessment of wind and obstacles

Exercise 8: Take off in wind more than 8 knots

- pre take-off checks and briefings
- heating for controlled climb
- "Hands off / Hands on" procedure for ground crew
- preparation for false lift
- use of quick release
- assessment of wind and obstacles

Exercise 9: Climb to level flight

- climbing with a predetermined rate of climb
- look out procedures
- effect on envelope temperature
- maximum rate of climb according to manufacturer's flight manual
- levelling off at selected altitude

Exercise 10: Level flight

- maintaining level flight by
  - Use of instruments only
  - Use of visual references only
  - All available means
- use of parachute and turning vents (if applicable)

Exercise 11: Descent to level flight

- descent with a predetermined rate of descent
- fast descent
- look out procedures
- maximum rate of descent according to manufacturer's flight manual
- use of parachute
- parachute stall
- cold descent
- levelling off at selected altitude

Exercise 12: Emergencies - systems

- pilot light failure
- burner failure, valve leaks, flame out, re-light
- gas leaks

- envelope over temperature
- envelope damage in flight
- parachute/Rapid deflation system failure

Exercise 13: Other emergencies

- fire extinguishers
- fire on ground
- fire in the air
- contact with electrical power lines
- obstacle avoidance
- escape drills, location and use of emergency equipment

Exercise 14: Navigation

- maps selection
- plotting expected track
- marking positions and time
- calculation of distance, speed and fuel consumption
- ceiling limitations (ATC, Weather, Envelope temperature)
- planning ahead
- monitoring of weather development and acting accordingly
- monitoring of fuel consumption and envelope temperature
- ATC liaison (if applicable)
- communication with retrieve crew
- use of GPS (if applicable)

Exercise 15: Fuel Management

- cylinder arrangement and burner systems
- pilot light supply (vapour/liquid)
- use of master cylinders (if applicable)
- fuel requirement and expected fuel consumption
- fuel state and pressure
- fuel reserves
- cylinder contents gauge and change procedure
- use of cylinder manifolds

Exercise 16: Approach from low level

- pre landing checks
- selection of field
- use of burner and parachute
- look out procedures
- missed approach / fly on

Exercise 17: Approach from high level

- pre landing checks

- selection of field
- rate of descent
- use of burner and parachute
- look out procedures
- missed approach / fly on

Exercise 18: Operating at low level

- use of burner and parachute
- look out procedures
- avoidance of low level obstacles
- landowner relations

Exercise 19: Landing in wind less than 8 knots

- pre landing checks
- selection of field
- use of burner and pilot lights
- use of parachute and turning vents (if applicable)
- look out
- dragging and Deflation
- landowner relations
- airmanship

Exercise 20: Landing in wind more than 8 knots

- pre landing checks
- selection of field
- turbulence
- use of burner and pilot lights
- use of parachute and turning vents (if applicable)
- look out procedures
- dragging and Deflation
- landowner relations

Exercise 21: Tethered flight

- ground preparations
- weather suitability
- tether points
  - Upwind
  - Downwind
- tether ropes
- maximum all-up-weight limitation
- crowd control
- pre take-off checks and briefings
- heating for controlled lift off

- "Hands off / Hands on" procedure for ground crew
- assessment of wind and obstacles

Exercise 22: First Solo

- supervised flight preparation
- instructor's briefing, observation of flight and de-briefing

4. SYLLABUS OF FLIGHT INSTRUCTION (GAS BALLOON)

4.1. The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide; therefore the demonstrations and practices need not necessarily be given in the order listed. The actual order and content will depend upon the following interrelated factors:

- The applicant's progress and ability
- The weather conditions affecting the flight
- The flight time available
- Instructional technique considerations
- The local operating environment
- Applicability of the exercises to the balloon type

4.2. Each of the exercises involves the need for the pilot-under-training to be aware the needs of good airmanship and look-out, which should be emphasised at all times.

Exercise 1: Familiarisation with the balloon

- characteristics of the balloon
- the components / systems
- instruments and equipment
- use of check list(s) and procedures

Exercise 2: Preparation for flight

- documentation and Equipment
- weather forecast and actuals
- flight Planning
  - Notam
  - Airspace structure
  - Sensitive areas
  - Expected track and distance
  - Pre-flight picture
  - Possible landing fields
- launch Field
  - Permission
  - Behaviour
  - Adjacent Fields
- load Calculations

Exercise 3: Crew and Passenger Briefing

- clothing
- crew Briefings
- passenger Briefing

Exercise 4 :Assembly and layout

- crowd control
- rigging envelope and basket (Balloon with net)
- rigging envelope and basket (Net-less balloon)
- ballast check

Exercise 5: Inflation

- crowd control
- inflation procedure according to manufacturer's flight manual
- avoiding electrostatic discharge

Exercise 6: Take off in wind less than 8 knots

- pre take-off checks and briefings
- prepare for controlled climb
- "Hands off / Hands on" procedure for ground crew
- assessment of wind and obstacles

Exercise 7: Take off in wind more than 8 knots

- pre take-off checks and briefings
- preparation for controlled climb
- "Hands off / Hands on" procedure for ground crew
- preparation for false lift
- assessment of wind and obstacles

Exercise 8: Climb to level flight

- climb with a predetermined rate of climb
- look out procedures
- maximum rate of climb according to manufacturer's flight manual
- levelling off at selected altitude

Exercise 9: Level flight

- maintaining level flight by
  - Use of instruments only
  - Use of visual references only
  - All available means
- use of parachute/valve

Exercise 10: Descent to level flight

- descent with a predetermined rate of descent
- fast descent
- look out procedures
- maximum rate of descent according to manufacturer's flight manual

- use of parachute/valve
- levelling off at selected altitude

Exercise 11 :Emergencies

- closed appendix during take-off and climb
- envelope damage in flight
- parachute/valve failure
- contact with electrical power lines
- obstacle avoidance
- escape drills, location and use of emergency equipment

Exercise 12: Navigation

- map selection
- plotting expected track
- marking positions and time
- calculation of distance, speed and ballast consumption
- ceiling limitations (ATC, Weather, Ballast)
- planning ahead
- monitoring of weather development and acting accordingly
- monitoring of ballast consumption
- ATC liaison (if applicable)
- communication with retrieve crew
- use of GPS (if applicable)

Exercise 13: Ballast Management

- minimum ballast
- arrangement and securing of ballast
- ballast requirement and expected ballast consumption
- ballast reserves

Exercise 14: Approach from low level

- pre landing checks
- selection of field
- use of ballast and parachute/valve
- use of trail rope (if applicable)
- look out procedures
- missed approach / fly on

Exercise 15: Approach from high level

- pre landing checks
- selection of field
- rate of descent
- use of ballast and parachute/valve
- use of trail rope (if applicable)

- look out procedures
- missed approach / fly on

Exercise 16: Operating at low level

- use of ballast and parachute/valve
- look out procedures
- avoidance of low level obstacles
- landowner relations

Exercise 17: Landing in wind less than 8 knots

- pre landing checks
- selection of field
- use of ballast and parachute/valve
- look out procedures
- use of rip panel
- deflation
- avoiding electrostatic discharge
- landowner relations

Exercise 18: Landing in wind more than 8 knots

- pre landing checks
- selection of field
- turbulence
- use of ballast and parachute/valve
- look out
- use of rip panel
- dragging
- deflation
- avoiding electrostatic discharge
- landowner relations

Exercise 19: First Solo

- supervised flight preparation
- instructor's briefing, observation of flight and de-briefing

AMC No 1 to FCL.135.B and to FCL.225.B

FLIGHT INSTRUCTION (THEORETICAL KNOWLEDGE) FOR THE EXTENSION TO ANOTHER BALLOON CLASS: LEISURE PILOT LICENCE – BALLOON / BALLOON PILOT LICENCE (BPL)

1. The aim of the flight instruction is to qualify LPL(B) or BPL holders to exercise the privileges on a different class of balloons.

2. The following classes are recognised:

   - hot air balloons
   - gas balloons

- hot air airships

3. The approved training organisation should issue a certificate of satisfactory completion of the instruction for the purpose of licence endorsement.

4. THEORETICAL KNOWLEDGE

The theoretical knowledge syllabus should cover the revision and/or explanation of:

4.1 Principles of flight

- operating limitations
- loading limitations

4.2 Operational Procedures

- special operational procedures and hazards
- emergency procedures

4.3 Flight performance and planning

- mass considerations
- loading
- performance (hot-air / gas / hot air airship)
- flight planning
- fuel planning
- flight monitoring

4.4. Aircraft general knowledge

- system designs, loads, stresses, maintenance
- envelope
- burner (only extension to hot air balloon /airship)
- fuel cylinders (except gas balloons)
- basket / gondola
- lifting or burning gas
- ballast (only gas balloon)
- engine (only hot-air airship)
- instruments and indication systems
- emergency equipment

AMC No 2 to FCL.135.B and to FCL.225.B

FLIGHT INSTRUCTION (THEORETICAL KNOWLEDGE) FOR THE EXTENSION TO ANOTHER BALLOON CLASS: LEISURE PILOT LICENCE – BALLOON / BALLOON PILOT LICENCE (BPL)

ADDITIONAL SYLLABUS OF FLIGHT INSTRUCTION FOR THE EXTENSION OF PRIVILEGES FOR THE BALLOON PILOT LICENCE / LEISURE PILOT LICENCE (BALLOONS) – HOT AIR BALLOON TO HOT-AIR AIRSHIP

The pre-requisite for the extension of privileges to hot-air airships is a valid BPL or LPL for hot air balloons because a hot-air airship with a failed engine must be handled in a similar manner as a hot air balloon. The conversion training has to concentrate therefore on the added complication of the engine, its controls and the different operating limitations of a hot-air airship.

Exercise 1: Familiarisation with the hot air airship

- characteristics of the hot air airship
- the components / systems

- instruments and equipment
- use of check list(s) and procedures

Exercise 2: Preparation for flight

- documentation and equipment
- weather forecast and actuals
- flight Planning
  - Notam
  - Airspace structure
  - Sensitive areas
  - Expected track and distance
  - Pre-flight picture
  - Possible landing fields
- launch Field
  - Permission
  - Behaviour
  - Field selection
  - Adjacent Fields
- load and fuel calculations

Exercise 3: Crew and passenger briefing.

- clothing
- crew Briefing
- passenger Briefing

Exercise 4: Assembly and layout

- crowd control
- rigging envelope, gondola, burner and engine
- burner test
- pre-inflation checks

Exercise 5: Inflation

- crowd control
- cold inflation
  - Use of restraint line
  - Use of the inflation fan
- hot inflation

Exercise 6: Engine

- identification of main parts and controls
- familiarisation with operation and checking of the engine
- engine checks before take off

Exercise 7: Pressurisation

- pressurisation fan operation

- super pressure and balance between pressure and temperature
- pressure limitations

Exercise 8: Take off

- pre take-off checks and briefings
- heating for controlled climb
- procedure for ground crew
- assessment of wind and obstacles

Exercise 9: Climb to level flight.

- climbing with a predetermined rate of climb
- effect on envelope temperature and pressure
- maximum rate of climb according to manufacturer's flight manual
- level off at selected altitude

Exercise 10: Level flight.

- maintaining level flight by
  - Use of instruments only
  - Use of visual references only
  - All available means
- maintaining level flight at different airspeeds taking account of aerodynamic lift

Exercise 11: Descent to level flight.

- descent with a predetermined rate of descent
- maximum rate of descent according to manufacturer's flight manual
- levelling off at selected altitude

Exercise 12: Emergencies – systems.

- engine failure
- pressurisation failure
- rudder failure
- pilot light failure
- burner failure, valve leaks, flame out, re-light
- gas leaks
- envelope over temperature
- envelope damage in flight

Exercise 13: Other emergencies

- fire extinguishers
- fire on ground
- fire in the air
- contact with electrical power lines
- obstacle avoidance
- escape drills, location and use of emergency equipment

Exercise 14: Navigation

- map selection and preparation
- plotting and steering expected track
- marking positions and time
- calculation of distance, speed and fuel consumption
- ceiling limitations (ATC, Weather, Envelope temperature)
- planning ahead
- monitoring of weather development and acting accordingly
- monitoring of fuel and envelope temperature / pressure
- ATC liaison (if applicable)
- communication with ground crew
- use of GPS (if applicable)

Exercise 15: Fuel Management

- engine arrangement and tank system.
- cylinder arrangement and burner systems
- pilot light supply (vapour/liquid)
- fuel requirement and expected fuel consumption for engine and burner
- fuel state and pressure
- fuel reserves
- cylinder and petrol tank contents gauge

Exercise 16: Approach and go around.

- pre landing checks
- selection of field into wind
- use of burner and engine
- look out procedures
- missed approach / go around

Exercise 17: Approach with simulated engine failure.

- pre landing checks
- selection of field
- use of burner
- look out procedures
- missed approach / go around

Exercise 18: Operating at low level

- use of burner and engine
- look out procedures
- avoidance of low level obstacles
- landowner relations

Exercise 19: Steering

- assessment of wind
- correcting for wind to steer a given course

Exercise 20: Final landing

- pre landing checks
- use of burner and engine
- look out
- deflation
- land owner relations

AMC No 3 to FCL.135.B and FCL.225.B

CONTENTS OF THE SKILL TEST FOR THE EXTENSION OF A LPL(B) OR A BPL TO ANOTHER BALLOON CLASS (HOT AIR AIRSHIP)

1 The take off site should be chosen by the applicant depending on the actual meteorological conditions, the area which has to be overflown and the possible options for suitable landing sites. The applicant should be responsible for the flight planning and should ensure that all equipment and documentation for the execution of the flight are on board.

2 An applicant should indicate to the FE the checks and duties carried out. Checks should be completed in accordance with the flight manual and/or the authorised check list for the balloon on which the test is being taken. During pre-flight preparation for the test the applicant should be required to perform crew and passenger briefings and demonstrate crowd control. The load calculation should be performed by the applicant in compliance with the operations manual or flight manual for the hot air airship used.

FLIGHT TEST TOLERANCE

3 The applicant should demonstrate the ability to:

- operate the hot air airship within its limitations;
- complete all manoeuvres with smoothness and accuracy
- exercise good judgment and airmanship;
- apply aeronautical knowledge; and
- maintain control of the airship at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

4 The skill test contents and sections set out in this AMC should be used for the skill test for the issue of a LPL(B) and BPL Hot Air Airship extension.

SECTION 1 PRE-FLIGHT OPERATIONS, INFLATION AND TAKE OFF	
Use of checklist, airmanship, control of hot-air airship by external visual reference, look out procedures, etc. apply in all sections.	
a	Pre-flight documentation, flight planning and weather brief
b	Hot-air airship inspection and servicing
c	Load calculation
d	Crowd control, crew and passenger briefings
e	Assembly and layout
f	Inflation and pre-take-off procedures
g	Take off
h	ATC liaison – compliance (if applicable)

SECTION 2 **GENERAL AIRWORK**	
a	Climb to level flight
b	Level flight
c	Descent to level flight
d	Operating at low level
e	ATC liaison – compliance (if applicable)
SECTION 3 **EN-ROUTE PROCEDURES**	
a	Dead reckoning and map reading
b	Marking positions and time
c	Orientation, airspace structure
d	Plotting and steering expected track
e	Maintenance of altitude
f	Fuel management
g	Communication with ground crew
h	ATC liaison – compliance (if applicable)
SECTION 4 **APPROACH AND LANDING PROCEDURES**	
a	Approach, missed approach / go around
b	Pre landing checks
c	Selection of landing field
d	Landing and deflation
e	ATC liaison – compliance (if applicable)
f	Actions after flight
SECTION 5 **ABNORMAL AND EMERGENCY PROCEDURES**	
This section may be combined with Sections 1 through 4.	
a	Simulated Fire on the ground and in the air
b	Simulated pilot light-, burner- and engine-failure
c	Approach with simulated engine failure, missed approach / go around
d	Other abnormal and emergency procedures as outlined in the appropriate flight manual.
e	Oral questions

SUBPART C

PRIVATE PILOT LICENCE (PPL), SAILPLANE PILOT LICENCE (SPL) and BALLOON PILOT LICENCE (BPL)

AMC No 1 to FCL.210 and FCL.215

Syllabus of theoretical knowledge for the private pilot licence – aeroplanes and helicopters

The following tables contain the syllabi for the courses of theoretical knowledge, as well as for the theoretical knowledge examinations for the PPL(A) and (H). The training and examination should cover aspects related to non-technical skills in an integrated manner, taking into account the particular risks associated to the licence and the activity.

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
010 00 00 00	**AIR LAW AND ATC PROCEDURES**				
010 01 00 00	**INTERNATIONAL LAW: CONVENTIONS, AGREEMENTS AND ORGANISATIONS**				
010 01 01 00	**The Convention on international civil aviation (Chicago)** **Doc. 7300/6**				
010 01 01 01	Part I Air Navigation – relevant parts of the following chapters: – general principles and application of the convention – flight over territory of Contracting States - nationality of aircraft – measures to facilitate air navigation - conditions to be fulfilled with respect to aircraft – international standards and recommended practices - validity of endorsed certificates and licences - notification of differences	x	x	x	x
010 01 01 02	Part II The International Civil Aviation Organisation (ICAO) – objectives and composition	x	x	x	x
010 02 00 00	**ANNEX 8 – AIRWORTHINESS OF AIRCRAFT**				
010 02 01 00	– foreword, definitions	x	x	x	x
010 02 02 00	- certificate of airworthiness	x	x	x	x
010 03 00 00	**ANNEX 7 – AIRCRAFT NATIONALITY AND REGISTRATION MARKS**				
010 03 01 00	– Foreword, definitions	x	x	x	x
010 03 02 00	- Common- and registration marks	x	x	x	x
010 03 03 00	- Certificate of registration, Aircraft nationality	x	x	x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
010 04 00 00	**ANNEX 1 – PERSONNEL LICENSING**				
010 04 01 00	- Definitions	x	x	x	x
010 04 02 00	- Relevant parts of Annex 1 connected to JAR-FCL 1, 2 & 3	x	x	x	x
010 05 00 00	**ANNEX 2 - RULES OF THE AIR**				
010 05 01 00	– essential definitions, applicability of the rules of the air, general rules (except water operations), visual flight rules, signals, interception of civil aircraft.	x	x	x	x
010 06 00 00	**PROCEDURES FOR AIR NAVIGATION – AIRCRAFT OPERATIONS Doc. 8168-OPS/611, VOLUME 1**				
010 06 06 00	**Altimeter setting procedures (including ICAO Doc. 7030 – regional supplementary procedures)**				
010 06 06 01	– Basic requirements (except tables), procedures applicable to operators and pilots (except tables)	x	x	x	x
010 06 07 00	**Secondary surveillance radar transponder operating procedures (including ICAO Doc. 7030 – regional supplementary procedures)**				
010 06 07 01	– operation of transponders	x	x	x	x
010 06 07 03	– phraseology	x	x	x	x
010 07 00 00	**ANNEX 11, Doc. 4444 AIR TRAFFIC MANAGEMENT**				
010 07 01 00	Definitions	x	x	x	x
010 07 04 00	General provisions for air traffic services	x	x	x	x
010 07 06 00	Visual separation in the vicinity of aerodromes.	x	x	x	x
010 07 07 00	Procedures for aerodrome control services	x	x	x	x
010 07 08 00	Radar services	x	x	x	x
010 07 09 00	Flight information service and alerting service	x	x	x	x
010 07 12 00	Phraseologies	x	x	x	x
010 07 15 00	Procedures related to emergencies, communication failure and contingencies	x	x	x	x
010 08 00 00	**ANNEX 15 - AERONAUTICAL INFORMATION SERVICE**				
010 08 01 00	Introduction, essential definitions	x	x	x	x

		Aeroplane		Helicopter	
		PPL	**Bridge**	**PPL**	**Bridge**
010 08 02 00	AIP, NOTAM, AIRAC, AIC	x	x	x	x
010 09 00 00	**ANNEX 14, Vol 1 & 2 - AERODROMES**				
010 09 01 00	Essential definitions	x	x	x	x
010 09 02 00	Aerodrome data: – conditions of the movement area and related facilities	x	x	x	x
010 09 03 00	Visual aids for navigation – indicators and signalling devices – markings – lights – signs – markers	x	x	x	x
010 09 04 00	Visual aids for denoting obstacles – marking of objects – lighting of objects	x	x	x	x
010 09 05 00	Visual aids for denoting restricted use of areas	x	x	x	x
010 09 06 00	Emergency and other services – rescue and fire fighting – apron management service	x	x	x	x
010 11 00 00	**ANNEX 12 - SEARCH AND RESCUE**				
010 11 01 00	Essential definitions	x	x	x	x
010 11 04 00	Operating procedures – procedures for pilots-in-command at the scene of an accident – procedures for pilots-in-command intercepting a distress transmission – search and rescue signals	x	x	x	x
010 11 05 00	Search and rescue signals: – signals with surface craft – ground/air visual signal code – air/ground signals	x	x	x	x
010 12 00 00	**ANNEX 17 - SECURITY**				
010 12 01 00	General: aims and objectives	x	x	x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
010 13 00 00	**ANNEX 13 - AIRCRAFT ACCIDENT INVESTIGATION**				
010 13 01 00	Essential definitions	x	x	x	x
010 13 02 00	Applicability	x	x	x	x
010 15 00 00	**NATIONAL LAW**				
010 15 01 00	National law and differences to relevant ICAO Annexes, JARs and EASA regulations.	x	x	x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
021 00 00 00	**AIRCRAFT GENERAL KNOWLEDGE – AIRFRAME AND SYSTEMS, ELECTRICS, POWERPLANT, EMERGENCY EQUIPMENT**				
021 01 00 00	**SYSTEM DESIGN, LOADS, STRESSES, MAINTENANCE**				
021 01 02 00	**Loads and combination loadings applied to an aircraft's structure**	x	x	x	x
021 02 00 00	**AIRFRAME**				
021 02 03 00	**Wings, tail surfaces and control surfaces**				
021 02 03 01	Design and constructions	x	x		
021 02 03 02	Structural components and materials	x	x		
021 02 03 03	Stresses	x	x		
021 02 03 04	Structural limitations	x	x		
021 02 04 00	**Fuselage, doors, floor, wind-screen and windows**				
021 02 04 01	Design and constructions	x	x	x	x
021 02 04 02	Structural components and materials	x	x	x	x
021 02 04 03	Stresses	x	x	x	x
021 02 04 04	Structural limitations	x	x	x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
021 02 05 00	**Flight and control surfaces**				
021 02 05 01	Design and constructions			x	x
021 02 05 02	Structural components and materials			x	x
021 02 05 03	Stresses, aeroelastic vibrations			x	x
021 02 05 04	Structural limitations			x	x
021 03 00 00	**HYDRAULICS**				
021 03 01 00	**Hydromechanics: basic principles**	x	x	x	x
021 03 02 00	**Hydraulic systems**	x	x	x	x
021 03 02 01	Hydraulic fluids: types, characteristics, limitations	x	x	x	x
021 03 02 02	System components: design, operation, degraded modes of operation, indications and warnings	x	x	x	x
021 04 00 00	**LANDING GEAR, WHEELS, TYRES, BRAKES**				
021 04 01 00	**Landing gear**				
021 04 01 01	Types and materials	x	x	x	x
021 04 02 00	**Nose wheel steering: design, operation**	x	x		
021 04 03 00	**Brakes**				
021 04 03 01	Types and materials	x	x	x	x
021 04 03 02	System components, design, operation, indications and warnings	x	x	x	x
021 04 04 00	**Wheels and Tyres**				
021 04 04 01	Types, operational limitations	x	x	x	x
021 04 05 00	**Helicopter equipments**			x	x
021 05 00 00	**FLIGHT CONTROLS**				
021 05 01 00	**Flight Controls**				
021 05 01 01	Mechanical/powered	x	x	x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
021 05 01 03	Control systems, mechanical	x	x	x	x
021 05 01 04	System components, design, operation, indications and warnings, degraded modes of operation, jamming	x	x	x	x
021 05 02 00	**Secondary Flight Controls**				
021 05 02 01	System components, design, operation, degraded modes of operation, indications and warnings	x	x		
021 07 00 00	**ANTI-ICING SYSTEMS**				
021 07 01 00	Types, operation (pitot, windshield)	x	x	x	x
021 08 00 00	**FUEL SYSTEM**				
021 08 01 00	**Piston engine**				
021 08 01 01	Design, operation, system components, degraded modes of operation, indications and warnings	x	x	x	x
021 08 02 00	**Turbine engine**				
021 08 02 00	Design, operation, system components, degraded modes of operation, indications and warnings			x	x
021 09 00 00	**ELECTRICS**				
021 09 01 00	**Electrics: general, definitions**				
021 09 01 01	Direct Current: – voltage, current, resistance, conductivity, Ohm’s law, power, work	x	x	x	x
021 09 01 02	Alternating Current: – voltage, current, amplitude, phase, frequency, resistance	x	x	x	x
021 09 01 04	Circuits: series, parallel	x	x	x	x
021 09 01 05	Magnetic field: effects in an electrical circuit	x	x	x	x
021 09 02 00	**Batteries**				
021 09 02 01	Types, characteristics and limitations	x	x	x	x
021 09 02 02	Battery chargers, characteristics and limitations	x	x	x	x
021 09 03 00	**Static electricity: general**				

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
021 09 03 01	Basic principles	x	x	x	x
021 09 03 02	Static dischargers	x	x	x	x
021 09 03 03	Protection against interference	x	x	x	x
021 09 03 04	Lightning effects	x	x	x	x
021 09 04 00	**Generation: production, distribution, use**				
021 09 04 01	DC Generation: – types, design, operation, degraded modes of operation, indications and warnings	x	x	x	x
021 09 04 02	AC Generation: – types, design, operation, degraded modes of operation, indications and warnings	x	x	x	x
021 09 05 00	**Electric components**				
021 09 05 01	Basic elements: – basic principles of switches, circuit-breakers, relays	x	x	x	x
021 09 06 00	**Distribution**				
021 09 06 01	General: – bus bar, common earth, priority – AC and DC comparison	x	x	x	x
021 10 00 00	**PISTON ENGINES**				
021 10 01 00	**General**				
021 10 01 01	Types of internal combustion engine: basic principles, definitions	x	x	x	x
021 10 01 02	Engine: design, operation, components and materials	x	x	x	x
021 10 02 00	**Fuel**				
021 10 02 01	Types, grades, characteristics, limitations	x	x	x	x
021 10 02 02	Alternate fuel: characteristics, limitations	x	x	x	x
021 10 03 00	**Carburettor/Injection system**				
021 10 03 01	Carburettor: design, operation, degraded modes of operation, indications and warnings	x	x	x	x
021 10 03 02	Injection: design, operation, degraded modes of operation, indications and warnings	x	x	x	x

		Aeroplane		Helicopter	
		PPL	**Bridge**	**PPL**	**Bridge**
021 10 03 03	Icing	x	x	x	x
021 10 04 01	**Air cooling systems**				
021 10 04 01	Design, operation, degraded modes of operation, indications and warnings	x	x	x	x
021 10 05 00	**Lubrication systems**				
021 10 05 01	Lubricants: types, characteristics, limitations	x	x	x	x
021 10 05 02	Design, operation, degraded modes of operation, indications and warnings	x	x	x	x
021 10 06 01	**Ignition circuits**				
021 10 06 01	Design, operation, degraded modes of operation	x	x	x	x
021 10 07 01	**Mixture**				
021 10 07 01	Definition, characteristic mixtures, control instruments, associated control levers, indications	x	x	x	x
021 10 08 00	**Propellers**				
021 10 08 01	Definitions, general: – Aerodynamic parameters – Types – Operating modes	x	x		
021 10 08 02	Constant speed propeller: - Design, operation, system components	x	X		
021 10 08 04	Propeller handling: – Associated control levers, degraded modes of operation, indications and warnings	x	x		
021 10 09 00	**Performance and engine handling**				
021 10 09 01	Performance: influence of engine parameters, influence of atmospheric conditions, limitations, power augmentation systems	x	x	x	x
021 10 09 02	Engine handling: power and mixture settings during various flight phases, operational limitations	x	x	x	x
021 11 00 00	**TURBINE ENGINES**				
021 11 02 00	**Definitions**			x	x
021 11 02 01	Coupled turbine engine: design, operation, components and materials			x	x
021 11 02 02	Free turbine engine: design, operation, components and materials			x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
021 11 03 00	**Fuel**				
021 11 03 01	Types, characteristics, limitations			x	x
021 11 04 00	**Main engine components**				
021 11 04 02	Compressor – Types, design, operation, components and materials – Stresses and limitations – Stall, surge, means of prevention			x	x
021 11 04 03	Combustion chamber – Types, design, operation, components and materials – Stresses and limitations – Emission problems			x	x
021 11 04 04	Turbine – Types, design, operation, components and materials – Stresses, creep and limitations			x	x
021 11 04 05	Exhaust – Design, operation, materials – Noise reduction			x	x
021 11 04 06	Fuel control units – Types, operation, sensors			x	x
021 11 04 07	Helicopter: Air intake – Different types, design, operation, materials, optional equipments			x	x
021 11 05 00	**Additional components and systems**				
021 11 05 02	Helicopter: Additional components and systems: – Lubrication system, ignition circuit, starter, accessory gearbox, free wheel units: design, operation, components			x	x
021 11 06 00	**Performance aspects**				
021 11 06 02	Torque, performance aspects, engine handling and limitations: – Engine ratings – Engine performance and limitations – Engine handling			x	x
021 12 00 00	**PROTECTION AND DETECTION SYSTEMS**				
021 12 03 00	**Fire detection systems**				

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
021 12 03 01	Operation, indications			x	X
021 14 00 00	**MISCELLANEOUS SYSTEMS**				
021 14 03 00	**Rotor design**			x	x
021 15 00 00	**ROTOR HEADS**				
021 15 01 00	**Main rotor**				
021 15 01 01	Types			x	x
021 15 01 02	Structural components and materials, stresses, structural limitations			x	x
021 15 01 03	Design and construction			x	x
021 15 01 04	Adjustment			x	x
021 15 02 00	**Tail rotor**				
021 15 02 01	Types			x	x
021 15 02 02	Structural components and materials, stresses, structural limitations			x	x
021 15 02 03	Design and construction			x	x
021 15 02 04	Adjustment			x	x
021 16 00 00	**TRANSMISSION**				
021 16 01 00	**Main gear box**				
021 16 01 01	Different types, design, operation, limitations			x	x
021 16 02 00	**Rotor brake**				
021 16 02 01	Different types, design, operation, limitations			x	x
021 16 03 00	**Auxiliary systems**			x	x
021 16 04 00	**Drive shaft and associated installation**			x	x
021 16 05 00	**Intermediate and tail gear box**				

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
021 16 05 01	Different types, design, operation, limitations			x	x
021 17 00 00	**BLADES**				
021 17 01 00	**Main rotor blade**				
021 17 01 01	Design, construction			x	x
021 17 01 02	Structural components and materials			x	x
021 17 01 03	Stresses			x	x
021 17 01 04	Structural limitations			x	x
021 17 01 05	Adjustment			x	x
021 17 01 06	Tip shape			x	x
021 17 02 00	**Tail rotor blade**				
021 17 02 01	Design, construction			x	x
021 17 02 02	Structural components and materials			x	x
021 17 02 03	Stresses			x	x
021 17 02 04	Structural limitations			x	x
021 17 02 05	Adjustment			x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
022 00 00 00	**AIRCRAFT GENERAL KNOWLEDGE – INSTRUMENTATION**				
022 01 00 00	**INSTRUMENT AND INDICATION SYSTEMS**				
022 01 01 00	**Pressure gauge**				
022 01 01 01	Different types, design, operation, characteristics, accuracy	x	x	x	x
022 01 02 00	**Temperature sensing**				

		Aeroplane		Helicopter	
		PPL	**Bridge**	**PPL**	**Bridge**
022 01 02 01	Different types, design, operation, characteristics, accuracy	x	x	x	x
022 01 03 00	**Fuel gauge**				
022 01 03 01	Different types, design, operation, characteristics, accuracy	x	x	x	x
022 01 04 00	**Flow meter**				
022 01 04 01	Different types, design, operation, characteristics, accuracy	x	x	x	x
022 01 05 00	**Position transmitter**				
022 01 05 01	Different types, design, operation, characteristics, accuracy	x	x	x	x
022 01 06 00	**Torque meter**				
022 01 06 01	Design, operation, characteristics, accuracy			x	x
022 01 07 00	**Tachometer**				
022 01 07 01	Design, operation, characteristics, accuracy	x	x	x	x
022 02 00 00	**MEASUREMENT OF AERODYNAMIC PARAMETERS**				
022 02 01 00	**Pressure measurement**				
022 02 01 01	Static pressure, dynamic pressure, density: definitions	x	x	x	x
022 02 01 02	Design, operation, errors, accuracy	x	x	x	x
022 02 02 00	**Temperature measurement: Aeroplane**				
022 02 02 02	Design, operation, errors, accuracy	x	x		
022 02 02 03	Displays	x	x		
022 02 03 00	**Temperature measurement: Helicopter**			x	x
022 02 03 01	Design, operation, errors, accuracy			x	x
022 02 03 02	Displays			x	x
022 02 05 00	**Altimeter**				
022 02 05 01	Standard atmosphere	x	x	x	x
022 02 05 02	The different barometric references (QNH, QFE and 1013.25)	x	x	x	x
022 02 05 03	Height, indicated altitude, true altitude, pressure altitude and density altitude	x	x	x	x
022 02 05 04	Design, operation, errors, accuracy	x	x	x	x

		Aeroplane		Helicopter	
		PPL	**Bridge**	**PPL**	**Bridge**
022 02 05 05	Displays	x	x	x	x
022 02 06 00	**Vertical Speed Indicator**				
022 02 06 01	Design, operation, errors, accuracy	x	x	x	x
022 02 06 02	Displays	x	x	x	x
022 02 07 00	**Airspeed Indicator**				
022 02 07 01	The different speeds IAS, CAS, TAS: definition, usage and relationships	x	x	x	x
022 02 07 02	Design, operation, errors, accuracy	x	x	x	x
022 02 07 03	Displays	x	x	x	x
022 03 00 00	**MAGNETISM – DIRECT READING COMPASS**				
022 03 01 00	**Earth magnetic field**	x	x	x	x
022 03 02 00	**Direct reading compass**				
022 03 02 01	Design, operation, data processing, accuracy, deviation	x	x	x	x
022 03 02 02	Turning and acceleration errors	x	x	x	x
022 04 00 00	**GYROSCOPIC INSTRUMENTS**				
022 04 01 00	**Gyroscope: basic principles**				
022 04 01 01	Definitions, design	x	x	x	x
022 04 01 02	Fundamental properties	x	x	x	x
022 04 01 03	Drifts	x	x	x	x
022 04 02 00	**Turn and bank indicator**				
022 04 02 01	Design, operation, errors	x	x	x	x
022 04 03 00	**Attitude indicator**				
022 04 03 01	Design, operation, errors, accuracy	x	x	x	x
022 04 04 00	**Directional gyroscope**				
022 04 04 01	Design, operation, errors, accuracy	x	x	x	x
022 10 00 00	**COMMUNICATION SYSTEMS**				
022 10 01 00	**Transmission modes: VHF, HF, Satcom**				
022 10 01 01	Principles, bandwidth, operational limitations, use	x	x	x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
022 10 02 00	**Voice communication**				
022 10 02 01	Definitions, general, applications	x	x	x	x
022 12 00 00	**ALERTING SYSTEMS, PROXIMITY SYSTEMS**				
022 12 02 00	**Flight Warning systems**				
022 12 02 01	Design, operation, indications and alarms	x	X	x	x
022 12 03 00	**Stall warning**				
022 12 03 01	Design, operation, indications and alarms	x	x		
022 12 08 00	**Radio-altimeter**				
022 12 08 01	Design, operation, errors, accuracy, indications			x	x
022 12 10 00	**Rotor/engine over speed alert system**				
022 12 10 01	Design, operation, displays, alarms			x	x
022 13 00 00	**INTEGRATED INSTRUMENTS – ELECTRONIC DISPLAYS**				
022 13 01 00	**Display units**				
022 13 01 01	Design, different technologies, limitations	x	x	x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
030 00 00 00	**FLIGHT PERFORMANCE AND PLANNING**				
031 00 00 00	**MASS AND BALANCE – AEROPLANES/HELICOPTERS**				
031 01 00 00	**PURPOSE OF MASS AND BALANCE CONSIDERATIONS**				
031 01 01 00	**Mass limitations**				
031 01 01 01	Importance in regard to structural limitations	x	x	x	x
031 01 01 02	Importance in regard to performance limitations	x	x	x	x
031 01 02 00	**Centre of gravity (CG) limitations**				
031 01 02 01	Importance in regard to stability and controllability	x	x	x	x
031 01 02 02	Importance in regard to performance	x	x	x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
031 02 00 00	**LOADING**				
031 02 01 00	**Terminology**				
031 02 01 01	Mass terms	x	x	x	x
031 02 01 02	Load terms (including Fuel Terms)	x	x	x	x
031 02 02 00	**Mass limits**				
031 02 02 01	Structural limitations	x	x	x	x
031 02 02 02	Performance limitations	x	x	x	x
031 02 02 03	Baggage compartment limitations	x	x	x	x
031 02 03 00	**Mass calculations**				
031 02 03 01	Maximum masses for Take-off and Landing	x	x	x	x
031 02 03 03	Use of standard masses for passengers, baggage and crew	x	x	x	x
031 03 00 00	**FUNDAMENTALS OF CG CALCULATIONS**				
031 03 01 00	Definition of centre of gravity	x	x	x	x
031 03 02 00	Conditions of equilibrium (Balance of Forces and Balance of Moments)	x	x	x	x
031 03 03 00	Basic calculations of CG	x	x	x	x
031 04 00 00	**MASS AND BALANCE DETAILS OF AIRCRAFT**				
031 04 01 00	**Contents of mass and balance documentation**				
031 04 01 01	Datum, moment arm	x	x	x	x
031 04 01 02	CG position as distance from datum	x	x	x	x
031 04 03 00	**Extraction of basic mass and balance data from aircraft documentation**				
031 04 03 01	Basic Empty Mass (BEM)	x	x	x	x
031 04 03 02	CG position and/or moment at BEM	x	x	x	x
031 04 03 03	Deviations from standard configuration	x	x	x	x
031 05 00 00	**DETERMINATION OF CG POSITION**				
031 05 01 00	**Methods**				
031 05 01 01	Arithmetic method	x	x	x	x
031 05 01 02	Graphic method	x	x	x	x
031 05 02 00	**Load and Trim Sheet**				
031 05 02 01	General considerations	x	x	x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
031 05 02 02	Load sheet and CG envelope for light aeroplanes and for helicopters	X	x	x	x
032 00 00 00	**PERFORMANCE – AEROPLANES**				
032 01 00 00	**INTRODUCTION**				
032 01 01 00	Performance classes	x	x		
032 01 02 00	Stages of flight	x	x		
032 01 03 00	Effect of aeroplane mass, wind, altitude, runway slope, runway conditions	x	x		
032 01 04 00	Gradients	x	x		
032 02 00 00	**SINGLE-ENGINE AEROPLANES**				
032 02 01 00	Definitions of terms and speeds	x	x		
032 02 02 00	**Take-off and landing performance**				
032 02 02 02	Use of aeroplane flight manual data	x	x		
032 02 03 00	**Climb and cruise performance**				
032 02 03 01	Use of aeroplane flight data	x	x		
032 02 03 02	Effect of density altitude and aeroplane mass	x	x		
032 02 03 03	Endurance and the effects of the different recommended power/thrust settings	x	x		
032 02 03 04	Still air range with various power/thrust settings	x	x		

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
033 00 00 00	**FLIGHT PLANNING AND FLIGHT MONITORING**				
033 01 00 00	**FLIGHT PLANNING FOR VFR FLIGHTS**				
033 01 01 00	**VFR Navigation plan**				
033 01 01 01	Routes, airfields, heights and altitudes from VFR charts	x	x	x	x
033 01 01 02	Courses and distances from VFR charts	x	x	x	x
033 01 01 03	Aerodrome Charts and Aerodrome Directory	x	x	x	x
033 01 01 04	Communications and Radio Navigation planning data	x	x	x	x
033 01 01 05	Completion of navigation plan	x	x	x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
033 03 00 00	**FUEL PLANNING**				
033 03 01 00	General knowledge	x	x	x	x
033 03 02 00	**Pre-flight calculation of fuel required**				
033 03 02 04	Calculation of Extra fuel	x	x	x	x
033 03 02 05	Completion of the fuel section of the navigation plan (fuel log) and calculation of total fuel	x	x	x	x
033 04 00 00	**PRE-FLIGHT PREPARATION**				
033 04 01 00	**AIP and NOTAM briefing**				
033 04 01 01	Ground facilities and services	x	x	x	x
033 04 01 02	Departure, destination and alternate aerodromes	x	x	x	x
033 04 01 03	Airway routings and airspace structure	x	x	x	x
033 04 02 00	**Meteorological briefing**				
033 04 02 01	Extraction and analysis of relevant data from meteorological documents	x	x	x	x
033 05 00 00	**ICAO FLIGHT PLAN (ATS Flight Plan)**				
033 05 02 00	**Individual flight Plan**				
033 05 02 01	Format of flight plan	x	x	x	x
033 05 02 02	Completion of the flight plan	x	x	x	x
033 05 03 00	Submission of the flight plan	x	x	x	x
033 06 00 00	**FLIGHT MONITORING AND IN-FLIGHT RE-PLANNING**				
033 06 01 00	**Flight monitoring**				
033 06 01 01	Monitoring of track and time	x	x	x	x
033 06 01 02	In-flight fuel management	x	x	x	x
033 06 02 00	In-flight re-planning in case of deviation from planned data	x	x	x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
034 00 00 00	**PERFORMANCE – HELICOPTERS**				

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
034 01 00 00	**GENERAL**				
034 01 01 00	**Introduction**				
034 01 01 01	Stages of flight			x	x
034 01 01 02	Effect on performance of atmospheric, airport/heliport and helicopter conditions			x	x
034 01 02 00	**Applicability of Airworthiness Requirements**			x	x
034 01 03 00	**Definitions and terminology**			x	x
034 06 00 00	**PERFORMANCE – SINGLE ENGINE HELICOPTERS**				
034 06 01 00	**DEFINITIONS OF TERMS** – masses – velocities : V_x, V_y – velocity of best range and of maximum endurance – power limitations – altitudes			x	x
034 06 02 00	**TAKE OFF – CRUISE – LANDING PERFORMANCE** **– Use and interpretation of diagrams and tables** Take-off - take off run and distance available - take off and initial climb - effects of mass, wind and density altitude - effects of ground surface and gradient Landing - effects of mass, wind, density altitude and approach speed - effects of ground surface and gradient In flight - relationship between power required and power available - performance diagram - effects of configuration, mass, temperature and altitude - reduction of performance during climbing turns - autorotation - adverse effects (icing, rain, condition of the airframe)			x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
040 00 00 00	**HUMAN PERFORMANCE**				
040 01 00 00	**HUMAN FACTORS: BASIC CONCEPTS**				
040 01 01 00	**Human Factors in aviation**				
040 01 01 02	Becoming a competent pilot	x		x	
040 02 00 00	**BASIC AVIATION PHYSIOLOGY AND HEALTH MAINTENANCE**				
040 02 01 01	The atmosphere – composition – gas Laws	x		x	

040 02 01 02	Respiratory and circulatory systems
	
	– oxygen requirement of tissues
	– functional anatomy
	– main forms of hypoxia (hypoxic and anaemic)
	  – sources, effects and counter-measures of carbon monoxide
	  – counter measures, hypoxia
	  – symptoms of hypoxia
	– hyperventilation
	– the effects of accelerations on the circulatory system
	- hypertension and coronary heart disease
		x		x	

040 02 02 00	**Man and Environment**				
040 02 02 01	Central, peripheral and autonomic nervous systems	x		x	
040 02 02 02	Vision – functional anatomy – visual field, foveal and peripheral vision – binocular and monocular vision – monocular vision cues – night vision - visual scanning and detection techniques and importance of “lookout” - defective vision	x		x	
040 02 02 03	Hearing – descriptive and functional anatomy – flight related hazards to hearing - hearing loss	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
040 02 02 04	Equilibrium – functional anatomy – motion and acceleration – motion sickness	x		x	

040 02 02 05	Integration of sensory inputs
	
	– spatial disorientation: forms, recognition, avoidance
	– illusions: forms, recognition, avoidance
	  – physical origin
	  – physiological origin
	  – psychological origin
	– approach and landing problems
		x		x	

040 02 03 00	**Health and hygiene**				
040 02 03 01	Personal hygiene - personal fitness	x		x	
040 02 03 02	Body rhythm and sleep - rhythm disturbances - symptoms, effects, management	x		x	
040 02 03 03	Problem areas for pilots - common minor ailments including cold, influenza and gastro-intestinal upset - entrapped gases, barotrauma, (scuba diving) - obesity - food hygiene - infectious diseases - nutrition - various toxic gases and materials	x		x	
040 02 03 04	Intoxication – tobacco – alcohol - caffeine – drugs and self-medication	x		x	
040 03 00 00	**BASIC AVIATION PSYCHOLOGY**				
040 03 01 00	**Human information processing**				
040 03 01 01	Attention and vigilance – selectivity of attention – divided attention	x		x	
040 03 01 02	Perception	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
	– perceptual illusions – subjectivity of perception – processes of perception				
040 03 01 03	Memory – sensory memory – working/short term memory – long term memory to include motor memory (skills)	x		x	
040 03 02 00	**Human error and reliability**				
040 03 02 01	Reliability of human behaviour	x		x	
040 03 02 04	Error generation – social environment (group, organisation)	x		x	
040 03 03 00	**Decision making**				
040 03 03 01	Decision-making concepts – structure (phases) – limits – risk assessment - practical application	x		x	
040 03 04 00	**Avoiding and managing errors: cockpit management**				
040 03 04 01	Safety awareness – risk area awareness – situational awareness	x		x	
040 03 04 04	Communication – verbal and non-verbal communication	x		x	
040 03 05 00	**Human behaviour**				
040 03 05 01	Personality and attitudes – development – environmental influences	x		x	
040 03 05 03	Identification of hazardous attitudes (error proneness)	x		x	
040 03 06 00	**Human overload and underload**				
040 03 06 01	Arousal	x		x	
040 03 06 02	Stress – definition(s) – anxiety and stress – effects of stress	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
040 03 06 05	Fatigue and stress management - types, causes and symptoms of fatigue - effects of fatigue – coping strategies – management techniques – health and fitness programmes	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
050 00 00 00	**EOROLOGY**				
050 01 00 00	**THE ATMOSPHERE**				
050 01 01 00	**Composition, extent, vertical division**				
050 01 01 01	Structure of the atmosphere	X		X	
050 01 01 02	Troposphere	X		X	
050 01 02 00	**Air temperature**				
050 01 02 01	Definition and units	X		X	
050 01 02 02	Vertical distribution of temperature	X		X	
050 01 02 03	Transfer of heat	X		X	
050 01 02 04	Lapse rates, stability and instability	X		X	
050 01 02 05	Development of inversions, types of inversions	X		X	
050 01 02 06	Temperature near the earth's surface, surface effects, diurnal and seasonal variation, effect of clouds, effect of wind	X		X	
050 01 03 00	**Atmospheric pressure**				
050 01 03 01	Barometric pressure, isobars	X		X	
050 01 03 02	Pressure variation with height	X		X	
050 01 03 03	Reduction of pressure to mean sea level	X		X	
050 01 03 04	Relationship between surface pressure centres and pressure centres aloft	X		X	
050 01 04 00	**Air density**				

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
050 01 04 01	Relationship between pressure, temperature and density	X		X	
050 01 05 00	**ICAO Standard Atmosphere (ISA)**				
050 01 05 01	ICAO Standard Atmosphere	X		X	
050 01 06 00	**Altimetry**				
050 01 06 01	Terminology and definitions	X		X	
050 01 06 02	Altimeter and altimeter settings	X		X	
050 01 06 03	Calculations	X		X	
050 01 06 04	Effect of accelerated airflow due to topography	X		X	
050 02 00 00	**WIND**				
050 02 01 00	**Definition and measurement of wind**				
050 02 01 01	Definition and measurement	X		X	
050 02 02 00	**Primary cause of wind**				
050 02 02 01	Primary cause of wind, pressure gradient, coriolis force, gradient wind	X		X	
050 02 02 02	Variation of wind in the friction layer	X		X	
050 02 02 03	Effects of convergence and divergence	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
060 00 00 00	**NAVIGATION**				
061 00 00 00	**GENERAL NAVIGATION**				
061 01 00 00	**BASICS OF NAVIGATION**				
061 01 01 00	**The solar system**				
061 01 01 01	Seasonal and apparent movements of the sun	x		x	
061 01 02 00	**The earth**				

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
061 01 02 01	Great circle, small circle, rhumb line	x		x	
061 01 02 03	Latitude, difference of latitude	x		x	
061 01 02 04	Longitude, difference of longitude	x		x	
061 01 02 05	Use of latitude and longitude co-ordinates to locate any specific position	x		x	
061 01 03 00	**Time and time conversions**				
061 01 03 01	Apparent time	x		x	
061 01 03 02	UTC	x		x	
061 01 03 03	LMT	x		x	
061 01 03 04	Standard times	x		x	
061 01 03 05	Dateline	x		x	
061 01 03 06	Definition of sunrise, sunset and civil twilight	x		x	
061 01 04 00	**Directions**				
061 01 04 01	True north, magnetic north, compass north	x		x	
061 01 04 03	Compass deviation	x		x	
061 01 04 04	Magnetic poles, isogonals, relationship between true and magnetic	x		x	
061 01 05 00	**Distance**				
061 01 05 01	Units of distance and height used in navigation: nautical miles, statute miles, kilometres, metres and feet	x		x	
061 01 05 02	Conversion from one unit to another	x		x	
061 01 05 03	Relationship between nautical miles and minutes of latitude and minutes of longitude	x		x	
061 02 00 00	**MAGNETISM AND COMPASSES**				
061 02 01 00	**General Principles**				
061 02 01 01	Terrestrial magnetism	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
061 02 01 02	Resolution of the earth’s total magnetic force into vertical and horizontal components	x		x	
061 02 01 04	Variation-annual change	x		x	
061 02 02 00	**Aircraft magnetism**				
061 02 02 02	The resulting magnetic fields	x		x	
061 02 02 04	Keeping magnetic materials clear of the compass	x		x	
061 03 00 00	**CHARTS**				
061 03 01 00	**General properties of miscellaneous types of projections**				
061 03 01 01	Direct Mercator	x		x	
061 03 01 02	Lambert conformal conic	x		x	
061 03 02 00	**The representation of meridians, parallels, great circles and rhumb lines**				
061 03 02 01	Direct Mercator	x		x	
061 03 02 02	Lambert conformal conic	x		x	
061 03 03 00	**The use of current aeronautical charts**				
061 03 03 01	Plotting positions	x		x	
061 03 03 02	Methods of indicating scale and relief (ICAO topographical chart)	x		x	
061 03 03 03	Conventional signs	x		x	
061 03 03 02	Measuring tracks and distances	x		x	
061 03 03 03	Plotting bearings and distances	x		x	
061 04 00 00	**DEAD RECKONING NAVIGATION (DR)**				
061 04 01 00	**Basis of dead reckoning**				
061 04 01 01	Track	x		x	
061 04 01 02	Heading (compass, magnetic, true)	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
061 04 01 03	Wind velocity	x		x	
061 04 01 04	Airspeed (IAS, CAS, TAS)	x		x	
061 04 01 05	Groundspeed	x		x	
061 04 01 06	ETA	x		x	
061 04 01 07	Drift, wind correction angle	x		x	
061 04 01 08	DR-position fix	x		x	
061 04 02 00	**Use of the navigational computer**				
061 04 02 01	Speed	x		x	
061 04 02 02	Time	x		x	
061 04 02 03	Distance	x		x	
061 04 02 04	Fuel consumption	x		x	
061 04 02 05	Conversions	x		x	
061 04 02 06	Airspeed	x		x	
061 04 02 07	Wind velocity	x		x	
061 04 02 08	True altitude	x		x	
061 04 03 00	**The triangle of velocities**				
061 04 03 01	Heading	x		x	
061 04 03 02	Ground speed	x		x	
061 04 03 03	Wind velocity	x		x	
061 04 03 04	Track and drift angle	x		x	
061 04 05 00	**Measurement of DR elements**				
061 04 05 01	Calculation of altitude	x		x	
061 04 05 03	Determination of appropriate speed	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
061 05 00 00	**IN-FLIGHT NAVIGATION**				
061 05 01 00	**Use of visual observations and application to in-flight navigation**	x		x	
061 05 03 00	**Navigation in cruising flight, use of fixes to revise navigation data**				
061 05 03 01	Ground speed revision	x		x	
061 05 03 02	Off-track corrections	x		x	
061 05 03 03	Calculation of wind speed and direction	x		x	
061 05 03 04	ETA revisions	x		x	
061 05 04 00	**Flight Log**	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
062 00 00 00	**RADIO NAVIGATION**				
062 01 00 00	**BASIC RADIO PROPAGATION THEORY**				
062 01 02 00	**Antennas**				
062 01 02 01	Characteristics	x		x	
062 01 03 00	**Wave propagation**				
062 01 03 04	Propagation with the frequency bands	x		x	
062 02 00 00	**RADIO AIDS**				
062 02 01 00	**Ground D/F**				
062 02 01 01	Principles	x		x	
062 02 01 02	Presentation and interpretation	x		x	
062 02 01 03	Coverage	x		x	
062 02 01 04	Range	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
062 02 01 05	Errors and accuracy	x		x	
062 02 01 06	Factors affecting range and accuracy	x		x	
062 02 02 00	**NDB/ADF**				
062 02 02 01	Principles	x		x	
062 02 02 02	Presentation and interpretation	x		x	
062 02 02 03	Coverage	x		x	
062 02 02 04	Range	x		x	
062 02 02 05	Errors and accuracy	x		x	
062 02 02 06	Factors affecting range and accuracy	x		x	
062 02 03 00	**VOR**				
062 02 03 01	Principles	x		x	
062 02 03 02	Presentation and interpretation	x		x	
062 02 03 03	Coverage	x		x	
062 02 03 04	Range	x		x	
062 02 03 05	Errors and accuracy	x		x	
062 02 03 06	Factors affecting range and accuracy	x		x	
062 02 04 00	**DME**				
062 02 04 01	Principles	x		x	
062 02 04 02	Presentation and interpretation	x		x	
062 02 04 03	Coverage	x		x	
062 02 04 04	Range	x		x	
062 02 04 05	Errors and accuracy	x		x	
062 02 04 06	Factors affecting range and accuracy	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
062 03 00 00	**RADAR**				
062 03 02 00	**Ground Radar**				
062 03 02 01	Principles	x		x	
062 03 02 02	Presentation and interpretation	x		x	
062 03 02 03	Coverage	x		x	
062 03 02 04	Range	x		x	
062 03 02 05	Errors and accuracy	x		x	
062 03 02 06	Factors affecting range and accuracy	x		x	
062 03 04 00	**Secondary Surveillance Radar and transponder**				
062 03 04 01	Principles	x		x	
062 03 04 02	Presentation and interpretation	x		x	
062 03 04 03	Modes and codes	x		x	
062 06 00 00	**GLOBAL NAVIGATION SATELLITE SYSTEMS**				
062 06 01 00	**GPS/GLONASS/GALILEO**				
062 06 01 01	Principles	x		x	
062 06 01 02	Operation	x		x	
062 06 01 03	Errors and accuracy	x		x	
062 06 01 04	Factors affecting accuracy	x		x	

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
070 00 00 00	**OPERATIONAL PROCEDURES**				
071 01 00 00	**GENERAL**				

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
071 01 01 00	**Operation of aircraft – ICAO Annex 6, General requirements**				
071 01 01 03	Definitions	x	x	x	X
071 01 01 04	Applicability	x	x	x	X
071 02 00 00	**SPECIAL OPERATIONAL PROCEDURES AND HAZARDS (GENERAL ASPECTS)**	x	x	x	x
071 02 04 00	**Noise abatement**				
071 02 04 01	Noise abatement procedures	x	x	x	X
071 02 04 02	Influence of the flight procedure (departure, cruise, approach)	x	x	x	X
071 02 05 00	**Fire/smoke**				
071 02 05 01	Carburettor fire	x	x	x	X
071 02 05 02	Engine fire	x	x	x	X
071 02 05 03	Fire in the cabin, cockpit, (choice of extinguishing agents according to fire classification, use of the extinguishers)	x	x	x	X
071 02 05 04	Smoke in the cockpit and cabin (effects and action to be taken)	x	x	x	X
071 02 07 00	**Windshear and microburst**				
071 02 07 01	Effects and recognition during departure and approach	x	x	x	X
071 02 07 02	Actions to avoid and actions taken during encounter	x	x	x	X
071 02 08 00	**Wake turbulence**				
071 02 08 01	Cause	x	x	x	X
071 02 08 02	List of relevant parameters	x	x	x	X
071 02 08 03	Actions taken when crossing traffic, during take-off and landing	x	x	x	X
071 02 10 00	**Emergency and precautionary landings**				
071 02 10 01	Definition	x	x	x	X
071 02 10 02	Cause	x	x	x	X
071 02 10 03	Passenger information	x	x	x	X
071 02 10 04	Evacuation	x	x	x	X
071 02 10 05	Action after landing	x	x	x	X

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
071 02 13 00	**Contaminated runways**				
071 02 13 01	Kinds of contamination	x	X		
071 02 13 02	Estimated surface friction, friction coefficient	x	x		
071 02 14 00	**Rotor downwash**			x	X
071 02 15 00	**Operation influence by meteorological conditions (Helicopter)**				
071 02 15 01	White out/sand/dust			X	X
071 02 15 02	Strong winds			X	X
071 02 15 03	Mountain environment			x	X
071 03 00 00	**EMERGENCY PROCEDURES**				
071 03 01 00	**Influence by technical problems**				
071 03 01 01	Engine failure			X	X
071 03 01 02	Fire in cabin/cockpit/engine			X	X
071 03 01 03	Tail/rotor/directional control failure			X	X
071 03 01 04	Ground resonance			X	X
071 03 01 05	Blade stall			x	X
071 03 01 06	Settling with power (vortex ring)			X	x
071 03 01 07	Overpitch			X	X
071 03 01 08	Overspeed: rotor/engine			X	X
071 03 01 09	Dynamic rollover			X	X
071 03 01 10	Mast bumping			x	X

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
080 00 00 00	**PRINCIPLES OF FLIGHT**				
081 00 00 00	**PRINCIPLES OF FLIGHT – AEROPLANE**				

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
081 01 00 00	**SUBSONIC AERODYNAMICS**				
081 01 01 00	**Basics concepts, laws and definitions**				
081 01 01 01	Laws and definitions – conversion of units - Newton´s laws – Bernoulli's equation, venturi – static pressure, dynamic pressure, total pressure – density – IAS, TAS	x	x		
081 01 01 02	Basics about airflow – streamline – two-dimensional airflow – three-dimensional airflow	x	x		
081 01 01 03	Aerodynamic forces on surfaces – resulting airforce – lift – drag – angle of attack	x	x		
081 01 01 04	Shape of an aerofoil section – thickness to chord ratio – chord line – camber line – camber – angle of attack	x	x		
081 01 01 05	The wing shape – aspect ratio – root chord – tip chord – tapered wings – wing planform	x	x		
081 01 02 00	**The two-dimensional airflow about an aerofoil**				
081 01 02 01	Streamline pattern	x	x		
081 01 02 02	Stagnation point	x	x		
081 01 02 03	Pressure distribution	x	x		
081 01 02 04	Centre of pressure	x	x		

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
081 01 02 07	Influence of angle of attack	x	x		
081 01 02 08	Flow separation at high angles of attack	x	x		
081 01 02 09	The Lift – α graph	x	x		
081 01 03 00	**The coefficients**				
081 01 03 01	The lift coefficient C_l – the lift formula	x	x		
081 01 03 02	The drag coefficient C_d - the drag formula	x	x		
081 01 04 00	**The three-dimensional airflow round a wing and a fuselage**				
081 01 04 01	Streamline pattern – span-wise flow and causes – tip vortices and angle of attack – upwash and downwash due to tip vortices – wake turbulence behind an aeroplane (causes, distribution, duration of the phenomenon)	x	x		
081 01 04 02	Induced drag – influence of tip vortices on the angle of attack – the induced local α – influence of induced angle of attack on the direction of the lift vector – induced drag and angle of attack	x	x		
081 01 05 00	**Drag**				
081 01 05 01	The parasite drag – pressure drag – interference drag – friction drag	x	x		
081 01 05 02	The parasite drag and speed	x	x		
081 01 05 03	The induced drag and speed	x	x		
081 01 05 04	The total drag	x	x		
081 01 06 00	**The ground effect**				
081 01 06 04	Effect on take-off and landing characteristics of an aeroplane	x	x		
081 01 08 00	**The stall**				
081 01 08	Flow separation at increasing angles of attack	x	x		

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
01	– the boundary layer: – laminar layer – turbulent layer – transition – separation point – influence of angle of attack – influence on: – pressure distribution – location of centre of pressure – C_L – C_D – pitch moments – buffet – use of controls				
081 01 08 02	The stall speed – in the lift formula – 1g stall speed – influence of: – the centre of gravity – power setting – altitude (IAS) – wing loading – load factor n: – definition – turns – forces	x	x		
081 01 08 03	The initial stall in span-wise direction – influence of planform – geometric twist (wash out) – use of ailerons	x	x		
081 01 08 04	Stall warning – importance of stall warning – speed margin – buffet - stall strip – flapper switch – recovery from stall	x	x		
081 01 08 05	Special phenomena of stall – the power-on stall – climbing and descending turns – T-tailed aeroplane – avoidance of spins: – spin development – spin recognition – spin recovery – ice (in stagnation point and on surface):	x	x		

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
	– absence of stall warning – abnormal behaviour of the aircraft during stall				
081 01 09 00	**C_L augmentation**				
081 01 09 01	Trailing edge flaps and the reasons for use in take-off and landing - influence on C_L - α-graph – different types of flaps – flap asymmetry – influence on pitch movement	x	x		
081 01 09 02	Leading edge devices and the reasons for use in take-off and landing	x	x		
081 01 11 00	**The boundary layer**				
081 01 11 01	Different types – laminar – turbulent	x	x		
081 01 12 00	**Special circumstances**				
081 01 12 01	Ice and other contamination – ice in stagnation point – ice on the surface (frost, snow, clear ice) – rain – contamination of the leading edge – effects on stall – effects on loss of controllability – effects on control surface moment – influence on high lift devices during take-off, landing and low speeds	x	x		
081 04 00 00	**STABILITY**				
081 04 01 00	**Condition of equilibrium in steady horizontal flight**				
081 04 01 01	Precondition for static stability	x	x		
081 04 01 02	Equilibrium – lift and weight – drag and thrust	x	x		
081 04 02 00	**Methods of achieving balance**				
081 04 02 01	Wing and empennage (tail and canard)	x	x		
081 04 02 02	Control surfaces	x	x		

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
081 04 02 03	Ballast or weight trim	x	x		
081 04 03 00	**Static and dynamic longitudinal stability**				
081 04 03 01	Basics and definitions – static stability, positive, neutral and negative – precondition for dynamic stability – dynamic stability, positive, neutral and negative	x	x		
081 04 03 05	Location of centre of gravity – aft limit, minimum stability margin – forward position – effects on static and dynamic stability	x	x		
081 04 06 00	**Dynamic lateral/directional stability**				
081 04 06 02	Spiral dive, corrective actions	x	x		
081 05 00 00	**CONTROL**				
081 05 01 00	**General**				
081 05 01 01	Basics, the three planes and three axis	x	x		
081 05 01 03	Angle of attack change	x	x		
081 05 02 00	**Pitch control**				
081 05 02 01	Elevator	x	x		
081 05 02 02	Downwash effects	x	x		
081 05 02 04	Location of centre of gravity	x	x		
081 05 03 00	**Yaw control**				
081 05 03 01	Pedal/Rudder	x	x		
081 05 04 00	**Roll control**				
081 05 04 01	Ailerons – function in different phases of flight	x	x		
081 05 04 04	Adverse yaw	x	x		
081 05 04 05	Means to avoid adverse yaw - frise ailerons - differential ailerons deflection	x	x		

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
081 05 06 00	**Means to reduce control forces**				
081 05 06 01	Aerodynamic balance – balance tab, anti-balance tab – servo tab	x	x		
081 05 07 00	**Mass balance**				
081 05 07 01	Reasons to balance – means	x	x		
081 05 08 00	**Trimming**				
081 05 08 01	Reasons to trim	x	x		
081 05 08 02	Trim tabs	x	x		
081 06 00 00	**LIMITATIONS**				
081 06 01 00	**Operating limitations**				
081 06 01 01	Flutter	x	x		
081 06 01 03	V_{FE}	x	x		
081 06 01 04	V_{NO}, V_{NE}	x	x		
081 06 02 00	**Manoeuvring envelope**				
081 06 02 01	Manoeuvring load diagram – load factor – accelerated stall speed – V_A – manoeuvring limit load factor/certification category	x	x		
081 06 02 02	Contribution of : – mass	x	x		
081 06 03 00	**Gust envelope**				
081 06 03 01	Gust load diagram	x	x		
081 06 03 02	Factors contributing to gust loads	x	x		
081 07 00 00	**PROPELLERS**				
081 07 01	**Conversion of engine torque to thrust**				

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
00					
081 07 01 01	Meaning of pitch	x	x		
081 07 01 02	Blade twist	x	x		
081 07 01 05	Effects of ice on propeller	x	x		
081 07 02 00	**Engine failure or engine stop**				
081 07 02 01	Windmilling drag	x	x		
081 07 04 00	**Moments due to propeller operation**				
081 07 04 01	Torque reaction	x	x		
081 07 04 03	Asymmetric slipstream effect	x	x		
081 07 04 04	Asymmetric blade effect	x	x		
081 08 00 00	**FLIGHT MECHANICS**				
081 08 01 00	**Forces acting on an aeroplane**				
081 08 01 01	Straight horizontal steady flight	x	x		
081 08 01 02	Straight steady climb	x	x		
081 08 01 03	Straight steady descent	x	x		
081 08 01 04	Straight steady glide	x	x		
081 08 01 05	Steady co-ordinated turn – bank angle – load factor – turn radius – rate one turn	x	x		

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
082 00 00 00	**PRINCIPLES OF FLIGHT – HELICOPTER**			x	x
082 01 00 00	**SUBSONIC AERODYNAMICS**			x	x

		Aeroplane		Helicopter	
		PPL	**Bridge**	**PPL**	**Bridge**
082 01 01 00	Basic concepts, laws and definitions			x	x
082 01 01 01	Conversion of units			x	x
082 01 01 02	Definitions and basic concepts about air – The atmosphere, International Standard Atmosphere – Density – Influence of pressure and temperature on density			x	x
082 01 01 03	Newton's Laws – Newton's second law : Momentum equation – Newton's third law : action and reaction			x	x
082 01 01 04	Basic concepts about airflow – Steady airflow and unsteady airflow – Bernoulli's equation – Static pressure, dynamic pressure, total pressure, stagnation point – TAS, IAS, – Two-dimensional airflow, three-dimensional airflow – Viscosity, boundary layer			x	x
082 01 02 00	Two-dimensional airflow			x	x
082 01 02 01	Aerofoil section geometry – Aerofoil section – Chord line, thickness, thickness to chord ratio of a section – Camber line, camber – Symmetrical and asymmetrical aerofoils sections			x	x
082 01 02 02	Aerodynamic forces on aerofoil elements – Angle of attack – Pressure distribution – Lift and lift coefficient – Relation lift coefficient - angle of attack – Profile drag and drag coefficient – Relation drag coefficient – angle of attack – Resulting force, centre of pressure, pitching moment			x	x
082 01 02 03	Stall – Boundary layer and reasons for stalling – Variation of lift and drag as a function of angle of attack			x	x

		Aeroplane		Helicopter	
		PPL	**Bridge**	**PPL**	**Bridge**
	– Displacement of the centre of pressure, pitching moment				
082 01 02 04	Disturbances due to profile contamination – Ice contamination – Ice on the surface (frost, snow, clear ice)			x	x
082 01 03 00	The three-dimensional airflow round a wing and a fuselage			x	x
082 01 03 01	The wing – Planform, rectangular and tapered wings – Wing twist			x	x
082 01 03 02	Airflow pattern and influence on lift – Span wise flow on upper and lower surface – Tip vortices – Span-wise lift distribution			x	x
082 01 03 03	Induced drag			x	x
	– Causes, vortices				
082 01 03 04	The airflow round an fuselage – Components of a fuselage – Parasite drag – Variation with speed			x	x
082 02 00 00	**TRANSONIC AERODYNAMICS and COMPRESSIBILITY EFFECTS**			x	x
082 02 01 00	Airflow velocities			x	x
082 02 01 01	Airflow speeds – Speed of sound – Subsonic, high subsonic and supersonic flows			x	x
082 02 01 02	Shock waves - Compressibility and shock waves - The reasons for their formation at upstream high subsonic airflow - Their effect on lift, drag			x	x
082 02 01 03	Influence of wing planform – Sweep-angle			x	x
082 03 00 00	**ROTORCRAFT TYPES**			x	x
082 03 01 00	Rotorcraft			x	x
082 03 01 01	Rotorcraft types			x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
	– Autogyro – Helicopter				
082 03 02 00	Helicopters			x	x
082 03 02 01	Helicopters configurations – The single main rotor helicopter			x	x
082 03 02 02	The helicopter, characteristics and associated terminology – General lay-out, fuselage, engine, gearbox – Tail rotor, Fenestron, No Tail Rotor (Notar) – Engines (reciprocating and turbo shaft engines) – Power transmission – Rotor shaft axis, rotor hub and rotor blades – Rotor disc and rotor disc area – Teetering rotor (two blades) and rotors with more than two blades – Skids and wheels – Helicopter axes, fuselage centre line – Roll axis, pitch axis, normal or yaw axis – Gross mass and gross weight, disc loading			x	x
082 04 00 00	**MAIN ROTOR AERODYNAMICS**			x	x
082 04 01 00	Hover flight outside ground effect			x	x
082 04 01 01	Airflow through the rotor discs and round the blades – Circumferential velocity of the blade sections – Induced airflow, through the disc and downstream – Downward fuselage drag – Equilibrium of rotor thrust, weight and fuselage drag – Rotor disc induced power – Relative airflow to the blade – Pitch angle and angle of attack of a blade section – Lift and profile drag on the blade element – Resulting lift and thrust on the blade and rotor thrust – Collective pitch angle changes, necessity of blade feathering – Required total main rotor-torque and rotor-power - Influence of the air density			x	x
082 04 01 02	Anti-torque force and tail rotor – Force of tail rotor as a function of main rotor-torque - Anti-torque rotor power			x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
	– Necessity of blade feathering of tail rotor blades, yaw pedals				
082 04 01 03	Maximum hover altitude OGE – Total power required, power available – Maximum hover altitude as a function of pressure altitude, OAT.			x	x
082 04 02 00	Vertical climb			x	x
082 04 02 01	Relative airflow and angles of attack – Climb velocity V_C , induced and relative velocity, angle of attack – Collective pitch angle and blade feathering			x	x
082 04 02 02	Power and vertical speed – Induced power, climb power, profile power – Total main rotor power and main rotor torque – Tail rotor power – Total power requirement in vertical flight			x	x
082 04 03 00	Forward flight			x	x
082 04 03 01	Airflow and forces in uniform inflow distribution – Assumption of uniform inflow distribution on rotor disc – Advancing blade (90°) and retreating blade (270°) – Airflow velocity relative to the blade sections, area of reverse flow – Lift on the advancing and retreating blades at constant pitch angles – Necessity of cyclic pitch changes – Compressibility effects on the advancing blade tip and speed limitations – High angle of attack on the retreating blade, blade stall and speed limitations – Thrust on rotor disc and tilt of thrust vector – Vertical component of the thrust vector and gross weight equilibrium – Horizontal component of the thrust vector and drag equilibrium			x	x
082 04 03 02	The flare (power flight) – Thrust reversal, increase in rotor thrust – Increase of rotor RPM on non governed rotor			x	x
082 04 03 04	Power and maximum speed – Induced power as a function of helicopter speed			x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
	– Rotor profile power as a function of helicopter speed – Fuselage drag and parasite power as a function of forward speed – Tail rotor power, power ancillary equipment – Total power requirement as a function of forward speed – Influence of helicopter mass, air density and drag of additional external equipment – Translational lift and influence on power required				
082 04 04 00	Hover and forward flight in ground effect			x	x
082 04 04 01	Airflow in ground effect, downwash – Rotor power decrease as a function of rotor height above the ground at constant helicopter mass			x	x
082 04 05 00	Vertical descent			x	x
082 04 05 01	Vertical descent, power on – Airflow through the rotor, low and moderate descent speeds – Vortex ring state, settling with power, consequences			x	x
082 04 05 02	Autorotation – Collective lever position after failure – Up flow through the rotor, auto-rotation and anti-autorotation rings - Tail rotor thrust and yaw control – Control of rotor RPM with collective lever – Landing after increase of rotor thrust by pulling collective, reduction in vertical speed			x	x
082 04 06 00	Forward flight - Autorotation			x	x
082 04 06 01	Airflow through the rotor disc - Descent speed and up flow through the disc – The flare, increase in rotor thrust, reduction of vertical speed and ground speed			x	x
082 04 06 02	Flight and landing – Turning – Flare – Auto-rotative landing – Height/velocity avoidance graph, dead man's curve			x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
082 05 00 00	**MAIN ROTOR MECHANICS**			x	x
082 05 01 00	Flapping of the blade in hover			x	x
082 05 01 01	Forces and stresses on the blade – Centrifugal force on the blade and attachments – Limits of rotor RPM – Lift on the blade and bending stresses on a rigid attachment – The flapping hinge of the articulated rotor, flapping hinge offset – The flapping of the hinge less rotor, flexible element			x	x
082 05 01 03	Coning angle in hover – Lift and centrifugal force in hover, blade weight negligible – Flapping, tip path plane and disc area			x	x
082 05 02 00	Flapping angles of the blade in forward flight			x	x
082 05 02 01	Forces on the blade in forward flight without cyclic feathering - Aerodynamic forces on the advancing and retreating blades without cyclic feathering – Periodic forces and stresses, fatigue, flapping hinge – Phase lag between the force and the flapping angle (about 90°) – Flapping motion of the hinged blades and tilting of the cone, flap back of rotor – Rotor disc attitude and thrust vector tilt			x	x
082 05 02 02	Cyclic pitch (feathering) in helicopter mode, forward flight – Necessity of forward rotor disc tilt and thrust vector tilt – Flapping and tip path plane, virtual rotation axis or no flapping axis, plane of rotation – Shaft axis and hub plane – Cyclic pitch change (feathering) and rotor thrust vector tilt – Collective pitch change, collective lever, swash plate, pitch link and pitch horn – Cyclic stick, rotating swash plate and pitch link movement, phase angle			x	x
082 05 03 00	Blade lag motion			x	x
082 05 03 01	Forces on the blade in the disc plane (tip path plane) in forward flight			x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
	– Forces due to the Coriolis effect because of the flapping – Alternating stresses and the need of the drag or lag hinge				
082 05 03 02	The drag or lag hinge – The drag hinge in the fully articulated rotor – The lag flexure in the hinge less rotor – Drag dampers			x	x
082 05 03 03	Ground resonance – Blade lag motion and movement of the centre of gravity of the blades and the rotor – Oscillating force on the fuselage – Fuselage and undercarriage, resonance			x	x
082 05 04 00	Rotor systems			x	x
082 05 04 01	See-saw or teetering rotor			x	x
082 05 04 02	Fully articulated rotor – Three hinges arrangement – Bearings and elastomeric hinges			x	x
082 05 04 03	Hinge less rotor, bearing less rotor			x	x
082 05 05 00	Blade sailing – Low rotor RPM and effect of adverse wind – Minimising the danger – Droop stops			x	x
082 05 06 00	Vibrations due to main rotor – Origins of the vibrations, in plane and vertical – Blade tracking and balancing			x	x
082 06 00 00	**TAIL ROTORS**			x	x
082 06 01 00	Conventional tail rotor			x	x
082 06 01 01	Rotor description – Two-blades tail rotors with teetering hinge – Rotors with more than two blades – Feathering bearings and flapping hinges – Dangers to people and to the tail rotor, rotor height and safety			x	x
082 06 01 02	Aerodynamics – Induced airflow and tail rotor thrust			x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
	– Thrust control by feathering, tail rotor drift and roll – Effect of tail rotor failure, vortex ring				
082 06 02 00	The fenestron – Technical lay-out			x	x
082 06 03 00	The NOTAR – Technical lay-out			x	x
082 06 04 00	Vibrations – High frequency vibrations due to the tail rotors			x	x
082 07 00 00	**EQUILIBRIUM, STABILITY AND CONTROL**			x	x
082 07 01 00	Equilibrium and helicopter attitudes			x	x
082 07 01 01	Hover _ Forces and equilibrium conditions – Helicopter pitching moment and pitch angle – Helicopter rolling moment and roll angle			x	x
082 07 01 02	Forward flight _ Forces and equilibrium conditions – Helicopter moments and angles – Effect of speed on fuselage attitude			x	x
082 07 03 00	Control			x	x
082 07 03 02	Control power – Fully articulated rotor – Hinge less rotor – Teetering rotor			x	x
082 07 03 03	Static and dynamic roll over			x	x
082 08 00 00	**HELICOPTER PERFORMANCES**			X	X
082 08 01 00	Engine performances			x	x
082 08 01 01	Piston engines – Power available – Effects of density altitude			x	x
082 08 01 02	Turbine engines – Power available – Effects of ambient pressure and temperature.			x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
082 08 02 00	Helicopter performances			x	x
082 08 02 01	Hover and vertical flight – Power required and power available – OGE and IGE maximum hover height – Influence of AUM, pressure, temperature, density			x	x
082 08 02 02	Forward flight – Maximum speed – Maximum rate of climb speed – Maximum angle of climb speed – Range and endurance – Influence of AUM, pressure, temperature, density			x	x
082 08 02 03	Manoeuvring – Load factor – Bank angle and number of g's – Manoeuvring limit load factor			x	x
082 08 02 04	Special conditions – Operating with limited power – Over pitch, over torque			x	x

		Aeroplane		Helicopter	
		PPL	Bridge	PPL	Bridge
090 00 00 00	**COMMUNICATIONS**				
091 00 00 00	**VFR COMMUNICATIONS**				
091 01 00 00	**DEFINITIONS**				
091 01 01 00	Meanings and significance of associated terms	x		x	
091 01 02 00	Air Traffic Services abbreviations	X		X	
091 01 03 00	Q-code groups commonly used in RTF air-ground communications	x		x	
091 01 04 00	Categories of messages	x		x	
091 02 00 00	**GENERAL OPERATING PROCEDURES**				

		Aeroplane		Helicopter	
		PPL	**Bridge**	**PPL**	**Bridge**
091 02 01 00	Transmission of letters	X		X	
091 02 02 00	Transmission of numbers (including level information)	X		X	
091 02 03 00	Transmission of time	X		X	
091 02 04 00	Transmission technique	X		X	
091 02 05 00	Standard words and phrases (relevant RTF phraseology included)	X		X	
091 02 06 00	Radiotelephony call signs for aeronautical stations including use of abbreviated call signs	X		X	
091 02 07 00	Radiotelephony call signs for aircraft including use of abbreviated call signs	X		X	
091 02 08 00	Transfer of communication	X		X	
091 02 09 00	Test procedures including readability scale	X		X	
091 02 10 00	Read back and acknowledgement requirements	X		X	
091 03 00 00	**RELEVANT WEATHER INFORMATION TERMS (VFR)**				
091 03 01 00	Aerodrome weather	X		X	
091 03 02 00	Weather broadcast	X		X	
091 04 00 00	**ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE**	X		X	
091 05 00 00	**DISTRESS AND URGENCY PROCEDURES**				
091 05 01 00	Distress (definition – frequencies – watch of distress frequencies – distress signal – distress message)	X		X	
091 05 02 00	Urgency (definition – frequencies – urgency signal – urgency message)	X		X	
091 06 00 00	**GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES**	x		x	

AMC No 2 to FCL.210 and FCL.215

Syllabus of theoretical knowledge for the private pilot licence – airships

The following table contains the syllabi for the courses of theoretical knowledge, as well as for the theoretical knowledge examinations for the PPL(As). The training and examination should cover aspects related to non-technical skills in an integrated manner, taking into account the particular risks associated to the licence and the activity.

		PPL
010 00 00 00	AIR LAW AND ATC PROCEDURES	
010 01 00 00	INTERNATIONAL LAW: CONVENTIONS, AGREEMENTS AND ORGANISATIONS	X
010 02 00 00	AIRWORTHINESS OF AIRCRAFT	X
010 03 00 00	AIRCRAFT NATIONALITY AND REGISTRATION MARKS	X
010 04 00 00	PERSONNEL LICENSING	X
010 05 00 00	RULES OF THE AIR	X
010 06 00 00	PROCEDURES FOR AIR NAVIGATION SERVICES – AIRCRAFT OPERATIONS	X
010 07 00 00	AIR TRAFFIC SERVICES AND AIR TRAFFIC MANAGEMENT	X
010 08 00 00	AERONAUTICAL INFORMATION SERVICE	X
010 09 00 00	AERODROMES	X
010 11 00 00	SEARCH AND RESCUE	X
010 12 00 00	SECURITY	X
010 13 00 00	AIRCRAFT ACCIDENT AND INCIDENT INVESTIGATION	X
010 15 00 00	NATIONAL LAW	X

		PPL
023 00 00 00	AIRSHIP GENERAL KNOWLEDGE – ENVELOPE, AIRFRAME AND SYSTEMS, ELECTRICS, POWERPLANT, EMERGENCY EQUIPMENT	
023 01 00 00	DESIGN, MATERIALS,LOADS, STRESSES	X
023 02 00 00	ENVELOPE AND AIRBAGS	X
023 03 00 00	FRAMEWORK	X
023 04 00 00	GONDOLA	X
023 05 00 00	FLIGHT CONTROLS	X
023 06 00 00	LANDING GEAR	X
023 07 00 00	HYDRAULICS AND PNEUMATICS	X
023 08 00 00	HEATING AND AIR CONDITIONING	X
023 09 00 00	FUEL SYSTEM	X
023 10 00 00	PISTON ENGINES (PROPELLERS)	X
023 11 00 00	TURBINE ENGINES (BASICS)	X
023 12 00 00	ELECTRICS	X
023 13 00 00	FIRE PROTECTION AND DETECTION SYSTEMS	X

023 14 00 00	MAINTENANCE	X

		PPL
024 00 00 00	AIRSHIP GENERAL KNOWLEDGE – INSTRUMENTATION	
024 01 00 00	SENSORS AND INSTRUMENTS	X
024 02 00 00	MEASUREMENT OF AIR DATA AND GAS PARAMETERS	X
024 03 00 00	MAGNETISM – DIRECT READING COMPASS AND FLUX VALVE	X
024 04 00 00	GYROSCOPIC INSTRUMENTS	X
024 05 00 00	COMMUNICATION SYSTEMS	X
024 06 00 00	ALERTING SYSTEMS	X
024 07 00 00	INTEGRATED INSTRUMENTS – ELECTRONIC DISPLAYS	X
024 08 00 00	FLIGHT MANAGEMENT SYSTEM (GENERAL BASICS)	X
024 09 00 00	DIGITAL CIRCUITS AND COMPUTERS	X

		PPL
030 00 00 00	FLIGHT PERFORMANCE AND PLANNING	
031 00 00 00	MASS AND BALANCE – AIRSHIPS	
031 01 00 00	PURPOSE OF MASS AND BALANCE CONSIDERATIONS	X
031 02 00 00	LOADING	X
031 03 00 00	FUNDAMENTALS OF CG CALCULATIONS	X
031 04 00 00	MASS AND BALANCE DETAILS OF AIRCRAFT	X
031 05 00 00	DETERMINATION OF CG POSITION	X
031 06 00 00	PASSENGER, CARGO AND BALLAST HANDLING	X

		PPL
035 00 00 00	PERFORMANCE – AIRSHIPS	
035 01 00 00	AIRWORTHINESS REQUIREMENTS	X
035 02 00 00	BASICS OF AIRSHIP PERFORMANCE	X
035 03 00 00	DEFINITIONS AND TERMS	X
035 04 00 00	STAGES OF FLIGHT	X
035 05 00 00	USE OF FLIGHT MANUAL	X

		PPL
033 00 00 00	FLIGHT PLANNING AND FLIGHT MONITORING	
033 01 00 00	FLIGHT PLANNING FOR VFR FLIGHTS	X
033 03 00 00	FUEL PLANNING	X
033 04 00 00	PRE-FLIGHT PREPARATION	X
033 05 00 00	ATS FLIGHT PLAN	X
033 06 00 00	FLIGHT MONITORING AND IN-FLIGHT RE-PLANNING	X

		PPL
040 00 00 00	HUMAN PERFORMANCE	
040 01 00 00	HUMAN FACTORS: BASIC CONCEPTS	X
040 02 00 00	BASIC AVIATION PHYSIOLOGY AND HEALTH MAINTENANCE	X
040 03 00 00	BASIC AVIATION PSYCHOLOGY	X

		PPL
050 00 00 00	METEOROLOGY	
050 01 00 00	THE ATMOSPHERE	X
050 02 00 00	WIND	X
050 03 00 00	THERMODYNAMICS	X
050 04 00 00	CLOUDS AND FOG	X
050 05 00 00	PRECIPITATION	X
050 06 00 00	AIR MASSES AND FRONTS	X
050 07 00 00	PRESSURE SYSTEMS	X
050 08 00 00	CLIMATOLOGY	X
050 09 00 00	FLIGHT HAZARDS	X
050 10 00 00	METEOROLOGICAL INFORMATION	X

		PPL
060 00 00 00	NAVIGATION	
061 00 00 00	GENERAL NAVIGATION	
061 01 00 00	BASICS OF NAVIGATION	X
061 02 00 00	MAGNETISM AND COMPASSES	X
061 03 00 00	CHARTS	X
061 04 00 00	DEAD RECKONING NAVIGATION (DR)	X
061 05 00 00	IN-FLIGHT NAVIGATION	X

		PPL
062 00 00 00	RADIO NAVIGATION	
062 01 00 00	BASIC RADIO PROPAGATION THEORY	X
062 02 00 00	RADIO AIDS	X
062 03 00 00	RADAR	X
062 06 00 00	GLOBAL NAVIGATION SATELLITE SYSTEMS	X

		PPL
070 00 00 00	OPERATIONAL PROCEDURES AIRSHIP	
073 01 00 00	GENERAL REQUIREMENTS	X
073 02 00 00	SPECIAL OPERATIONAL PROCEDURES AND HAZARDS (GENERAL ASPECTS)	X
073 03 00 00	EMERGENCY PROCEDURES	X

		PPL
080 00 00 00	PRINCIPLES OF FLIGHT	X
083 00 00 00	PRINCIPLES OF FLIGHT – AIRSHIPS	X
083 01 00 00	BASICS OF AEROSTATICS	X
083 02 00 00	BASICS OF SUBSONIC AERODYNAMICS	X
083 03 00 00	AERODYNAMICS OF AIRSHIPS	X
083 04 00 00	STABILITY	X
083 05 00 00	CONTROLLABILITY	X
083 06 00 00	LIMITATIONS	X
083 07 00 00	PROPELLERS	X
083 08 00 00	BASICS OF AIRSHIP FLIGHT MECHANICS	X

		PPL
090 00 00 00	COMMUNICATIONS	
091 00 00 00	VFR COMMUNICATIONS	X
091 01 00 00	DEFINITIONS	X
091 02 00 00	GENERAL OPERATING PROCEDURES	X
091 03 00 00	RELEVANT WEATHER INFORMATION TERMS (VFR)	X
091 04 00 00	ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE	X
091 05 00 00	DISTRESS AND URGENCY PROCEDURES	X
091 06 00 00	GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES	X

AMC No 3 to FCL.210 and FCL.215

Syllabus of theoretical knowledge for the balloon pilot licence and the sailplane pilot licence

The syllabi for the theoretical knowledge instruction and examination for the LPL(B) and LPL(S) in AMC to FCL.115 and FCL.120 should be used for the BPL and SPL, respectively.

AMC to FCL.215 and FCL.220
Theoretical knowledge examination and skill test for the PPL

1. THEORETICAL KNOWLEDGE EXAMINATION

   1.1 The examinations should comprise a total of 120 multiple choice questions covering all the subjects.

   1.2 Communication practical classroom testing may be conducted.

   1.3 The period of 18 months mentioned in FCL.215(c) should be counted from the end of the calendar month when the applicant first attempted an examination.

2. SKILL TEST

   2.1 Further training may be required following any failed skill test or part thereof. There should be no limit to the number of skill tests that may be attempted.

3. CONDUCT OF THE TEST

   3.1 If the applicant chooses to terminate a skill test for reasons considered inadequate by the flight examiner, the applicant should retake the entire skill test. If the test is terminated for reasons considered adequate by the flight examiner, only those sections not completed should be tested in a further flight.

   3.2 Any manoeuvre or procedure of the test may be repeated once by the applicant. The flight examiner may stop the test at any stage if it is considered that the applicant's demonstration of flying skill requires a complete retest.

   3.3 An applicant should be required to fly the aircraft from a position where the pilot-in-command functions can be performed and to carry out the test as if there is no other crew member. Responsibility for the flight should be allocated in accordance with national regulations.

AMC No 1 to FCL.220
Contents of the skill test for the issue of a PPL(A)

1 The route to be flown for the navigation test should be chosen by the flight examiner (FE). The route may end at the aerodrome of departure or at another aerodrome. The applicant should be responsible for the flight planning and should ensure that all equipment and documentation for the execution of the flight are on board. The navigation section of the test should have a duration that allows the pilot to demonstrate his/her ability to complete a route with at least three identified waypoints and may, as agreed between applicant and FE, be flown as a separate test.

2 An applicant should indicate to the FE the checks and duties carried out, including the identification of radio facilities. Checks should be completed in accordance with the authorised check list for the aeroplane on which the test is being taken. During pre-flight preparation for the test the applicant should be required to determine power settings and speeds. Performance data for take-off, approach and landing should be calculated by the applicant in compliance with the operations manual or flight manual for the aeroplane used.

FLIGHT TEST TOLERANCE

3 The applicant should demonstrate the ability to:

   – operate the aeroplane within its limitations;

- complete all manoeuvres with smoothness and accuracy;
- exercise good judgment and airmanship;
- apply aeronautical knowledge; and
- maintain control of the aeroplane at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

4 The following limits are for general guidance. The FE should make allowance for turbulent conditions and the handling qualities and performance of the aeroplane used.

Height	
normal flight	± 150 feet
with simulated engine failure	± 200 feet
Heading / Tracking of radio aids	
normal flight	± 10°
with simulated engine failure	± 15°
Speed	
take-off and approach	+15/–5 knots
all other flight regimes	± 15 knots

5 The skill test contents and sections set out in this AMC should be used for the skill test for the issue of a PPL(A) on single-engine.

SECTION 1 **PRE-FLIGHT OPERATIONS AND DEPARTURE**	
Use of checklist, airmanship (control of aeroplane by external visual reference, anti/de-icing procedures, etc.) apply in all sections.	
a	Pre-flight documentation and weather brief
b	Mass and balance and performance calculation
c	Aeroplane inspection and servicing
d	Engine starting and after starting procedures
e	Taxiing and aerodrome procedures, pre take-off procedures
f	Take-off and after take-off checks
g	Aerodrome departure procedures
h	ATC liaison – compliance, R/T procedures
SECTION 2 **GENERAL AIRWORK**	
a	ATC liaison – compliance, R/T procedure
b	Straight and level flight, with speed changes
c	Climbing: i. Best rate of climb ii. Climbing turns iii. Levelling off

d	Medium (30° bank) turns
e	Steep (45° bank) turns (including recognition and recovery from a spiral dive)
f	Flight at critically low airspeed with and without flaps
g	Stalling: i. Clean stall and recover with power ii. Approach to stall descending turn with bank angle 20°, approach configuration iii. Approach to stall in landing configuration
h	Descending: i. With and without power ii. Descending turns (steep gliding turns) iii. Levelling off
SECTION 3 **EN-ROUTE PROCEDURES**	
a	Flight plan, dead reckoning and map reading
b	Maintenance of altitude, heading and speed
c	Orientation, timing and revision of ETAs, log keeping
d	Diversion to alternate aerodrome (planning and implementation)
e	Use of radio navigation aids
f	Basic instrument flying check (180° turn in simulated IMC)
g	Flight management (checks, fuel systems and carburettor icing, etc.) ATC liaison – compliance, R/T procedures
SECTION 4 **APPROACH AND LANDING PROCEDURES**	
a	Aerodrome arrival procedures
b	* Precision landing (short field landing), cross wind, if suitable conditions available
c	* Flapless landing
d	* Approach to landing with idle power
e	Touch and go
f	Go-around from low height
g	ATC liaison – compliance, R/T procedures
h	Actions after flight

SECTION 5 **ABNORMAL AND EMERGENCY PROCEDURES**	
This section may be combined with Sections 1 through 4.	
a	Simulated engine failure after take-off
b	* Simulated forced landing

c	Simulated precautionary landing
d	Simulated emergencies
e	Oral questions

* These items may be combined, at the discretion of the FE.

AMC No 2 to FCL.220
Contents of the skill test for the issue of a PPL(H)

1. The area and route to be flown should be chosen by the flight examiner (FE) and all low level and hover work should be at an adequate aerodrome/site. Routes used for section 3 may end at the aerodrome of departure or at another aerodrome. The applicant should be responsible for the flight planning and should ensure that all equipment and documentation for the execution of the flight are on board. The navigation section of the test, as set out in this AMC should consist of at least 3 legs, each leg of a minimum duration of 10 minutes. The skill test may be conducted in 2 flights.

2. An applicant should indicate to the FE the checks and duties carried out, including the identification of radio facilities. Checks should be completed in accordance with the authorised check list or pilot operating handbook for the helicopter on which the test is being taken. During pre-flight preparation for the test the applicant is required to determine power settings and speeds. Performance data for take-off, approach and landing should be calculated by the applicant in compliance with the operations manual or flight manual for the helicopter used.

FLIGHT TEST TOLERANCE

3. The applicant should demonstrate the ability to:
   - operate the helicopter within its limitations;
   - complete all manoeuvres with smoothness and accuracy;
   - exercise good judgement and airmanship;
   - apply aeronautical knowledge; and
   - maintain control of the helicopter at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

4. The following limits are for general guidance. The FE should make allowance for turbulent conditions and the handling qualities and performance of the helicopter used.

Height

normal forward flight	± 150 feet
with simulated major emergency	± 200 feet
hovering I.G.E. flight	± 2 feet

Heading / Tracking of radio aids

normal flight	± 10°
with simulated major emergency	± 15°

Speed

take-off approach	– 10 knots/+15 knots
all other flight regimes	± 15 knots

Ground drift

T.O. hover I.G.E.	± 3 feet
landing	no sideways or backwards movement

CONTENT OF THE SKILL TEST

5. The skill test contents and sections set out in this AMC should be used for the skill test for the issue of a PPL(H) on single- or multi-engine helicopters .

NOTE: Use of checklist, airmanship, control of helicopter by external visual reference, anti-icing procedures, etc., apply in all sections.

	SECTION 1 **PRE-FLIGHT/POST-FLIGHT CHECKS AND PROCEDURES**
a	Helicopter knowledge, (e.g. technical log, fuel, mass and balance, performance), Flight Planning, NOTAMS, Weather
b	Pre-flight inspection/action, location of parts and purpose
c	Cockpit inspection, Starting procedure
d	Communication and navigation equipment checks, selecting and setting frequencies
e	Pre-take-off procedure, R/T procedure, ATC liaison-compliance
f	Parking, Shutdown and Post-flight procedure
	SECTION 2 **HOVER MANOEUVRES, ADVANCED HANDLING AND CONFINED AREAS**
a	Take-off and landing (lift off and touch down)
b	Taxi, hover taxi
c	Stationary hover with head/cross/tail wind
d	Stationary hover turns, 360º left and right (spot turns)
e	Forward, sideways and backwards hover manoeuvring
f	Simulated engine failure from the hover
g	Quick stops into and downwind
h	Sloping ground/unprepared sites landings and take-offs
i	Take-offs (various profiles)
j	Crosswind, downwind take-off (if practicable)
k	Take-off at maximum take-off mass (actual or simulated)
l	Approaches (various profiles)
m	Limited power take-off and landing

n	Autorotations, (FE to select two items from - Basic, range, low speed, and 360º turns)
o	Autorotative landing
p	Practice forced landing with power recovery
q	Power checks, reconnaissance technique, approach and departure technique
SECTION 3 **NAVIGATION - EN ROUTE PROCEDURES**	
a	Navigation and orientation at various altitudes/heights, map reading
b	Altitude/height, speed, heading control, observation of airspace, altimeter setting
c	Monitoring of flight progress, flight-log, fuel usage, endurance, ETA, assessment of track error and re-establishment of correct track, instrument monitoring
d	Observation of weather conditions, diversion planning
e	Use of navigation aids (where available)
f	ATC liaison and observance of regulations, etc.
SECTION 4 **FLIGHT PROCEDURES AND MANOEUVRES**	
a	Level flight, control of heading, altitude/height and speed
b	Climbing and descending turns to specified headings
c	Level turns with up to 30ºbank, 180º to 360º left and right
d	Level turns 180º left and right by sole reference to instruments
SECTION 5 **ABNORMAL AND EMERGENCY PROCEDURES** **(SIMULATED WHERE APPROPRIATE)**	
Note (1) Where the test is conducted on a multi-engine helicopter a simulated engine failure drill, including a single engine approach and landing should be included in the test.	
Note (2) The FE should select 4 items from the following:	
a	Engine malfunctions, including governor failure, carburettor/engine icing, oil system, as appropriate
b	Fuel system malfunction
c	Electrical system malfunction
d	Hydraulic system malfunction, including approach and landing without hydraulics, as applicable
e	Main rotor and/or anti-torque system malfunction (flight simulator or discussion only)
f	Fire drills, including smoke control and removal, as applicable

g	Other abnormal and Emergency procedures as outlined in appropriate flight manual and with reference to Appendix 9 B.1 to Part-FCL, sections 7 and 8, including for multi-engine helicopters: - Simulated engine failure at take-off: - rejected take-off at or before TDP or safe forced landing at or before DPATO - shortly after TDP or DPATO - Landing with simulated engine failure: - landing or go-around following engine failure before LDP or DPBL - following engine failure after LDP or safe forced landing after DPBL

AMC No 3 to FCL.235

Content of the skill test for the issue of the PPL(As)

1 The area and route to be flown is chosen by the FE. Routes used for section 3 may end at the aerodrome of departure or at another aerodrome and one destination should be a controlled aerodrome. The skill test may be conducted in 2 flights. The total duration of the flight(s) should be at least 60 minutes.

2 The applicant should demonstrate the ability to:

- operate the airship within its limitations;
- complete all manoeuvres with smoothness and accuracy;
- exercise good judgement and airmanship;
- apply aeronautical knowledge; and
- maintain control of the airship at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

FLIGHT TEST TOLERANCES

3 The following limits should apply, corrected to make allowance for turbulent conditions and the handling qualities and performance of the airship used.

Height	
normal flight	±200 feet
simulated major emergency	±300 feet
Tracking on radio aids	±15°
Heading	
normal flight	±15°
simulated major emergency	±20°

CONTENT OF THE TEST

4 Items in Sections 5 and 6 may be performed in an FNPT (AS) or a flight simulator (As). Use of airship checklists, airmanship, control of airship by external visual reference, anti-icing procedures, and principles of threat and error management apply in all sections.

SECTION 1 PRE-FLIGHT OPERATIONS AND DEPARTURE	
a	Pre-flight, including: Flight planning, Documentation, Mass and balance determination, Weather briefing

b	Airship inspection and servicing
c	Off-mast procedure, ground manoeuvring and take-off
d	Performance considerations and trim
e	Aerodrome and traffic pattern operations
f	Departure procedure, altimeter setting, collision avoidance (lookout)
g	ATC liaison – compliance, R/T procedures
SECTION 2 **GENERAL AIRWORK**	
a	Control of the airship by external visual reference, including straight and level, climb, descent, lookout
b	Flight close to pressure height
c	Turns
d	Steep descents and climbs
e	Flight by reference solely to instruments, including: i. Level flight, control of heading, altitude and airspeed ii. Climbing and descending turns iii. Recoveries from unusual attitudes
f	ATC liaison – compliance, R/T procedures
SECTION 3 **EN ROUTE PROCEDURES**	
a	Flight Plan, dead reckoning and map reading
b	Maintenance of altitude, heading and speed, collision avoidance (lookout procedures)
c	Orientation, timing and revision of ETAs, log keeping
d	Observation of weather conditions, diversion to alternate aerodrome (planning and implementation)
e	Use of radio navigation aids
f	Flight management (checks, fuel systems, etc.) ATC liaison – compliance, R/T procedures
SECTION 4 **APPROACH AND LANDING PROCEDURES**	
a	Aerodrome arrival procedures, altimeter setting, checks, lookout
b	ATC liaison: compliance, R/T procedures
c	Go-around action

d	Normal landing,
e	Short field landing
f	Post flight actions
SECTION 5 **ABNORMAL AND EMERGENCY PROCEDURES**	
This section may be combined with sections 1 through 4.	
a	Simulated engine failure after take-off (at a safe altitude), fire drill
b	Equipment malfunctions
c	Forced landing (simulated)
d	ATC liaison: compliance, R/T procedures
e	Oral questions
SECTION 6 **RELEVANT TYPE ITEMS**	
This section may be combined with Sections 1 through 5.	
a	Simulated engine failure during take-off (at a safe altitude unless carried out in a flight simulator)
b	approach and go-around with failed engine(s)
c	approach and full stop landing with failed engine(s)
d	Malfunctions in the envelope pressure system
e	ATC liaison – compliance, R/T procedures, Airmanship
f	As determined by the Flight Examiner – any relevant items of the type rating skill test to include, if applicable: i. Airship systems ii. Operation of envelope pressure system
g	Oral questions

AMC to FCL.210.A

FLIGHT INSTRUCTION FOR THE PRIVATE PILOT LICENCE - AEROPLANE

1. ENTRY TO TRAINING

   1.1 Before being accepted for training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

2. FLIGHT INSTRUCTION

2.1 The PPL(A) flight instruction syllabus should take into account the principles of threat and error management and cover:

(a) pre-flight operations, including mass and balance determination, aircraft inspection and servicing;

(b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;

(c) control of the aircraft by external visual reference;

(d) flight at critically low airspeeds, recognition of, and recovery from, incipient and full stalls;

(e) flight at critically high airspeeds, recognition of, and recovery from, spiral dive;

(f) normal and crosswind take-offs and landings;

(g) maximum performance (short field and obstacle clearance) take-offs, short-field landings;

(h) flight by reference solely to instruments, including the completion of a level 180 degrees turn;

(i) cross-country flying using visual reference, dead reckoning and radio navigation aids;

(j) emergency operations, including simulated aeroplane equipment malfunctions; and

(k) operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, communication procedures and phraseology.

2.2 Before allowing the applicant for a PPL(A) to undertake his/her first solo flight, the flight instructor should ensure that the applicant can use radiotelephony (R/T) communication

3. SYLLABUS OF FLIGHT INSTRUCTION

Exercise 1: Familiarisation with the aeroplane

- characteristics of the aeroplane
- cockpit layout
- systems
- check lists, drills, controls

Exercise 1E: Emergency drills

- action in the event of fire on the ground and in the air
- engine cabin and electrical system fire
- systems failure
- escape drills, location and use of emergency equipment and exits

Exercise 2: Preparation for and action after flight

- flight authorisation and aeroplane acceptance
- serviceability documents
- equipment required, maps, etc.
- external checks
- internal checks
- harness, seat or rudder panel adjustments

- starting and warm up checks
- power checks
- running down system checks and switching off the engine
- parking, security and picketing (e.g. tie down)
- completion of authorisation sheet and serviceability documents

Exercise 3: Air experience

- flight exercise

Exercise 4: Effects of controls

- primary effects when laterally level and when banked
- further effects of aileron and rudder
- effects of:
  - airspeed
  - slipstream
  - power
  - trimming controls
  - flaps
  - other controls, as applicable
- operation of:
  - mixture control
  - carburettor heat
  - cabin heating/ventilation
- airmanship

Exercise 5: Taxiing

- pre-taxi checks
- starting, control of speed and stopping
- engine handling
- control of direction and turning
- turning in confined spaces
- parking area procedure and precautions
- effects of wind and use of flying controls
- effects of ground surface
- freedom of rudder movement
- marshalling signals
- instrument checks
- air traffic control procedures
- airmanship

Exercise 5E: Emergencies

- Brake and steering failure

Exercise 6: Straight and level

- at normal cruising power, attaining and maintaining straight and level flight
- flight at critically high airspeeds
- demonstration of inherent stability
- control in pitch, including use of trim
- lateral level, direction and balance, trim
- at selected airspeeds (use of power)
- during speed and configuration changes
- use of instruments for precision
- airmanship

Exercise 7: Climbing

- entry, maintaining the normal and max rate climb, levelling off
- levelling off at selected altitudes
- en-route climb (cruise climb)
- climbing with flap down
- recovery to normal climb
- maximum angle of climb
- use of instruments for precision
- airmanship

Exercise 8: Descending

- entry, maintaining and levelling off
- levelling off at selected altitudes
- glide, powered and cruise descent (including effect of power and airspeed)
- side slipping (on suitable types)
- use of instruments for precision flight
- airmanship

Exercise 9: Turning

- entry and maintaining medium level turns
- resuming straight flight
- faults in the turn – (in correct pitch, bank, balance)
- climbing turns
- descending turns
- faults in the turns (slipping/skidding on suitable types)
- turns onto selected headings, use of gyro heading indicator and compass
- use of instruments for precision
- airmanship

Exercise 10A: Slow flight

NOTE: The objective is to improve the student's ability to recognise inadvertent flight at critically low speeds and provide practice in maintaining the aeroplane in balance while returning to normal airspeed.

- safety checks

- introduction to slow flight
- controlled flight down to critically slow airspeed
- application of full power with correct attitude and balance to achieve normal climb speed
- airmanship

Exercise 10B: Stalling

- airmanship
- safety checks
- symptoms
- recognition
- clean stall and recovery without power and with power
- recovery when a wing drops
- approach to stall in the approach and in the landing configurations, with and without power, recovery at the incipient stage

Exercise 11: Spin avoidance

- airmanship
- safety checks
- stalling and recovery at the incipient spin stage (stall with excessive wing drop, about 45°)
- instructor induced distractions during the stall

NOTE 1: At least two hours of stall awareness and spin avoidance flight training should be completed during the course.

NOTE 2: Consideration of manoeuvre limitations and the need to refer to the aeroplane manual and mass and balance calculations.

Exercise 12: Take-off and climb to downwind position

- pre-take-off checks
- into wind take-off
- safeguarding the nosewheel
- crosswind take-off
- drills during and after take-off
- short take-off and soft field procedure/techniques including performance calculations
- noise abatement procedures
- airmanship

Exercise 13: Circuit, approach and landing

- circuit procedures, downwind, base leg
- powered approach and landing
- safeguarding the nosewheel
- effect of wind on approach and touchdown speeds, use of flaps
- crosswind approach and landing
- glide approach and landing
- short landing and soft field procedures/techniques

- flapless approach and landing
- wheel landing (tail wheel aeroplanes)
- missed approach/go around
- noise abatement procedures
- airmanship

Exercise 12/13E: Emergencies

- abandoned take-off
- engine failure after take-off
- mislanding/go-around
- missed approach

In the interests of safety it will be necessary for pilots trained on nose wheel aeroplanes to undergo dual conversion training before flying tail wheel aeroplanes, and vice-versa.

Exercise 14: First solo

- instructor's briefing, observation of flight and de-briefing

NOTE: During flights immediately following the solo circuit consolidation the following should be revised.

- procedures for leaving and rejoining the circuit
- the local area, restrictions, map reading
- use of radio aids for homing
- turns using magnetic compass, compass errors
- airmanship

Exercise 15: Advanced turning

- steep turns (45°), level and descending
- stalling in the turn and recovery
- recoveries from unusual attitudes, including spiral dives
- airmanship

Exercise 16: Forced landing without power

- forced landing procedure
- choice of landing area, provision for change of plan
- gliding distance
- descent plan
- key positions
- engine cooling
- engine failure checks
- use of radio
- base leg
- final approach
- landing
- actions after landing

- airmanship

Exercise 17: Precautionary landing

- full procedure away from aerodrome to break-off height
- occasions necessitating
- in-flight conditions
- landing area selection
  - normal aerodrome
  - disused aerodrome
  - ordinary field
- circuit and approach
- actions after landing
- airmanship

Exercise 18A: Navigation

Flight planning

- weather forecast and actuals
- map selection and preparation
  - choice of route
  - controlled airspace
  - danger, prohibited and restricted areas
  - safety altitudes
- calculations
  - magnetic heading(s) and time(s) en-route
  - fuel consumption
  - mass and balance
  - mass and performance
- flight information
  - NOTAMS etc.
  - radio frequencies
  - selection of alternate aerodromes
- aeroplane documentation
- notification of the flight
  - pre-flight administrative procedures
  - flight plan form

Departure

- organisation of cockpit workload
- departure procedures
  - altimeter settings
  - ATC liaison in controlled/regulated airspace
  - setting heading procedure

   - noting of ETAs
- maintenance of altitude and heading
- revisions of ETA and heading
- log keeping
- use of radio
- use of navaids
- minimum weather conditions for continuation of flight
- in-flight decisions
- transiting controlled/regulated airspace
- diversion procedures
- uncertainty of position procedure
- lost procedure

Arrival, aerodrome joining procedure

   - ATC liaison in controlled/regulated airspace
   - altimeter setting
   - entering the traffic pattern
   - circuit procedures
- parking
- security of aeroplane
- refuelling
- closing of flight plan, if appropriate
- post-flight administrative procedures

Exercise 18B: Navigation problems at lower levels and in reduced visibility

- actions prior to descending
- hazards (e.g. obstacles, and terrain)
- difficulties of map reading
- effects of wind and turbulence
- vertical situational awareness (avoidance of controlled flight into terrain)
- avoidance of noise sensitive areas
- joining the circuit
- bad weather circuit and landing

Exercise 18C: Radio navigation

Use of VHF Omni Range

- availability, AIP, frequencies
- selection and identification
- omni bearing selector (OBS)
- to/from indications, orientation
- course deviation indicator (CDI)
- determination of radial

- intercepting and maintaining a radial
- VOR passage
- obtaining a fix from two VORs

Use of automatic direction finding equipment (ADF) – non-directional beacons (NDBs)

- availability, AIP, frequencies
- selection and identification
- orientation relative to the beacon
- homing

Use of VHF direction finding (VHF/DF)

- availability, AIP, frequencies
- R/T procedures and ATC liaison
- obtaining a QDM and homing

Use of en-route/terminal radar

- availability, AIP
- procedures and ATC liaison
- pilot's responsibilities
- secondary surveillance radar
  - transponders
  - code selection
  - interrogation and reply

Use of distance measuring equipment (DME)

- station selection and identification
- modes of operation
  - distance, groundspeed, time to run

Exercise 19: Basic instrument flight

- physiological sensations
- instrument appreciation
  - attitude instrument flight
- instrument limitations
- airmanship
- basic manoeuvres
  - straight and level at various airspeeds and configurations
  - climbing and descending
  - standard rate turns, climbing and descending, onto selected headings
  - recoveries from climbing and descending turns

4. BASIC INSTRUMENT TRAINING DEVICES (BITD)

4.1 A BITD may be used for flight training for:

- flight by reference solely to instruments;
- navigation using radio navigation aids; and

– basic instrument flight

The use of the BITD should be subject to the following:

- the training should be complemented by exercises on an aeroplane;
- the record of the parameters of the flight must be available; and
- A FI(A) or STI(A) should conduct the instruction

AMC to FCL.210.H

FLIGHT INSTRUCTION FOR THE PRIVATE PILOT LICENCE (HELICOPTER)

1. ENTRY TO TRAINING

1.1 Before being accepted for training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

2. FLIGHT INSTRUCTION

2.1 The PPL(H) flight instruction syllabus should take into account the principles of threat and error management and cover:

(a) pre-flight operations, including mass and balance determination, helicopter inspection and servicing;

(b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;

(c) control of the helicopter by external visual reference;

(d) take-offs, landings, hovering, look out turns and normal transitions from and to the hover;

(e) emergency procedures, basic autorotations, simulated engine failure, ground resonance recovery if relevant to type;

(f) sideways and backwards flight, turns on the spot;

(g) incipient vortex ring recognition and recovery;

(h) touchdown autorotations, simulated engine-off landings, practice forced landings. Simulated equipment malfunctions and emergency procedures relating to malfunctions of engines, controls, electrical and hydraulic circuits;

(i) steep turns;

(j) transitions, quick stops, out of wind manoeuvres, sloping ground landings and take-offs;

(k) limited power and confined area operations including selection of and operations to and from unprepared sites;

(l) flight by sole reference to basic flight instruments including completion of a level 180° turn and recovery from unusual attitudes to simulate inadvertent entry into cloud (this training may be conducted by an FI(H));

(m) cross-country flying by using visual reference, dead reckoning and, where available, radio navigation aids;

(n) operations to, from and transiting controlled aerodromes; compliance with air traffic services procedures, communication procedures and phraseology;

2.2 Before allowing the applicant for a PPL(H) to undertake his/her first solo flight, the flight instructor should ensure that the applicant can use radiotelephony (R/T) communication

3. SYLLABUS OF FLIGHT INSTRUCTION

NOTE : Airmanship should be included as required in each exercise

Exercise 1a: Familiarisation with the helicopter

- characteristics of the helicopter, external features
- cockpit layout
- systems
- check lists, procedures, controls

Exercise 1b: Emergency procedures

- action in the event of fire on the ground and in the air
- engine, cabin and electrical system fire
- systems failures
- escape drills, location and use of emergency equipment and exits

Exercise 2: Preparation for and action after flight

- flight authorisation and helicopter acceptance
- serviceability documents
- equipment required, maps, etc.
- external checks
- internal checks
- seat, harness and flight controls adjustments
- starting and warm up checks clutch engagement, starting rotors
- power checks
- running down system checks and switching off the engine
- parking, security and picketing
- completion of authorisation sheet and serviceability documents

Exercise 3: Air experience

- to introduce the student to rotary wing flight
- flight exercise

Exercise 4: Effects of controls

- function of flight controls, primary and secondary effect
- effect of airspeed
- effect of power changes (torque)
- effect of yaw(sideslip)
- effect of disc loading (bank and flare)
- effect on controls of selecting hydraulics on/off
- effect of control friction
- instruments
- use of carburettor heat/anti-icing control

Exercise 5: Power and attitude changes

- relationship between cyclic control position, disc attitude, fuselage attitude, airspeed
- flapback

- power required diagram in relation to airspeed
- power and airspeed changes in level flight
- use of instruments for precision
- engine and airspeed limitations

Exercise 6a: Straight and level

- at normal cruising power, attaining and maintaining straight and level flight
- control in pitch, including use of control friction and/or trim
- maintaining direction and balance, (ball/yawstring use)
- setting power for selected airspeeds/speed changes
- use of instruments for precision

Exercise 6b: Climbing

- optimum climb speed, best angle/rate of climb from power required diagram
- initiation, maintaining the normal and maximum rate of climb, levelling off
- levelling off at selected altitudes/heights
- use of instruments for precision

Exercise 6c: Descending

- optimum descent speed, best angle/rate of descent from power required diagram
- initiation, maintaining and levelling off
- levelling off at selected altitudes/heights
- descent (including effect of power and airspeed)
- use of instruments for precision

Exercise 6d: Turning

- initiation and maintaining medium level turns
- resuming straight flight
- altitude, bank and co-ordination
- climbing and descending turns and effect on rate of climb/descent
- turns onto selected headings, use of gyro heading indicator and compass
- use of instruments for precision

Exercise 7: Basic autorotation

- safety checks, verbal warning, lookout
- entry, development and characteristics
- control of airspeed and RRPM, rotor and engine limitations
- effect of AUM, IAS, disc loading, G forces and density altitude
- re-engagement and go around procedures (throttle over-ride/ERPM control)
- vortex condition during recovery
- gentle/medium turns in autorotation
- demonstration of variable flare simulated engine off landing

Exercise 8a: Hovering

– demonstrate hover I.G.E, importance of wind effect and attitude, ground cushion, stability in the hover, effects of over controlling

– student holding cyclic stick only

– student handling collective lever (and throttle) only

– student handling collective lever, (throttle) and pedals

– student handling all controls

– demonstration of ground effect

– demonstration of wind effect

– demonstrate gentle forward running touchdown

– specific hazards e.g. snow, dust, litter

Exercise 8b: Hover taxiing, spot turns

– revise hovering

– precise ground speed/height control

– effect of wind direction on helicopter attitude and control margin

– control, co-ordination during spot turns

– carefully introduce gentle forward running touchdown

Exercise 8C: Hovering, taxiing emergencies

– revise hovering and gentle forward running touchdown, explain (demonstrate where applicable) effect of hydraulics failure in the hover

– demonstrate simulated engine failure in the hover and hover taxi

– demonstrate dangers of mishandling and over-pitching

Exercise 9: Take-off and landing

– pre-take off checks/drills

– lookout

– lifting to hover

– after take-off checks

– danger of horizontal movement near ground

– danger of mishandling and overpitching

– landing (without sideways or backwards movement)

– after landing checks/drills

– take-off and landing cross wind, downwind

Exercise 10: Transitions from hover to climb and approach to hover

– lookout

– revise take-off and landing

– ground effect, translational lift and its effects

– flapback and its effects

– effect of wind speed/direction during transitions from/to the hover

– the constant angle approach

– demonstration of variable flare simulated engine off landing

Exercise 11a: Circuit, approach and landing

- revise transitions from hover to climb and approach to hover
- circuit procedures, downwind, base leg
- approach and landing with power
- pre-landing checks
- effect of wind on approach and I.G.E. hover
- crosswind approach and landing
- go around
- noise abatement procedures

Exercise 11b: Steep and limited power approaches and landings

- revise the constant angle approach
- the steep approach (explain danger of high sink rate and low air speed)
- limited power approach (explain danger of high speed at touch down)
- use of the ground effect
- variable flare simulated engine off landing

Exercise 11c: Emergency procedures

- abandoned take-off
- missed approach/go-around
- hydraulic OFF landing, (if applicable)
- tail rotor control or tail rotor drive failure (briefing only)
- simulated emergencies in the circuit to include:
- hydraulics failure
- simulated engine failure on take-off, cross wind, downwind and baseleg
- governor failure

Exercise 12: First solo

- instructor's briefing, observation of flight and debriefing
- warn of change of attitude from reduced and laterally displaced weight
- warn of low tail, low skid/wheel during hover, landing
- warn of dangers of loss of RRPM and overpitching
- pre take-off checks
- into wind take-off
- procedures during and after take-off
- normal circuit, approaches and landings
- action in the event of an Emergency

Exercise 13: Sideways and backwards hover manoeuvring

- manoeuvring sideways flight heading into wind
- manoeuvring backwards flight heading into wind
- combination of sideways and backwards manoeuvring
- manoeuvring sideways and backwards, heading out of wind
- stability, weathercocking

- recovery from backwards manoeuvring, (pitch nose down)
- groundspeed limitations for sideways and backwards manoeuvring

Exercise 14: Spot turns

- revise hovering into wind and downwind
- turn on spot through 360º:
  - around pilots position
  - around tail rotor
  - around helicopter geometric centre
  - square, safe visibility clearing turn
- rotor RPM control, torque effect, cyclic limiting stops due to C of G position and wind speed/direction

Exercise 15: Hover out of ground effect (OGE), vortex ring

- establishing hover O.G.E
- drift/height/power control
- demonstration of incipient stage of vortex ring, recognition and recovery (from a safe altitude)
- loss of tail rotor effectiveness

Exercise 16: Simulated engine off landings (EOL)

- the effect of weight, disc loading, density attitude, RRPM decay
- revise basic autorotation entry
- optimum use of cyclic and collective to control speed/RRPM
- variable flare simulated EOL
- demonstrate constant attitude simulated EOL
- demonstrate simulated EOL from hover/hover taxi
- demonstrate simulated EOL from transition and low level

Exercise 17: Advanced autorotation

- over a selected point at various height and speed
- revise basic autorotation - note ground distance covered
- range autorotation
- low speed autorotation
- constant attitude autorotation (terminate at safe altitude)
- 'S' turns
- turns through 180° and 360°
- effects on angles of descent, IAS, RRPM and effect of AUM

Exercise 18: Practice forced landings

- procedure and choice of the forced landing area
- forced landing checks and crash action
- re-engagement and go-around procedures

Exercise 19: Steep turns

- steep (level) turns (30° bank)

- maximum rate turns (45° bank if possible)
- steep autorotative turns
- faults in the turn - balance, attitude, bank and co-ordination
- RRPM control, disc loading
- vibration and control feedback
- effect of wind at low level

Exercise 20: Transitions

- revise ground effect, translational lift, flapback
- maintaining constant height, (20-30 feet AGL):
  - transition from hover to minimum 50 knots IAS and back to hover
- demonstrate effect of wind

Exercise 21: Quickstops

- use of power and controls
- effect of wind
- quickstops into wind
- quickstops from crosswind and downwind terminating into wind
- danger of vortex ring
- danger of high disc loading

Exercise 22a: Navigation

Flight planning

- weather forecast and actuals
- map selection and preparation and use
- choice of route
  - controlled airspace, danger and prohibited areas
  - safety altitudes and noise abatement considerations
- calculations
  - magnetic heading(s) and time(s) en-route
  - fuel consumption
  - mass and balance
- flight information
  - NOTAMs etc
  - radio frequencies
  - selection of alternate landing sites
- helicopter documentation
- notification of the flight
  - pre-flight administrative procedures
  - flight plan form (where appropriate)

Departure

- organisation of cockpit workload

- departure procedures
  - altimeter settings
  - ATC liaison in controlled/regulated airspace
  - setting heading procedure
  - noting of ETAs
- maintenance of height/altitude and heading
- revisions of ETA and heading
  - 10º line, double track and track error, closing angle
  - 1 in 60 rule
  - amending an ETA
- log keeping
- use of radio
- use of navaids (if fitted)
- minimum weather conditions for continuation of flight
- in-flight decisions
- transiting controlled/regulated airspace
- uncertainty of position procedure
- lost procedure

Arrival, aerodrome joining procedure

  - ATC liaison in controlled/regulated airspace
  - altimeter setting
  - entering the traffic pattern
  - circuit procedures
- parking
- security of helicopter
- refuelling
- closing of flight plan, (if appropriate)
- post-flight administrative procedures

Exercise 22b: Navigation problems at low heights and in reduced visibility

- actions prior to descending
- hazards (e.g. obstacles, other aircraft)
- difficulties of map reading
- effects of wind and turbulence
- avoidance of noise sensitive areas
- joining the circuit
- bad weather circuit and landing
- appropriate procedures and choice of landing area

Exercise 22c: Radio navigation

- Use of VHF Omni Range

  - availability, AIP, frequencies
  - selection and identification
  - omni bearing selector (OMB)
  - to/from indications, orientation
  - course deviation indicator (CDI)
  - determination of radial
  - intercepting and maintaining a radial
  - VOR passage
  - obtaining a fix from two VORs
- use of automatic direction finding equipment (ADF)/non directional beacons (NDBs)
  - availability, AIP, frequencies
  - selection and identification
  - orientation relative to the beacon
  - homing
- use of VHF direction finding (VHF/DF)
  - availability, AIP, frequencies
  - RTF procedures and ATC liaison
  - obtaining a QDM and homing
- use of en-route/terminal radar
  - availability, AIP
  - procedures and ATC liaison
  - pilots responsibilities
  - secondary surveillance radar (if transponder fitted)
    - transponders
    - code selection
    - interrogation and reply
- use of distance measuring equipment (DME)
  - station selection and identification
  - modes of operation
    - distance, groundspeed, time to run

Exercise 23: Advanced take-off, landings, transitions

- landing and take-off out of wind (performance reduction)
- ground effect, translational lift and directional stability variation when out of wind
- downwind transitions
- vertical takeoff over obstacles
- reconnaissance of landing site
- running landing
- zero speed landing
- cross wind and downwind landings

- steep approach
- go-around

Exercise 24: Sloping ground

- limitations, assessing slope angle
- wind and slope relationship - blade and control stops
- effect of C of G when on slope
- ground effect on slope, power required
- right skid up slope
- left skid up slope
- nose up slope
- avoidance of dynamic roll over, dangers of soft ground and sideways movement on touchdown
- danger of striking main/tail rotor by harsh control movement near ground

Exercise 25: Limited power

- take-off power check
- vertical take-off over obstacles
- in flight power check
- running landing
- zero speed landing
- approach to low hover
- approach to hover
- approach to hover OGE
- steep approach
- go-around

Exercise 26: Confined areas

- landing capability, performance assessment
- locating landing site, assessing wind speed/direction
- reconnaissance of landing site
- select markers
- select direction and type of approach
- circuit
- approach to committed point and go around
- approach
- clearing turn
- landing
- power check, performance assessment in and out of ground effect
- normal take-off to best angle of climb speed
- vertical take-off from hover

Exercise 27: Basic instrument flight

- physiological sensations
- instrument appreciation
  - attitude instrument flight
  - instrument scan
- instrument limitations
- basic manoeuvres
  - straight and level at various airspeeds and configurations
  - climbing and descending
  - standard rate turns, climbing and descending, onto selected headings
- recoveries from climbing and descending turns
- recoveries from unusual attitudes

Exercise 28a: Night flying (if night rating required)

- pre-flight inspection using torch, pan lights, etc.
- take-off (no sideways or backwards manoeuvring)
- hover taxi (higher and slower than by day)
- transition to climb
- level flight
- approach and transition to hover
- landing
- autorotation
- practice forced landing (with flares if appropriate - simulated)
- night Emergencies (e.g. failure of lights, etc.)

Exercise 28b: Night cross country (if night rating required)

- nav principles as for day cross country
- map marking (highlighting built up areas with thicker lines, etc.)

AMC to FCL.210.As

FLIGHT INSTRUCTION FOR THE PRIVATE PILOT LICENCE - AIRSHIPS

1. ENTRY TO TRAINING

1.1 Before being accepted for training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

2. FLIGHT INSTRUCTION

2.1 The PPL(AS) flight instruction syllabus should take into account the principles of threat and error management and cover:

(a) Pre-flight operations, including mass and balance determination, airship inspection and servicing;

(b) ground manoeuvring, masting / offmasting procedures

(c) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;

(d) control of the airship by external visual reference;

(e) take-offs and landings;

(f) flight by reference solely to instruments, including the completion of a level 180 degrees turn;

(g) cross-country flying using visual reference, dead reckoning and radio navigation aids;

(h) emergency operations, including simulated airship equipment malfunctions; and

(i) operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, communication procedures and phraseology.

2.2 Before allowing the applicant for a PPL(AS) to undertake his/her first solo flight, the flight instructor should ensure that the applicant can use radiotelephony (R/T) communication.

3. SYLLABUS OF FLIGHT INSTRUCTION

Exercise 1: Familiarisation with the airship

- characteristics of the airship
- cockpit layout
- systems
- check lists, drills, controls

Exercise 1E: Emergency drills

- action in the event of fire on the ground and in the air
- engine cabin and electrical system fire
- systems failure
- escape drills, location and use of emergency equipment and exits

Exercise 2: Preparation for and action after flight

- flight authorisation and airship acceptance
- serviceability documents
- equipment required, maps, etc.
- mass and balance
- external checks
- ground crew briefing
- internal checks
- harness, seat or rudder panel adjustments
- starting and warm up checks
- power checks
- running down system checks and switching off the engine
- parking, security and masting
- completion of authorisation sheet and serviceability documents

Exercise 3: Air experience

- flight exercise

Exercise 4: Effects of controls

- primary effects
- further effects

- effects of:
  - airspeed
  - power
  - trimming controls
  - other controls, as applicable
- operation of:
  - mixture control
  - carburettor heat
  - cabin heating/ventilation
- airmanship

Exercise 5: Ground manoeuvring

- pre-taxi checks
- starting, control of speed and stopping
- engine handling
- Masting procedures
- control of direction and turning
- effects of wind
- effects of ground surface
- marshalling signals
- instrument checks
- air traffic control procedures
- airmanship / Emergencies

Exercise 6: Take off procedures

- Pre take off checks
- take off with different static heaviness
- drills during and after take-off
- noise abatement procedures
- airmanship

Exercise 6E: Emergencies

- abandoned take-off
- engine failure after take-off
- malfunctions of thrust vector control
- aerodynamic control failures
- electrical and system failures

Exercise 7: Climbing

- entry, maintaining the normal and max rate climb, levelling off
- levelling off at selected altitudes
- maximum angle of climb
- maximum rate of climb

- airmanship

Exercise 8: Straight and level

- attaining and maintaining straight and level flight
- flight at or close to pressure height
- control in pitch, including use of trim
- at selected airspeeds (use of power)
- during speed changes
- use of instruments for precision
- airmanship

Exercise 9: Descending

- entry, maintaining and levelling off
- levelling off at selected altitudes
- maximum rate of descent
- maximum angle of descent
- use of instruments for precision flight
- airmanship

Exercise 10: Turning

- entry and maintaining level turns
- resuming straight flight
- faults in the turn
- climbing turns
- descending turns
- turns onto selected headings, use of gyro heading indicator and compass
- use of instruments for precision
- airmanship

Exercise 11: Hovering

- Hovering manoeuvres (as applicable)
- airmanship

Exercise 12: Approach and landing

- effect of wind on approach and touchdown speeds
- landing with different static heaviness
- missed approach/go around procedures
- noise abatement procedures
- airmanship

Exercise 12E: Emergencies

- aborted approach / go around
- malfunction of thrust vector control
- envelope emergencies
- fire emergencies

- aerodynamic control failures
- electrical and system failures

Exercise 13: Precautionary landing

- occasions necessitating
- in-flight conditions
- landing area selection
- circuit and approach
- actions after landing
- airmanship

Exercise 14A: Navigation

Flight planning

- weather forecast and actuals
- map selection and preparation
  - choice of route
  - airspace structure
  - sensitive areas
  - safety altitudes
- calculations
  - magnetic heading(s) and time(s) en-route
  - fuel consumption
  - mass and balance
  - performance
- flight information
  - NOTAMS etc.
  - radio frequencies
  - selection of alternate aerodromes
- airship documentation
- notification of the flight
  - pre-flight administrative procedures
  - flight plan form

Departure

- organisation of cockpit workload
- departure procedures
  - altimeter settings
  - ATC liaison in controlled/regulated airspace
  - setting heading procedure
  - noting of ETAs
- maintenance of altitude and heading
- revisions of ETA and heading

- log keeping
- use of radio
- use of navaids
- minimum weather conditions for continuation of flight
- in-flight decisions
- transiting controlled/regulated airspace
- diversion procedures
- uncertainty of position procedure
- lost procedure

Arrival, aerodrome joining procedure

  - ATC liaison in controlled/regulated airspace
  - altimeter setting
  - entering the traffic pattern
  - circuit procedures

- parking / on masting
- security of airship
- refuelling
- closing of flight plan, if appropriate
- post-flight administrative procedures

Exercise 14B: Navigation problems at lower levels and in reduced visibility

- actions prior to descending
- hazards (e.g. obstacles, and terrain)
- difficulties of map reading
- effects of winds, turbulence and precipitation
- vertical situational awareness
- avoidance of noise sensitive areas
- joining the circuit
- bad weather circuit and landing

Exercise 14C: Radio navigation

Use of VHF Omni Range (if applicable)

- availability, AIP, frequencies
- selection and identification
- omni bearing selector (OBS)
- to/from indications, orientation
- course deviation indicator (CDI)
- determination of radial
- intercepting and maintaining a radial
- VOR passage
- obtaining a fix from two VORs

Use of automatic direction finding equipment (ADF) – non-directional beacons (NDBs) (if applicable)

- availability, AIP, frequencies
- selection and identification
- orientation relative to the beacon
- homing

Use of VHF direction finding (VHF/DF)

- availability, AIP, frequencies
- R/T procedures and ATC liaison
- obtaining a QDM and homing

Use of en-route/terminal radar

- availability, AIP
- procedures and ATC liaison
- pilot's responsibilities
- secondary surveillance radar
  - transponders
  - code selection
  - interrogation and reply

Use of distance measuring equipment (DME) (if applicable)

- station selection and identification
- modes of operation
  - distance, groundspeed, time to run

Exercise 15: Basic instrument flight

- physiological sensations
- instrument appreciation
  - attitude instrument flight
- instrument limitations
- airmanship
- basic manoeuvres
  - straight and level
  - climbing and descending
  - turns, climbing and descending, onto selected headings
  - recoveries from climbing and descending turns

4. BASIC INSTRUMENT TRAINING DEVICES (BITD)

4.1 A BITD may be used for flight training for:

- flight by reference solely to instruments;
- navigation using radio navigation aids; and
- basic instrument flight

4.2 The use of the BITD should be subject to the following:

– the training should be complemented by exercises on an airship;

– the record of the parameters of the flight must be available; and

a FI(AS) should conduct the instruction

AMC No1 to FCL.205.S (c)
Contents of the proficiency check for the extension of SPL privileges to exercise commercial privileges on a glider

1. The applicant should be responsible for the flight planning and should ensure that all equipment and documentation for the execution of the flight are on board.

2. An applicant should indicate to the FE the checks and duties carried out. Checks should be completed in accordance with the authorised check list for the sailplane on which the test is being taken.

FLIGHT TEST TOLERANCE

2. The applicant should demonstrate the ability to:

– operate the sailplane within its limitations;
– complete all manoeuvres with smoothness and accuracy;
– exercise good judgment and airmanship;
– apply aeronautical knowledge; and
– maintain control of the sailplane at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

4. The applicant should demonstrate his / her skill in at least the winch or aerotow method of launching.

SECTION 1 PRE-FLIGHT OPERATIONS AND DEPARTURE	
Use of checklist, airmanship (control of sailplane by external visual reference), lookout, apply in all sections.	
a	Pre-flight sailplane (daily) inspection, documentation and weather brief
b	Verifying in-limits mass and balance and performance calculation
c	Passenger briefing
d	Sailplane servicing compliance
e	Pre take-off checks
SECTION 2 LAUNCH METHOD Note: At least for one of the three launch methods all the mentioned items are fully exercised during the skill test.	
SECTION 2 (A) WINCH OR CAR LAUNCH	
a	Signals before and during launch, including messages to winch driver
b	Initial roll, take-off climb
c	Adequate profile of winch launch
d	Launch failures (simulated)
e	Situational awareness
SECTION 2 (B) AEROTOW LAUNCH	
a	Signals before and during launch, including signals to / communications with tow plane pilot for any problems
b	Initial roll, take-off climb
c	Launch abandonment (simulation only or ‘talk-through’)

d	Correct positioning during straight flight and turns
e	Out of position and recovery
f	Correct release from tow
g	Lookout and airmanship through whole launch phase
SECTION 2 (C) **SELF LAUNCH (SLS only)**	
a	ATC liaison – compliance
b	Aerodrome departure procedures
c	Initial roll, take-off climb
d	Simulated engine failure after take off
e	Engine shut down and stowage
f	Lookout and airmanship through whole launch phase
SECTION 3 **GENERAL AIRWORK**	
a	Maintain straight and level flight ; attitude and speed control
b	Co-ordinated medium (30° bank) turns, look out procedures and collision avoidance
c	Turning on to selected headings visually and with use of compass
d	Flight at high angle of attack (critically low airspeed)
e	Clean stall and recovery
f	Spin avoidance and recovery
SECTION 4 **CIRCUIT, APPROACH AND LANDING**	
a	Aerodrome circuit joining procedure
b	Collision avoidance - look out procedures
c	Pre landing checks
d	Circuit, approach control, landing
e	Precision landing (simulation of out-landing - short field)
f	Cross wind landing if suitable conditions available

AMC No 1 to FCL.205.B (c)

Contents of the proficiency check for extension of the BPL privileges to exercise commercial privileges

1. The take off site should be chosen by the applicant depending on the actual meteorological conditions, the area which has to be over flown and the possible options for suitable landing sites. The applicant should be responsible for the flight planning and should ensure that all equipment and documentation for the execution of the flight are on board. The proficiency check may be conducted in 2 flights. The total duration of the flight(s) should be at least 60 minutes

2. An applicant should indicate to the FE the checks and duties carried out. Checks should be completed in accordance with the Flight Manual and/or the authorised check list for the balloon on which the test is being taken. During pre-flight preparation for the test the applicant should be required to perform crew and passenger briefings and demonstrate crowd control. The load calculation should be performed by the applicant in compliance with the operations manual or flight manual for the balloon used.

FLIGHT TEST TOLERANCE

3. The applicant should demonstrate the ability to:
   - operate the balloon within its limitations;
   - complete all manoeuvres with smoothness and accuracy
   - exercise good judgment and airmanship;
   - apply aeronautical knowledge; and

– maintain control of the balloon at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.

4. The following limits are for general guidance. The FE should make allowance for turbulent conditions and the handling qualities and performance of the hot air balloon used.

Height

normal flight	± 100 feet
with simulated emergency	± 150 feet

5. The contents and sections of the proficiency check set out in this AMC should be used for the for extension of BPL privileges to exercise commercial privileges (HOT AIR BALLOON).

SECTION 1 PRE-FLIGHT OPERATIONS, INFLATION AND TAKE OFF	
Use of checklist, airmanship, control of balloon by external visual reference, look out procedures, etc. apply in all sections.	
a	Pre-flight documentation, flight planning and weather brief
b	Balloon inspection and servicing
c	Load calculation
d	Crowd control and crew briefing
e	Passenger briefing
f	Assembly and layout
g	Inflation and pre-take-off procedures
h	Take off
i	ATC liaison – compliance
SECTION 2 GENERAL AIRWORK	
a	Climb to level flight
b	Level flight
c	Descent to level flight
d	Operating at low level
e	ATC liaison – compliance
SECTION 3 EN-ROUTE PROCEDURES	
a	Dead reckoning and map reading
b	Marking positions and time
c	Orientation, airspace structure
d	Maintenance of altitude
e	Fuel management
f	Communication with retrieve crew
g	ATC liaison – compliance / R/T communication
SECTION 4 APPROACH AND LANDING PROCEDURES	
a	Approach from low level, missed approach / fly on
b	Approach from high level, missed approach / fly on
c	Passenger pre-landing briefing
d	Pre landing checks
e	Selection of landing field
f	Landing, dragging and deflation
g	ATC liaison – compliance / R/T communication
h	Actions after flight
SECTION 5 ABNORMAL AND EMERGENCY PROCEDURES	
This section may be combined with Sections 1 through 6.	
a	Simulated Fire on the ground and in the air
b	Simulated pilot light- and burner failures
c	Simulated passenger health problems

d	Other abnormal and emergency procedures as outlined in the appropriate flight manual.
e	Oral questions
SECTION 6 **TETHERED FLIGHT**	
This section may be combined with Section 1.	
a	Pre-flight documentation, flight planning and weather brief
b	Balloon inspection and servicing
c	Load calculation
d	Crowd control, crew and passenger briefings
e	Assembly and layout
f	Tether points and ropes
g	Inflation and pre-take-off procedures
h	Tethered flight
i	Fuel management
j	Descent to land
k	Actions after flight

6. The contents and sections of the proficiency check set out in this AMC should be used for the for extension of BPL privileges to exercise commercial privileges (GAS BALLOON).

SECTION 1 **PRE-FLIGHT OPERATIONS, INFLATION AND TAKE OFF**	
Use of checklist, airmanship, control of balloon by external visual reference, look out procedures, etc. apply in all sections.	
a	Pre-flight documentation, flight planning and weather brief
b	Balloon inspection and servicing
c	Load calculation
d	Crowd control and crew briefings
e	Passenger briefing
f	Assembly and layout
g	Inflation and pre-take-off procedures
h	Take off
i	ATC liaison – compliance
SECTION 2 **GENERAL AIRWORK**	
a	Climb to level flight
b	Level flight
c	Descent to level flight
d	Operating at low level
e	ATC liaison – compliance
SECTION 3 **EN-ROUTE PROCEDURES**	
a	Dead reckoning and map reading
b	Marking positions and time
c	Orientation, airspace structure
d	Maintenance of altitude
e	Ballast management
f	Communication with retrieve crew
g	ATC liaison – compliance / R/T communication
SECTION 4 **APPROACH AND LANDING PROCEDURES**	
a	Approach from low level, missed approach / fly on
b	Approach from high level, missed approach / fly on
c	Passenger pre-landing briefing
d	Pre landing checks
e	Selection of landing field
f	Landing, dragging and deflation
g	ATC liaison – compliance / R/T communication
h	Actions after flight
SECTION 5	

ABNORMAL AND EMERGENCY PROCEDURES	
This section may be combined with Sections 1 through 4.	
a	Simulated closed appendix during take off and climb
b	Simulated parachute/valve failure
c	Simulated passenger health problems
d	Other abnormal and emergency procedures as outlined in the appropriate flight manual.
e	Oral questions

AMC to FCL.225.B

Extension of privileges to another balloon class or group

1. The aim of the flight training is to qualify BPL holders to exercise the privileges on a different class or group of balloons.

2. The following classes should be recognised:

   – hot air balloons
   – gas balloons
   – hot air airships

3. The following groups should be recognised:

   3.1. Small:

   – hot air balloons and hot air airship with a maximum envelope capacity of $4000m^3$
   – gas balloons with a maximum envelope capacity of $1200m^3$

   3.2. Medium:

   – hot air balloons and hot air airship with an envelope capacity between $4000m^3$ and $10000m^3$

   3.3. Large:

   – hot air balloons and hot air airship with an envelope capacity of more than $10000m^3$
   – gas balloons with an capacity of more than $1200m^3$

4. An extension in group medium is also valid for group small. The extension for the group large is also valid for group medium and small.

5. The approved training organisation should issue a certificate of satisfactory completion of the instruction for the purpose of licence endorsement.

SUBPART F
AIRLINE TRANSPORT PILOT LICENCE - ATPL

AMC to FCL.515.A and FCL.515.H

ATPL – Modular theoretical knowledge course

1. The aim of this course is to train pilots who have not received the theoretical knowledge instruction during an integrated course to the level of theoretical knowledge required for the ATPL.
2. An approved course should include formal classroom work and may include the use of such facilities as interactive video, slide/tape presentation, learning carrels and computer based training and other media distance learning (correspondence) courses as approved by the Authority. Approved distance learning (correspondence) courses may also be offered as part of the course.

AMC to FCL.520.A and FCL.520.H

ATPL Skill test

The ATPL 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 aircraft used in the test and may be combined with the skill test for the issue of a multi-pilot type rating.

AMC to FCL.510.A (b)(1)

Pre-requisites, experience and crediting

Equivalent requirements for CS-25 and CS-23 Commuter category are the JAR/FAR-25 transport category, JAR/FAR-23 Commuter category, or BCAR or AIR 2051.

SUBPART G
INSTRUMENT RATING

AMC to FCL.625(c)

Renewal of instrument rating – refresher training

1. Paragraph (b)(1) of FCL.740 determines that if the instrument rating has lapsed, the applicant shall go through refresher training at an approved training organisation, to reach the level of proficiency needed to pass the instrument element of the skill test prescribed in Appendix 9 to Part-FCL. The amount of refresher training needed should be determined on a case by case basis by the approved training organisation, taking into account the following factors:

   1.1 the experience of the applicant. To determine this, the training organisation should evaluate the pilot's log book, and, if necessary, conduct a test in an FSTD.

   1.2 the amount of time lapsed since the expiry of the validity period of the rating. The amount of training needed to reach the desired level of proficiency should increase with the time lapsed. In some cases, after evaluating the pilot, and when the time lapsed is very limited (less than 3 months), the training organisation may even determine that no further refresher training is necessary. The following may be taken as guidance when determining the needs of the applicant:

      (a) Expiry for a period shorter than 3 months: no supplementary requirements.

      (b) Expiry for longer than 3 months but shorter than 1 year: a minimum of 1 training session.

      (c) Expiry for longer than 1 year but shorter than 7 years: a minimum of 3 training sessions.

      (d) Expiry for longer than 7 years: the applicant should undergo the full training course for the issue of the IR.

2. Once the training organisation has determined the needs of the applicant, it should develop an individual training programme, that should be based on the initial training for the issue of instrument ratings and focus on the aspects where the applicant has shown the greatest needs.

3. After successful completion of the training, the training organisation should give a certificate to the applicant, to be submitted to the authority when applying for the renewal.

SUBPART H

CLASS AND TYPE RATINGS

GM to FCL.710

Differences and familiarisation training

1. Differences training requires the acquisition of additional knowledge and training on an appropriate training device or the aircraft.
2. Familiarisation training requires the acquisition of additional knowledge.

AMC No 1 to FCL.725 (a)

Syllabus of theoretical knowledge instruction for class/type ratings

A. Single-engine and multi-engine aeroplanes

DETAILED LISTING

1. Aeroplane structure and equipment, normal operation of systems and malfunctions

   1.1 Dimensions

   minimum required runway width for 180° turn

   1.2 Engine including auxiliary power unit

   1.2.1 type of engine/engines

   1.2.2 in general, function of the following systems or components:

   - engine
   - auxiliary power unit
   - oil system
   - fuel system
   - ignition system
   - starting system
   - fire warning and extinguishing system
   - generators and generator drives
   - power indication
   - reverse thrust
   - water injection

   on piston or turbine-propeller engines additionally:

   - propeller system
   - feathering system

   1.2.3 engine controls (including starter), engine instruments and indications in the cockpit, their function, interrelation and interpretation

   1.2.4 engine operation, including APU, during engine start, start and engine malfunctions, procedures for normal operation in the correct sequence

   1.3 Fuel system

   1.3.1 location of the fuel tanks, fuel pumps, fuel lines to the engines, tank capacities, valves and measuring

   1.3.2 location of the following systems:

   - filtering
   - heating
   - fuelling and defuelling
   - dumping

- venting

1.3.3 in the cockpit
the monitors and indicators of the fuel system,
quantity and flow indication, interpretation

1.3.4 procedures
fuel procedures distribution into the various tanks
fuel supply, temperature control and fuel dumping

1.4 Pressurisation and air conditioning

1.4.1 components of the system and protection devices

1.4.2 cockpit monitors and indicators

interpretation with regard to the operational condition

1.4.3 normal operation of the system during start, cruise, approach and landing, air conditioning airflow and temperature control

1.5 Ice and rain protection, windshield wipers and rain repellent

1.5.1 ice protected components of the aeroplane including engines, heat sources, controls and indications

1.5.2 operation of the anti-icing/de-icing system during take-off, climb, cruise and descent, conditions requiring the use of the protection systems

1.5.3 controls and indications of the windshield wipers and rain repellent systems operation

1.6 Hydraulic system

1.6.1 components of the hydraulic system(s), quantities and system pressure, hydraulically actuated components associated to the respective hydraulic system

1.6.2 controls, monitors and indicators in the cockpit, function and interrelation and interpretation of indications

1.7 Landing gear

1.7.1 main components of the

- main landing gear
- nose gear
- gear steering
- wheel brake system, including anti-skid

1.7.2 gear retraction and extension (including changes in trim and drag caused by gear operation)

1.7.3 required tyre pressure, or location of the relevant placard

1.7.4 controls and indicators including warning indicators in the cockpit in relation to the retraction/extension condition of the landing gear and brakes

1.7.5 components of the emergency extension system

1.8 Flight controls and high lift devices

1.8.1
- aileron system
- elevator system
- rudder system
- rim system
- spoiler system
- lift devices

- stall warning system
- take-off configuration warning system

1.8.2 flight control system from the cockpit controls to the flight control/surfaces

1.8.3 controls, monitors and indicators including warning indicators of the systems mentioned under 1.8.1, interrelation and dependencies

1.9 Electrical power supply

1.9.1 number, power, voltage, frequency and location of the main power system (AC or DC), auxiliary power system location and external power system

1.9.2 location of the controls, monitors and indicators in the cockpit

1.9.3 flight instruments, communication and navigation systems, main and back-up power sources

1.9.4 location of vital circuit breakers

1.9.5 generator operation and monitoring procedures of the electrical power supply

1.10 Flight instruments, communication, radar and navigation equipment, autoflight and flight recorder

1.10.1 visible antennae

1.10.2 controls and instruments of the following equipment in the cockpit during normal operation:

- flight instruments
- flight management systems
- radar equipment, including radio altimeter
- communication and navigation systems
- autopilot
- flight recorder, voice recorder
- ground proximity warning system
- collision avoidance system
- warning systems

1.11 Cockpit, cabin and cargo compartment

1.11.1 operation of the exterior, cockpit, cabin and cargo compartment lighting and the emergency lighting

1.11.2 operation of the cabin and cargo doors, stairs, windows and emergency exits

1.11.3 main components of the oxygen system and their location, oxygen masks and operation of the oxygen systems for the crew and passengers, required amount of oxygen by means of a table or diagram

1.12 Emergency equipment operation and correct application of the following emergency equipment in the aeroplane:

- portable fire extinguisher
- first aid kits
- portable oxygen equipment
- emergency ropes
- life vest
- life rafts
- emergency transmitters
- crash axes
- megaphones
- emergency signals

1.13 Pneumatic system

1.13.1 components of the pneumatic system, pressure source, actuated components

1.13.2 controls, monitors and indicators in the cockpit, function of the system

1.13.3 vacuum system

2. LIMITATIONS

2.1 General Limitations

2.1.1. certification of the aeroplane, category of operation, noise certification and maximum and minimum performance data for all flight profiles, conditions and a/c systems,

- maximum tail and crosswind-components at take-off and landing,
- maximum speeds for flap extension V_{fo}
- at various flap settings V_{fe}
- for landing gear operation V_{lo}, M_{lo}
- for extended landing gear V_{le}, M_{le}
- for maximum rudder deflection V_a, M_a
- for tyres
- one propeller feathered

2.1.2
- minimum control speed air V_{mca}
- minimum control speed ground V_{mcg}
- stall speed under various conditions V_{so},V_{s1}
- maximum speed V_{ne}, M_{ne}
- maximum speed for normal operation V_{mo}, M_{mo}
- altitude and temperature limitations
- stick shaker activation

2.1.3
- maximum airport pressure altitude, runway slope
- maximum taxi mass
- maximum take-off mass
- maximum lift off mass
- maximum landing mass
- zero fuel mass
- maximum dumping speed V_{dco}, M_{dco}, V_{dce}, M_{dce}
- maximum load factor during operation
- certificated range of centre of gravity

2.2 Engine Limitations

2.2.1 Operating data of the engines

- time limits and maximum temperatures
- minimum RPMs and temperatures
- torque
- maximum power for take-off and go-around with respect to pressure altitude/flight altitude and temperature
- piston engines: certified range of mixture
- minimum and maximum oil temperature and pressure
- maximum starter time and required cooling
- time between two start attempts for engines and auxiliary power unit
- for propeller: maximum RPM of propeller triggering of automatic feathering device.

2.2.2 Certified oil grades

2.3 Systems limitations

2.3.1 Operating data of the following systems:

– pressurisation, air conditioning maximum pressures
– electrical power supply, maximum load of main power system (AC or DC)
– maximum time of power supply by battery in case of emergency
– mach trim system and yaw damper speed limits
– auto pilot limitations of various modes
– ice protection
– speed and temperature limits of window heat
– temperature limits of engine and wing anti-ice

2.3.2 Fuel system

Certified fuel specifications, minimum and maximum pressures and temperature of the fuel

2.4 Minimum equipment list

3 PERFORMANCE, FLIGHT PLANNING

3.1 Performance

Performance calculation concerning speeds, gradients, masses in all conditions for take off, en route, approach and landing according to the documentation available, e.g. for take-off V_1, V_{mbe}, V_r, V_{lof}, V_2, take-off distance, maximum take-off mass and the required stop distance with respect to the following factors:

– accelerate/stop distance
– take-off run and distance available (TORA, TODA)
– ground temperature, pressure altitude, slope, wind
– maximum load and maximum mass (e.g. ZFM)
– minimum climb gradient after engine failure
– influence of snow, slush, moisture and standing water on the runway
– possible single and/or dual engine failure during cruise flight
– use of anti-icing systems
– failure of water injection system and/or antiskid system
– speeds at reduced thrust, V_1, V_{1red}, V_{mbe}, V_{mu}, V_r, V_{lof}, V_2
– safe approach speed V_{ref}, with respect to V_{mca} and turbulent conditions
– effects of excessive approach speed and abnormal glideslope with respect to the landing distance
– minimum climb gradient during approach and landing
– limiting values for a go around with minimum fuel
– maximum allowable landing mass and the landing distance for the destination and alternate aerodrome with respect to the following factors:
– available landing distance
– ground temperature, pressure altitude, runway slope and wind
– fuel consumption to destination or alternate aerodrome
– influence of moisture on the runway, snow, slush and standing water
– failure of the water injection system and/or the anti skid system
– influence of thrust reverser and spoilers

3.2 Flight planning

Flight planning for normal and abnormal conditions

– optimum/maximum flight level
– minimum required flight altitude
– drift down procedure after an engine failure during cruise flight
– power setting of the engines during climb, cruise and holding under various circumstances, as well as the most economic cruising flight level
– calculation of a short range/long range flight plan
– optimum and maximum flight level and power setting of the engines after engine failure

4 LOAD AND BALANCE AND SERVICING

4.1 Load and Balance

- load and trim sheet with respect to the maximum masses for take-off and landing
- centre of gravity limits

4.1.1 influence of fuel consumption on the centre of gravity

4.1.2 lashing points, load clamping, maximum ground load

4.2 Servicing

Servicing connections for:

- fuel
- oil
- water
- hydraulic
- oxygen
- nitrogen
- conditioned air
- electric power
- start air
- toilet and safety regulations

5 EMERGENCY PROCEDURES

5.1 Recognition of the situation as well as immediate memory actions in correct sequence and for those conditions recognised as emergencies by the manufacturer and certification authority:

- engine failure during take off before and after V_1, as well as inflight
- malfunctions of the propeller system
- engine overheat, engine fire on ground and inflight
- wheel well fire
- electrical smoke and/or fire
- rapid decompression and emergency descent
- air-conditioning overheat, anti ice system overheat
- fuel pump failure
- fuel freezing/overheat
- electric power failure
- equipment cooling failure
- flight instrument failure
- partial or total hydraulic failure
- failures at the lift devices and flight controls including boosters
- cargo compartment smoke and/or fire

5.2 Actions according to the approved abnormal and emergency checklist

- engine restart inflight
- landing gear emergency extension
- application of the emergency brake system
- emergency extension of lift devices
- fuel dumping
- emergency descent

6 SPECIAL REQUIREMENTS FOR EXTENSION OF A TYPE RATING FOR INSTRUMENT APPROACHES DOWN TO DECISION HEIGHTS OF LESS THAN 200 FT (60 M)

6.1 Airborne and ground equipment

- technical requirements
- operational requirements
- operational reliability
- fail operational

- fail-passive
- equipment reliability
- operating procedures
- preparatory measures
- operational downgrading
- communications

6.2 Procedures and Limitations

- operational procedures
- crew co-ordination

7 SPECIAL REQUIREMENTS FOR 'GLASS COCKPIT' AEROPLANES WITH ELECTRONIC FLIGHT INSTRUMENT SYSTEMS (EFIS)

7.1 Additional learning objectives

7.1.1 general rules of aeroplanes computer hardware and software design

7.1.2 logic of all crew information and alerting systems and their limitations

7.1.3 interaction of the different aeroplane computer systems, their limitations, the possibilities of computer fault recognition and the actions to be performed on computer failures

7.1.4 normal procedures including all crew co-ordination duties

7.1.5 aeroplane operation with different computer degradations (basic flying)

8 FLIGHT MANAGEMENT SYSTEMS

B. Single and multi-engine helicopters

DETAILED LISTING

1. Helicopters structure, transmissions, rotors and equipment, normal and abnormal operation of systems.

1.1 Dimensions

1.2 Engine including aux. power unit, rotor and transmissions; if an initial type rating for a turbine engine helicopter is applied for, the applicant should have received turbine engine instruction.

1.2.1 type of engine/engines

1.2.2 in general the function of the following systems or components:

- engine
- aux. power unit
- oil system
- fuel system
- ignition system
- starting system
- fire warning and extinguishing system
- generators and generator drives
- power indication
- water/methanol injection

1.2.3 engine controls (including starter), engine instruments and indications in the cockpit, their function and interrelation and interpretation

1.2.4 engine operation, including APU, during engine start and engine malfunctions, procedures for normal operation in the correct sequence

1.2.5 transmission system

- lubrication
- generators and generator drives
- freewheeling units
- hydraulic drives
- indication and warning systems

1.2.6 type of rotor systems

- indication and warning systems

1.3 Fuel system

1.3.1 location of the fuel tanks, fuel pumps, fuel lines to the engines tank capacities, valves and measuring

1.3.2 the following systems:

- filtering
- fuelling and defuelling heatings
- dumping
- transferring
- venting

1.3.3 in the cockpit
the monitors and indicators of the fuel system, quantity and flow indication, interpretation

1.3.4 fuel procedures distribution into the various tanks
fuel supply and fuel dumping

1.4 Air conditioning

1.4.1 components of the system and protection devices

1.4.2 cockpit monitors and indicators

interpretation with regard to the operational condition

1.4.3 normal operation of the system during start, cruise approach and landing, air conditioning airflow and temperature control

1.5 Ice and rain protection, windshield wipers and rain repellent

1.5.1 ice protected components of the helicopter, including engines and rotor systems, heat sources, controls and indications

1.5.2 operation of the anti-icing/de-icing system during T/O, climb, cruise and descent, conditions requiring the use of the protection systems

1.5.3 controls and indications of the windshield wipers and rain repellent system operation

1.6 Hydraulic system

1.6.1 components of the hydraulic system(s), quantities and system pressure, hydraulically actuated components associated to the respective hydraulic system

1.6.2 controls, monitors and indicators in the cockpit, function and interrelation and interpretation of indications

Landing gear, skids fixed, floats

1.7.1 main components of the:

- main landing gear
- nose gear
- tail gear
- gear steering
- wheel brake system

1.7.2 gear retraction and extension

1.7.3 required tyre pressure, or location of the relevant placard

1.7.4 controls and indicators including warning indicators in the cockpit in relation to the retraction/extension condition of the landing gear

1.7.5 components of the emergency extension system

1.8 Flight controls, stab-and autopilot systems

1.8.1 controls, monitors and indicators including warning indicators of the systems, interrelation and dependencies

1.9 Electrical power supply

1.9.1 Number, power, voltage, frequency and if applicable phase and location of the main power system (AC or DC) auxiliary power system location and external power system

1.9.2 location of the controls, monitors and indicators in the cockpit

1.9.3 main and back-up power sources flight instruments, communication and navigation systems, main and back-up power sources

1.9.4 location of vital circuit breakers

1.9.5 generator operation and monitoring procedures of the electrical power supply

1.10 Flight instruments, communication, radar and navigation equipment, autoflight and flight recorder

1.10.1 antennas

1.10.2 controls and instruments of the following equipment in the cockpit:

- flight instruments (e.g. airspeed indicator, pitot static system, compass system, flight director)
- flight management systems
- radar equipment (e.g. wx radar, transponder)
- communication and navigation system (e.g. HF, VHF, ADF, VOR/DME, ILS, marker beacon) and area navigation systems (e.g. GPS, VLF Omega)
- stabilisation and autopilot system
- flight data recorder, cockpit voice recorder, radio altimeter
- collision avoidance system
- ground proximity warning system
- HUMS (Health and Usage Monitoring System)

1.11 Cockpit, cabin and cargo compartment

1.11.1 operation of the exterior, cockpit, cabin and cargo compartment lighting and the emergency lighting

1.11.2 operation of the cabin doors and emergency exits

1.12 Emergency equipment
operation and correct application of the following emergency equipment in the helicopter:

Mobile equipment	*Fixed equipment*
– portable fire extinguisher	emergency floats
– first aid kits	
– portable oxygen equipment	

- emergency ropes
- life vest
- life rafts
- emergency transmitters
- crash axes
- megaphones
- emergency signals
- torches

2 LIMITATIONS

2.1 General limitations, according to the helicopter flight manual

2.2 Minimum equipment list

3 PERFORMANCE, FLIGHT PLANNING AND MONITORING

3.1 Performance

Performance calculation concerning speeds, gradients, masses in all conditions for take-off, en route, approach and landing

3.1.1 Take off

- hover performance in and out of ground effect
- all approved profiles, cat A and B
- HV diagram
- take off and rejected take off distance
- take off decision point (TDP) or (DPAT)
- calculation of first and second segment distances
- climb performance

3.1.2 En-route

- airspeed indicator correction
- service ceiling
- optimum/economic cruising altitude
- max endurance
- max range
- cruise climb performance

3.1.3 Landing

- hovering in and out of ground effect
- landing distance
- landing decision point (LDP) or (DPBL)

3.1.4 Knowledge and/or calculation of

- V_{lo}, V_{le}, V_{mo}, V_x, V_y, V_{toss}, V_{ne}, $V_{max\ range}$, V_{mini}

3.2 Flight planning
Flight planning for normal and abnormal conditions

- optimum/maximum flight level
- minimum required flight altitude
- drift down procedure after an engine failure during cruise flight
- power setting of the engines during climb, cruise and holding under various circumstances as well as at the most economic cruising flight level
- optimum and maximum flight level and power setting after an engine failure

3.3 Effect of optional equipment on performance

4 LOAD, BALANCE AND SERVICING

4.1 Load and balance

- load and trim sheet with respect to the maximum masses for take-off and landing

– centre of gravity limits

4.1.1 influence of the fuel consumption on the centre of gravity

4.1.2 lashing points, load clamping, max ground load

4.2 Servicing on the ground
servicing connections for

– fuel
– oil, etc...
and safety regulations for servicing

5 EMERGENCY, PROCEDURES

6 SPECIAL REQUIREMENTS FOR EXTENSION OF A TYPE RATING FOR INSTRUMENT APPROACHES DOWN TO A DECISION HEIGHT OF LESS THAN 200 FT (60 M)

6.1 Airborne and ground equipment

– Technical requirements
– Operational requirements
– Operational reliability
– Fail operational
– Fail-passive
– Equipment reliability
– Operating procedures
– Preparatory measures
– Operational downgrading
– Communication

6.2 Procedures and limitations

– Operational procedures
– Crew co-ordination

7 SPECIAL REQUIREMENTS FOR HELICOPTERS WITH ELECTRONIC FLIGHT INSTRUMENT SYSTEMS (EFIS)

8 OPTIONAL EQUIPMENT

C. Airships

DETAILED LISTING

1 Airship structure and equipment, normal operation of systems and malfunctions

1.1 Dimensions

1.2 Structure and envelope

1.2.1 Internal structure

1.2.2 Envelope

1.2.3 Pressure system

1.2.4 Gondola

1.2.5 Empennage

1.3 Flight Controls

1.4 Systems

1.4.1 Hydraulic

1.4.2 Pneumatic

1.5 Landing gear

1.6 Fuel system

1.7 Fire warning and extinguishing system

1.8 Emergency equipment

1.9 Electrical systems

1.10 Avionics, Radio Navigation and communication equipment

1.11 Instrumentation

1.12 Engines and propellers

1.13 Heating / ventilation / air-condition

1.14 Operational procedures during start, cruise, approach and landing,

1.14.1 Normal operations

1.14.2 Abnormal operations

2 Limitations

2.1 General Limitations

2.1.1. Certification of the airship, category of operation, noise certification and maximum and minimum performance data for all flight profiles, conditions and a/c systems

2.1.2 Speeds

2.1.3 Altitudes

2.2 Engine Limitations

2.3 Systems limitations

2.4 Minimum equipment list

3 Performance, Flight Planning

3.1 Performance calculation

3.2 Flight planning

4 Load and Balance, servicing

4.1 Load and Balance

4.2 Servicing

5 Emergency procedures

5.1. Recognition of emergency situations

5.2 Actions according to the approved abnormal and emergency checklist

AMC No 2 to FCL.725 (a)

Flight instruction for type ratings – Helicopters

1. The amount of flight instruction depend on:
   - complexity of the helicopter type, handling caracteristics, level of technology
   - category of helicopter (single-engine piston or turbine helicopter, multi-engine turbine and multi pilot helicopter);

- previous experience of the applicant;
- the availibiliy of FSTDs.

2. Flight Synthetic Training Devices (FSTDs)

The level of qualification and the complexity of the type will determine the amount of practical training that may be accomplished in FSTDs, including completion of the skill test. Prior to undertaking the skill test, a student should demonstrate competency in the skill test items during the practical training.

3. Initial issue

The flight instruction (excluding skill test) should comprise:

Helicopter types	In Helicopter	In Helicopter and FSTD associated training Credits
SEP (H)	5 hrs	Using FS C/D: At least 2 hrs helicopter and at least 6 hrs total Using FTD 2/3: At least 4 hrs helicopter and at least 6 hrs total
SET (H) under 3175 kg MTOM	5 hrs	Using FS C/D: At least 2 hrs helicopter and at least 6 hrs total Using FTD 2/3: At least 4 hrs helicopter and at least 6 hrs total
SET(H) at or over 3175 kg MTOM	8 hrs	Using FS C/D: At least 2 hrs helicopter and at least 10 hrs total Using FTD 2/3: At least 4 hrs helicopter and at least 10 hrs total
SPH MET (H) JAR/FAR 27 and 29	8 hrs	Using FS C/D: At least 2 hrs helicopter and at least 10 hrs total Using FTD 2/3: At least 4 hrs helicopter and at least 10 hrs total
MPH	10 hrs	Using FS C/D: At least 2 hrs helicopter, and at least 12 hrs total Using FTD 2/3: At least 6 hrs helicopter, and at least 12 hrs total

4. Additional types

The flight instruction (excluding skill test) should comprise:

Helicopter types	In Helicopter	In Helicopter and FSTD associated training Credits
SEP(H) to SEP(H) within Appendix 1 to JAR-FCL 2.245(b)(3)	2 hrs	Using FS C/D: At least 1 hr helicopter and at least 3 hrs total Using FTD 2/3: At least 1 hr helicopter and at least 4 hrs total
SEP(H) to SEP(H) not included in Appendix 1 to JAR-FCL 2.245(b)(3)	5 hrs	Using FS C/D: At least 1 hr helicopter and at least 6 hrs total Using FTD 2/3: At least 2 hr helicopter and at least 7 hrs total

SET(H) to SET(H)	2 hrs	Using FS C/D: At least 1 hr helicopter and at least 3 hrs total Using FTD 2/3: At least 1 hr helicopter and at least 4 hrs total
Single Engine difference training	1 hr	N/A
MET(H) to MET(H)	3 hrs	Using FS C/D: At least 1 hr helicopter and at least 4 hrs total Using FTD 2/3: At least 2 hrs helicopter and at least 5 hrs total
Multi Engine difference training	1 hrs	N/A
MPH to MPH	5 hrs	Using FS C/D: At least 1 hr helicopter and at least 6 hrs total Using FTD 2/3: At least 2 hrs helicopter and at least 7 hrs total

AMC to FCL.740(b)(1)

Renewal of class and type ratings – refresher training

1. Paragraph (b)(1) of FCL.740 determines that if a class or type rating has lapsed, the applicant shall take refresher training at an approved training organisation, to reach the level of proficiency necessary to safely operate the relevant type or class of aircraft. The amount of refresher training needed should be determined on a case by case basis by the approved training organisation, taking into account the following factors:

   1.1 the experience of the applicant. To determine this, the training organisation should evaluate the pilot's log book, and, if necessary, conduct a test in an FSTD.

   1.2 the amount of time lapsed since the expiry of the validity period of the rating. The amount of training needed to reach the desired level of proficiency should increase with the time lapsed. In some cases, after evaluating the pilot, and when the time lapsed is very limited (less than 3 months), the training organisation may even determine that no further refresher training is necessary. The following can be taken as guidance when determining the needs of the pilot:

   (a) Expiry shorter than 3 months: no supplementary requirements.

   (b) Expiry longer than 3 months but shorter than 1 year: a minimum of 2 training sessions.

   (c) Expiry longer than 1 year but shorter than 3 years: a minimum of 3 training sessions in which the most important malfunctions in the available systems are covered.

   (d) Expiry longer than 3 years: the applicant should again undergo the training required for the initial issue of the rating.

2. Once the training organisation has determined the needs of the applicant, it should develop an individual training programme that should be based on the initial training for the issue of the rating and focus on the aspects where the applicant has shown the greatest needs.

3. After successful completion of the training, the training organisation should give a certificate to the applicant, to be submitted to the authority when applying for the renewal.

AMC to FCL.720.A (b)(2)(i)

Additional theoretical knowledge for a class or type rating for high performance single-pilot aeroplanes

1. A number of aeroplanes certificated for single pilot operation have similar performances, systems and navigation capabilities to those more usually associated with multi-pilot types of aeroplanes, and regularly operate within the same airspace. The level of knowledge required to operate safely in this environment is not part of, or not included to the necessary depth of knowledge in the training syllabi for the PPL, CPL or IR(A) but these licence holders may fly as pilot-in-command of such aeroplanes. The additional theoretical knowledge required to operate such aeroplanes safely is obtained by completion of an course at an approved training organisation covering the syllabus shown in Appendix 10.
2. The aim of the theoretical knowledge course is to provide the applicant with sufficient knowledge of those aspects of the operation of aeroplanes capable of operating at high speeds and altitudes, and the aircraft systems necessary for such operation.
3. Demonstration of acquisition of this knowledge is undertaken by passing an examination set by approved training organisation. Successfully passing this examination results in the issue of a certificate indicating that the course and examination have been completed.
4. The certificate represents a 'once only' qualification and satisfies the requirement for the addition of all future high performance aeroplanes to the holder's licence. The certificate is valid indefinitely and is to be submitted with the application for the first HPA type or class rating.

AMC to FCL.730.A

Requisites for pilots undertaking a zero flight time type rating (ZFTT) course
When a pilot is changing from a turbo-prop to a turbo-jet aeroplane or from a turbo-jet to a turbo-prop aeroplane, additional simulator training should be required.

AMC to FCL.735.A

Multi-crew co-operation course - aeroplanes

MULTI-CREW CO-OPERATION TRAINING

1. The objectives of MCC training are optimum decision making, communication, division of tasks, use of checklists, mutual supervision, teamwork, and support throughout all phases of flight under normal, abnormal and emergency conditions. The training emphasises the development of non-technical skills applicable to working in a multi-crew environment.
2. The training should focus on teaching students the basics on the functioning of crew members as teams in a multi-crew environment, not simply as a collection of technically competent individuals. Furthermore, the course should provide students with opportunities to practice the skills that are necessary to be effective team leaders and members. This requires training exercises which include students as crew members in the PF and PNF roles.
3. Students should be made familiar with inter-personal interfaces and how to make best use of crew co-operation techniques and their personal and leadership styles in a way that fosters crew effectiveness. Students should be made aware that their behaviour during normal circumstances can have a powerful impact on crew functioning during high workload and stressful situations.
4. Research studies strongly suggest that behavioural changes in any environment cannot be accomplished in a short period even if the training is very well designed. Trainees need time, awareness, practice and feedback, and continual reinforcement to learn lessons that will endure. In order to be effective, multi-crew co-operation training should be accomplished in several phases spread over a period.

BASIC MULTI-CREW CO-OPERATION COURSE

5. The contents of the basic MCC course should cover theoretical knowledge training, practice and feedback in:

   a. interfaces

      – examples of software, hardware, environment and live ware mismatches in practice

   b. leadership/'followership' and authority

      – managerial and supervisory skills
      – assertiveness
      – barriers
      – cultural influence
      – PF and PNF roles
      – professionalism
      – team responsibility

   c. personality, attitude and motivation

      – listening
      – conflict resolution
      – mediating
      – critique (pre-flight analyses and planning, ongoing-review, postflight)
      – team building

   d. effective and clear communication during flight

      – listening
      – feedback
      – standard phraseologies
      – assertiveness
      – participation

   e. crew co-ordination procedures

      – flight techniques and cockpit procedures
      – standard phraseologies
      – discipline

6. The use of checklists is of special importance for an orderly and safe conduct of the flights. Different philosophies have been developed for the use of checklists. Whichever philosophy is used depends on the complexity of the aircraft concerned, the situation presented, the flight crew composition and their operating experience and the operator's procedures as laid down in the Flight Operations Manual.

7. Mutual supervision, information and support.

   a. Any action in handling the aircraft should be performed by mutual supervision. The pilot responsible for the specific action or task (PF or PNF) should be advised when substantial deviations (flight path, aircraft configuration etc.) are observed.

   b. Call-out procedures are essential, especially during take-off and approach, to indicate progress of the flight, systems status etc.

   c. Operation of aircraft systems, setting of radios and navigation equipment etc. should not be performed without demand by the PF or without information to the PF and his confirmation.

8. The contents of paragraphs 3 and 4 can best be practised by performing the exercises in simulated commercial air transport operations.

9. Practice and feedback of MCC with regard to the L-L (liveware-liveware) interface should also make provision for students for self and peer critique in order to improve communication, decision making and leadership skills. This phase is best accomplished through the use of flight simulators and video equipment. Video feedback is particularly effective because it allows

participants to view themselves from a third-person perspective; this promotes acceptance of one's weak areas which encourages attitude and behavioural changes.

EXERCISES

10. The exercises should be accomplished as far as possible in a simulated commercial air transport environment. The instruction should cover the following areas:

a. pre-flight preparation including documentation, and computation of take-off performance data;

b. pre-flight checks including radio and navigation equipment checks and setting;

c. before take-off checks including powerplant checks, and take-off briefing by PF;

d. normal take-offs with different flap settings, tasks of PF and PNF, call-outs;

e. rejected take-offs; crosswind take-offs; take-offs at maximum take-off mass; engine failure after V_1;

f. normal and abnormal operation of aircraft systems, use of checklists;

g. selected emergency procedures to include engine failure and fire, smoke control and removal, windshear during take-off and landing, emergency descent, incapacitation of a flight crew member;

h. early recognition of and reaction on approaching stall in differing aircraft configurations;

i. instrument flight procedures including holding procedures; precision approaches using raw navigation data, flight director and automatic pilot, one engine simulated inoperative approaches, non-precision and circling approaches, approach briefing by PF, setting of navigation equipment, call-out procedures during approaches; computation of approach and landing data;

j. go-arounds; normal and with one engine simulated inoperative, transition from instrument to visual flight on reaching decision height or minimum descent height/altitude.

k. landings, normal, crosswind and with one engine simulated inoperative, transition from instrument to visual flight on reaching decision height or minimum descent height/altitude.

Where MCC training is combined with training for an initial type rating on a multi-pilot aeroplane, the exercises (a), (b), (c), (f), (g) and (j) may be conducted in a FTD as part of an approved course.

REINFORCEMENT

11. No matter how effective the classroom curriculum, interpersonal drills, LOFT exercises, and feedback techniques are, a single exposure during the multi-crew co-operation course for the initial issue of a multi-pilot aeroplane type rating will be insufficient. The attitudes and influences which contribute to ineffective crew co-ordination are ubiquitous and may develop over a pilot's lifetime. Thus it will be necessary that the training of non-technical skills will be an integral part of all recurrent training for revalidation of a multi-pilot aeroplane type rating as well as of the training for the issue of further multi-pilot type ratings.

CERTIFICATE OF COMPLETION FORM

CERTIFICATE OF COMPLETION OF MCC-TRAINING

Applicant's last name:			First names:	
Type of licence:			Number:	State:
Multi-engine instrument rating:		***OR***	Multi-engine Instrument rating skill test:	
issued on:			passed on:	
	Signature of applicant:			

The satisfactory completion of MCC-Training according to requirements is certified below:

TRAINING			
Multi-crew co-operation training received during period:			
from:	to:	at:	ATO / operator*
Location and date:		Signature of Head of ATO or authorised instructor*:	

Type and number of licence and State of issue:	Name in capital letters of authorised instructor:

* Delete as appropriate

AMC to FCL.735.H

Multi-crew co-operation course - helicopters

MULTI-CREW CO-OPERATION TRAINING

1. The objectives of MCC training are optimum decision making, communication, division of tasks, use of checklists, mutual supervision, teamwork, and support throughout all phases of flight under normal, abnormal and emergency conditions. The training emphasises the development of non-technical skills applicable to working in a multi-crew environment.
2. The training should focus on teaching students the basics on the functioning of crew members as teams in a multi-crew environment, not simply as a collection of technically competent individuals. Furthermore, the course should provide students with opportunities to practice the skills that are necessary to be effective team leaders and members. This requires training exercises which include students as crew members in the PF and PNF roles.
3. Students should be made familiar with inter-personal interfaces and how to make best use of crew co-operation techniques and their personal and leadership styles in a way that fosters crew effectiveness. Students should be made aware that their behaviour during normal circumstances can have a powerful impact on crew functioning during high workload and stressful situations
4. Research studies strongly suggest that behavioural changes in any environment cannot be accomplished in a short period even if the training is very well designed. Trainees need time, awareness, practice and feedback, and continual reinforcement to learn lessons that will endure. In order to be effective, multi-crew co-operation training should be accomplished in several phases spread over a period.
5. The contents of the basic MCC course should cover theoretical knowledge training, practice and feedback in:

   a. interfaces

      – examples of Software, Hardware, Environment and Liveware mismatches in practice

   b. leadership/'followership' and authority

      – managerial and supervisory skills
      – assertiveness
      – barriers
      – cultural influence
      – PF and PNF roles
      – professionalism
      – team responsibility

   c. personality, attitude and motivation

      – listening
      – conflict resolution
      – mediating
      – critique (pre-flight analyses and planning, ongoing-review, postflight)

- team building

d. effective and clear communication during flight

- listening
- feedback
- standard phraseologies
- assertiveness
- participation

e. crew co-ordination procedures

- flight techniques and cockpit procedures
- standard phraseologies
- discipline

6. The use of checklists is of special importance for an orderly and safe conduct of the flights. Different philosophies have been developed for the use of checklists. Whichever philosophy is used depends on the complexity of the aircraft concerned, the situation presented, the flight crew composition and their operating experience and the operator's procedures as laid down in the Flight Operations Manual.

7. Mutual supervision, information and support.

   a. Any action in handling the aircraft should be performed by mutual supervision. The pilot responsible for the specific action or task (PF or PNF) should be advised when substantial deviations (flight path, aircraft configuration etc.) are observed.

   b. Call-out procedures are essential, especially during take-off and approach, to indicate progress of the flight, systems status etc.

   c. Operation of aircraft systems, setting of radios and navigation equipment etc. should not be performed without demand by the PF or without information to the PF and his confirmation.

COURSE OBJECTIVE

8. Practice and feedback of MCC with regard to the L-L (liveware-liveware) interface should also make provision for students for self and peer critique in order to improve communication, decision making and leadership skills. This phase is best accomplished through the use of FSTDs and video equipment. Video feedback is particularly effective because it allows participants to view themselves from a third-person perspective; this promotes acceptance of one's weak areas which encourages attitude and behavioural changes.

EXERCISES

9. The instruction should be accomplished as far as possible in a simulated commercial air transport environment and cover the following areas:

   a. pre-flight preparation, including documentation; computation of take off performance data; radio and navigation equipment checks and setting;

   b. before take-off checks, including powerplant checks; take-off briefing by PF;

   c. take-offs and landings to and from :

      - standard surface heliport
      - pinpoint surface heliport
      - elevated site
      - helideck

   task of PF and PNF; call outs;

d. rejected take-offs; crosswind take-offs; take-offs at maximum take-off mass ; engine failure before and after Take off Decision Point (TDP); engine failure before and after Defined Point After Take-off (DPATO);

e. normal and abnormal operation of aircraft systems; use of checklists;

f. Emergency procedures to include engines (shut down and restart at a safe height) failure, fire, smoke control and removal; auto pilot/flight director failure, autorotation descent, tail rotor control failure (if applicable), tail rotor loss, hydraulic failure, SAS failure; wind and turbulence effect on raised structures, or due to heliport environment; emergency descent; incapacitation of a flight crew member;

g. early recognition of specific helicopter hazards, e.g. ground resonance, dynamic and static rollover, blade stall, vortex ring/setting with power, settling with power depending on type of operation;

h. instrument flight procedures including holding procedures; precision approaches using raw navigation data, flight director and autopilot; one engine simulated inoperative approaches; autopilot inoperative approaches; non precision and circling approaches; radar approaches on fixed or moving platforms; call out procedures during approaches; computation of approach and landing data;

i. normal go-arounds; go arounds with one engine simulated inoperative and with autopilot or stabiliser inoperative; rejected landing; support of the PF by the PNF;

j. normal and crosswind landings with one simulated engine failure before and after landing decision point (LDP) and one simulated engine failure before defined point before landing (DPBL) and with autopilot or Stability Augmentation System (SAS) inoperative; transition from instrument to visual flight on reaching decision height or minimum descent height/altitude.

Where MCC training is combined for an initial type rating on a multi-pilot helicopter, the exercises (a) and (b) may be conducted in a **[**FS or**]** FTD as part of an approved course.

REINFORCEMENT

10. No matter how effective the classroom curriculum, interpersonal drills, LOFT exercises, and feedback techniques are, a single exposure during the multi-crew co-operation course for the initial issue of a multi-pilot helicopter type rating will be insufficient. The attitudes and influences which contribute to ineffective crew co-ordination are ubiquitous and may develop over a pilot's lifetime. Thus it will be necessary that the training of non-technical skills will be an integral part of all recurrent training for revalidation of a multi-pilot helicopter type rating as well as of the training for the issue of further multi-pilot type ratings.

CERTIFICATE OF COMPLETION FORM

CERTIFICATE OF COMPLETION OF MCC-TRAINING

Applicant's last name:		First names:	
Type of licence:		Number:	State:

Instrument rating:		***OR***	Instrument rating skill test:	
issued on:		passed on:	
	Signature of applicant:		

The satisfactory completion of MCC-Training according to requirements is certified below:

TRAINING			
Multi-crew co-operation training received during period:			
from:	to:	at:	ATO / operator*
Location and date:		Signature of Head of ATO or authorised instructor*:	
Type and number of licence and state of issue:		Name in capital letters of authorised instructor:	

** Delete as appropriate*

AMC to FCL.740.H

Revalidation and renewal of type ratings – helicopters

The revalidation of an IR (H), if held, may be combined with the class or type rating proficiency check.

GM to FCL.720.PL

Experience requirements and pre-requisites for the issue of type ratings for the powered lift

The endorsement of a powered-lift type rating to an aeroplane or helicopter licence does not confer upon its holder the privileges to fly helicopters or aeroplanes, respectively.

SUBPART I
ADDITIONAL RATINGS

AMC to FCL.800

Aerobatic Rating – Theoretical knowledge and flying training

1. The aim of the aerobatic training is to qualify licence holders to perform aerobatic manoeuvres.
2. The approved training organisation should issue a certificate of satisfactory completion of the instruction for the purpose of licence endorsement.

THEORETICAL KNOWLEDGE

3. The theoretical knowledge syllabus should cover the revision and/or explanation of:

   3.1. Human factors and body limitation
   - spatial disorientation
   - airsickness
   - body stress and g-forces, positive and negative
   - effects of grey- and black out

   3.2. Technical subjects
   - legislation affecting aerobatic flying to include environmental and noise subjects
   - principles of aerodynamics to include slow flight, stalls and spins, flat and inverted
   - general airframe and engine limitations

   3.3. Limitations applicable to the specific aircraft category (and type)
   - airspeed limitations (aeroplane, helicopter, touring motor glider, sailpane – as applicable)
   - symmetric load factors (type related - as applicable)
   - rolling g's (type related – as applicable)

   3.4. Aerobatic manoeuvres and recovery
   - entry parameters
   - planning systems and sequencing of manoeuvres
   - rolling manoeuvres
   - over the top manoeuvres
   - combination manoeuvres
   - entry and recovery from developed spins, flat, accelerated and inverted

   3.5. Emergency procedures
   - recovery from unusual attitudes
   - drills to include use of parachutes and aircraft abandonment

FLYING TRAINING

4. The exercises of the aerobatic flying training syllabus should be repeated as necessary until the applicant achieves a safe and competent standard. The training should be tailored to the category of aircraft and limited to the permitted manoeuvres of that type of aircraft. The exercises should comprise at least the following practical training items (if permitted):

4.1. Aerobatic manoeuvres

- Chandelle
- Lazy Eight
- Aileron Roll
- Barrel Roll
- Rudder Roll
- Loop and inverted loop
- Immelmann
- Split S

4.2. Confidence manoeuvres and recoveries

- slow flights and stalls
- steep turns
- side slips
- engine restart in flight (if applicable)
- spins and recovery
- recovery from spiral dives
- recovery from unusual attitudes

AMC to FCL.805

Towing Rating – Theoretical knowledge and flying training

1. The aim of the towing instruction is to qualify licence holders to tow banners or sailplanes.
2. The approved training organisation should issue a certificate of satisfactory completion of the training for the purpose of licence endorsement.

THEORETICAL KNOWLEDGE

TOWING OF SAILPLANES

3.1. The theoretical knowledge syllabus should cover the revision and/or explanation of:

- regulations concerning towing flights
- equipment for the towing activity
- sailplane towing techniques including:
  - signals and communication procedures
  - take off (normal / cross wind)
  - in flight launch procedures
  - descending on tow
  - sailplane release procedure
  - tow rope release procedure
  - landing with tow rope connected
  - emergency procedures during tow including equipment malfunctions
  - specific sailplane towing safety procedures
- flight performance of the applicable aircraft type when towing sailplanes

- look out and collision avoidance
- performance data sailplanes including:
  - suitable speeds
  - stall characteristics in turns

THEORETICAL KNOWLEDGE

BANNER TOWING

3.2. The theoretical knowledge syllabus should cover the revision and/or explanation of:

- regulations concerning banner towing
- equipment for the banner towing activity
- ground crew coordination
- pre-flight procedures
- banner towing techniques including:
  - take-off launch
  - banner pickup manoeuvres
  - flying with banner in tow
  - release procedure
  - landing with banner in tow
  - emergency procedures during tow including equipment malfunctions
  - specific banner towing safety procedures
- flight performance of the applicable aircraft type when towing a heavy/light banner
- prevention of stall during towing operations

FLYING TRAINING

TOWING OF SAILPLANES

4.1. The exercises of the towing training syllabus for towing sailplanes should be repeated as necessary until the student achieves a safe and competent standard and should comprise at least the following practical training items:

- take off procedures (normal and cross wind take offs)
- 360° circles on tow with a bank of 30° and more
- descending during launch
- release procedure of the sailplane
- landing with the tow rope connected
- tow rope release procedure in-flight
- emergency procedures (simulation)
- signals and communication during tow

FLYING TRAINING

BANNER TOWING

4.2. The exercises of the towing training syllabus for banner towing should be repeated as necessary until the student achieves a safe and competent standard and should comprise at least the following practical training items:

- pickup manoeuvres
- towing in-flight techniques
- release procedures
- flight at critically low airspeeds
- maximum performance manoeuvres
- emergency manoeuvres to include equipment malfunctions (simulated)
- specific banner towing safety procedures
- go around with the banner connected
- loss of engine power with the banner attached (simulated)

AMC to FCL.810

PPL(H) Night Rating Course

1. The aim of the course is to qualify PPL(H) holders to exercise the privileges of the licence at night.
2. The approved training organisation should issue a certificate of satisfactory completion of the course for the purpose of licence endorsement.

THEORETICAL KNOWLEDGE

3. The theoretical knowledge syllabus should cover the revision and/or explanation of:
   - night VMC minima
   - rules regarding airspace control at night and facilities available
   - rules regarding aerodrome ground/runway/landing site/obstruction lighting
   - aircraft navigation lights and collision avoidance rules
   - physiological aspects of night vision and orientation
   - dangers of disorientation at night
   - dangers of weather deterioration at night
   - instrument systems/functions and errors
   - instrument lighting and emergency cockpit lighting systems
   - map marking for use under cockpit lighting
   - practical navigation principles
   - radio navigation principles
   - planning and use of safety altitude
   - danger from icing conditions, avoidance and escape manoeuvres

FLYING TRAINING

4. In all cases, exercises 4 to 6 of the night rating flight syllabus should be completed.
5. For exercises 1 to 3, up to 50 % of the required flight training may be completed in a STD(H). However, all items within each exercise should be conducted in a helicopter in flight.
6. Items marked (*) should be completed in simulated IMC and may be completed in daylight.
7. The flying exercises should comprise:

   Exercise 1

   (repeat as necessary until the student achieves a safe and competent standard)

– revise basic manoeuvres when flying by sole reference to instruments*
– explain and demonstrate transition to instrument flight from visual flight*
– explain and revise recovery from unusual attitudes by sole reference to instruments*

Exercise 2

(repeat as necessary until the student achieves a safe and competent standard)

– explain and demonstrate use of radio navigation aids when flying by sole reference to instruments, to include position finding and tracking*

Exercise 3

(repeat as necessary until the student achieves a safe and competent standard)

– explain and demonstrate the use of Radar Assistance *

Exercise 4

(repeat as necessary until the student achieves a safe and competent standard)

– explain and demonstrate use and adjustment of landing light
– explain and demonstrate night hovering:
  - higher and slower than by day
  - avoidance of unintended sideways or backwards movements
– explain and demonstrate night take-off techniques
– explain and demonstrate night circuit technique
– explain and demonstrate night approaches (constant angle) with or without visual approach aids to:
  - heliports
  - illuminated touchdown areas
– practise take-off's, circuits and approaches
– explain and demonstrate night Emergency procedures to include:
  - simulated engine failure,
    (to be terminated with power recovery at a safe altitude)
  - simulated engine failure including single engine approach and landing, (multi-engine only)
  - simulated inadvertent entry to IMC (not on base leg or final)
  - simulated hydraulic control failure (to include landing)
  - internal and external lighting failure
  - other Malfunctions and Emergency procedures as required by the Aircraft Flight Manual

Exercise 5

– solo night circuits

Exercise 6

– explain and demonstrate night cross country techniques
– practise night cross country dual and as SPIC to a satisfactory standard

AMC No 1 to FCL.815

Mountain rating – Theoretical knowledge and flying training

THEORETICAL KNOWLEDGE	
WHEEL RATING	SKI RATING
1.*Equipements*	
W.1.1 Personal equipment for the flight. W.1.2 Aircraft equipment for the flight.	S.1.1 Personal equipment for the flight. S.1.2 Aircraft equipment for the flight.
2. Take off techniques	
W 2.1 Technique for approach and landing on a mountain surface W 2.2 Rolling techniques of the aircraft on various runway profiles. W 2.3 Take-off technique W 2.4 Aircraft and engine performances regarding altitude.	S.2.1 Technique for approach and landing on a mountain surface. S.2.2 Landing technique on skis. S.2.3 Rolling techniques of the aircraft on skis regarding the snow nature S.2.4 Take-off technique on snowed surfaces. S.2.5. Aircraft and engine performances regarding altitude.
3. *Rules*	
W 3.1 Mountain rating W 3.2 Overflight rules W 3.3 Surfaces classification W 3.4 Pilot in command responsibilities W 3.5 Responsibilities of the surface manager W 3.6 The flight plan	S 3.1 Mountain rating S 3.2 Overflight rules S 3.3 Surfaces classification S 3.4 Pilot in command responsibilities S 3.5 Responsibilities of the surface manager S.3.6 The flight plan S.3.7 Certification of the ski mounted aeroplanes

4. Meteorology	
W 4.1 Movements of the air mass W 4.2 Flight consequences W 4.3 Relief effect on the movement of the air masses W 4.4 Altimetry	S.4.1 Movements of the air mass S.4.2 Flight consequences S.4.3 Relief effect on the movement of the air masses S.4.4 Altimetry
5. Human Performance and Limitations	
W.5.1 The cold W.5.2 The food W.5.3 The hypoxia W.5.4 The radiance W.5.5 The thirst W.5.6 The tiredness	S.5.1 The cold S.5.2 The food. S.5.3 The hypoxia. S.5.4 The radiance S.5.5 The thirst S.5.6 The tiredness

W.5.7 Turbulence effects in altitude	S.5.7 Turbulence effects in altitude
6. Navigation	
W.6.1 Progress of the flight W.6.2 Dead reckoning W.6.3 The path over the relief W.6.4 Progress in the valleys W.6.5 Detection of the man-made obstacles (high voltage lines, chairlifts, cables, etc.).	S.6.1 Progress of the flight S.6.2 Dead reckoning S.6.3 The path over the relief S.6.4 Progress in the valleys S.6.5 Detection of the man-made obstacles (high voltage lines, chairlifts, cables, etc.).
7. Specific items	
	S.7.1 Knowledge of the snow and assessment of the snow nature in flight S.7.2 Knowledge of the glacier. S.7.3 Life of the glacier. S.7.4 Formation of the cracks. S.7.5 Snow bridges S.7.6 Avalanches
8. Survival	
	S.8.1 Ways of survival (psychological aspects). S.8.2 Use of the equipments. S.8.3 Removal the snow on the aircraft. S.8.4 Building of a shelter S.8.5 How to feed
FLIGHT INSTRUCTION	
WHEEL RATING	SKI RATING
I.- Navigation	
W.I.1 Flight techniques in the valleys. W.I.2 Flight over mountain passes and ridges W.I.3 U-turn in narrow valleys. W.I.4 Choice of the flight path regarding aerology W.I.5 Map reading	S.I.I Flight techniques in the valleys. S.I.2 Flight over mountain passes and ridges. S.I.3 U-turn in narrow valleys. S.I.4 Choice of the flight path regarding aerology S.I.5 Map reading
II. – *Arrival and reconnaissance*	
W.II.1 Choice of the altitude of arrival.	S.II.1 Choice of the arrival altitude.
W.II.2 Choice of the arrival and overfly pattern.	S.II.2 Choice of the arrival and overflight pattern.
W.II.3 Choice of the landing pattern.	S.II.3 Description of the circuit pattern.
W.II.4 Aero logy awareness	S.II.4 Aerology awareness.
W.II.5 Evaluation of the length of the runway.	S.II.5 Evaluation of the runway length.
W.II.6 Evaluation of the runway profile (slope and banking).	S.II.6 Evaluation of the runway profile (slope and banking).
W II.7 Collision avoidance.	S.II.7 Collision avoidance .
W II.8 Definition of the references for the	S.II.8 Definition of the references for the landing

landing (touch down point).	(touch down point).
W II.9 Determination of the circuit pattern altitude.	S.II.9 Determination of the circuit pattern altitude.
W II.10 Choice of the final speed regarding the runway profile.	S.II.10 Choice of the final speed regarding the runway profile.
	S.II.11 Choice of the take-off axis
	S.II.12. Choice of the landing axis
	S.II.13 Choice of the parking area
	S.II.14 Observation of the obstacles on the ground (cracks, snow bridges, avalanches).
	S.II.15 Estimation of the snow nature.
	S.II.16 Observation of the way to reach a refuge from the landing area
III – Approach and landing	
W.III.1 Landing pattern altitude.	S.III.1 Landing pattern altitude.
W III.2 Precision of flight along the landing path.	S.III.2 Precision of flight along the landing path..
W III.3 Corrections on the landing path (accuracy and effectiveness).	S.III.3 Corrections on the landing path (accuracy and effectiveness).
	S.III.4 Landing (precision of the flare and of the touch down point).
W III.4 Landing (precision of the flare and of the touch down point).	S.III.5 Taxi of the aircraft on various snows and various runway profiles.
W III.5 Taxiing (use of the engine power) on various profiles	S.III.6 Parking of the aircraft regarding the snow nature and the profile of the apron.
W III.6 Parking of the aircraft (regarding the runway profile, the traffic, etc.).	S.III.7 Turns on various snow nature and various ground profiles.
IV. – Take-off	
W IV.1 Safety checks before take-off.	S. IV.1 Safety checks before take-off.
	S.IV.2 Lining up on the runway.
	S.IV.3 Control of the runway axis during take-off S.IV.4 Choice and use of the visual references of the take-off axis.
W IV.2 Lining up on the runway.	S.IV.5 Acceleration regarding the nature of the snow.
W IV.3 Control of the runway axis during take-off.	S.IV.6 Short take-off.
W IV.4 Choice and use of the visual references of the take-off axis.	S.IV.7 Take-off avoiding the skid of the skis.
V. - Survival	
	S.V.1 Use of the snowshoes.
	S.V.2 Use of the markings.

AMC No 2 to FCL.815

Mountain rating – Skill test

The skill test for the issue or the renewal of a mountain rating should contain the following elements:

1. ORAL EXAMINATION

This part should be done before the flight and should cover all the relevant parts of the theoretical knowledge. At least one question for each of the following sections should be asked:

– Specific equipment for a mountain flight (personal and aircraft)
– Rules of the mountain flight

If the oral examination reveals a lack in theoretical knowledge, the flight test should not be done and the skill test is failed.

2. PRACTICAL SKILL TEST

During the flight test, two different sites from the departure airport should be used for recognition, approach, landing and take-off. For the Ski Mountain Rating, one of the two different sites should be a glacier.

AMC to FCL.820

Conduct of flight tests – Training course

The content of the course should vary taking into account the type of aircraft. The following table provides an overview of the different types of course

Categories of flight test Aircraft	Category 1	Category 2
CS-25; CS-23 jets and CS-23 Commuters	Condition 1	Condition 2
Other CS-23	Condition 2	Condition 2
CS-27	Condition 1	Condition 2
CS-29	Condition 1	Condition 2

Condition 1:

For CS-25 aircraft; jet aeroplanes certified to CS-23, CS-23 Commuter Category aircraft; and CS-27 and CS-29 rotorcraft, the training should cover Performance; Handling Qualities; Systems and Test management and can be outlined as follows:

- For fixed wing test pilots: duration 10 months; 500 hours of ground training; 110/120 flying hours on 15/25 different airplanes.
- For rotorcraft test pilots: duration 10 months; 500 hours of ground training; 110/120 flying hours on 4 to 10 rotorcraft
- Batchelor of Sciences or equivalent University standards are usually requested from applicants.

Condition 2:

This condition requires a significant amount of flight experience, in accordance to the task and requires training for flight testing activities, the amount of which should be specifically adapted to the tasks. Such courses may last 15 weeks and the flying training should amount to 38 hours on 12 types of airplanes.

SUBPART J
INSTRUCTORS

AMC to FCL.900
Instructor certificates

1 General

1.1 Nine instructor categories are recognised:

a) Light aircraft flight instructor certificate – aeroplane (LAFI(A)), helicopter (LAFI(H)), sailplane LAFI(S), balloon (LAFI(B));
b) Flight instructor certificate – aeroplane (FI(A)), helicopter (FI(H)), powered-lift (FI(PL)), airship (FI(As)), sailplane (FI(S)), balloon (FI(B));
c) Type rating instructor certificate – aeroplane (TRI(A)), helicopter (TRI(H)), powered-lift (TRI(PL));
d) Class rating instructor certificate – aeroplane (CRI(A));
e) Instrument rating instructor certificate – aeroplane (IRI(A)), helicopter (IRI(H)), airship (IRI(As)) ;
f) Synthetic flight instructor certificate – aeroplane (SFI(A), helicopter (SFI(H));
g) Multi crew Co-operation instructor certificate Aeroplanes (MCCI(A));
h) Synthetic training instructor certificate – aeroplane (STI(A)), helicopter (STI(H));
i) Mountain rating instructor certificate – (MI).

1.2 For categories a) to e) and for f) the applicant needs to hold a pilot licence. For categories f) to h) no licence is needed, only an instructor certificate.

1.3 A person may hold more than one instructor certificate.

2 Special conditions.

2.1 When new aircraft are introduced, requirements such as to hold a licence and rating equivalent to the one for which instruction is being given, or to have adequate flight experience, may not be possible to comply with. In this case, to allow for the first instruction courses to be given to applicants for licences or ratings for these aircraft, competent authorities need the possibility to issue a specific certificate that does not have to comply with the requirements established in this Subpart.

2.2 The competent authority should only give these certificates to holders of other instruction qualifications. As far as possible, preference should be given to persons with experience in similar types or classes of aircraft.

2.3 The certificate should ideally be limited in validity to the time needed to qualify the first instructors for the new aircraft in accordance with this Subpart, but in any case it should not exceed the 3 years established in the rule.

AMC to FCL.920

Instructor competencies and assessment

1 Training should be both theoretical and practical. Practical elements should include the development of specific instructor skills, particularly in the area of teaching and assessing threat and error management and CRM.

2 The training and assessment of instructors should be made against the following performance standards:.

Competence	**Performance**	**Knowledge**
Prepare resources	– Ensure adequate facilities – Prepares briefing material	– Understand objectives – Available tools

	– Manage available tools	– Competency based training methods
Create a climate conducive to learning	– Establishes credentials, role models appropriate behaviour – Clarifies roles – States objectives – Ascertains and supports trainees needs	– Barriers to learning – Learning styles –
Present knowledge	– Communicates clearly – Creates and sustains realism – Looks for training opportunities	– Teaching methods –
Integrate TEM/CRM	– Makes TEM/CRM links with technical training	– Human Factors, TEM/CRM –
Manage Time to achieve training objectives	– Allocate time appropriate to achieving competency objective	– Syllabus time allocation –
Facilitate learning	– Encourage trainee participation – Motivating, patient, confident, assertive manner – Conducts one-to-one coaching – Encourages mutual support –	– Facilitation – How to give constructive feedback – How to encourage trainees to ask questions and seek advice
Assesses trainee performance	– Assess and encourage trainee self assessment of performance against competency standards – Makes assessment decision and provide clear feedback – Observes CRM behaviour	– Observation techniques – Methods for recording observations
Monitor and review progress	– Compare individual outcomes to defined objectives – Identify individual differences in learning rates – Apply appropriate corrective action	– Learning styles – Strategies for training adaptation to meet individual needs
Evaluate training sessions	– Elicits feedback from trainees. – Tracks training session processes against competence criteria – Keeps appropriate records –	– Competency unit and associated elements – Performance criteria
Report outcome	– Report accurately using only observed actions and events	– Phase training objectives – Individual versus systemic weaknesses

AMC No 1 to FCL.925

MPL instructor course

1. The objectives of the MPL instructors training course are to train applicants to deliver training in accordance with the features of a competency based approach to training and assessment.

2. Training should be both theoretical and practical. Practical elements should include the development of specific instructor skills, particularly in the area of teaching and assessing threat and error management and CRM in the multi-crew environment

3. The course is intended to adapt instructors to conduct competency-based MPL training. It should cover the items specified below:

THEORETICAL KNOWLEDGE

4. Integration of operators and organisations providing MPL training

- Reasons for development of the MPL
- MPL training course objective
- Adoption of harmonised training and procedures
- Feedback process

5. The philosophy of a competency-based approach to training
   - Principles of competency-based training

6. Regulatory framework, instructor qualifications and competencies
   - Source Documentation
   - Instructor Qualifications
   - Syllabus Structure

7. Introduction to Instructional Systems Design methodologies (See ICAO PANS-TRG Doc)
   - Analysis
   - Design and Production
   - Evaluation and Revision

8 Introduction to the MPL Training Scheme
   - Training phases and content
   - Training media
   - Competency Units, elements and performance criteria

9. Introduction to human performance limitations, including the principles of threat and error management and appropriate countermeasures developed in CRM.
   - Definitions
   - Appropriate behaviours categories
   - Assessment system

10. Application of the principles of threat and error management and CRM principles to training
    - Application and practical uses
    - Assessment methods
    - Individual corrective actions
    - Debriefing techniques

11. The purpose and conduct of assessments and evaluations
    - Basis for continuous assessment against a defined competency standard
    - Individual assessment
    - Collection and analysis of data
    - Training System evaluation

PRACTICAL TRAINING

12. Practical training may be conducted by interactive group classroom modules, and/or by the use of training devices. The objective is to enable instructors to:
    - Identify behaviours based on observable actions in the following areas:
        - Communications
        - Team working
        - Situation Awareness
        - Workload Management

  - Problem Solving and Decision Making
- Analyse the root causes of undesirable behaviours
- Debrief students using appropriate techniques, in particular
  - Use of facilitative techniques
  - Encouragement of student self-analysis
- Agree corrective actions with the student/s
- Determine achievement of the required competency

AMC No 2 to FCL.925

MPL instructors - renewal of privileges – refresher training

1. Paragraph (d) of FCL.925 determines that if the applicant has not complied with the requirements to maintain his privileges to conduct competency based approach training, he/she shall receive refresher training at an approved training organisation to reach the level of competence necessary to pass the assessment of instructor competencies. The amount of refresher training needed should be determined on a case by case basis by the approved training organisation, taking into account the following factors:

   1.1 the experience of the applicant.

   1.2 the amount of time lapsed since the last time the applicant has conducted training in an MPL course. The amount of training needed to reach the desired level of competence should increase with the time lapsed. In some cases, after evaluating the instructor, and when the time lapsed is very limited, the training organisation may even determine that no further refresher training is necessary.

2. Once the training organisation has determined the needs of the applicant, it should develop an individual training programme, that should be based on the MPL instructor course and focus on the aspects where the applicant has shown the greatest needs.

GM to FCL.925

MPL Instructors

The following table summarises the instructor qualifications for each phase of MPL integrated training course:

Phase of training	Qualification
Line Flying Under Supervision in accordance with Part-OPS	Line Training Captain or TRI(A)
Phase 4 – Advanced Base Training	 TRI(A)

Phase 4 – Advanced Skill Test	 TRE(A)
Phase 4 - Advanced	SFI(A) or TRI(A)
Phase 3 -Intermediate	SFI(A) or TRI(A)
Phase 2 - Basic	- FI(A)/IRI(A) + IR(A)/ME/MCC + 1500hrs multi crew environment + IR(A) instructional privileges, or - FI(A) + MCCI(A), or - FI(A) + SFI(A), or - FI(A) + TRI(A)
Phase 1 - Core Flying Skills	- FI(A) + 500hrs, including 200hrs instruction - Instructor qualifications and privileges should be in accordance with the training items within the phase. STI for appropriate exercises conducted in a FNPT or BITD.

AMC to FCL.930.LAFI

Light Aircraft Flight Instructor (LAFI) training course

GENERAL

The aim of the LAFI course is to train leisure pilot licence holders to the level of competence defined in FCL.920 as instructor competencies.

The course should develop safety awareness throughout by teaching the knowledge, skills and attitudes relevant to the LAFI task including at least the following:

a. refresh the technical knowledge of the student instructor;

b. train the student instructor to teach the ground subjects and air exercises;

c. ensure that the student instructor's flying is of a sufficiently high standard; and

d. teach the student instructor the principles of basic instruction and to apply them at the LPL level.

COURSE CONTENT

With the exception of the section on Teaching and Learning, all the subject detail contained in the Ground and Flight Training Syllabus is complementary to the LPL course syllabus and should already be known by the applicant.

The LAFI course should give particular stress to the role of the individual in relation to the importance of human factors in the man-machine and theoretical knowledge environment interaction. Special attention should be paid to the applicant's maturity and judgement including an understanding of adults, their behavioural attitudes and variable levels of education.

During the course, the applicants should be made aware of their own attitudes to the importance of flight safety. Improving safety awareness should be a fundamental objective throughout the course. It will be of major importance for the course of training to aim at giving applicants the knowledge, skills and attitudes relevant to a flight instructor's task.

On successful completion of the course and final test the applicant may be issued with a LAFI certificate.

The course consists of 2 parts:

- Part 1 Teaching and Learning instruction (should comply with AMC to FCL.920)
- Part 2 Flight instruction

PART 1

TEACHING AND LEARNING

The course should include at least 75 hours of theoretical knowledge and instructional techniques for the LAFI (A) and (H) certificate and at least 30 hours of theoretical knowledge and instructional techniques for the LAFI (S) and (B) certificate.

CONTENT OF THE INSTRUCTIONAL TECHNIQUES:

1 THE LEARNING PROCESS

Motivation
Perception and understanding
Memory and its application
Habits and transfer
Obstacles to learning
Incentives to learning
Learning methods
Rates of learning

2 THE TEACHING PROCESS

Elements of effective teaching
Planning of instructional activity
Teaching methods
Teaching from the 'known' to the 'unknown'
Use of 'lesson plans'

3 TRAINING PHILOSOPHIES

Value of a structured (approved) course of training
Importance of a planned syllabus
Integration of theoretical knowledge and flight instruction

4 TECHNIQUES OF APPLIED INSTRUCTION

a. Theoretical knowledge – Classroom instruction techniques
Use of training aids
Group lectures
Individual briefings

Student participation/discussion

b. Flight – Airborne instruction techniques
The flight/cockpit environment
Techniques of applied instruction
Post-flight and in-flight judgement and decision making

5 STUDENT EVALUATION AND TESTING

a. Assessment of student performance
The function of progress tests
Recall of knowledge
Translation of knowledge into understanding
Development of understanding into actions
The need to evaluate rate of progress

b. Analysis of student errors
Establish the reason for errors
Tackle major faults first, minor faults second
Avoidance of over criticism
The need for clear concise communication

6 TRAINING PROGRAMME DEVELOPMENT

Lesson planning
Preparation
Explanation and demonstration
Student participation and practice
Evaluation

7 HUMAN PERFORMANCE AND LIMITATIONS RELEVANT TO FLIGHT INSTRUCTION

Physiological factors
Psychological factors
Human information processing
Behavioural attitudes
Development of judgement and decision making

8 SPECIFIC HAZARDS INVOLVED IN SIMULATING SYSTEMS FAILURES AND MALFUNCTIONS IN THE AIRCRAFT DURING FLIGHT
Importance of 'touch drills'
Situational awareness
Adherence to correct procedures

9 TRAINING ADMINISTRATION

Flight/theoretical knowledge instruction records
Pilot's personal flying log book
The flight/ground curriculum
Study material
Official forms
Aircraft Flight/Owner's Manuals/Pilot's Operating Handbooks
Flight authorisation papers
Aircraft documents
The private pilot's licence regulations

PART 2

FLYING TRANING

An approved LAFI course should comprise at least the minimum hours of flight instruction as defined bin FCL.930.LAFI.

AIR EXERCISES

The air exercises are similar to those used for the training of LPL but with additional items designed to cover the needs of a flight instructor.

The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide: therefore the demonstrations and practices need not necessarily be given in the order listed. The actual order and content will depend upon the following interrelated factors:

The applicant's progress and ability
The weather conditions affecting the flight
The flight time available
Instructional technique considerations
The local operating environment
Applicability of the exercises to the aircraft type

At the discretion of the instructors some of the exercises may be combined whereas some other exercises may be done in several flights.

It follows that student instructors will eventually be faced with similar inter-related factors. They should be shown and taught how to construct flight lesson plans, taking these factors into account, so as to make the best use of each flight lesson, combining parts of the set exercises as necessary.

GENERAL

The briefing normally includes a statement of the aim and a brief allusion to principles of flight only if relevant. An explanation is to be given of exactly what air exercises are to be taught by the instructor and practised by the student during the flight. It should include how the flight will be conducted with regard to who is to fly the aircraft and what airmanship, weather and flight safety aspects currently apply. The nature of the lesson will govern the order in which the constituent parts are to be taught.

The five basic components of the briefing will be:

1. The aim
2. Airmanship
3. The air exercise(s) briefing (what, and how and by whom)
4. Flight Briefing
5. Check of understanding

PLANNING OF FLIGHT LESSONS

The preparation of lesson plans is an essential pre-requisite of good instruction and the student instructor is to be given supervised practice in the planning and practical application of flight lesson plans.

GENERAL CONSIDERATIONS

The student instructor should complete flight training in order to practise the principles of basic instruction at the LPL level. During this training the student instructor occupies the seat normally occupied by the LAFI.

It is to be noted that airmanship is a vital ingredient of all flight operations. Therefore, in the following air exercises the relevant aspects of airmanship are to be stressed at the appropriate times during each flight.

FLIGHT INSTRUCTION SYLLABUS CONTENTS

A. Aeroplanes

LONG BRIEFINGS AND AIR EXERCISES

1 Familiarisation with the aeroplanes

2 Preparation before and action after flight

3 Air experience

4 Effects of controls

5 Taxiing

6 Straight and level flight

7 Climbing

8 Descending

9 Turning

10A Slow flight

10B Stalling

11 Spin recovery at the incipient stage

12 Take-off and climb to downwind position

13 The circuit, approach and landing

14 First solo

15 Advanced turning

16 Forced landing without power

17 Precautionary landing

18A Pilot navigation

18B Navigation at lower levels/reduced visibility

19 Basic night flight (if night instructional qualification required)

NOTE 1: Although exercise 11A is not required for the LPL(A) course it is a requirement for the LAFI(A) course.

NOTE 2: Airmanship should be included as required in each exercise.

EXERCISE 1 - AEROPLANE FAMILIARISATION

OBJECTIVE

To advise the student instructor on how to familiarise the student with the aeroplane or touring motor glider which will be used for the training and to test his position in the aircraft for comfort, visibility, and ability to use all controls and equipment.

BRIEFING AND EXERCISE

The student instructor has to:

- present the type of aeroplane which will be used
- explain the cockpit layout – instruments and equipment
- explain the aeroplane and engine systems
- explain and demonstrate the flight controls
- check the position of the student on the seat for comfort, visibility, ability to use all controls

- explain and demonstrate the use of the harness
- explain the differences when occupying the instructor's position
- explain all check lists, drills, controls

EMERGENCY DRILLS

The student instructor has to

- explain the action in the event of fire in the air and on the ground (engine/cabin/ electrical)
- explain systems failures and actions as applicable to type
- explain and demonstrate escape drills
- explain and demonstrate the location and use of emergency equipment and exits

EXERCISE 2 - PREPARATION FOR AND ACTION AFTER FLIGHT

OBJECTIVE

To advise the student instructor on how to explain and demonstrate all the operations to be completed prior to flight and how to explain the actions after flight.

BRIEFING

The student instructor has to explain:

- the need for a pre-flight briefing.
- the structure and the content of this briefing
- which documents are required on board
- which equipment are required for a flight
- how to do the pre-flight external and internal checks
- the procedure for verifying in-limits mass and balance
- the starting, warming up and power checks (check list)
- the running down and system checks / switching off the engine
- leaving of the aircraft, Parking, Security and Picketing

AIR EXERCISE

The student instructor has to prepare and and give a pre-flight briefing:

The student instructor has to demonstrate:

- that the required documents are on board
- that the equipment required for the intended flight is on board
- how to perform a pre-flight external and internal check
- how to verify in-limits mass and balance
- how to adjust harness as well as seat and/or rudder pedals
- the starting, warm up and power checks
- how to leave the aircraft

The student instructor also has to demonstrate:

- how to advise the student pilot in performing the pre-flight preparation
- how to analyse and correct pre-flight preparation errors of the student as necessary

EXERCISE 3 – AIR EXPERIENCE FLIGHT

OBJECTIVE

To advise the student instructor on how to familiarise the student with being in the air, with the area around the airfield, to note his/her reactions in this situation, and to draw his/her attention to safety and look-out procedures

BRIEFING

The student instructor has to explain:

- the area around the airfield
- the need for looking out

AIR EXERCISE

The student instructor has to:

- show the noteworthy references on the ground
- analyse the reactions of the student
- check that the student looks out (safety)
- demonstrate airmanship

EXERCISE 4 - EFFECTS OF CONTROLS

OBJECTIVE

To advise the student instructor on how to demonstrate the primary and further effects of each control with the help of visual references and how to demonstrate the effects of airspeed, slipstream, power, trimming controls and flaps. Furthermore the student instructor has to demonstrate the operation of mixture control, carburettor heat control and the cabin heat and/or ventilation system. The continuous and efficient look-out procedures have to be demonstrated during these exercises.

BRIEFING

The student instructor has to define the axes of an aeroplane / touring motor glider

The student instructor has to explain:

- the look-out procedures
- the visual references along each axis
- the primary effects of controls when laterally level and banked
- the further effects of ailerons and rudder
- the effect of inertia, airspeed, slipstream, power, trimming controls and flaps
- the use of mixture control, carburettor heat control and cabin heat/ventilation systems
- the effect of other controls (as applicable)

AIR EXERCISE

The student instructor has to demonstrate:

- the visual references in flight

- the primary effect of flying controls – when laterally level and banked
- the further effects of ailerons and rudder
- the effect of inertia, airspeed, slipstream, power, trimming controls and flaps (if applicable)
- the use of mixture control, carburettor heat control and cabin heat/ventilation systems
- the look-out procedures during all the exercises
- airmanship

The student instructor also has to demonstrate:

- how to advise the student pilot to recognise the primary and further effects of each control
- how to advise the student to practice the use of flying controls
- how to analyse and correct errors as necessary

EXERCISE 5 - TAXIING

OBJECTIVES:

To advise the student instructor how to demonstrate the pre-taxiing checks, the starting procedure and how to control speed, direction, turning and stopping of the aircraft. Furthermore the student instructor should learn how to identify taxiing errors and how to correct them properly.

BRIEFING

The student instructor has to explain:

- the pre-taxiing checks
- how to start and how to control the speed and stopping
- the engine handling
- the control of direction and turning (including manoeuvring in confined spaces)
- the parking area procedures and precautions
- the effects of wind and use of flying controls
- effects of ground surface
- freedom of rudder movement
- the marshalling signals
- the instrument checks
- the Air Traffic Control procedures

EMERGENCIES

The student instructor has to explain:

- steering failures / brake failure and suitable actions

AIR EXERCISE

The student instructor has to demonstrate:

- how to perform the pre-taxiing checks (use of checklist)
- how to perform starting, control of speed and stopping of the aircraft
- the freedom of rudder movement
- the instrument checks
- the handling of the engine
- the control of direction and turning
- turning in confined spaces

- how to use the flying controls during taxiing (effects of wind)
- how to follow the parking area procedures and precaution actions
- the effects of ground surface
- the look-out procedures during taxiing
- airmanship

The student instructor also has to demonstrate:

- how to advise the student pilot to perform the pre-taxiing checks and engine starting procedures
- how to advise the student pilot to perform the taxiing techniques
- how to identify errors and how to correct them

EMERGENCIES

The student instructor also has to demonstrate:

- how to react on steering failures or brake failures

EXERCISE 6 - STRAIGHT AND LEVEL FLIGHT

OBJECTIVES

To advise the student instructor on how to train the student to maintain straight and level flight with a constant heading without slipping and skidding.

BRIEFING

The student instructor has to explain:

- the longitudinal stability and control in pitch
- the relationship of c of g to control in pitch
- lateral and directional stability (control of lateral level and balance)
- attitude and balance control
- how to use the trim
- the different power settings and related airspeeds
- the drag and power curves
- range and endurance

AIR EXERCISE

The instructor student has to demonstrate:

- attaining and maintaining straight and level flight (at normal cruising power)
- inherent stability
- the control of the aircraft in pitch, including use of elevator trim control
- the control of lateral level, direction and balance, the use of rudder trim controls as applicable
- the effect of drag and use of power (at selected airspeeds)
- straight and level flight in different aircraft configurations (flaps, landing gear)
- the use of instruments to achieve precision flight
- the look-out procedures during all the exercises

The student instructor also has to demonstrate:

- how to advise the student pilot to attain and maintain straight and level flight
- how to analyse and correct errors as necessary

- airmanship

EXERCISE 7 – CLIMBING

OBJECTIVES

To advise the student instructor on how to train the entry and maintain the normal maximum rate of climb, the cruise climb and the levelling off at a certain altitude.

BRIEFING

The student instructor has to explain:

- the forces
- the relationship between power/airspeed and rate of climb (maximum rate of climb (Vy))
- the effect of mass
- the effect of flaps
- engine considerations
- the effect of density altitude
- the cruise climb
- the maximum angle of climb (Vx)

AIR EXERCISE

The student instructor has to demonstrate:

- the entry and maintaining of the normal maximum rate of climb
- the levelling off procedure
- levelling off at selected altitudes
- climbing with flaps down
- the recovery to normal climb
- en route climb (cruise climb)
- the maximum angle of climb
- the use of instruments to achieve precision flight

The student instructor also has to demonstrate:

- how to advise the student pilot to entry and maintain the normal and maximum rate of climb
- how to advise the student pilot to perform the cruise climb and the levelling off at a certain altitude
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 8 - DESCENDING

OBJECTIVES:

To advise the student instructor on how to train how to perform the descend entry, to maintain the glide (with different configurations) and how to perform levelling off at selected altitudes.

BRIEFING

The student instructor has to explain:

- the forces
- the glide descent angle – airspeed – rate of Descent
- the effect of flaps
- the effect of wind
- the effect of mass
- the engine considerations
- the power assisted descent – power/airspeed – rate of descent
- the cruise descent
- the sideslip

AIR EXERCISE

The student instructor has to demonstrate:

- how to perform the entry and how to maintain the glide
- the levelling off procedure
- the levelling off at selected altitudes
- how to descend with flaps down
- how to perform a powered descent – cruise descent (inc. effect of power/airspeed)
- how to perform side slipping (on suitable types)
- the use of Instrument to achieve precision flight

The student instructor also has to demonstrate:

- how to advise the student pilot to entry and maintain a continuous glide
- how to advise the student pilot to perform the levelling off at a certain altitude
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 9 - TURNING

OBJECTIVES:

To advise the student instructor on how to teach student pilots to fly medium level turns with constant bank and coordinated flight, climbing and descending turns and how to perform turning onto selected heading.

BRIEFING

The student instructor has to explain:

- the forces
- the use of controls
- the use of power
- the maintenance of attitude and balance
- medium Level Turns
- climbing and descending turns
- slipping turns
- turning onto selected headings (use of gyro heading indicator and/or magnetic compass)

AIR EXERCISE

The student instructor has to demonstrate:

- the entry and maintaining medium level turns
- straight flight
- climbing turns
- descending turns
- slipping turns (on suitable types)
- turns to selected headings (use of gyro heading indicator and/or compass)
- the use of instruments to achieve precision flight

The student instructor also has to demonstrate:

- how to advise the student pilot to entry and maintain medium level turns
- how to advise the student pilot to perform climbing and descending turns
- how to advise the student pilot to turn onto selected headings
- how to analyse and correct faults in the turn (incorrect Pitch, Bank, Balance) as necessary
- airmanship

THE STALL / SPIN AWARENESS AND AVOIDANCE TRAINING CONSISTS OF EXERCISES: 10 A, 10 B and 11

10 A - SLOW FLIGHT

OBJECTIVES:

To advise the student instructor on how to improve the student's ability to recognise inadvertent flight at critically low speeds (high angle of attack) and to provide practice in maintaining the sailplane in balance while returning to normal attitude (speed).

BRIEFING

The student instructor has to explain:

- the aeroplane handling characteristics during slow flight at
  - Vs1 & Vso + 10 knots
  - Vs1 & Vso + 5 knots
- the slow flight during instructor induced distractions
- the effect of overshooting in "nose-up" trim configurations

AIR EXERCISE

The student instructor has to demonstrate:

- the safety checks
- the introduction to slow flight
- the controlled slow flight in the clean configuration at:
  - Vs1 + 10 knots & with flaps down
  - Vso + 10 knots:

straight & level flight

level turns

climbing and descending

climbing and descending turns

- the controlled slow flight in the clean configuration at:

  Vs1 + 5 knots and with flaps down

  Vso + 5 knots:

  straight and level flight

  level turns

  climbing and descending

  climbing and descending turns

  descending 'unbalanced' turns at low airspeed

- 'instructor induced distractions' during flight at low airspeed
- the need to maintain Balanced Flight and a safe Airspeed
- the effect of going around with strong "nose up" configurations

The student instructor also has to demonstrate:

- how to advise the student pilot to recognise inadvertent flight at critically low speeds
- how to advise the student pilot to perform the controlled slow flight in the different configurations
- how to advise the student to maintain balanced flight and a safe airspeed
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 10 B - STALLING

OBJECTIVES:

To advise the student Instructor on how to improve the student's ability to recognize a stall and to recover from it. This includes stalling and recovery at the incipient stage with "instructor induced" distractions.

BRIEFING

The student instructor has to explain:

- the characteristics of the stall
- the angle of attack
- the effectiveness of the controls at the stall
- the factors affecting the stalling speed
- the symptoms of the stall
- stall recognition and recovery
- stalling and recovery (different configurations):
- the recovering from Incipient stalls (in different configurations and conditions)

- the recovering at the Incipient Stage during Change of Configuration
- the stalling and recovery at the incipient stage with 'instructor induced' distractions

* Consideration is to be given to manoeuvre limitations and references to The Owners/Flight manual or Pilot's Operating Handbook in relation to Mass and Balance limitations. These factors are also covered in the next exercise Spinning.

AIR EXERCISE

The student instructor has to demonstrate:

- the safety checks
- the symptoms of the stall
- the stall recognition and recovery
- the recovery without power / with power
- the recovery when a wing drops at the stall
- stalling with power 'on' and recovery
- stalling with flaps 'down' and recovery
- the maximum power climb (straight / turning flight) to the point of stall with uncompensated yaw
- the effect of unbalance at the stall when climbing power is being used
- stalling and recovery during manoeuvres involving more than 1 g
- recoveries from incipient stalls in the landing and other configurations / conditions
- recoveries at the incipient stage during change of configuration

The student instructor also has to demonstrate:

- how to advise the student pilot to recognise a stall and to recover from it
- how to perform instructor induced distractions during stalling
- how to analyse and correct errors as necessary
- airmanship

* Consideration of manoeuvre limitations and the need to refer to the Aeroplane Manual and Weight (mass) and Balance calculations. These factors are to be covered in the next exercise – Spinning.

EXERCISE 11 - SPIN RECOVERY at the INCIPIENT STAGE

OBJECTIVES:

To advise the student Instructor on how to improve the student's ability to recognize a spin at the incipient stage and how to recover from it.

BRIEFING

The student instructor has to explain:

- the causes, stages, autorotation and characteristics of the spin
- the recognition and recovery at the incipient stage – entered from various flight attitudes

- the aeroplane limitations

AIR EXERCISE

The student instructor has to demonstrate:

- the safety checks
- recognition at the Incipient Stage of a Spin
- recoveries from incipient spins entered from various attitudes (clean configuration)
- instructor induced distractions
- the use of controls
- the effects of power/flaps (restrictions applicable to aeroplane type)
- spinning and recovery from various flight attitudes

The student instructor also has to demonstrate:
- how to advise the student pilot to recognise the spin
- how to improve the student pilot's ability to recover from the spin
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 12 - TAKE-OFF AND CLIMB TO DOWNWIND POSITION

OBJECTIVES:

To advise the student Instructor on how to improve the student's ability to perform the checks and drills before during and after take-off and how to perform the different take off techniques. This includes the student pilot's ability to deal with emergency situations during take-off and climb.

BRIEFING

The student instructor has to explain:

- the handling – factors affecting the length of take-off run and initial climb
- the correct lift off speed, use of elevators (safeguarding the nose wheel), rudder and power
- the effect of wind (including crosswind component)
- the effect of flaps (including the decision to use and the amount permitted)
- the effect of ground surface and gradient upon the take-off run
- the effect of mass, altitude and temperature on take-off and climb performance
- the pre take-off checks
- the air traffic control procedure (before take-off)
- the drills, during and after take-off
- noise abatement procedures
- tail wheel considerations (as applicable)
- short/soft field take-off considerations/procedures

EMERGENCIES:

Aborted Take-Off

Engine Failure after Take-Off

Airmanship and Air Traffic Control Procedures

Common Errors

AIR EXERCISE 12

The student instructor has to demonstrate:

- how to perform the pre take-off checks
- the into wind take-off
- how to safeguard the nose wheel
- how to perform a crosswind take-off
- perform the drills during and after take-off
- a short take-off and soft field procedures/techniques (including performance calculations)
- noise abatement procedures

The student instructor also has to demonstrate:
- how to advise the student pilot to perform the checks and drills
- how to advise the student pilot to perform the different take-off techniques
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 13 - THE CIRCUIT APPROACH AND LANDING

OBJECTIVES:

To advise the student instructor on how to teach a student to fly a safe circuit approach and to land the aeroplane.

BRIEFING

The student instructor has to explain:

- the downwind leg, base leg, approach – position and drills
- the factors affecting the final approach and the landing run
- the effect of mass
- the effects of altitude and temperature
- the effect of wind
- the effect of flap
- the landing
- the effect of ground surface and gradient upon the landing run
- the types of approach and landing:
    - powered
    - crosswind
    - flapless (at an appropriate stage of the course)
    - glide
    - short field
    - soft field

- tail wheel considerations (as applicable)
- the missed approach / go around
- the engine handling
- wake turbulence / windshear awareness
- the air traffic control procedures
- the special emphasis on lookout

AIR EXERCISE

The student instructor has to demonstrate:

- how to perform the normal circuit procedures
- a powered approach and landing
- how to safeguard the nosewheel
- the effect of wind on approach, touchdown speeds and the use of Flaps
- how to perform a crosswind approach and landing
- the glide approach and landing
- the flapless approach and landing (short and soft field)
- the short field and soft field procedures
- the wheel landing (tail wheel aircraft)
- the missed approach/go around procedure
- the noise abatement procedures

The student instructor also has to demonstrate:

- how to advise the student pilot to fly a safe circuit approach
- how to advise the student pilot to perform the landing under different conditions
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 14 - FIRST SOLO AND CONSOLIDATION

OBJECTIVE

To advise the student instructor on how to prepare their students for the first solo flight.

BRIEFING

The student instructor has to explain

- the limitations of the flight (awareness of local area, restrictions)
- the use of required equipment

AIR EXERCISE

The student instructor has to demonstrate

- how to check with another instructor if the student can fly solo
- how to monitor the flight
- how to debrief the flight with the student

15 - ADVANCED TURNING

OBJECTIVES:

To advise the student instructor on how to teach to fly level, descending and climbing steep turns and how to recognise and avoid stalling or spinning in the turn.

BRIEFING

The student instructor has to explain:

- the forces
- the use of power
- the effect of load factor
- the structural considerations
- the increased stalling speed
- physiological effects
- the rate and radius of turn
- how to perform steep, level, descending and climbing Turns
- stalling in the turn and how to avoid it
- *spinning from the turn – recovery at the incipient stage
- *the spiral dive
- unusual attitudes and recoveries

* Considerations are to be given to manoeuvre limitations and reference to the Flight Manual/Pilot's Operating handbook in relation to mass and balance, and any other restrictions for practice entries to the spin.

AIR EXERCISE

The student instructor has to demonstrate:

- how to perform level, descending and climbing steep turns
- how to avoid stalling in the turn
- the spiral dive and how to recover
- spinning from the turn and how to recover
- recovery from unusual attitudes
- maximum rate turns

The student instructor also has to demonstrate:

- how to advise the student pilot to fly level, descending and climbing steep turns
- how to advise the student pilot to recover from unusual attitudes, stalling and spinning in the turn
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 16 - FORCED LANDING WITHOUT POWER

OBJECTIVES:

To advise the student instructor on how to teach students to select a landing area for a forced landing, to fly the circuit and to master the unusual landing situation.

BRIEFING

The student instructor has to explain:

- the selection of forced landing areas
- the provision for change of plan
- the gliding distance – consideration
- the planning of the descent
- the importance of key positions
- the engine failure checks
- the use of radio – R/T ‘distress’ procedure
- the circuit
- the go around procedures
- the landing considerations
- the actions after landing – aeroplane security
- the causes of engine failure

AIR EXERCISE

The student instructor has to demonstrate:

- the forced landing procedures
- the selection of landing area
- the provision for change of plan
- the use of the gliding distance considerations
- planning of the descent
- the engine failure checks
- the engine cooling precautions
- the use of radio
- the approach and the landing (if conducted at an aerodrome)
- aeroplane security

The student instructor also has to demonstrate:
- how to advise the student pilot to select a suitable landing area
- how to advise the student pilot to perform a forced landing
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 17 - PRECAUTIONARY LANDING

OBJECTIVES:

To advise the student instructor on how to teach students to select a landing area for a precautionary landing, to fly the circuit and to master the unusual landing situation.

BRIEFING

The student instructor has to explain:

- the occasions when necessary (in flight conditions)
- the landing area selection and communication (R/T Procedure)
- the overhead inspection
- simulated approach
- the climb away
- the landing at a normal aerodrome
- the landing at a disused aerodrome
- the landing on an ordinary field
- circuit and approach
- the actions after landing
- aeroplane security

AIR EXERCISE

The student instructor has to demonstrate:

- how to perform the landing area selection
- the overhead inspection
- the simulated approach
- the climb away
- the landing at a normal aerodrome
- landing at a disused aerodrome (if allowed under national legislation)
- the landing on an ordinary field (break off in a certain altitude)
- the circuit and approach

The student instructor also has to demonstrate:
- how to advise the student pilot to perform the landing area selection
- how to advise the student pilot to perform the simulated approach
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 18A - PILOT NAVIGATION

OBJECTIVES:

To advise the student instructor on how to teach students to plan, prepare and conduct a cross country flight.

FLIGHT PLANNING

BRIEFING

The student instructor has to explain:

- the weather forecast and actual(s)
- the map selection and preparation
- the choice of route

- the airspace structure
- the calculations
- the flight information
- how to file a flight plan

Aerodrome Departure

Organisation of Cockpit Workload

DEPARTURE PROCEDURES

BRIEFING

The student instructor has to explain:

- the altimeter settings
- the noting of ETA(s)

EN-ROUTE

BRIEFING

The student instructor has to explain:

- how to read a map – identification of ground
- the maintenance of altitudes and headings
- the revisions to ETA and heading, wind effect, drift angle and groundspeed checks
- the log keeping
- the use of radio (including VDF if applicable)
- the minimum weather conditions for continuance of flight
- the 'in flight' decisions, diversion procedures
- the operations in regulated/controlled airspace
- the procedures for entry, transit and departure
- navigation at minimum level
- the uncertainty of position procedure (Including R/T)
- the lost procedure

ARRIVAL

BRIEFING

The student instructor has to explain:

- the arrival procedures
- the aerodrome circuit joining procedures (controlled aerodromes)
- altimeter setting, ATC liaison, etc.
- how to enter the traffic pattern (uncontrolled aerodromes)

- the circuit procedures
- the parking procedures
- the security of aeroplane refuelling

AIR EXERCISE

The student instructor has to demonstrate:

- how to do the flight planning for a cross country flight
- how to do the additional departure procedures for a cross country flight
- how to organise the cockpit workload
- how to perform the en-route tasks:
    - revision to ETA and heading
    - log keeping
    - decisions on minimum weather conditions for continuance of flight
    - other "in flight" decisions
    - diversion and uncertainty of position procedures
- the arrival procedures
- the aerodrome joining procedures
- altimeter setting, ATC liaison, etc.
- how to enter the traffic pattern
- the circuit procedures
- the parking procedures

The student instructor also has to demonstrate:
- how to advise the student pilot to plan and prepare a cross country flight
- how to advise the student pilot to perform a cross country flight
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 18B - NAVIGATION AT LOWER LEVELS / REDUCED VISIBILITY

OBJECTIVES:

To advise the student instructor on how to familiarise student pilots with lower level flights or flights with reduced visibility.

BRIEFING

The student instructor has to explain:

- the planning requirements prior to flight in entry/exit lanes
- the ATC rules, pilot qualifications and aircraft equipment
- entry/exit lanes and areas where specific local rules apply
- the low level familiarisation:
    - actions prior to descending
    - visual impressions and height keeping at low altitude
    - effects of speed and inertia during turns

- effects of wind and turbulence

- the low level operation:
  - weather considerations
  - low cloud and good visibility
  - low cloud and poor visibility
  - avoidance of moderate to heavy rain showers
- the effects of precipitation
- how to join a circuit
- the bad weather circuit, approach and landing

AIR EXERCISE

The student instructor has to demonstrate:

- how to do the low level familiarisation
- how to do the low level operation
- how to perform a bad weather circuit, approach and landing

The student instructor also has to demonstrate:
- how to advise the student pilot to perform a low level operation
- how to advise the student pilot to perform a bad weather circuit, approach and landing
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 19 - BASIC NIGHT FLYING (if night instructional qualification required)

OBJECTIVES:

To advise the student instructor on how to teach student pilots to perform a flight at night.

BRIEFING

The student instructor has to give a summary of points to be covered before sending the student on a first solo at night. He should explain the following items:

- the start up procedures
- the local procedures - including ATC liaison
- taxiing
  - parking area and taxiway lighting
  - judgement of speed and distances
  - the use of taxiway lights
  - the avoidance of hazards – obstruction lighting
  - the instrument checks
- holding point – lighting procedure
- the initial familiarisation at night
- the local area orientation
- the significance of lights on other aircraft
- the ground obstruction lights

- the division of piloting effort – external/instrument reference
- the rejoining procedure
- the aerodrome lighting – approach and runway lighting (including VASI and PAPI)
- how to perform night circuits
    - take-off and climb
    - line up
    - visual references during the take-off run
    - transfer to instruments
    - establishing the initial climb
    - use of flight instruments
    - instrument climb and initial turn
    - aeroplane positioning – reference to runway lighting
    - the traffic pattern and lookout
    - the initial approach and runway lighting demonstration
    - the aeroplane positioning
    - intercepting the correct approach path
    - the climb away
    - positioning for approach and landing
    - diurnal wind effect
    - the use of landing lights
    - the flare and touchdown
    - the roll out
    - missed approach
- night navigation
- night emergencies
    - radio failure
    - failure of runway lighting
    - failure of aeroplane landing lights
    - failure of aeroplane internal lighting
    - failure of aeroplane navigation lights
    - total electrical failure
    - abandoned take-off
    - engine failure
    - obstructed runway procedure

AIR EXERCISE

The student instructor has to demonstrate:
- how to do plan and to perform a flight at night

The student instructor also has to demonstrate:
- how to advise the student pilot to plan and prepare a flight at night
- how to advise the student pilot to perform a flight at night
- how to analyse and correct errors as necessary

- airmanship

B. Helicopters

LONG BRIEFINGS AND AIR EXERCISES

1 Familiarisation with the helicopter

2 Preparation before and action after flight

3 Air experience

4 Effects of controls

5 Power and attitude changes

6 Level flight, climbing and descending and turning

7 Auto-rotations

8 Hovering and hover taxiing

9 Take-off and landing

10 Transitions from hover to climb and approach to hover

11 Circuits and emergencies

12 First solo

13 Sideways and backwards hover manoeuvring

14 Spot turns

15 Hover out of ground effect (OGE) and Vortex ring

16 Simulated engine off landings

17 Advanced auto-rotations

18 Practice forced landings

19 Steep turns

20 Transitions

21 Quick-stops

22 Navigation

23 Advanced take-offs, landings and transitions

24 Sloping ground

25 Limited power

26 Confined areas

27 Night flying (if night instructional qualification required)

NOTE: Airmanship should be included as required in each exercise.

EXERCISE 1 - FAMILIARISATION WITH THE HELICOPTER

OBJECTIVE

To advise the student instructor on how to familiarise the student with the helicopter which will be used for the training and to test his position in the aircraft for comfort, visibility, and ability to use all controls and equipment.

BRIEFING AND EXERCISE

The student instructor has to:

- present the type of helicopter which will be used
- explain the cockpit layout – instruments and equipment
- explain the characteristics of the helicopter and the engine systems
- explain and demonstrate the flight controls
- check the position of the student on the seat for comfort, visibility, ability to use all controls
- explain and demonstrate the use of the harness
- explain the differences when occupying the instructor's position
- explain all check lists, drills, controls
- familiarise the student pilot with the helicopter

EMERGENCY DRILLS

The student instructor has to

- explain the action in the event of fire in the air and on the ground (engine/cockpit/ electrical)
- explain systems failures and actions as applicable to type
- explain and demonstrate escape drills
- explain and demonstrate the location and use of emergency equipment and exits

EXERCISE 2 - PREPARATION FOR AND ACTION AFTER FLIGHT

OBJECTIVES

To advise the student instructor on how to explain and demonstrate all the operations to be completed prior to flight and how to explain the actions after flight.

BRIEFING

The student instructor has to explain:
- the manual, tech log (if applicable) and certificate of maintenance
- the equipment required for flight (maps, etc.)
- the external and internal checks
- the harness, seat and rudder pedal adjustment, (student comfort)
- the starting and after starting checks
- the system/power/serviceability checks (as applicable)
- closing down/shutting down the helicopter (including system checks)
- parking, leaving the helicopter (including safety/security as applicable)
- the completion of the helicopter serviceability documents

EXERCISE

The student instructor has to prepare and give a pre-flight briefing:

The student instructor has to demonstrate:

- that the required documents are on board
- that the equipment required for the intended flight is on board
- how to perform a pre-flight external and internal check
- how to verify in-limits mass and balance
- how to adjust harness as well as seat and/or rudder pedals

- the starting, warm up, system and power checks
- how to leave the aircraft

The student instructor also has to demonstrate:
- how to advise the student pilot in performing the pre-flight preparation
- how to advise the student pilot in performing the after flight actions
- how to analyse and correct pre-flight preparation errors of the student as necessary

EXERCISE 3 – AIR EXPERIENCE FLIGHT

OBJECTIVE

To advise the student instructor on how to familiarise the student pilot with being in the air, with the area around the airfield, to note his/her reactions in this situation, and to draw his/her attention to safety and look-out procedures

BRIEFING

The student instructor has to explain:
- the area around the airfield
- the need for looking out

AIR EXERCISE

The student instructor has to:
- demonstrate the cockpit procedures
- show the noteworthy references on the ground
- analyse the reactions of the student
- check that the student looks out (safety)
- demonstrate airmanship

EXERCISE 4 - EFFECTS OF CONTROLS

OBJECTIVES

To advise the student instructor on how to demonstrate the primary and further effects of the flying controls with the help of visual references and how to demonstrate the effects of airspeed, power changes, yaw, disc loading and control friction. The continuous and efficient look-out procedures have to be demonstrated during these exercises.

BRIEFING

The student instructor has to explain:
- the function of the flying controls (primary and secondary effect)
- the effect of airspeed
- the effect of power changes (torque)
- the effect of yaw (sideslip)
- the effect of disc loading (bank and flare)
- the effect on controls of selecting hydraulics on/off
- the effect of control friction
- the instruments
- the use of carburettor heat/anti-icing control
- the look out procedures

AIR EXERCISE

The student instructor has to demonstrate:
- the function of the flying controls
- the effects of airspeed
- the effect of power changes (torque)
- the effect of yaw (sideslip)
- the effect of disc loading (bank and flare)
- the effect on controls of selecting hydraulics on/off
- the effect of control friction
- the instruments (including instrument scan)
- the use of carburettor heat/anti-icing control
- the look-out procedures during all the exercises

The student instructor also has to demonstrate:
- how to advise the student pilot to recognise the primary and further effects of the controls
- how to advise the student to practice the use of flying controls
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 5 - POWER AND ATTITUDE CHANGES

OBJECTIVES

To advise the student instructor on how to explain and demonstrate power and attitude changes. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the relationship between cyclic control position, disc attitude, fuselage attitude, airspeed flapback
- the power required diagram in relation to airspeed
- power and airspeed changes in level flight
- the use of the instruments for precision
- the engine and airspeed limitations

AIR EXERCISE

The student instructor also has to demonstrate:
- the relationship between cyclic control position, disc attitude, fuselage attitude, airspeed flapback
- power and airspeed changes in level flight
- the use of instruments for precision (including instrument scan and lookout)

The student instructor also has to demonstrate:
- how to advise the student pilot to perform power and airspeed changes
- how to advise the student to use the instruments for precision
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 6 - LEVEL FLIGHT, CLIMBING, DESCENDING AND TURNING

NOTE: For ease of training this exercise can be divided into separate parts (see LPL(H) training syllabus) but may be also taught complete or in convenient parts

OBJECTIVES

To advise the student instructor on how to explain and demonstrate level flight, climbing, descending and turning and how to use the instruments for precision. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the basic factors involved in level flight
- the normal power settings
- the use of control friction and/or trim
- the importance of maintaining direction and balance
- the power required/power available diagram
- the optimum climb and descent speeds/angles/rates
- the importance of balance, attitude and co-ordination in the turn
- the effects of turning on rate of climb/descent
- the use of the gyro direction/heading indicator and compass
- the use of instruments for precision

AIR EXERCISE

The student instructor has to demonstrate:
- how to maintain straight and level flight at normal cruise power
- control in pitch, including use of control friction and/or trim
- the use of the ball / yawstring to maintain direction and balance
- setting and use of power for selected airspeeds/speed changes
- the entry to climb
- normal and maximum rate of climb
- levelling off from climb at selected altitudes/heights
- the entry to descent
- the effect of power and airspeed on rate of descent
- levelling off from descent at selected altitudes/heights
- the entry to medium rate turns
- the importance of balance, attitude and co-ordination to maintain level turn
- resuming straight and level flight
- turns onto selected headings, use of direction indicator and compass
- turns whilst climbing and descending
- the effect of turn on rate of climb or descent
- the use of instruments for precision (including instrument scan and lookout)

The student instructor also has to demonstrate:
- how to advise the student pilot to perform level flight and turning
- how to advise the student to perform climbing and descending
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 7 - AUTOROTATION

OBJECTIVES

To advise the student instructor on how to explain and demonstrate an autorotation. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:

- the characteristics of autorotation
- the safety checks (including lookout and verbal warning)
- the entry and development of autorotation
- the effect of AUM, IAS, disc loading, G forces and density altitude on RRPM and rate of descent rotor and engine limitations
- the control of airspeed and RRPM
- the recovery to powered flight
- throttle override and control of ERPM/RRPM during re-engagement (as applicable)
- the danger of vortex condition during recovery

AIR EXERCISE

The student instructor has to demonstrate:
- the safety checks (including verbal warning and lookout)
- the entry to and establishing in autorotation
- the effect of IAS and disc loading on RRPM and rate of descent
- the control of airspeed and RRPM
- the recovery to powered flight
- medium turns in autorotation
- a simulated engine off landing (as appropriate)

The student instructor also has to demonstrate:
- how to advise the student pilot to perform an autorotation
- how to analyse and correct student errors as necessary
- airmanship

EXERCISE 8 - HOVERING AND HOVER TAXIING

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the control and coordination during hover manoeuvres (hovering and hover taxiing). Furthermore the student instructor should learn how to identify student errors during hovering and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the ground effect and power required
- the effect of wind, attitude and surface
- the stability in hover and effects of over controlling
- the effects of controls in hover
- the control and co-ordination during spot turns
- the requirement for slow hover speed to maintain ground effect
- the effect of hydraulic failure in hover
- specific hazards, e.g. snow, dust, etc.

AIR EXERCISE

The student instructor has to demonstrate:
- the stability in hover and effects of over controlling
- the effects of controls and hover technique
- the gentle forward running touchdown
- control and co-ordination during spot (90 degree clearing) turns
- control and co-ordination during hover taxi
- the dangers of mishandling and overpitching
- (where applicable) the effect of hydraulics failure in hover

- simulated engine failure in the hover and hover taxi

The student instructor also has to demonstrate:
- how to advise the student pilot to perform hovering and hover taxiing
- how to analyse and correct student errors as necessary
- airmanship

EXERCISE 9 - TAKE-OFF AND LANDING

OBJECTIVES

To advise the student instructor on how to explain and demonstrate pre take off checks and drills, look out techniques, the take off and the landing. Furthermore the student instructor should learn how to identify student errors during take off and landing and how to correct them properly.

BRIEFING

The student instructor has to explain:

- the pre-take-off checks/drills
- the importance of good lookout
- the technique for lifting to hover
- the after take-off checks
- the danger of horizontal movement near ground
- the dangers of mishandling and overpitching
- the technique for landing
- the after landing checks
- the take-off and landing cross wind and downwind

AIR EXERCISE

The student instructor also has to demonstrate:
- how to perform the pre-take-off checks/drills
- the pre-take-off lookout technique
- the lifting to hover
- the after take-off checks
- the landing
- the after landing checks/drills
- the take-off and landing cross wind and downwind

The student instructor also has to demonstrate:
- how to advise the student pilot to perform the checks and drills
- how to advise the student to perform the look out techniques
- how to advise the student to use the different take-off / landing techniques
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 10 - TRANSITIONS FROM HOVER TO CLIMB AND APPROACH TO HOVER

OBJECTIVES

To advise the student instructor on how to explain and demonstrate transitions from hover to climb and from approach to hover. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain / revise:

- the ground effect
- the translational lift and its effects
- the inflow roll and its effects
- the flapback and its effects
- the avoid curve diagram and associated dangers
- the effect/dangers of wind speed/direction during transitions
- the transition to climb technique
- the constant angle approach
- the transition to hover technique

AIR EXERCISE

The student instructor has to demonstrate:
- the take-off and landing
- the transition from hover to climb
- the effects of translational lift, inflow roll and flapback
- the constant angle approach
- the technique for transition from descent to hover
- a variable flare simulated engine off landing

The student instructor also has to demonstrate:
- how to advise the student pilot to perform the transition from hover to climb
- how to advise the student pilot to perform the transition from approach to hover
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 11 - CIRCUIT, APPROACH AND LANDING

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the circuit, approach and landing techniques including missed approach procedures and emergency procedures. Furthermore the student instructor should learn how to identify student errors during circuit, approach and landing and how to correct them properly.

BRIEFING

The student instructor has to explain:

- the circuit and associated procedures
- the take-off and climb (including checks/speeds)
- the cross wind leg (including checks/speeds/angles of bank in turns)
- the downwind leg (including pre-landing checks)
- the base leg (including checks/speeds/angles of bank in turns)
- the final approach (including checks/speeds)
- the effect of wind on approach and hover IGE
- the cross wind approach and landing technique
- the missed approach and go around technique (as applicable)
- the steep approach technique (including danger of high sink rate)
- the limited power approach technique (including danger of high speed at touch down)
- the use of the ground effect
- the abandoned take-off technique
- the hydraulic failure drills and hydraulics off landing technique (where applicable)
- the drills/technique for tail rotor control/tail rotor drive failure
- the engine failure drills in the circuit to include
- the engine failures during take-off, circuit and approach
- the noise abatement procedures (as applicable)

AIR EXERCISE

The student instructor has to demonstrate:
- the transitions and constant angle approach
- a basic training circuit, including checks
- a cross wind approach and landing technique
- the missed approach and go around technique (as applicable)
- the steep approach technique
- the basic limited power approach/run on technique
- the use of ground effect
- hydraulic failure and approach to touchdown with hydraulics off
- how to recover at safe height (as applicable)
- the simulated engine failure on take-off, cross wind, downwind, base leg and finals
- variable flare simulated engine off landing

The student instructor also has to demonstrate:
- how to advise the student pilot to perform the circuit, approach and landing
- how to advise the student pilot to conduct a missed approach / go around
- how to advise the student pilot to react in emergency situations
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 12 - FIRST SOLO

OBJECTIVE

To advise the student instructor on how to prepare a students for the first solo flight.

BRIEFING

The student instructor has to explain

- the limitations of the flight (awareness of local area, restrictions)
- the change of attitude due to reduced and laterally displaced weight
- the use of required equipment

AIR EXERCISE

The student instructor has to demonstrate

- how to check with another instructor if the student can fly solo
- how to do the pre flight briefing together with the student pilot
- how to monitor the flight
- how to debrief the flight with the student

EXERCISE 13 - SIDEWAYS AND BACKWARDS HOVER MANOEUVRING

OBJECTIVES

To advise the student instructor on how to explain and demonstrate sideways and backwards hover manoeuvring. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to:

- revise the hovering techniques
- explain the directional stability and weathercocking effect
- explain the danger of pitching nose down on recovery from backwards manoeuvring
- explain the helicopter limitations for sideways and backwards manoeuvring
- explain the effect of C of G position

AIR EXERCISE

The student instructor has to demonstrate:
- hovering and 90 degree clearing turns
- manoeuvring sideways heading into wind
- manoeuvring backwards heading into wind
- manoeuvring sideways and backwards heading out of wind
- manoeuvring backwards too fast and recovery action

The student instructor also has to demonstrate:
- how to advise the student pilot to perform sideways and backwards hover manoeuvring
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 14 - SPOT TURNS

OBJECTIVES

To advise the student instructor on how to explain and demonstrate spot turns. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain / revise:
- the ground effect and effect of wind
- weathercocking and control actions
- the control of RRPM
- the torque effect
- the cyclic limiting stops due to C of G position (where applicable)
- the rate of turn limitations
- the spot turn about pilot position
- the spot turn about tail rotor position
- the spot turn about helicopter geometric centre
- square (safe visibility) clearing turn

AIR EXERCISE

The student instructor has to demonstrate:
- weathercocking, torque effect and control actions
- the rate of turn
- the spot turn about pilot position
- the spot turn about tail rotor position
- the spot turn about helicopter geometric centre
- the square, clearing turn

The student instructor also has to demonstrate:
- how to advise the student pilot to perform a spot turn
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 15 - HOVER OUT OF GROUND EFFECT AND VORTEX RING

OBJECTIVES

To advise the student instructor on how to explain and demonstrate hovering out of ground effect and vortex ring. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to revise / explain:

- the ground effect and power required diagram
- the drift/height/power control/lookout/scan
- the vortex ring, (including dangers, recognition and recovery actions)
- the loss of tail rotor effectiveness

AIR EXERCISE

The student instructor has to demonstrate:
- hover OGE
- the drift/height/power control/lookout and instrument scan technique
- the recognition of incipient stage of vortex ring/settling with power
- the recovery action from incipient stage of vortex ring
- the recognition of loss of tail rotor effectiveness and recovery actions

The student instructor also has to demonstrate:
- how to advise the student pilot to perform hovering out of ground effect and vortex ring
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 16 - SIMULATED ENGINE OFF LANDINGS

OBJECTIVES

To advise the student instructor on how to explain and demonstrate a simulated engine off landing.

BRIEFING

The student instructor has to:
- revise the basic autorotation
- revise the effect of AUM, disc loading, density altitude and RRPM decay
- revise the use of cyclic and collective to control speed/RRPM
- explain the torque effect
- explain the use of flare/turn to restore RRPM
- explain the technique for variable flare simulated EOL
- explain the technique for constant attitude simulated EOL
- revise the technique for hover/hover taxi simulated EOL
- explain the emergency technique for engine failure during transition
- explain the technique for low level simulated EOL

AIR EXERCISE

The student instructor has to demonstrate:
- the entry to and control in autorotation
- variable flare simulated EOL
- constant attitude simulated EOL
- hover simulated EOL
- hover taxi simulated EOL

- low level simulated EOL

The student instructor also has to demonstrate:
- how to advise the student pilot to perform a simulated engine off landing
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 17 - ADVANCED AUTOROTATIONS

OBJECTIVES

To advise the student instructor on how to train the student pilot to perform advanced autorotations. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to:
- explain the effect of airspeed/AUM on angles/rates of descent
- explain the effect of RRPM setting on angle/rate of descent
- explain the reason and technique for range autorotation
- explain the reason and technique for constant attitude autorotation
- explain the reason and technique for low speed and 'S' turns in autorotation
- explain the speed/bank limitations in turns in autorotation
- revise the re-engagement/go-around procedures

AIR EXERCISE

The student instructor has to demonstrate:
- how to select ground marker and standard datum height to determine distance covered during various autorotation techniques
- the basic autorotation
- the technique for range autorotation
- the technique for constant attitude autorotation
- the technique for low speed autorotation, including need for timely speed recovery
- the technique for 'S' turn in autorotation
- 180 and 360 degree turns in autorotation
- re-engagement and go-around technique

The student instructor also has to demonstrate:
- how to advise the student pilot to perform advanced autorotations
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 18 - PRACTICE FORCED LANDINGS

OBJECTIVES

To advise the student instructor on how to explain and demonstrate forced landings. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the types of terrain/surface options for choice of best landing area
- how to practice forced landing procedure
- how to perform forced landing checks and crash actions
- the rules/height for recovery and go-around

AIR EXERCISE

The student instructor also has to demonstrate:
- the recognition of types of terrain from normal cruise height/altitude
- the practicing of forced landing technique
- the recovery/go-around technique

The student instructor also has to demonstrate:
- how to advise the student pilot to perform forced landings
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 19 - STEEP TURNS

OBJECTIVES

To advise the student instructor on how to explain and demonstrate steep turns. Furthermore the student instructor should learn how to identify student errors during steep turns and how to correct them properly.

BRIEFING

The student instructor has to:
- explain the airspeed/angle of bank limitations
- explain the technique for co-ordination to hold bank/attitude
- revise speed/bank limitations in autorotation including RRPM control
- explain the significance of disc loading, vibration and control feedback
- explain the effect of wind in turns at low level

AIR EXERCISE

The student instructor has to demonstrate:
- the technique for turning at 30 degrees of bank
- the technique for turning at 45 degrees of bank (where possible)
- steep autorotative turns
- the effect of wind at low level

The student instructor also has to demonstrate:
- how to advise the student pilot to perform steep turns
- how to analyse and correct faults in the turn (balance, attitude, bank and co-ordination)
- airmanship

EXERCISE 20 - TRANSITIONS

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the techniques for transitions. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to:

- revise the effect of ground cushion, translational lift, flapback
- explain the training requirement for precision exercise
- explain the technique for transition to forward flight and back to hover as precision exercise
- explain the effect of wind

AIR EXERCISE

The student instructor has to demonstrate:
- the transition from hover to minimum 50 knots IAS and back to hover
(Note: select constant height (20 - 30 feet) and maintain)
- the effect of wind

The student instructor also has to demonstrate:
- how to advise the student pilot to perform transitions
- how to analyse and correct faults / errors
- airmanship

EXERCISE 21 - QUICKSTOPS

OBJECTIVES

To advise the student instructor on how to explain and demonstrate quickstops. Furthermore the student instructor should learn how to identify student errors during and how to correct them properly.

BRIEFING

The student instructor has to:

- explain the power control co-ordination
- revise the effect of wind
- explain the technique for quickstop into wind
- explain the technique for quickstop from cross wind
- revise airspeed/angles of bank limitations
- explain the technique for Emergency turn from downwind
- explain the technique for quickstop from downwind from high speed - flare and turn
- explain the technique for quickstop from downwind from low speed - turn and flare
- explain the danger of holding flare when downwind, (vortex ring) - (minimum speed 70 knots)
- revise the danger of high disc loading

AIR EXERCISE

The student instructor has to demonstrate:
- the technique for quickstop into wind
- the technique for quickstop from cross wind
- the danger of vortex ring and disc loading
- the technique for quickstop from downwind with low speed
- the technique for quickstop from downwind with high speed
- emergency turns from downwind

The student instructor also has to demonstrate:
- how to advise the student pilot to perform quickstops
- how to analyse and correct faults / errors
- airmanship

EXERCISE 22 - NAVIGATION

(to be broken down into manageable parts at discretion of instructor)

OBJECTIVES

To advise the student instructor on how to teach students to plan, prepare and conduct a cross country flight. Furthermore the student instructor should learn how to identify student errors during the cross country flight and how to correct them properly.

FLIGHT PLANNING

BRIEFING

The student instructor has to explain:
- the use of weather forecasts/actuals
- the map selection, orientation, preparation and use
- the route choice with particular regard to:
- the airspace structure
- the safety altitudes
- the calculations (magnetic heading(s), time(s) en route, fuel consumption, mass and balance)
- the use of flight information (NOTAM's, radio frequencies, selection of alternate landing sites)
- the helicopter documentation
- the notification of the flight (pre-flight administration procedures, flight plan form)

DEPARTURE

The student instructor has to explain:
- the importance of organisation of cockpit workload
- the departure procedures
- the log keeping
- the use of radio and navaids
- weather monitoring and minimum weather conditions for continuation of flight
- the significance of in flight decision making
- the technique for transiting controlled/regulated airspace
- the uncertainty of position procedure
- the lost procedure

ARRIVAL

The student instructor has to explain:
- the aerodrome joining procedure
- the parking procedures

AIR EXERCISE

The student instructor has to demonstrate:

- how to do the flight planning for a cross country flight
- how to do the additional departure procedures for a cross country flight
- how to organise the cockpit workload
- how to perform the en-route tasks:
    - log keeping
    - decisions on minimum weather conditions for continuance of flight
    - other "in flight" decisions
    - diversion and uncertainty of position / lost procedures
- the arrival procedures
- the aerodrome joining procedures
- the circuit procedures
- the parking procedures

The student instructor also has to demonstrate:
- how to advise the student pilot to plan and prepare a cross country flight
- how to advise the student pilot to perform a cross country flight
- how to analyse and correct errors as necessary

- airmanship

NAVIGATION PROBLEMS AT LOW HEIGHTS AND REDUCED VISIBILITY

The student instructor has to explain:
- the actions prior to descending
- the significance of hazards, (e.g. obstacles, other traffic)
- the difficulties of map reading
- the effects of wind and turbulence
- the significance of avoiding noise sensitive areas
- the procedures for joining a circuit from low level
- the procedures for a bad weather circuit and landing

AIR EXERCISE
The student instructor has to demonstrate:
- the navigation procedures as necessary
- the map reading techniques
- how to perform the calculations
- how to perform the revision of headings and ETA's

Furthermore the student instructor has to demonstrate:
- how to advise the student pilot to solve navigation problems at low heights / reduced visibility
- how to analyse and correct student errors

EXERCISE 23 - ADVANCED TAKE-OFF, LANDINGS, TRANSITIONS

OBJECTIVES

To advise the student instructor on how to teach students to perform advanced take-offs, landings and transitions. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to:
- revise the landing and takeoff out of wind (performance reduction)
- revise the wind limitations
- revise the directional stability variation when out of wind
- revise the power required diagram
- explain the technique for downwind transitions
- explain the technique for vertical take-off over obstacles
- explain the reconnaissance technique for landing site
- explain the power checks
- explain the technique for running landing
- explain the technique for zero speed landing
- explain the technique for cross wind and downwind landings
- explain the steep approach, including dangers
- revise the go around procedures

AIR EXERCISE
The student instructor has to demonstrate:
- how to perform the technique for downwind transition
- how to perform the technique for vertical take-off over obstacles
- how to perform the reconnaissance technique for landing site
- how to do the power check and assessment
- how to perform the technique for running landing
- how to perform the technique for zero speed landing
- how to perform the technique for cross wind and downwind landings

- how to perform the technique for steep approach
- go around procedures

The student instructor also has to demonstrate:
- how to teach the student pilot to perform advanced take-offs, landings and/or transitions
- how to analyse and student correct errors as necessary

EXERCISE 24 - SLOPING GROUND

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the different techniques for take-offs and/or landings skid up and/or nose up slope. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:

- the limitations
- the wind and slope relationship, including blade and control stops
- the effect of C of G when on slope
- the ground effect and power required when on slope
- the landing technique when on slope, left, right and nose-up
- the avoidance of dynamic rollover, dangers of soft ground and sideways movement
- the dangers of overcontrolling near ground on slope
- the danger of striking main/tail rotor on up slope

AIR EXERCISE

The student instructor has to demonstrate:
- the technique for assessing slope angle
- the technique for landing/take-off left skid up slope
- the technique for landing/take-off right skid up slope
- the technique for landing nose up slope
- the dangers of over controlling near ground

The student instructor also has to demonstrate:
- how to advise the student pilot to perform nose up or skid up slope take-offs/landings
- how to analyse and correct faults / errors
- airmanship

EXERCISE 25 - LIMITED POWER

OBJECTIVES

To advise the student instructor on how to explain and demonstrate limited power exercises. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the use of appropriate helicopter performance graphs
- the selection of technique according to available power
- the effect of wind on available power

AIR EXERCISE

The student instructor has to revise and refine the techniques demonstrated in exercise 23.

EXERCISE 26 - CONFINED AREAS

OBJECTIVES

To advise the student instructor on how to teach students the approach, landing and take-off procedures for confined areas. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to revise / explain:
- the use of helicopter performance graphs
- the procedure for locating landing site and selecting site marker
- the procedures for assessing wind speed/direction
- the landing site reconnaissance techniques
- the reason for selecting landing markers
- the procedure for selecting direction and type of approach
- the dangers of out of wind approach
- the circuit procedures
- the reason for approach to committal point and go around, (practice approach)
- the approach technique
- the clearing turn and landing, (sloping ground technique)
- the hover power check/performance assessment IGE and OGE, (if necessary)
- the take-off procedures

AIR EXERCISE

The student instructor has to demonstrate:
- the procedure for locating landing site and selecting site marker
- the procedure for assessing wind speed/direction
- the landing site reconnaissance techniques
- how to select landing markers, direction and type of approach
- the circuit procedure
- how to practice the approach, go around and approach technique
- the clearing turn and landing, (sloping ground technique)
- the hover power check/performance assessment IGE and OGE, (if necessary)
- the take-off procedures

The student instructor also has to demonstrate:
- how to advise the student pilot to perform the techniques for confined areas
- how to analyse and correct faults / errors
- airmanship

EXERCISE 27 - NIGHT FLYING (if night instructional qualification required)

OBJECTIVES

To advise the student instructor on how to teach student pilots to perform a flight at night.

BRIEFING

The student instructor has to explain:

- the medical/physiological aspects of night vision

- the requirement for torch to be carried, (pre-flight inspection, etc.)
- the use of the landing light
- the take-off and hover taxi procedures at night
- the night take-off procedure
- the cockpit procedures at night
- the approach techniques
- the night landing techniques
- the night autorotation techniques (power recovery at safe height)
- the technique for practice forced landing at night (using appropriate illumination)
- the emergency procedures at night
- the navigation principles at night
- the map marking for night use, (highlighting built up/lit areas with thicker lines, etc.)

AIR EXERCISE

The student instructor has to demonstrate:

- the use of torch for pre-flight inspection
- the use of the landing light
- a night take-off to hover, (no sideways or backwards movement)
- a night hover taxi, (higher and slower than by day)
- a night transition procedure
- a night circuit
- a night approach and landing, (including use of landing light)
- a night autorotation (power recovery at safe height)
- how to perform a forced landing at night, (using appropriate illumination)
- night emergency procedures
- night cross country techniques, as appropriate

The student instructor also has to demonstrate:
- how to advise the student pilot to perform a flight at night
- how to analyse and correct errors as necessary

C. Sailplanes

LONG BRIEFINGS AND AIR EXERCISES

1 Familiarisation with the sailplane

2 Procedures in the event of emergencies

3 Preparation for flight

4 Initial air experience

5 Effects of controls

6 Moderate Banking - coordination

7 Straight flying

8 Turning

9 Slow flight

10 Stalling

11A Spin recognition and avoidance

11B Developed spins – entry and recovery

12 Take-off / Launch methods

12A Winch launch

12B Aero tow

12C Self-launch

12D Car launch

13 Soaring Techniques

13A Thermalling

13B Ridge flying (if applicable during training and if possible at training site)

13C Wave flying (if applicable during training and if possible at training site)

14 Circuit, approach and landing

15 First solo

16 Advanced turning

17 Out-landings

18 Cross country flying

18A Flight Planning

18B In-Flight Navigation

18C Cross country soaring techniques

NOTE: Although exercise 11B is not required for the LPL course, it is a requirement for the LAFI course.

EXERCISE 1 - FAMILIARISATION WITH THE SAILPLANE

OBJECTIVE

To advise the student instructor on how to familiarise the student with the sailplane which will be used for the training and to test his position in the sailplane for comfort, visibility, and ability to use all controls and equipment.

BRIEFING AND EXERCISE

The student instructor has to:

- present the type of sailplane which will be used
- explain the cockpit layout – instruments and equipment
- explain the flight controls - stick, pedals, airbrakes, flaps, cable release, undercarriage
- check the position of the student on the seat for comfort, visibility, ability to use all controls
- explain the use of the harness
- demonstrate how to adjust the rudder pedal
- explain the differences when occupying the instructor's position
- explain all check lists, drills, controls

EXERCISE 2 - PROCEDURE IN THE EVENT OF EMERGENCIES

OBJECTIVE

To advise the student instructor on how to familiarise the student with the use of the parachute and how to explain the bail out procedure in case of emergency

BRIEFING

The student instructor has to:

- explain how to handle the parachute with care (transport, storage, drying after use)
- demonstrate the adjustment of the parachute harness
- explain the bail out procedure (especially from a sailplane in unusual attitude)
- explain the procedure for landing with a parachute in normal conditions and with a strong wind

EXERCISE 3 - PREPARATION FOR FLIGHT

OBJECTIVE:

To advise the student instructor on how to explain all the operations to be completed prior to flight

BRIEFING

The student instructor has to explain:

- the need for a pre-flight briefing
- the structure and the content of this briefing
- which documents are required on board
- which equipment are required for a flight
- how to handle the sailplane on the ground / how to move it/ how to tow it out, how to park it
- how to do the pre-flight external and internal checks
- the procedure for verifying in-limits mass and balance
- the pre-launch checks (check list)

PRACTICAL EXERCISE

The student instructor has to prepare and give a pre-flight briefing:

The student instructor has to demonstrate:

- that the required documents are on board
- that the equipment required for the intended flight is on board
- how to handle the sailplane on the ground / move it to the start position / tow it out, park it
- how to perform a pre-flight external and internal check
- how to verify in-limits mass and balance
- how to adjust harness as well as seat and/or rudder pedals
- the pre-launch checks

The student instructor also has to demonstrate:

- how to advise the student pilot in performing the pre-flight preparation
- how to analyse and correct pre-flight preparation errors as necessary

EXERCISE 4 - INITIAL AIR EXPERIENCE

OBJECTIVE

To advise the student instructor on how to familiarise the student with being in the air, with the area around the airfield, to note his/her reactions in this situation, and to draw his/her attention to safety and look-out procedures

BRIEFING

The student instructor has to explain:

- the area around the airfield
- the need for looking out

AIR EXERCISE

The student instructor has to:

- show the noteworthy references on the ground
- analyse the reactions of the student
- check that the student looks out (safety)
- demonstrate airmanship

EXERCISE 5

PRIMARY EFECTS OF CONTROLS

OBJECTIVE

To advise the student instructor on how to:

- demonstrate the primary effects of each control with the help of visual references
- train the student pilot to recognise when the sailplane is no longer in a normal attitude along one of the axes and to return to the normal attitude
- train continuous and efficient look-out during these exercises
- analyse and correct errors and student pilot mistakes as necessary

BRIEFING

The student instructor has to define the axes of a sailplane

The student instructor has to explain:

- the look-out procedures
- the visual references along each axis
- the primary effects of controls when laterally level
- the relationship between attitude and speed
- the use of flaps
- the use of airbrakes

AIR EXERCISE

The student instructor has to demonstrate:

the visual references in flight

- the primary effect of the elevator

- the relationship between attitude and speed (inertia)
- the primary effect of rudder on the rotation of the sailplane around the vertical axis
- the primary effect of ailerons on banking
- the effect of airbrakes (including changes in pitch when airbrakes are extended or retracted)
- the effects of flaps (provided the sailplane has flaps)
- the look-out procedures during all the exercises
- airmanship

The student instructor also has to demonstrate:

- how to advise the student pilot to recognise the primary effects of each control
- how to analyse and correct errors as necessary

EXERCISE 6 - BANKING AT MODERATE ANGLE - COORDINATION

OBJECTIVE

To advise the student instructor on secondary effects of controls and on how to teach the student to coordinate ailerons and ruder in order to compensate for the adverse yaw effect.

BRIEFING

The student instructor has to explain:

- the secondary effects of controls
- the adverse yaw effect
- how to compensate for the adverse yaw
- the further effect of the rudder (roll)

AIR EXERCISE

The student instructor has to demonstrate

- the adverse yaw effect with a reference on ground
- the further effect of the rudder (roll)
- the coordination of ruder and aileron controls to compensate for the adverse yaw effects
- moderate banking (20 to 30 °) and return to the level flight

The student instructor also has to demonstrate:

- how to advise the student pilot to coordinate ailerons and rudder
- how to analyse and correct errors as necessary

EXERCISE 7 - STRAIGHT FLYING

OBJECTIVE

To advise the student instructor on how to train the student to maintain straight and level flight with a constant heading without slipping and skidding.

BRIEFING

The student instructor has to:

-explain how to maintain straight flight

-explain airspeed limitations (Vne)

-explain the pitch stability of the sailplane

-explain the effect of trimming

AIR EXERCISE

The instructor student has to demonstrate:

- maintaining straight flight
- inherent pitch stability
- the control of the sailplane in pitch, including use of trim with visual references and airspeed
- how to perform the instrument monitoring
- the control of level attitude with visual references
- the control of the heading with a visual reference on the ground
- the look-out procedures during all the exercises

The student instructor also has to demonstrate:

- how to advise the student pilot to maintain straight and level flight
- how to analyse and correct errors as necessary
- airmanship

EXERCISE 8 - TURNING

OBJECTIVE

To advise the student instructor on how to teach students to fly turns and circles with a moderate constant bank of about 30 ° with constant attitude (speed) and coordinated flight.

BRIEFING

The student instructor has to explain:

- the forces on the sailplane during a turn
- the need to look out before turning
- the sequences of a turn (entry, stabilizing, exiting)
- the common faults during a turn
- how to turn on to selected headings, use of compass
- the use of instruments (ball indicator and/or slip string) for precision

AIR EXERCISE

The student instructor has to demonstrate:

- the look-out procedure before turning
- entering a turn (correction of adverse yaw)

- the stabilisation of a turn (keeping the attitude and compensating the induced roll)
- the exit from a turn
- the most common faults in a turn
- turns on to selected headings (use landmarks as reference)
- use of instruments (ball indicator and/or slip string) for precision

The student instructor also has to demonstrate:
- how to advise the student pilot to fly a turn / circle with a moderate bank
- how to analyse and correct errors as necessary

EXERCISE 9 - SLOW FLIGHT

OBJECTIVE

To advise the student instructor on how to improve the student's ability to recognise inadvertent flight at critically low speeds (high angle of attack) and to provide practice in maintaining the sailplane in balance while returning to normal attitude (speed).

BRIEFING

The student instructor has to explain

- the characteristics of slow flight
- the risks of stalling

AIR EXERCISE

The student instructor has to:

- Check that the airspace below the sailplane is free of other aircraft before starting the exercise

The student instructor has to demonstrate:

- a controlled flight down to critically high angle of attack (slow airspeed), and draw the attention of the student to the nose up attitude, reduction of noise, reduction of speed
- a return to the normal attitude (speed)
- airmanship

The student instructor also has to demonstrate:
- how to advise the student pilot to recognise inadvertent flight at critically low speeds
- how to provide practice in maintaining the sailplane in balance while returning to normal attitude
- how to analyse and correct errors as necessary

EXERCISE 10 - STALLING

OBJECTIVE

To advise the student Instructor on how to improve the student's ability to recognize a stall and to recover from it. This includes stall from a level flight and stalls when a wing drops.

BRIEFING

The student instructor has to explain

- the mechanism of a stall
- the effectiveness of the controls at the Stall
- pre-stall symptoms, recognition and recovery
- factors affecting the stall (importance of the angle of attack, high speed stall)
- effect of flaps if any on the sailplane
- the effects of unbalance at the stall safety checks
- stall symptoms, recognition and recovery
- recovery when a wing drops
- approach to stall in the approach and in the landing configurations - recognition and recovery from accelerated stalls

AIR EXERCISE

The student instructor has to check that the airspace below the sailplane is free of other aircraft/traffic before starting the exercise The student instructor should demonstrate:

- stall from a level flight
- pre-stall symptoms, recognition and recovery
- stall symptoms, recognition and recovery
- recovery when a wing drops
- approach to stall in the approach and in the landing configurations
- recognition and recovery from accelerated stalls
- stalling and recovery at the incipient stage with 'instructor induced' distractions

The student instructor also has to demonstrate:

- how to improve the student pilot's ability to recognise a stall and to recover from it
- how to analyse and correct errors as necessary
- airmanship

NOTE: Consideration is to be given to manoeuvre limitations and references to The Owners'/Flight manual or Pilot's Operating Handbook in relation to Mass and Balance limitations. These factors are also covered in the next exercise.

EXERCISE 11A - SPIN RECOGNITION AND AVOIDANCE

OBJECTIVES

To advise the student Instructor on how to improve the student's ability to recognize a spin at the incipient stage and to recover from it.

BRIEFING

The student instructor has to explain

- why a sailplane spins
- how to recognise the symptoms of a spin (not to be confused with spiral dive)

- what are the parameters influencing the spin
- how to recover from a spin

AIR EXERCISE

The student instructor has to check that the airspace below the sailplane is free of other aircraft/traffic before starting the exercise

The student instructor has to demonstrate:

- stalling and recovery at the incipient spin stage (stall with excessive wing drop, about 45°)
- airmanship

The student instructor also has to:

- make sure that the student recognises the spin entry
- make sure that the student pilot is able to recover from the spin
- check if the student still reacts properly if the instructor induces distractions during the spin entry
- demonstrate how to analyse and correct errors as necessary

NOTE: Consideration of manoeuvre limitations and the need to refer to the sailplane manual and mass and balance calculations.

EXERCISE 11B - DEVELOPED SPINS – ENTRY AND RECOVERY

OBJECTIVES:

To advise the student instructor on how to recognize a developed spin and to recover from it

BRIEFING

The student instructor has to explain

- the spin entry
- the symptoms of a real spin and the recognition and identification of Spin Direction
- the spin recovery
- use of controls
- effects of flaps (flap restriction applicable to type)
- the effect of the C of G upon spinning characteristics
- the spinning from various flight attitudes
- the sailplane limitations
- airmanship – safety checks
- common errors during recovery

AIR EXERCISE

The student instructor has check that the airspace below the sailplane is free of other aircraft/traffic before starting the exercise

The student instructor has to demonstrate:

- safety checks
- the spin entry
- the recognition & identification of the spin direction
- the spin recovery (reference to Flight Manual)
- the use of controls
- the effects of flaps (restrictions applicable to aeroplane type)
- spinning and recovery from various flight attitudes
- airmanship

The student instructor also has to demonstrate:

- how to improve the student pilot's ability to recognise a spin and how to recover from it
- how to analyse and correct errors as necessary

EXERCISES 12 - TAKE OFF/ LAUNCH METHODS

NOTE: the student instructor has to teach at least one of the following launch methods: winch launch, aero tow, self launch.

EXERCISE 12A

WINCH LAUNCH

OBJECTIVES

To advise the student instructor on how to teach winch launches and on how to make sure that their student will manage an aborted launch.

BRIEFING

The student instructor has to explain:

- the signals and /or communication before and during launch
- the use of the launching equipment
- the pre-take-off checks
- the procedure for into wind take-off
- the procedure for crosswind take-off
- the optimum profile of winch launch and limitations
- the launch failure procedures

AIR EXERCISE

The student instructor has to demonstrate:

- the use of the launching equipment
- the pre-take-off checks

- the into wind take-off
- the crosswind take-off
- the optimum profile of winch launch and limitations
- the procedure in case of cable break or aborted launch, launch failure procedures
- airmanship

The student instructor also has to demonstrate:

- how to teach the student pilot to perform safe winch launches
- how to teach the student pilot to manage an aborted launch (different altitudes)
- how to analyse and correct errors as necessary

EXERCISE 12B - AERO TOW

OBJECTIVES

To advise the student instructor on how to teach aero towing and on how to make sure that their student will manage an aborted launch.

BRIEFING

The student instructor has to explain:

- the signals and/or communication before and during launch
- the use of the launch equipment
- the pre-take-off checks
- the procedure for into wind take-off
- the procedure for crosswind take-off
- the procedure on tow – straight flight / turning / slip stream
- the recovery from out-of-position on tow
- the procedures in case of launch failure and abandonment
- the descending procedure on tow (towing aircraft and sailplane)

AIR EXERCISE

The student instructor has to demonstrate:

- the signals before and during launch
- the use of the launch equipment
- the pre-take-off checks
- the procedure for into wind take-off
- the procedure for a crosswind take-off
- the procedures on tow – straight flight / turning / slip stream
- the recovery from out-of-position on tow
- the procedure in case of launch failure and abandonment
- the descending procedure on tow

- airmanship

The student instructor also has to demonstrate:

- how to teach the student pilot to perform safe aero tow launches
- how to teach the student pilot to manage an aborted launch
- how to analyse and correct errors as necessary

BRIEFING EXERCISE 12C - SELF LAUNCH

OBJECTIVES

To advise the student instructor on how to teach launching with a self launching sailplane and on how to make sure that their student will manage an aborted launch.

BRIEFING

The student instructor has to explain:

- the engine extending and retraction procedures
- the engine starting and safety precautions
- the pre-take-off checks
- the noise abatement procedures
- the checks during and after take-off
- the into wind take-off
- the crosswind take-off
- the procedure in case of power failure
- the procedure in case of abandoned take-off
- the maximum performance (short field and obstacle clearance) take-off
- the short take-off and soft field procedure / techniques and performance calculations

AIR EXERCISE

The student instructor has to demonstrate:

- the engine extending and retraction procedures
- the engine starting and safety precautions
- the pre-take-off checks
- the noise abatement procedures
- the checks during and after take off
- the into wind take-off
- the crosswind take-off
- the power failures / procedures
- the procedure in case of abandoned take-off
- the maximum performance (short field and obstacle clearance) take-off
- the short take-off and soft field procedure / techniques and performance calculations
- airmanship

The student instructor also has to demonstrate:

- how to teach the student pilot to perform safe self launches
- how to teach the student pilot to manage an aborted launch (different altitudes)
- how to analyse and correct errors as necessary

EXERCISE 13 - SOARING TECHNIQUES

NOTE: If the weather conditions during the instructor training do not allow the practical training of soaring techniques, all items of the air exercises have to be discussed and explained during a long briefing exercise only.

EXERCISE 13A - THERMALLING

OBJECTIVES

To advise the student instructor on how to teach their students to recognise and detect thermals, on how to join a thermal and on how to look out, in order to avoid mid-air collisions.

BRIEFING

The student instructor has to explain

- the look-out procedures
- the detection and recognition of thermals
- the use of audio soaring instruments
- the procedure for joining a thermal and giving way
- how to fly in close proximity to other sailplanes
- how to centre in thermals
- how to leave thermals

AIR EXERCISE

The student instructor has to demonstrate

- the look-out procedures
- the detection and recognition of thermals
- the use of audio soaring instruments
- the procedure for joining a thermal and giving way
- the procedure for flying in close proximity to other sailplanes
- the centering in thermals
- the procedure for leaving thermals
- airmanship

The student instructor also has to demonstrate:
- how to improve the student pilot's ability to recognise and detect thermals
- how to improve the student pilot's ability to join a thermal and how to look out
- how to analyse and correct errors as necessary

EXERCISE 13B - RIDGE FLYING

OBJECTIVE

To advise the student instructor on how to teach their students to fly safely on ridges, to control their speed, and to apply the rules in order to avoid mid-air collisions.

BRIEFING

The student instructor has to explain:

- the look-out procedures
- the ridge flying rules
- the recognition of optimum flight path
- speed control

AIR EXERCISE (if applicable during training and, if possible, at training site)

The student instructor has to demonstrate:

- the look-out procedures
- the practical application of ridge flying rules
- the recognition of optimum flight path
- speed control
- airmanship

The student instructor also has to demonstrate:

- how to teach the student pilot to fly safely on ridges
- how to analyse and correct errors as necessary

EXERCISE 13C - WAVE FLYING

OBJECTIVES

To advise the student instructor on how to introduce students to wave flying and to teach them to fly safely at high altitude.

BRIEFING

The student instructor has to explain:

- the look-out procedures
- the techniques to be used to accede to a wave
- the speed limitations with increasing height
- the risks of hypoxia and the use of oxygen

AIR EXERCISE (if applicable during training and if possible at training site)

The student instructor has to demonstrate:

- the look-out procedures

- the wave access techniques
- the speed limitations with increasing height
- the use of oxygen (if available)
- airmanship

The student instructor also has to demonstrate:
- how to improve the student pilot's ability to recognise and detect waves
- how to teach the student pilot to fly safely in a wave
- how to analyse and correct errors as necessary

EXERCISE 14 - CIRCUIT APPROACH AND LANDING

OBJECTIVES

To advise the student instructor on how to teach their students to fly a safe circuit approach and to land the sailplane

BRIEFING

The student instructor has to explain:

- the procedures for rejoining the circuit
- the procedures for collision avoidance and the look -out techniques
- the normal circuit procedures, downwind, base leg
- the effect of wind on approach and touchdown speeds
- the visualisation of a reference point
- the approach control and use of airbrakes
- the use of flaps (if applicable)
- the procedures for normal and crosswind approach and landing

AIR EXERCISE

The student instructor has to demonstrate:

- the procedures for rejoining the circuit
- the procedures for collision avoidance and the look- out techniques
- the standard circuit and contingency planning (e.g. running out of height)
- the effect of wind on approach and touchdown speeds
- the visualisation of an aiming point
- the approach control and use of airbrakes
- the use of flaps (if applicable)
- the procedures for normal and crosswind approaches and landings
- airmanship

The student instructor also has to demonstrate:
- how to teach the student pilot to fly a safe circuit approach
- how to improve the student pilot's ability to perform a safe landing
- how to analyse and correct errors as necessary

EXERCISE 15 - FIRST SOLO

OBJECTIVE

To advise the student instructor on how to prepare their students for the first solo flight.

BRIEFING

The student instructor has to explain

- the limitations of the flight (awareness of local area, restrictions)
- the use of required equipment

AIR EXERCISE

The student instructor has to

- check with another/more senior instructor if the student can fly solo
- monitor the flight
- debrief the flight with the student

EXERCISE 16 - ADVANCED TURNING

OBJECTIVES

To advise the student instructor on how to fly steep turns or circles (30-40° banking) at constant attitude (speed) and with the yaw string centred.

BRIEFING

The student instructor has to explain

- the relationship between banking and speed
- how to master steep turns or circles
- the unusual attitudes which can occur (stalling/spinning, spiral dive)
- how to recover from these unusual attitudes

AIR EXERCISE

The student has to demonstrate:

- steep turns (45°) at constant speed and with the yaw string centred
- common errors (slipping, skidding)
- unusual attitudes and how to recover from them
- airmanship

The student instructor also has to demonstrate:

- how to teach the student pilot to fly steep turns or circles
- how to analyse and correct errors as necessary

EXERCISE 17 - OUT-LANDINGS

NOTE: If the weather conditions during the instructor training do not allow the practical training of outlanding procedures (a touring motor glider may be used) all items of the air exercise have to be discussed and explained during a long briefing exercise only.

OBJECTIVE

To advise the student instructor on how to teach students to select an out-landing field, to fly the circuit and how to master the unusual landing situation.

BRIEFING

The student instructor has to explain

- the gliding range at max L/D
- the engine re-start procedures (only for self-launching and self-sustaining sailplanes)
- the selection of a landing area
- the circuit judgement and key positions
- the circuit and approach procedures
- the actions to be done after landing

AIR EXERCISE

The student instructor has to demonstrate:

- precision landings on the airfield
- the gliding range
- the procedures for joining, arrival and circuit at a remote aerodrome
- the selection of an out-landing area
- the procedures for circuit and approach on an out-landing field, procedures
- the actions to be done after landing
- airmanship

The student instructor also has to be trained:
- how to advise the student pilot to do perform a safe outlanding
- how to master an unusual landing situation
- how to analyse and correct errors as necessary

EXERCISE 18 - CROSS COUNTRY FLYING

NOTE: If the weather conditions during the instructor training do not allow a cross country training flight the items of the air exercise have to be discussed and explained during a long briefing exercise only.

EXERCISE 18A - FLIGHT PLANNING

OBJECTIVES

To advise the student instructor on how plan and prepare a cross-country flight

BRIEFING

The student instructor has to explain

- the weather forecast and current situation
- the selection of the amount of water to be carried as a function of the weather forecast
- the method for selecting a task, taking into account the average speed to be expected
- the map selection and preparation
- the NOTAMS, airspace considerations
- the radio frequencies (if applicable)
- the pre-flight administrative procedures
- the procedure for filing a flight plan where required
- alternate aerodromes and landing areas

EXERCISE 18B - IN-FLIGHT NAVIGATION

OBJECTIVES

To advise the student instructor on how to teach performing a cross-country flight

BRIEFING

The student instructor has to explain

- how to maintain track and re-route if necessary
- the altimeter settings
- the use of radio and phraseology
- the in-flight planning
- the procedures for transiting regulated airspace / ATC liaison where required
- the procedure in case of uncertainty of position
- the procedure in case of becoming lost

AIR EXERCISE

The student instructor has to demonstrate:

- maintaining track and re-routing if necessary
- altimeter settings
- the use of radio and phraseology
- in-flight planning
- procedures for transiting regulated airspace / ATC liaison where required
- uncertainty of position procedure
- lost procedure
- use of additional equipment where required
- joining, arrival and circuit procedures at remote aerodrome
- airmanship

The student instructor also has to demonstrate:

- how to teach the student pilot to perform a cross-country flight
- how to analyse and correct errors as necessary

EXERCISE 18C - CROSS-COUNTRY SOARING TECHNIQUES

OBJECTIVES

To advise the student instructor on the techniques for an efficient cross country flight

BRIEFING

The student has to explain

- the speed to fly at maximal L/D ratio
- the speed to fly to maximise the cruise speed (Mc Cready theory)
- how to select the optimal track (efficient use of cloud streets etc)
- how to calculate the final glide
- how to perform a safe outlanding

AIR EXERCISE

The student has to demonstrate:

- a cross-country flight
- the selection of the optimal track (efficient use of cloud streets, etc)
- the use of the MacCready ring
- use of final glide computers
- how to reduce risk and to react to potential dangers
- how to plan and perform an outlanding
- airmanship

The student instructor also has to demonstrate:
- how to teach the student pilot techniques for an efficient cross country flight
- how to analyse and correct errors as necessary

D. Balloons

LONG BRIEFINGS AND AIR EXERCISES

1 Familiarisation with the balloon

2 Preparation for flight

3 Crew and Passenger Briefing

4 Assembly and layout

5 Inflation

6 Take off in different wind conditions

7 Climb to level flight

8 Level flight

9 Descent to level flight

10 Emergencies

11 Navigation

12A Fuel Management hot air balloons

12B Ballast Management gas balloons

13 Approach from low level

14 Approach from high level

15 Operating at low level

16 Landing in different wind conditions

17 Tethered flight hot air balloons

18 First Solo

19 Night Flying (if night instructional qualification required)

NOTE: Airmanship should be included as required in each exercise.

EXERCISE 1

FAMILIARISATION WITH THE BALLOON

OBJECTIVE
To advise the student Instructor on how to familiarise the student with the balloon which will be used for the training and to test his position in the basket for comfort, visibility, and ability to use all controls and equipment

BRIEFING

The student instructor has to:

- present the type of balloon which will be used
- explain the characteristics of the balloon
- explain the components, instruments and equipment
- to familiarise the student with the balloon controls
- explain the differences when occupying the instructor's position
- explain all check lists, drills, controls

EXERCISE 2 - PREPARATION FOR FLIGHT

OBJECTIVE:

To advise the student instructor on how to explain all the operations and necessary preparation to be completed prior to flight

BRIEFING

The student instructor has to explain:

- the need for a pre-flight briefing.
- the structure and the content of this briefing
- which documents are required on board
- which equipment are required for a flight
- the use of weather forecasts/actuals
- the flight planning with particular regard to Notams / Airspace structure / Sensitive areas /

expected track and distance / pre-flight picture and possible landing fields

- the use of load calculation chart
- the selection of launch field with particular regard to permission, behaviour and adjacent fields

PRACTICAL EXERCISE

The student instructor has to prepare and give a pre-flight briefing.

The student instructor has to demonstrate:

- that the required documents are on board
- that the equipment required for the intended flight is on board
- how to advice the student to do the pre-planning procedures for each flight
- how to perform a pre-launch check
- how to select a launch field with particular regard to permission, behaviour and adjacent fields.

The student instructor also has to demonstrate:

- how to teach the student pilot to perform the preparation to be completed prior to flight
- how to analyse and correct errors as necessary

EXERCISE 3

CREW AND PASSENGER BRIEFING

OBJECTIVES

To advise the student instructor on how to explain all the importance of correct clothing for pilot, passengers and crew and how to perform the briefing of ground- and retrieve crew and the briefing of passengers.

BRIEFING

The student instructor has to explain:

- the correct clothing for passengers and crew
- the briefings for ground- and retrieve crew and passengers

PRACTICAL EXERCISE

The student instructor has to demonstrate:

- how to advise the passengers and crew about the correct clothing
- the briefing of ground- and retrieve crew
- the briefing of passengers

The student instructor also has to demonstrate:

- how to familiarise the student pilot with the different type of briefings
- how to analyse and correct errors

EXERCISE 4

ASSEMBLY AND LAYOUT

OBJECTIVES

To advise the student instructor on how to familiarise the student pilot with the control of the crowd and how to perform the securing of launch site. Furthermore the student instructor has to demonstrate how to familiarise the student pilot with the correct rigging of envelope and basket, the burner test procedure (hot air balloons) and the pre-inflation checks.

BRIEFING

The student instructor has to explain:
- the control of the crowd
- the securing of the launch site
- the correct rigging procedure
- the pre-inflation checks

PRACTICAL EXERCISE
The student instructor has to demonstrate:
- how to control of crowd and securing of launch site
- the correct rigging of envelope and basket
- the burner test procedure (hot air balloons)
- the pre-inflation checks

The student instructor also has to demonstrate:
- how to teach the student pilot to perform the correct rigging
- how to analyse and correct assembly errors as necessary

EXERCISE 5 – INFLATION

OBJECTIVES
To advise the student instructor on how to familiarise the student pilot with the different phases of the inflation procedure, the use of restraint line and inflation fan (hot air balloons) and the avoidance of electrostatic discharge (gas balloons).

BRIEFING

The student instructor has to explain:
- the different phases of the inflation procedure
- the crowd control and securing procedures during inflation
- the use of restraint line and inflation fan (hot air balloons)
- how to avoid electronic discharge (gas balloons)

PRACTICAL EXERCISE
The student instructor has to demonstrate:
- how to control of crowd and securing of launch site during inflation procedure
- the cold inflation procedure and use of restraint line and inflation fan (hot air balloons)
- the hot inflation procedure (hot air balloons)
- the avoidance of electrostatic discharge (gas balloons)
- the inflation procedure (gas balloons)

The student instructor also has to demonstrate:
- how to teach the student pilot to perform the inflation procedures
- how to analyse and correct errors during the inflation procedure as necessary

EXERCISE 6 – TAKE OFF IN DIFFERENT WIND CONDITIONS

OBJECTIVES
To advise the student instructor how to explain the pre take-off checks and briefings, the preparation for controlled climb and the use of restraint equipment: Furthermore the student instructor should be able to demonstrate the assessment of wind and obstacles, the preparation for false lift and the take off techniques in different wind conditions.

BRIEFING

The student instructor has to explain:
- the pre take-off checks and briefings
- the preparation for controlled climb
- the "hands off / hands on" procedure for ground crew
- the use of the restraint equipment
- the assessment of wind and obstacles
- the preparation for false lift
- the take off techniques from sheltered and non sheltered launch fields

PRACTICAL EXERCISE
The student instructor has to demonstrate:
- how to perform the pre take-off checks and briefings
- how to prepare for controlled climb
- how to perform the "hands off / hands on" procedure for ground crew
- how to use the restraint equipment
- how to perform the assessment of wind and obstacles
- how to prepare for false lift

The student instructor also has to demonstrate:

- how to teach the student pilot the correct take off techniques from sheltered and non sheltered launch fields
- how to analyse and correct errors as necessary

EXERCISE 7 – CLIMB TO LEVEL FLIGHT

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the climb to flight level. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:

- the climbing with a predetermined rate of climb
- the effect on envelope temperature (hot air balloons)
- the maximum rate of climb according to manufacturer's flight manual
- how to level off at selected altitude

AIR EXERCISE

The student instructor has to demonstrate:
- how to climb with a predetermined rate of climb
- how to perform look out techniques
- the effect on envelope temperature (hot air balloons)
- the maximum rate of climb according to manufacturer's flight manual
- the levelling off techniques at selected altitude

The student instructor also has to demonstrate:
- how to advise the student pilot to perform the climb to level flight
- how to analyse and correct faults / errors during the climb
- airmanship

EXERCISE 8 – LEVEL FLIGHT

OBJECTIVES

To advise the student instructor on how to explain and demonstrate level flight. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- how to maintain level flight by use of instruments
- how to maintain level flight by use of visual references
- how to maintain level flight by use of all available means
- the use of parachute
- the use of turning vents if installed (hot air balloons)

AIR EXERCISE

The student instructor has to demonstrate:
- how to maintain level flight by use of instruments
- how to maintain level flight by use of visual references
- how to maintain level flight by use of all available means
- the use of parachute
- the use of turning vents if installed (hot air balloons)

The student instructor also has to demonstrate:
- how to advise the student pilot to perform the level flight
- how to analyse and correct faults / errors during the level flight
- airmanship

EXERCISE 9 – DESCENT TO LEVEL FLIGHT

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the descent to a certain flight level. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- how to descent with a predetermined rate of descent
- a fast descent
- the maximum rate of descent according to manufacturer's flight manual
- the use of parachute
- a parachute stall and cold descent (hot air balloons)
- the levelling off technique at selected altitude

AIR EXERCISE

The student instructor has to demonstrate:
- a descent with a predetermined rate of descent
- how to perform look out techniques
- a fast descent
- the maximum rate of descent according to manufacturer's flight manual
- the use of parachute
- how to level off at selected altitudes

The student instructor also has to demonstrate:
- how to advise the student pilot to perform a descent to a certain flight level

- how to analyse and correct faults / errors during the descent
- airmanship

EXERCISE 10 – EMERGENCIES

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the different emergency situations and how to react. Furthermore the student instructor should learn how to identify student errors during the simulated emergency exercises and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the pilot light failure (hot air balloons)
- burner failures, valve leaks, flame out and re-light (hot air balloons)
- gas leaks
- closed appendix during take-off and climb (gas balloons)
- the envelope over temperature (hot air balloons)
- envelope damage in flight
- the parachute / rapid deflation system failure
- fire on ground and in the air
- how to avoid an obstacle contact including contact with electrical power lines
- escape drills, location and use of emergency equipment

AIR EXERCISE

The student instructor has to demonstrate:
- a pilot light failure (hot air balloons)
- a burner failure, valve leaks, flame out and re-light (hot air balloons)
- gas leaks
- a closed appendix during take-off and climb (gas balloons)
- envelope over temperature (hot air balloons)
- envelope damage in flight
- parachute / rapid deflation system failure
- a fire on ground and in the air
- the escape drills, location and use of emergency equipment

The student instructor also has to demonstrate:
- how to advise the student pilot in performing the different emergency drills
- how to analyse and correct faults / errors
- airmanship

EXERCISE 11 – NAVIGATION

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the advanced navigational flight preparation. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the maps selection
- the plotting of the expected track
- the marking of positions and time
- the calculation of distance and speed
- the calculation of fuel consumption (hot air balloons)

- the calculation of ballast consumption (gas balloons)
- the ceiling limitations (ATC, Weather)
- how to plan ahead
- the monitoring of weather development
- the monitoring of fuel / ballast consumption
- ATC liaison (if applicable)
- the communication with retrieve crew
- the use of GNSS (if applicable)

AIR EXERCISE

The student instructor has to demonstrate:
- the use of selected maps
- the plotting of the expected track
- the marking of positions and time
- how to monitor of distance and speed
- how to monitor the fuel / ballast consumption
- the observance of ceiling limitations (ATC, Weather)
- the planning ahead
- the monitoring of weather development
- the monitoring of envelope temperature (hot air balloons)
- ATC liaison (if applicable)
- communication with retrieve crew
- use of GNSS (if applicable)

The student instructor also has to demonstrate:
- how to advise the student pilot in performing the navigational preparation
- how to advise the student pilot in performing the different navigational in-flight tasks
- how to analyse and correct faults / errors
- airmanship

EXERCISE 12 A – FUEL MANAGEMENT HOT AIR BALLOONS

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the fuel management techniques. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the cylinder arrangement and the burner systems
- the function of the pilot light supply (vapour/liquid)
- the use of master cylinders (if applicable)
- the fuel requirement and expected fuel consumption
- the fuel state and pressure
- the minimum fuel reserves
- cylinder contents gauge and change procedure
- the use of cylinder manifolds

AIR EXERCISE

The student instructor has to demonstrate:
- the cylinder arrangement and burner systems
- the pilot light supply (vapour/liquid)
- the use of master cylinders (if applicable)
- how to monitor of fuel requirement and expected fuel consumption
- the monitoring of fuel state and pressure

- the monitoring of fuel reserves
- the use of cylinder contents gauge and change procedure
- the use of cylinder manifolds

The student instructor also has to demonstrate:
- how to advise the student pilot to perform the fuel management
- how to analyse and correct faults / errors
- airmanship

EXERCISE 12 B– BALLAST MANAGEMENT GAS BALLOONS

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the ballast management. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the minimum ballast
- the arrangement and securing of ballast
- the ballast requirement and expected ballast consumption
- the ballast reserves

AIR EXERCISE

The student instructor also has to demonstrate:
- the arrangement of minimum ballast
- the arrangement and securing of ballast
- the ballast requirement calculation and expected ballast consumption
- how to secure ballast reserves

The student instructor also has to demonstrate:
- how to advise the student pilot to perform the ballast management
- how to analyse and correct faults / errors
- airmanship

EXERCISE 13 – APPROACH FROM LOW LEVEL

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the approach from level. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the pre landing checks
- the selection of field
- the use of burner and parachute (hot air balloons)
- the use of ballast / parachute and valve (gas balloons)
- the use of trail rope (if applicable) (gas balloons)
- the look out
- missed approach / fly on procedures

AIR EXERCISE

The student instructor has to demonstrate:
- the use of the pre landing checks
- the selection of fields
- the use of burner and parachute (hot air balloons)
- the use of ballast / parachute and valve (gas balloons)
- the use of trail rope (if applicable) (gas balloons)
- the look out procedures and how to avoid possible distractions
- the missed approach / fly on techniques

The student instructor also has to demonstrate:
- how to advise the student pilot to perform an approach from low level
- how to analyse and correct faults / errors
- airmanship

EXERCISE 14– APPROACH FROM HIGH LEVEL

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the approach from high level. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the pre landing checks
- the selection of field
- the rate of descent
- the use of burner and parachute (hot air balloons)
- the use of ballast and parachute (gas balloons)
- the use of trail rope (if applicable) (gas balloons)
- the look out
- the missed approach / fly on procedures

AIR EXERCISE

The student instructor has to demonstrate:
- the pre landing checks
- the selection of field
- the rate of descent
- the use of burner and parachute (hot air balloons)
- the use of ballast and parachute (gas balloons)
- the use of trail rope (if applicable) (gas balloons)
- the look out procedures and how to avoid potential distraction
- the missed approach / fly on techniques

The student instructor also has to demonstrate:
- how to advise the student pilot to perform an approach from a higher level
- how to analyse and correct faults / errors
- airmanship

EXERCISE 15 – OPERATING AT LOW LEVEL

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the operation at a low height. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the use of burner and parachute (hot air balloons)
- the use of ballast and parachute (gas balloons)
- the look out
- how to avoid a contact with low level obstacles
- landowner relations

AIR EXERCISE

The student instructor has to demonstrate:
- the use of burner and parachute (hot air balloons)
- the use of ballast and parachute (gas balloons)
- the look out procedures and how to avoid potential distraction
- how to avoid low level obstacles
- good landowner relations

The student instructor also has to demonstrate:
- how to advise the student pilot to operate the balloon at a low level
- how to analyse and correct faults / errors
- airmanship

EXERCISE 16 – Landing in different wind conditions

OBJECTIVES

To advise the student instructor on how to explain and demonstrate landings in different wind conditions. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the correct actions for turbulences during the approach / landing
- the use of burner and pilot lights (hot air balloons)
- the use of ballast / parachute / valve and rip panel (gas balloons)
- the use of parachute and turning vents (if applicable)
- the look out
- the landing, dragging and deflation
- landowner relations

AIR EXERCISE

The student instructor has to demonstrate:
- the pre landing checks
- the selection of field
- the effect of turbulence
- the use of burner and pilot lights (hot air balloons)
- the use of ballast / parachute / valve and rip panel (gas balloons)
- the use of parachute and turning vents (if applicable)
- the look out procedures and how to avoid potential distraction

- the landing, dragging and deflation procedures

The student instructor also has to demonstrate:
- how to advise the student pilot to perform a safe landing in different wind conditions
- how to analyse and correct faults / errors
- airmanship

EXERCISE 17– TETHERED FLIGHT HOT AIR BALLOONS

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the tethering techniques. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the ground preparations
- the weather suitability
- the tethering techniques and equipment
- the maximum all-up-weight limitation
- the crowd control
- the pre take-off checks and briefings
- the heating for controlled lift off
- the "Hands off / Hands on" procedure for ground crew
- the assessment of wind and obstacles

AIR EXERCISE

The student instructor has to demonstrate:
- the ground preparations
- the tethering techniques
- the reason for maximum all-up-weight limitation
- how to perform the crowd control
- the pre take-off checks and briefings
- the heating for controlled lift off
- the "Hands off / Hands on" procedure for ground crew
- the assessment of wind and obstacles
- the landing techniques

The student instructor also has to demonstrate:
- how to advise the student pilot to perform a tethered flight
- how to analyse and correct faults / errors
- airmanship

EXERCISE 18– FIRST SOLO

OBJECTIVE

To advise the student instructor on how to prepare their students for the first solo flight.

BRIEFING

The student instructor has to explain

- the limitations of the flight

- the use of required equipment

AIR EXERCISE

The student instructor has to

- check with another/more senior instructor if the student can fly solo
- monitor the pre-flight preparation
- brief the student (expected flight time / emergency actions)
- monitor the flight as far as possible
- debrief the flight with the student

EXERCISE 19 - NIGHT FLYING (if night instructional qualification required)

OBJECTIVES

To advise the student instructor on how to explain and demonstrate the night flying techniques. Furthermore the student instructor should learn how to identify student errors and how to correct them properly.

BRIEFING

The student instructor has to explain:
- the medical/physiological aspects of night vision
- the use of lights for assembly, layout and inflation
- the requirement for torch to be carried, (pre-flight inspection, etc.)
- the use of the external- and instrument lights
- the night take-off procedure
- the checklist procedures at night
- the emergency procedures at night
- the navigation principles at night
- map marking for night use, (highlighting built up/lit areas with thicker lines, etc.)

AIR EXERCISE

The student instructor has to demonstrate:
- the use of lights for assembly, layout and inflation
- the use of torch for pre-flight inspection
- the use of external- and instrument lights
- the night take-off procedure
- how to perform the checklist procedures at night
- simulated night emergency procedures
- night cross country techniques, as appropriate

The student instructor also has to demonstrate:
- how to advise the student pilot to perform a flight at night
- how to analyse and correct faults / errors
- airmanship

AMC to FCL.940.LAFI(a)(2)

Light Aircraft Flight Instructor (LAFI) refresher seminar

1 LAFI refresher seminars made available in member States should have due regard to geographical location, numbers attending, and periodicity throughout the State concerned.

2 Such seminars should run for at least one day, and attendance from participants will be required for the whole duration of the seminar including breakout groups/workshops.

3 Some experienced LAFIs/FIs currently involved with flying training and with a practical understanding of the revalidation requirements and current instructional techniques should be included as speakers at these seminars.

4 The attendance form will be completed and signed by the organiser of the seminar as approved by the Authority, following attendance and satisfactory participation by the LAFI.

5 The content of the LAFI refresher seminar should be selected from the following:

a. new and/or current applicable rules/regulations with emphasis on knowledge of Part-FCL

b. teaching and learning;

c. instructional techniques;

d. the role of the instructor;

e. national regulations (as applicable);

f. human performance and limitations;

g. flight safety, incident and accident prevention;

h. airmanship;

i. legal aspects and enforcement procedures;

j. navigational skills including new/current radio navigation aids;

l. weather related topics including methods of distribution.

m. any additional topic

Formal sessions should allow for a presentation time of 45 minutes, with at least 15 minutes for questions and discussion. The use of visual aids is recommended, with inter-active video/beamer sessions and other modern teaching aids (where available) for break-out groups/workshops.

AMC to FCL.930.FI

FI training course

GENERAL

The aim of the FI course is to train aircraft licence holders to the level of competence defined in FCL.920.

The course should develop safety awareness throughout by teaching the knowledge, skills and attitudes relevant to the FI task including at least the following:

a. refresh the technical knowledge of the student instructor;

b. train the student instructor to teach the ground subjects and air exercises;

c. ensure that the student instructor's flying is of a sufficiently high standard; and

d. teach the student instructor the principles of basic instruction and to apply them at the PPL, SPL or SPL level.

FLIGHT INSTRUCTION

In the case of the FI(A), FI(H) or FI(As) the remaining five hours in FCL.930.FI (b)(2) may be mutual flying (that is, two applicants flying together to practice flight demonstrations).

The skill test is additional to the course training time.

CONTENT

The course consists of 2 parts:

- Part 1, teaching and learning instruction that should comply with AMC to FCL.920
- Part 2, flight instruction that should have the following content:

A. Aeroplanes

Part 2

AIR EXERCISES

1 The air exercises are similar to those used for the training of PPL(A) but with additional items designed to cover the needs of a flight instructor.

2 The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide: therefore the demonstrations and practices need not necessarily be given in the order listed. The actual order and content will depend upon the following interrelated factors:

The applicant's progress and ability
The weather conditions affecting the flight
The flight time available
Instructional technique considerations
The local operating environment

3 It follows that student instructors will eventually be faced with similar interrelated factors. They should be shown and taught how to construct flight lesson plans, taking these factors into account, so as to make the best use of each flight lesson, combining parts of the set exercises as necessary.

GENERAL

4 The briefing normally includes a statement of the aim and a brief allusion to principles of flight only if relevant. An explanation is to be given of exactly what air exercises are to be taught by the instructor and practised by the student during the flight. It should include how the flight will be conducted with regard to who is to fly the aeroplane and what airmanship, weather and flight safety aspects currently apply. The nature of the lesson will govern the order in which the constituent parts are to be taught.

5 The four basic components of the briefing will be:

1 The aim
2 Principles of Flight (briefest reference only)
3 The Air Exercise(s) (what, and how and by whom)
4 Airmanship (weather, flight safety etc.)

PLANNING OF FLIGHT LESSONS

6 The preparation of lesson plans is an essential pre-requisite of good instruction and the student instructor is to be given supervised practice in the planning and practical application of flight lesson plans.

GENERAL CONSIDERATIONS

7 The student instructor should complete flight training to practise the principles of basic instruction at the PPL(A) level.

8 During this training, except when acting as a student pilot for mutual flights, the student instructor occupies the seat normally occupied by the FI(A).

9 It is to be noted that airmanship is a vital ingredient of all flight operations. Therefore, in the following air exercises the relevant aspects of airmanship are to be stressed at the appropriate times during each flight.

10 If the privileges of the FI(A) certificate are to include instruction for night flying, exercises 12 and 13 of the flight instruction syllabus should be undertaken at night in addition to by day either as part of the course or subsequent to certification issue.

FLIGHT INSTRUCTION SYLLABUS CONTENTS

LONG BRIEFINGS AND AIR EXERCISES

1 Familiarisation with the aeroplanes

2 Preparation before and action after flight

3 Air experience

4 Effects of controls

5 Taxiing

6 Straight and level flight

7 Climbing

8 Descending

9 Turning

10A Slow flight

10B Stalling

11A Spin recovery at the incipient stage

11B Developed spins – entry & recovery

12 Take-off and climb to downwind position

13 The circuit, approach and landing

14 First solo

15 Advanced turning

16 Forced landing without power

17 Precautionary landing

18A Pilot navigation

18B Navigation at lower levels/reduced visibility

18C Radio navigation

19 Introduction to Instrument Flying

20 Basic night flight

NOTE: Although exercise 11B is not required for the PPL course it is a requirement for the FI course.

LONG BRIEFING EXERCISE 1

AEROPLANE FAMILIARISATION
Objectives
Introduction to the aeroplane
Explanation of the cockpit layout
Aeroplane and engine systems
Check lists, drills, controls
Propeller safety

- Precautions general

- Precautions before and during hand turning
- Hand swinging technique for starting (if applicable to type)

Differences when occupying the instructor's seat

EMERGENCY DRILLS
Action in the event of fire in the air and on the ground – engine cabin and electrical
Systems failures as applicable to type
Escape drills – location and use of emergency equipment and exits

AIR EXERCISE 1

FAMILIARISATION WITH THE AEROPLANE
Introduction to the Aeroplane
Explanation of the Cockpit Layout
Aeroplane Systems
Check Lists, Drills, Controls

EMERGENCY DRILLS
Action in the Event of Fire in the Air and on the Ground –Engine/Cabin/Electrical
System Failure as Applicable to Type
Escape Drills – Location and use of Emergency Equipment and Exits

LONG BRIEFING EXERCISE 2

PREPARATION FOR AND ACTION AFTER FLIGHT
Objectives
Flight authorisation and aeroplane acceptance including technical log (if applicable) and certificate of maintenance
Equipment required for Flight (Maps, etc.)
External checks
Internal checks
Student comfort, harness, seat or rudder pedal adjustment
Starting and Warming up Checks
Power Checks
Running Down, System Checks and Switching Off the Engine
Leaving the Aeroplane, Parking, Security and Picketing
Completion of Authorisation Sheet and Aeroplane Serviceability Documents

AIR EXERCISE 2

PREPARATION FOR AND ACTION AFTER FLIGHT
Flight Authorisation and Aeroplane Acceptance
Aircraft Serviceability Documents
Equipment Required for Flight (Maps etc.)
External Checks
Internal Checks
Student Comfort, Harness, Seat or Rudder Pedal Adjustment
Starting and Warming up Checks
Power Checks
Running Down, System Checks and Switching Off the Engine
Leaving the Aircraft, Parking, Security and Picketing
Completion of Authorisation Sheet and Aeroplane Serviceability
Documents

LONG BRIEFING EXERCISE 3

(Air Exercise only)

AIR EXERCISE 3
Air Experience

LONG BRIEFING EXERCISE 4

EFFECTS OF CONTROLS
Objectives
Function of Primary Controls – when Laterally Level and Banked
Further Effect of Ailerons and Rudder
Effect of Inertia
Effect of Airspeed
Effect of Slipstream
Effect of Power
Effect of Trimming Controls
Effect of Flaps
Operation of Mixture Control
Operation of Carburettor Heat Control
Operation of Cabin Heat/Ventilation Systems
Effect of other Controls (as applicable)
Airmanship

AIR EXERCISE 4

EFFECTS OF CONTROLS
Primary Effects of Flying Controls – when Laterally Level and Banked
Further effects of Ailerons and Rudder
Effect of Airspeed
Effect of Slipstream
Effect of Power
Effect of Trimming Controls
Effect of Flaps
Operation of Mixture Control
Operation of Carburettor Heat Control
Operation of Cabin Heat/Ventilation Systems
Effect of other Controls as applicable
Airmanship

LONG BRIEFING EXERCISE 5

TAXIING
Objectives:
Pre-Taxiing Checks
Starting, Control of Speed and Stopping
Engine Handling
Control of Direction and Turning (including manoeuvring in confined spaces)
Parking Area Procedures and Precautions
Effects of Wind and Use of Flying Controls
Effects of Ground Surface
Freedom of Rudder Movement
Marshalling Signals
Instrument Checks
Airmanship and Air Traffic Control Procedures
Common Errors

EMERGENCIES
Steering Failure/Brake Failure

AIR EXERCISE 5

TAXIING
Pre Taxiing Checks
Starting, Control of Speed and Stopping
Engine Handling
Control of Direction and Turning
Turning in Confined Spaces
Parking Area Procedures and Precautions
Effects of Wind and Use of Flying Control
Effects of Ground Surface
Freedom of Rudder Movement
Marshalling Signals
Instrument Checks
Airmanship and Air Traffic Control Procedures

EMERGENCIES
Steering Failure/Brake Failure

LONG BRIEFING EXERCISE 6

STRAIGHT AND LEVEL FLIGHT
Objectives:
The Forces
Longitudinal Stability and Control in Pitch
Relationship of C of G to Control in Pitch
Lateral and Directional Stability (Control of Lateral Level and Balance)
Attitude and Balance Control
Trimming
Power Settings and Airspeeds
Drag and Power Curves
Range and Endurance
Airmanship
Common Errors

AIR EXERCISE 6

STRAIGHT AND LEVEL
At normal Cruising Power:
Attaining and Maintaining Straight and Level Flight
Demonstration of Inherent Stability
Control in Pitch, including use of Elevator Trim control
Lateral Level, Direction and Balance, use of Rudder Trim controls as applicable at Selected Airspeeds (Use of Power):
Effect of Drag and use of Power (Two Airspeeds for one Power Setting)
Straight and Level in Different Aeroplane Configurations (Flaps, Landing Gear)
Use of Instruments to achieve Precision Flight
Airmanship

LONG BRIEFING EXERCISE 7

CLIMBING
Objectives:
The Forces
Relationship between Power/Airspeed and Rate of Climb (Power Curves Maximum Rate of Climb (Vy))
Effect of Mass
Effect of Flaps
Engine Considerations

Effect of density Altitude
The Cruise Climb
Maximum Angle of Climb (Vx)
Airmanship
Common Errors

AIR EXERCISE 7

CLIMBING
Entry and maintaining the normal Maximum Rate Climb
Levelling Off
Levelling Off at Selected Altitudes
Climbing with Flaps down
Recovery to normal Climb
En Route Climb (Cruise Climb)
Maximum Angle of Climb
Use of Instruments to achieve Precision Flight
Airmanship

LONG BRIEFING EXERCISE 8

DESCENDING
Objectives:
The Forces
Glide Descent Angle – Airspeed – Rate of Descent
Effect of Flaps
Effect of Wind
Effect of Mass
Engine Considerations
Power Assisted Descent – Power/Airspeed – Rate of Descent
The Cruise Descent
The Sideslip
Airmanship
Common Errors

AIR EXERCISE 8

DESCENDING
Entry and maintaining the Glide
Levelling Off
Levelling Off at Selected Altitudes
Descending with Flaps down
Powered Descent – Cruise Descent (inc. effect of Power/Airspeed)
Sideslipping (on suitable types)
Use of Instrument to achieve Precision Flight
Airmanship

LONG BRIEFING EXERCISE 9

TURNING
Objectives:
The Forces
Use of Controls
Use of Power
Maintenance of Attitude and Balance
Medium Level Turns
Climbing and Descending Turns
Slipping Turns

Turning onto Selected Headings – Use of Gyro Heading Indicator and Magnetic Compass
Airmanship
Common Errors

AIR EXERCISE 9

TURNING
Entry and maintaining Medium Level Turns
Resuming straight flight
Faults in the Turn (incorrect Pitch, Bank, Balance)
Climbing Turns
Descending Turns
Slipping Turns (on suitable types)
Turns to Selected Headings, use of Gyro Heading Indicator and Compass
Use of Instruments to achieve Precision flight
Airmanship

STALL/SPIN AWARENESS & AVOIDANCE
TRAINING CONSISTS OF EXERCISES:

10 A, 10 B and 11 A

LONG BRIEFING EXERCISE 10 A

SLOW FLIGHT
Objectives:
Aeroplane Handling Characteristics during Slow Flight at
V_{s1} & V_{so} + 10 knots
V_{s1} & V_{so} + 5 knots
Slow Flight During Instructor Induced Distractions
Effect of overshooting in configurations where application of engine power causes a strong 'nose-up' trim change
Airmanship
Common Errors

AIR EXERCISE 10 A

SLOW FLIGHT
Airmanship
Safety Checks
Introduction to Slow Flight
Controlled Slow Flight in the Clean Configuration at:
V_{s1} + 10 knots & with Flaps Down
V_{so} + 10 knots:
Straight & Level Flight
Level Turns
Climbing & Descending
Climbing & Descending Turns

Controlled Slow Flight in the Clean Configuration at:
V_{s1} + 5 knots & with Flaps Down
V_{so} + 5 knots:
Straight & Level Flight
Level Turns
Climbing & Descending
Climbing & Descending Turns

Descending 'Unbalanced' Turns at Low Airspeed –

the need to maintain Balanced Flight

'Instructor Induced Distractions' during Flight at Low Airspeed – the need to Maintain Balanced Flight and a safe Airspeed

Effect of going around in configurations where application of engine power causes a strong 'nose up' trim change

LONG BRIEFING EXERCISE 10 B

STALLING
Objectives:
Characteristics of the Stall
Angle of Attack
The Effectiveness of the Controls at the Stall
Factors Affecting the Stalling Speed:
    Effect of Flaps/Slats/Slots
    Effect of Power/Mass/C of G/Load Factor
The Effects of Unbalance at the Stall
The Symptoms of the Stall
Stall Recognition & Recovery
Stalling & Recovery:
Without Power
With Power On
With Flaps Down
Maximum Power Climb (straight & turning flight to the point of Stall with uncompensated Yaw)
    * Stalling & Recovery during manoeuvres involving more than 1 G (accelerated stalls, including secondary stalls & recoveries)
Recovering from Incipient Stalls in the landing and other configurations and conditions
Recovering at the Incipient Stage during Change of Configuration
Stalling and Recovery at the Incipient Stage with 'Instructor Induced' Distractions
Airmanship
Common Errors

    * Consideration is to be given to manoeuvre limitations and references to The Owners/Flight manual or Pilot's Operating Handbook in relation to Mass and Balance limitations. These factors are also covered in the next exercise Spinning.

AIR EXERCISE 10 B

STALLING
Airmanship – Safety checks
The symptoms of the Stall
Stall Recognition & Recovery

Recovery Without Power
Recovery With Power
Recovery when a Wing Drops at the Stall
Stalling with Power 'ON' & Recovery
Stalling with Flap 'Down' & Recovery
Maximum Power Climb (straight & turning flight) to the point of Stall with uncompensated YAW – Effect of unbalance at the stall when climbing power is being used.
    * Stalling & Recovery during Manoeuvres involving more than 1 G (accelerated stalls, including secondary stalls & recoveries)
Recoveries from Incipient Stalls in the landing and other configurations & conditions
Recoveries at the Incipient Stage during change of Configuration
Instructor Induced Distractions during Stalling

* Consideration of manoeuvre limitations and the need to refer to the Aeroplane Manual and Weight (mass) & Balance calculations. These factors are to be covered in the next exercise – Spinning.

LONG BRIEFING EXERCISE 11 A

SPIN RECOVERY at the INCIPIENT STAGE
Objectives:
Causes, Stages, Autorotation and Characteristics of the Spin
Recognition and Recovery at the Incipient Stage – entered from various flight attitudes
Aeroplane Limitations
Airmanship
Common Errors

AIR EXERCISE 11 A

SPIN RECOVERY at the INCIPIENT STAGE
Aeroplane Limitations
Airmanship
Safety Checks
Recognition at the Incipient Stage of a Spin
Recoveries from Incipient Spins entered from various attitudes with the Aeroplane in the Clean Configuration including instructor induced distractions.

LONG BRIEFING EXERCISE 11 B

SPIN RECOVERY at the DEVELOPED STAGE
Objectives:
The Spin Entry
Recognition & Identification of Spin Direction
The Spin Recovery
Use of Controls
Effects of Power/Flaps (flap restriction applicable to type)
Effect of the C of G upon Spinning characteristics
Spinning from Various Flight Attitudes
Aeroplane Limitations
Airmanship – Safety Checks
Common Errors during Recovery

AIR EXERCISE 11 B

SPIN RECOVERY at the DEVELOPED STAGE
Aeroplane Limitations
Airmanship
Safety Checks

The Spin Entry
Recognition & Identification of the Spin Direction
The Spin Recovery (reference to Flight Manual)

Use of Controls
Effects of Power/Flaps (restrictions applicable to aeroplane type)
Spinning & Recovery from various Flight Attitudes

LONG BRIEFING EXERCISE 12

TAKE-OFF AND CLIMB TO DOWNWIND POSITION
Objectives:

Handling – Factors affecting the length of Take-off Run and Initial Climb
The Correct Lift Off Speed, use of Elevators (Safeguarding the Nose Wheel), Rudder and Power
Effect of Wind (including Crosswind Component)
Effect of Flaps (including the Decision to Use and the Amount Permitted)
Effect of Ground Surface and Gradient upon the Take-off Run
Effect of Mass, Altitude and Temperature on Take-off and climb Performance
Pre Take-Off Checks
Air Traffic Control Procedure (before Take-Off)
Drills, during and after Take-off
Noise abatement procedures
Tail Wheel Considerations (as applicable)
Short/Soft Field Take-Off Considerations/Procedures

EMERGENCIES:
Aborted Take-Off
Engine Failure after Take-Off
Airmanship and Air Traffic Control Procedures
Common Errors

AIR EXERCISE 12

TAKE-OFF AND CLIMB TO DOWNWIND POSITION
Pre Take-Off Checks
Into Wind Take-Off
Safeguarding the Nose Wheel
Crosswind Take-Off
Drills During and After Take-Off
Short Take-Off and Soft Field Procedure/Techniques (including Performance Calculations)
Noise abatement procedures
Airmanship

LONG BRIEFING EXERCISE 13

THE CIRCUIT APPROACH AND LANDING
Objectives:
The Downwind Leg, Base Leg, Approach – Position and Drills
Factors Affecting the Final Approach and the Landing Run
Effect of Mass
Effects of Altitude and Temperature
Effect of Wind
Effect of Flap

The Landing
Effect of Ground Surface and Gradient upon the Landing Run

Types of Approach and Landing:
Powered
Crosswind
Flapless (at an appropriate stage of the course)
Glide
Short Field
Soft Field
Tail Wheel Aeroplane Considerations (as applicable)
Missed Approach
Engine Handling
Wake Turbulence Awareness
Windshear Awareness
Airmanship and Air Traffic Control Procedures

Mislanding/Go around
Special emphasis on lookout
Common Errors

AIR EXERCISE 13

THE CIRCUIT APPROACH AND LANDING
Circuit Procedures – Downwind, Base Leg
Powered Approach and Landing
Safeguarding the Nosewheel
Effect of Wind on Approach and Touchdown Speeds and use of Flaps
Crosswind Approach and Landing
Glide Approach and Landing
Flapless Approach and Landing (short and soft field)
Short field and soft field procedures
Wheel Landing (Tail Wheel Aircraft)
Missed Approach/Go around
Mislanding/Go around
Noise abatement procedures
Airmanship

LONG BRIEFING EXERCISE 14

FIRST SOLO AND CONSOLIDATION

A summary of points to be covered before sending the student on first solo.

NOTE: During the flights immediately following the solo circuit consolidation period the following should be covered:

Procedures for Leaving and Rejoining the Circuit
The Local Area (Restrictions, Controlled Airspace, etc.)
Compass Turns
QDM Meaning and Use
Airmanship
Common Errors

AIR EXERCISE 14

FIRST SOLO AND CONSOLIDATION
During the flights immediately following the solo circuit consolidation period the following should be covered:
Procedures for Leaving and Rejoining the Circuit
The Local Area (Restrictions, Controlled Airspace, etc.)
Compass Turns
Obtaining QDM's
Airmanship

LONG BRIEFING EXERCISE 15

ADVANCED TURNING
Objectives:
The Forces
Use of Power
Effect of Load Factor:
    Structural Considerations
    Increased Stalling Speed
Physiological Effects

Rate and Radius of Turn
Steep, Level, Descending and Climbing Turns
Stalling in the Turn
* Spinning from the Turn – Recovery at the Incipient Stage
* The Spiral Dive
Unusual Attitudes and Recoveries
Airmanship
Common Errors

* Considerations are to be given to manoeuvre limitations and reference to The Owner's/Flight Manual/Pilot's Operating Handbook in relation to Mass and Balance, and any other restrictions for Practice Entries to the Spin.

AIR EXERCISE 15

ADVANCED TURNING
Level, Descending and Climbing Steep Turns
Stalling in the Turn
The Spiral Dive
Spinning from the Turn
Recovery from Unusual Attitudes
Maximum Rate Turns
Airmanship

LONG BRIEFING EXERCISE 16

FORCED LANDING WITHOUT POWER
Objectives:
Selection of forced landing areas
Provision for change of plan
Gliding distance – consideration
Planning the descent
Key positions
Engine failure checks
Use of radio – R/T 'Distress' Procedure
The base leg
The final approach

Go around
The landing considerations
Actions after landing – Aeroplane security
Causes of engine failure
Airmanship
Common errors
AIR EXERCISE 16

FORCED LANDING WITHOUT POWER
Forced Landing Procedures
Selection of Landing Area:
Provision for Change of Plan
Gliding Distance Considerations
Planning the descent:
Key Positions
Engine Failure Checks
Engine cooling precautions
Use of Radio
The Base Leg
The Final Approach

The Landing	)	When the Exercise is
Actions after Landing:	)	conducted at an
Aeroplane Security	)	Aerodrome
Airmanship		

LONG BRIEFING EXERCISE 17

PRECAUTIONARY LANDING

Objectives:
Occasions when necessary (In Flight Conditions):
Landing area Selection and Communication (R/T Procedure)
Overhead Inspection
Simulated Approach
Climb Away
Landing at a Normal Aerodrome
Landing at a Disused Aerodrome
Landing on an Ordinary Field
Circuit and Approach

Actions After Landing:
Aeroplane Security
Airmanship
Common errors

AIR EXERCISE 17

PRECAUTIONARY LANDING

Occasions when necessary (In Flight Conditions):
Landing area selection
Overhead Inspection
Simulated Approach
Climb Away
Landing at a Normal Aerodrome
Landing at a Disused Aerodrome
Landing on an Ordinary Field
Circuit and Approach
Actions After Landing:
Aeroplane Security
Airmanship

LONG BRIEFING EXERCISE 18A

PILOT NAVIGATION
Flight Planning

Objectives:
Weather Forecast and Actual(s)
Map Selection and Preparation:

Choice of Route:
Regulated/Controlled Airspace
Danger, Prohibited and Restricted Areas
Safety Altitude

Calculations:

Magnetic Heading(s) and Time(s) enroute
Fuel Consumption
Mass and Balance
Mass and Performance

Flight Information:
NOTAMs etc.
Noting of Required Radio Frequencies
Selection of Alternate aerodrome(s)
Aircraft Documentation

Notification of the Flight:
Booking Out Procedure
Flight Plans

Aerodrome Departure
Organisation of Cockpit Workload

Departure Procedures:
Altimeter Settings
Setting Heading Procedures
Noting of ETA(s)

En-Route:
Map reading – identification of ground features
Maintenance of Altitudes and Headings
Revisions to ETA and Heading, wind effect, drift angle and groundspeed checks.
Log Keeping
Use of Radio (including VDF if applicable)
Minimum Weather Conditions for Continuance of Flight
'In Flight' Decisions, diversion procedures
Operations in Regulated/Controlled Airspace
Procedures for Entry, Transit and Departure
Navigation at Minimum Level
Uncertainty of Position Procedure) Including R/T
Lost Procedure) Procedure
Use of Radio Navaids
Arrival Procedures
Aerodrome Circuit Joining Procedures:
Altimeter Setting, ATC Liaison, R/T Procedure, etc.
Entering the Traffic Pattern (controlled/uncontrolled aerodromes)
Circuit Procedures
Parking Procedures
Security of Aeroplane Refuelling and Booking In

AIR EXERCISE 18A

PILOT NAVIGATION

Flight Planning:
Weather Forecast and Actual(s)
Map Selection and Preparation:
Choice of Route
Regulated/Controlled Airspace
Danger, Prohibited and Restricted Areas
Safety Altitude

Calculations:

Magnetic Heading(s) and Time(s) En-Route
Fuel Consumption
Mass and Balance
Mass and Performance

Flight Information:
NOTAMs etc.
Noting of Required Radio Frequencies
Selection of Alternate Aerodromes
Aeroplane Documentation

Notification of the Flight:
Flight clearance procedures (as applicable)
Flight Plans

AERODROME DEPARTURE

Organisation of Cockpit Workload
Departure Procedures:
Altimeter Settings

En-route:
Noting of ETA(s)
Wind effect, drift angle, ground speed checks
Maintenance of Altitudes and Headings
Revisions to ETA and Heading
Log Keeping
Use of Radio (including VDF if applicable)
Minimum Weather Conditions for Continuance of Flight
'In Flight' Decisions
Diversion Procedure
Operations in Regulated/Controlled Airspace
Procedures for Entry, Transit and Departure
Uncertainty of Position Procedure
Lost Procedure
Use of Radio Navaids
Arrival Procedures:
Aerodrome Joining Procedures:
Altimeter Setting, ATC Liaison, etc.
Entering the Traffic Pattern
Circuit Procedures
Parking Procedures
Security of Aircraft
Refuelling
Booking In

LONG BRIEFING EXERCISE 18B

NAVIGATION AT LOWER LEVELS/REDUCED VISIBILITY

Objectives:

General Considerations:
Planning Requirements Prior to Flight in Entry/Exit Lanes
ATC Rules, Pilot Qualifications and Aircraft Equipment
Entry/Exit Lanes and Areas where Specific Local Rules Apply

Low Level Familiarisation:

Actions Prior to Descending
Visual Impressions and Height Keeping at Low Altitude
Effects of Speed and Inertia During Turns
Effects of Wind and Turbulence

Low Level Operation:
Weather Considerations
Low Cloud and Good Visibility
Low Cloud and Poor Visibility
Avoidance of Moderate to Heavy Rain Showers
Effects of Precipitation
Joining a Circuit
Bad Weather Circuit, Approach and Landing

Airmanship

AIR EXERCISE 18B

NAVIGATION AT LOWER LEVELS

Low Level Familiarisation:
Entry/Exit Lanes and Areas Where Specific Local Rules Apply
Actions Prior to Descending
Visual Impressions and Height Keeping at Low Altitude
Effects of Speed and Inertia During Turns
Effects of Wind and Turbulence
Hazards of operating at low levels
Low Level Operation:
Weather Considerations
Low Cloud and Good Visibility
Low Cloud and Poor Visibility
Avoidance of Moderate to Heavy Rain Showers
Effects of Precipitation (forward visibility)
Joining a Circuit
Bad Weather Circuit, Approach and Landing

Airmanship

LONG BRIEFINGS 18C

USE OF RADIO NAVIGATION AIDS UNDER VFR

Objectives:

a. use of VHF omni range
- availability of VOR stations, AIP
- signal reception range
  - selection and identification
- radials and method of numbering
- use of omni bearing selector (OBS)
- To–From indication and station passage
- selection, interception and maintaining a radial
- use of two stations to determine position

b. use of automatic direction finding equipment (ADF)
- availability of NDB stations, AIP
- signal reception range
  - selection and identification

- orientation in relation to NDB
- homing to an NDB

c. use of VHF direction finding (VHF/DF)
- availability, AIP
- R/T procedures
- obtaining QDMs and QTEs

d. use of radar facilities
- availability and provision of service, AIS
- types of service
- R/T procedures and use of transponder
  - mode selection
  - emergency codes

e. Use of Distance Measuring Equipment (DME)
- availability, AIP
- operating modes
- slant range

f. Use of Aero Navigation systems, satellite navigation systems (RNAV – SATNAV)
- availability
- operating modes
- limitations

AIR EXERCISE 18C

RADIO NAVIGATION

a. Use of VHF Omni Range
- availability, AIP, frequencies
- selection and identification
- omni bearing selector (OBS)
- to/from indications, – orientation
- course deviation indicator (CDI)
- determination of radial
- intercepting and maintaining a radial
- VOR passage
- obtaining a fix from two VORs

b. Use of automatic direction finding equipment (ADF)
non-directional beacons (NDBs)
- availability, AIP, frequencies
- selection and identification
- orientation relative to the beacon
- homing

c. Use of VHF direction finding (VHF/DF)
- availability, AIP, frequencies
- R/T procedures and ATC liaison
- obtaining a QDM and homing

d. Use of en-route/terminal radar
- availability, AIP
- procedures and ATC liaison
- pilot’s responsibilities
- secondary surveillance radar
- transponders

- code selection
- interrogation and reply

e. Use of distance measuring equipment (DME)
- station selection and identification
- modes of operation

f. Use of Aero Navigation systems, satellite navigation systems (RNAV – SATNAV)
- setting up
- operation
- interpretation

LONG BRIEFING EXERCISE 19

INTRODUCTION TO INSTRUMENT FLYING

Objectives:
Flight Instruments
Physiological Considerations
Instrument Appreciation
Attitude Instrument Flight
Pitch Indications
Bank Indications
Different Dial Presentations
Introduction to the Use of the Attitude Indicator
Pitch Attitude
Bank Attitude
Maintenance of Heading and Balanced flight
Instrument Limitations (inc. System Failures)

ATTITUDE, POWER & PERFORMANCE

Attitude Instrument Flight:
Control Instruments
Performance Instruments
Effect of Changing Power and configuration
Cross Checking the Instrument Indications
Instrument Interpretation
Direct and Indirect Indications (Performance Instruments)
Instrument Lag
Selective Radial Scan

THE BASIC FLIGHT MANOEUVRES (FULL PANEL)

Straight and Level Flight at Various Airspeeds and Aeroplane Configurations
Climbing
Descending
Standard Rate Turns

Level)
Climbing) Onto Pre-Selected Headings
Descending)

AIR EXERCISE 19

INTRODUCTION TO INSTRUMENT FLYING

Physiological Sensations

Instrument Appreciation
Attitude Instrument Flight
Pitch Attitude
Bank Attitude
Maintenance of Heading and Balanced Flight
Attitude Instrument Flight
Effect of Changing Power and configuration
Cross Checking the Instruments
Selective Radial Scan
THE BASIC FLIGHT MANOEUVRES (FULL PANEL)

Straight and Level Flight at various Airspeeds and Aeroplane Configurations
Climbing
Descending
Standard Rate Turns
Level)
Climbing) Onto Pre-Selected Headings
Descending)

LONG BRIEFING EXERCISE 20

BASIC NIGHT FLYING

A summary of points to be covered before sending the student on a first solo at night

Start up procedures
Local procedures - including ATC liaison
Taxiing
Parking area and taxiway lighting
Judgement of speed and distances
Use of taxiway lights
Avoidance of hazards – obstruction lighting
Instrument checks
Holding point – lighting procedure
Initial familiarisation at night
Local area orientation
Significance of lights on other aircraft
Ground obstruction lights
Division of piloting effort – external/instrument reference
Rejoining procedure
Aerodrome lighting – Approach and runway lighting (including VASI and PAPI)

Threshold lights
Approach lighting
Visual approach slope indicator systems

NIGHT CIRCUITS

Take-off and climb
Line up
Visual references during the take-off run
Transfer to instruments
Establishing the initial climb
Use of flight instruments
Instrument climb and initial turn

The circuit
Aeroplane positioning – reference to runway lighting

The traffic pattern and lookout
Initial approach and runway lighting demonstration
Aeroplane positioning
Changing aspect of runway lights and VASI (or PAPI)
Intercepting the correct approach path
The climb away

Approach and landing
Positioning, base leg and final approach
Diurnal wind effect
Use of landing lights
The flare and touchdown
The roll out
Turning off the runway – control of speed

Missed approach
Use of instruments
Re-positioning in the circuit pattern

NIGHT NAVIGATION

Particular emphasis on flight planning
Selection of ground features visible at night
Air light beacons
Effect of cockpit lighting on map colours
Use of radio aids
Effect of moonlight upon visibility at night
Emphasis on maintaining a 'minimum safe altitude'
Alternate aerodromes – restricted availability
Restricted recognition of weather deterioration
Lost procedures

NIGHT EMERGENCIES

Radio failure
Failure of runway lighting
Failure of aeroplane landing lights
Failure of aeroplane internal lighting
Failure of aeroplane navigation lights
Total electrical failure
Abandoned take-off
Engine failure
Obstructed runway procedure

B. HELICOPTERS

PART 2

AIR EXERCISES

1 The air exercises are similar to those used for the training of PPL(H) but with additional items designed to cover the needs of a flight instructor.

2 The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide: therefore the demonstrations and practices need not necessarily be given in the order listed. The actual order and content will depend upon the following interrelated factors:

The applicant's progress and ability
The weather conditions affecting the flight
The flight time available
Instructional technique considerations
The local operating environment
Applicability of the exercises to the helicopter type

3 It follows that student instructors will eventually be faced with similar interrelated factors. They should be shown and taught how to construct flight lesson plans, taking these factors into account, so as to make the best use of each flight lesson, combining parts of the set exercises as necessary.

GENERAL

4 The briefing normally includes a statement of the objectives and a brief reference to principles of flight only if relevant. An explanation is to be given of exactly what air exercises are to be taught by the instructor and practised by the student during the flight. It should include how the flight will be conducted with regard to who is to fly the helicopter and what airmanship, weather and flight safety aspects currently apply. The nature of the lesson will govern the order in which the constituent parts are to be taught.

5 The four basic components of the briefing will be:

1 The aim
2 Principles of Flight (briefest reference only)
3 The Air Exercise(s) (what, and how and by whom)
4 Airmanship

PLANNING OF FLIGHT LESSONS

6 The preparation of lesson plans is an essential pre-requisite of good instruction and the student instructor is to be given supervised practice in the planning and practical application of flight lesson plans.

GENERAL CONSIDERATIONS

7 The student instructor should complete flight training in order to practise the principles of basic instruction at the PPL(H) level.

8 During this training, except when acting as a student pilot for mutual flights, the student instructor occupies the seat normally occupied by the Flight Instructor.

9 It is to be noted that airmanship is a vital ingredient of all flight operations. Therefore, in the following air exercises the relevant aspects of airmanship are to be stressed at the appropriate times during each flight.

10 If the privileges of the FI(H) certificate are to include instruction for night flying, exercise 28 should be undertaken either as a part of the course or subsequent to certificate issue.

FLIGHT INSTRUCTION SYLLABUS CONTENTS

LONG BRIEFINGS AND AIR EXERCISES

1 Familiarisation with the helicopter

2 Preparation before and action after flight

3 Air experience

4 Effects of controls

5 Power and attitude changes

6 Level flight, climbing and descending and turning

7 Auto-rotations

8 Hovering and hover taxying

9 Take-off and landing

10 Transitions from hover to climb and approach to hover

11 Circuits and emergencies

12 First solo

13 Sideways and backwards hover manoeuvring

14 Spot turns

15 Hover out of ground effect (OGE) and Vortex ring

16 Simulated engine off landings

17 Advanced auto-rotations

18 Practice forced landings

19 Steep turns

20 Transitions

21 Quick-stops

22 Navigation

23 Advanced take-offs, landings and transitions

24 Sloping ground

25 Limited power

26 Confined areas

27 Basic instrument flying

28 Night flying (if night instructional qualification required)

NOTE: Airmanship should be included as required in each exercise.

EXERCISE 1 - FAMILIARISATION WITH THE HELICOPTER

LONG BRIEFING

Objectives
to familiarise the student with the helicopter
to explain the characteristics of the helicopter
the cockpit layout
the helicopter and engine systems
the use of the check list(s) and procedures

to familiarise the student with the helicopter controls
to explain the differences when occupying the instructor's seat

EMERGENCY DRILLS
to explain the action in the event of a fire on the ground or in the air:
engine fire
cockpit/cabin fire
electrical fire
system failure drills as applicable to type

escape exits

to demonstrate escape drills including use of Emergency equipment

EXERCISE 2 - PREPARATION FOR AND ACTION AFTER FLIGHT

LONG BRIEFING
Objectives
to explain flight authorisation and helicopter acceptance including tech log (if applicable) and certificate of maintenance
equipment required for flight (maps, etc.)
external checks
internal checks
harness, seat and rudder pedal adjustment, (student comfort)
to demonstrate starting and after starting checks
system/power/serviceability checks (as applicable)
closing down/shutting down the helicopter (including system checks)
to explain parking, leaving the helicopter (including safety/security as applicable)
completion of the authorisation sheet and helicopter serviceability documents

EXERCISE 3 - AIR EXPERIENCE

Note: there is no requirement for a long briefing for this exercise

AIR EXERCISE
Objectives
to give the student air experience
to familiarise the student with the cockpit layout, ergonomics, controls
to demonstrate cockpit procedures
stability and control

EXERCISE 4 - EFFECTS OF CONTROLS

LONG BRIEFING
Objectives
to explain the function of the flying controls (primary and secondary effect)
the effect of airspeed
the effect of power changes (torque)
the effect of yaw (sideslip)
the effect of disc loading (bank and flare)
the effect on controls of selecting hydraulics on/off
the effect of control friction
the instruments
the use of carburettor heat/anti-icing control

AIR EXERCISE
Objectives
to demonstrate the function of the flying controls
the effects of airspeed
the effect of power changes (torque)
the effect of yaw (sideslip)
the effect of disc loading (bank and flare)
the effect on controls of selecting hydraulics on/off
the effect of control friction
the instruments (including instrument scan)
the use of carburettor heat/anti-icing control

EXERCISE 5 - POWER AND ATTITUDE CHANGES

LONG BRIEFING
Objectives
to explain the relationship between cyclic control position, disc attitude, fuselage attitude and airspeed flapback
the power required diagram in relation to airspeed
power and airspeed changes in level flight
the use of the instruments for precision
the engine and airspeed limitations

AIR EXERCISE
Objectives
to demonstrate the relationship between cyclic control position, disc attitude, fuselage attitude and airspeed flapback
power and airspeed changes in level flight
the use of instruments for precision (including instrument scan and lookout)

EXERCISE 6 - LEVEL FLIGHT, CLIMBING, DESCENDING AND TURNING

NOTE: For ease of training this exercise is divided into four separate parts in the PPL(H) syllabus but may be taught complete or in convenient parts

LONG BRIEFING
Objectives
to explain the basic factors involved in level flight
the normal power settings
the use of control friction and/or trim
the importance of maintaining direction and balance
the power required/power available diagram
the optimum climb and descent speeds/angles/rates
the importance of balance, attitude and co-ordination in the turn
the effects of turning on rate of climb/descent
the use of the gyro direction/heading indicator and compass
the use of instruments for precision

AIR EXERCISE
Objectives
to demonstrate maintaining straight and level flight at normal cruise power
control in pitch, including use of control friction and/or trim
the use of the ball/yawstring to maintain direction and balance
setting and use of power for selected airspeeds/speed changes
entry to climb
normal and maximum rate of climb
levelling off from climb at selected altitudes/heights
entry to descent
effect of power and airspeed on rate of descent
levelling off from descent at selected altitudes/heights
entry to medium rate turns
importance of balance, attitude and co-ordination to maintain level turn
resuming straight and level flight
turns onto selected headings, use of direction indicator and compass
turns whilst climbing and descending
effect of turn on rate of climb or descent
the use of instruments for precision (including instrument scan and lookout)

EXERCISE 7 - AUTOROTATION

LONG BRIEFING
Objectives
to explain the characteristics of autorotation
safety checks (including lookout and verbal warning)
entry and development of autorotation
the effect of AUM, IAS, disc loading, G forces and density altitude on RRPM and rate of descent
rotor and engine limitations
control of airspeed and RRPM
recovery to powered flight
throttle override and control of ERPM/RRPM during re-engagement (as applicable)
danger of vortex condition during recovery

AIR EXERCISE
Objectives
to demonstrate safety checks (including verbal warning and lookout)
entry to and establishing in autorotation
effect of IAS and disc loading on RRPM and rate of descent
control of airspeed and RRPM
recovery to powered flight
medium turns in autorotation
a simulated engine off landing (as appropriate)

EXERCISE 8 - HOVERING AND HOVER TAXIING

LONG BRIEFING
Objectives
to explain ground effect and power required
effect of wind, attitude and surface
stability in hover and effects of over controlling
effects of controls in hover
control and co-ordination during spot turns
requirement for slow hover speed to maintain ground effect
effect of hydraulic failure in hover
specific hazards, e.g. snow, dust, etc.

AIR EXERCISE
Objectives
to demonstrate ground effect and power/height relationship
effect of wind, attitude and surface
stability in hover and effects of over controlling
effects of controls and hover technique
gentle forward running touchdown
control and co-ordination during spot (90 degree clearing) turns
control and co-ordination during hover taxi
dangers of mishandling and overpitching
(where applicable) effect of hydraulics failure in hover
simulated engine failure in the hover and hover taxi

EXERCISE 9 - TAKE-OFF AND LANDING

LONG BRIEFING
Objectives
to explain pre-take-off checks/drills
importance of good lookout
technique for lifting to hover
after take-off checks
danger of horizontal movement near ground

dangers of mishandling and overpitching
technique for landing
after landing checks
take-off and landing cross wind and downwind

AIR EXERCISE
Objectives
to demonstrate pre-take-off checks/drills
pre-take-off lookout technique
lifting to hover
after take-off checks
landing
after landing checks/drills
take-off and landing cross wind and downwind

EXERCISE 10 - TRANSITIONS FROM HOVER TO CLIMB AND APPROACH TO HOVER

LONG BRIEFING
Objectives
to revise ground effect
to explain translational lift and its effects
inflow roll and its effects
to revise flapback and its effects
to explain avoid curve diagram and associated dangers
effect/dangers of wind speed/direction during transitions
transition to climb technique
constant angle approach
transition to hover technique

AIR EXERCISE
Objectives
to revise take-off and landing
to demonstrate transition from hover to climb
effects of translational lift, inflow roll and flapback
constant angle approach
technique for transition from descent to hover
a variable flare simulated engine off landing

EXERCISE 11 - CIRCUIT, APPROACH AND LANDING

LONG BRIEFING
Objectives
to explain circuit and associated procedures
take-off and climb (including checks/speeds)
cross wind leg (including checks/speeds/angles of bank in turns)
downwind leg (including pre-landing checks)
base leg (including checks/speeds/angles of bank in turns)
final approach (including checks/speeds)
effect of wind on approach and hover IGE
cross wind approach and landing technique
missed approach and go around technique (as applicable)
steep approach technique (including danger of high sink rate)
limited power approach technique (including danger of high speed at touch down)
use of the ground effect
abandoned take-off technique
hydraulic failure drills and hydraulics off landing technique (where applicable)
drills/technique for tail rotor control/tail rotor drive failure
engine failure drills in the circuit to include

engine failure on take-off
cross wind
downwind
base leg
on final approach
noise abatement procedures (as applicable)

AIR EXERCISE
Objectives
to revise transitions and constant angle approach
to demonstrate a basic training circuit, including checks
cross wind approach and landing technique
missed approach and go around technique (as applicable)
steep approach technique
basic limited power approach/run on technique
use of ground effect
hydraulic failure and approach to touchdown with hydraulics off
and to recover at safe height (as applicable)
simulated engine failure on take-off, cross wind, downwind, base leg and finals
variable flare simulated engine off landing

EXERCISE 12 - FIRST SOLO

INSTRUCTORS BRIEF TO STUDENT TO INCLUDE:

warning of change of attitude due to reduced and laterally displaced weight
low tail, low skid/wheel during hover/landing
dangers of loss of RRPM and overpitching
pre-take-off checks
into wind take-off
drills during and after take-off
normal circuit, approach and landing
action in the event of an emergency

EXERCISE 13 - SIDEWAYS AND BACKWARDS HOVER MANOEUVRING

LONG BRIEFING
Objectives
to revise hovering
to explain directional stability and weathercocking effect
danger of pitching nose down on recovery from backwards manoeuvring
helicopter limitations for sideways and backwards manoeuvring
effect of C of G position

AIR EXERCISE
Objectives
to revise hovering and 90 degree clearing turns
to demonstrate manoeuvring sideways heading into wind
manoeuvring backwards heading into wind
manoeuvring sideways and backwards heading out of wind
manoeuvring backwards too fast and recovery action

EXERCISE 14 - SPOT TURNS

LONG BRIEFING
Objectives
to revise ground effect and effect of wind
to explain weathercocking and control actions

control of RRPM
torque effect
cyclic limiting stops due to C of G position (where applicable)
rate of turn limitations
spot turn about pilot position
spot turn about tail rotor position
spot turn about helicopter geometric centre
square (safe visibility) clearing turn

AIR EXERCISE
Objectives
to demonstrate weathercocking, torque effect and control actions
rate of turn
spot turn about pilot position
spot turn about tail rotor position
spot turn about helicopter geometric centre
square, clearing turn

EXERCISE 15 - HOVER OUT OF GROUND EFFECT AND VORTEX RING

LONG BRIEFING
Objectives
to revise ground effect and power required diagram
to explain drift/height/power control/lookout/scan
vortex ring, (including dangers, recognition and recovery actions)
loss of tail rotor effectiveness

AIR EXERCISE
Objectives
to demonstrate hover OGE
drift/height/power control/lookout and instrument scan technique
recognition of incipient stage of vortex ring/settling with power
recovery action from incipient stage of vortex ring
recognition of loss of tail rotor effectiveness and recovery actions

EXERCISE 16 - SIMULATED ENGINE OFF LANDINGS

LONG BRIEFING
Objectives
to revise basic autorotation
effect of AUM, disc loading, density altitude and RRPM decay
use of cyclic and collective to control speed/RRPM
torque effect
to explain use of flare/turn to restore RRPM
technique for variable flare simulated EOL
technique for constant attitude simulated EOL
to revise technique for hover/hover taxi simulated EOL
to explain emergency technique for engine failure during transition
technique for low level simulated EOL

AIR EXERCISE
Objectives
to revise entry to and control in autorotation
to demonstrate variable flare simulated EOL
constant attitude simulated EOL
hover simulated EOL
hover taxi simulated EOL
low level simulated EOL

EXERCISE 17 - ADVANCED AUTOROTATIONS

LONG BRIEFING

Objectives

to explain effect of airspeed/AUM on angles/rates of descent
effect of RRPM setting on angle/rate of descent
reason and technique for range autorotation
reason and technique for constant attitude autorotation
reason and technique for low speed and 'S' turns in autorotation
speed/bank limitations in turns in autorotation

to revise re-engagement/go-around procedures

AIR EXERCISE

Objectives

to select ground marker and standard datum height to determine distance covered during various autorotation techniques

to revise basic autorotation

to demonstrate technique for range autorotation
technique for constant attitude autorotation
technique for low speed autorotation, including need for timely speed recovery
technique for 'S' turn in autorotation
180 and 360 degree turns in autorotation

to revise re-engagement and go-around technique

EXERCISE 18 - PRACTICE FORCED LANDINGS

LONG BRIEFING

Objectives

to explain types of terrain/surface options for choice of best landing area
practice forced landing procedure
forced landing checks and crash actions
rules/height for recovery and go-around

AIR EXERCISE

Objectives

to demonstrate recognition of types of terrain from normal cruise height/altitude
practice forced landing technique

to revise recovery/go-around technique

EXERCISE 19 - STEEP TURNS

LONG BRIEFING

Objectives

to explain airspeed/angle of bank limitations
technique for co-ordination to hold bank/attitude

to revise speed/bank limitations in autorotation including RRPM control

to explain significance of disc loading, vibration and control feedback
effect of wind in turns at low level

AIR EXERCISE

Objectives

to demonstrate technique for turning at 30 degrees of bank
technique for turning at 45 degrees of bank (where possible)
steep autorotative turns

to explain faults in the turn - balance, attitude, bank and co-ordination

to demonstrate effect of wind at low level

EXERCISE 20 - TRANSITIONS

LONG BRIEFING
objectives
to revise effect of ground cushion, translational lift, flapback
to explain training requirement for precision exercise
technique for transition to forward flight and back to hover as precision exercise
effect of wind

AIR EXERCISE
Objectives
to demonstrate transition from hover to minimum 50 knots IAS and back to hover

NOTE: select constant height (20 - 30 feet) and maintain

to demonstrate effect of wind

EXERCISE 21 - QUICKSTOPS

LONG BRIEFING
Objectives
to explain power control co-ordination
to revise effect of wind
to explain technique for quickstop into wind
technique for quickstop from cross wind
to revise airspeed/angles of bank limitations
to explain technique for Emergency turn from downwind
technique for quickstop from downwind from high speed - flare and turn
technique for quickstop from downwind from low speed - turn and flare

NOTE: use reasonable datum speed e.g. high speed, low speed

to explain danger of holding flare when downwind, (vortex ring) - (minimum speed 70 knots)
to revise danger of high disc loading

AIR EXERCISE
Objectives
to demonstrate technique for quickstop into wind
technique for quickstop from cross wind
danger of vortex ring and disc loading
technique for quickstop from downwind with low speed
technique for quickstop from downwind with high speed
Emergency turns from downwind

EXERCISE 22 - NAVIGATION

LONG BRIEFING - to be broken down into manageable parts at discretion of instructor
Objectives
flight planning
to explain use of weather forecasts/actuals
map selection, orientation, preparation and use
route choice with particular regard to:
controlled airspace, danger and prohibited areas
safety altitudes
calculations with particular regard to:
magnetic heading(s), time(s) en route
fuel consumption
mass and balance
use of flight information with particular regard to:
NOTAM's

radio frequencies
selection of alternate landing sites
to revise and explain helicopter documentation
to explain notification of the flight, to include
pre-flight administration procedures
flight plan form (where appropriate)

departure
to explain importance of organisation of cockpit workload
departure procedures to include
altimeter settings
ATC liaison in controlled/regulated airspace
setting heading procedure
noting of ETA's
maintenance of height/altitude and heading
procedure for revisions of ETA and headings to include
10 degree line, double track, track error, closing angle
1 in 60 rule
amending an ETA
log keeping
use of radio
use of navaids
weather monitoring and minimum weather conditions for continuation of flight
significance of in flight decision making
technique for transiting controlled/regulated airspace
uncertainty of position procedure
lost procedure

arrival
to explain aerodrome joining procedure, in particular
ATC liaison in controlled/regulated airspace
altimeter setting
entering traffic pattern
circuit procedures
parking procedures, in particular
security of helicopter
refuelling
closing of flight plan, (if appropriate)
post flight administrative procedures

navigation problems at low heights and reduced visibility
to explain actions prior to descending
significance of hazards, (e.g. obstacles, other traffic)
difficulties of map reading
effects of wind and turbulence
significance of avoiding noise sensitive areas
procedures for joining a circuit from low level
procedures for a bad weather circuit and landing

radio navigation
to explain use of VHF Omni Range, including:
availability, AIP, frequencies
selection and identification
omni bearing selector (OBS)
to/from indications, orientation
course deviation indicator (CDI)
determination of radial
intercepting and maintaining a radial

VOR passage
obtaining a fix from two VORs
use of automatic direction finding equipment (ADF)/ non-directional beacons (NDBs), including:
availability, AIP, frequencies
selection and identification
orientation relative to beacon
homing
use of VHF direction finding (VHF/DF)
availability, AIP, frequencies
R/T procedures and ATC liaison
obtaining a QDM and homing
use of en-route/terminal radar, including:
availability, AIP
procedures and ATC liaison
pilots responsibilities
secondary surveillance radar, including:
transponders
code selection
interrogation and reply
use of distance measuring equipment (DME), including:
station selection and identification
modes of operation, including:
distance, groundspeed, time to run

AIR EXERCISE
Objectives
to demonstrate navigation procedures as necessary
to advise student and correct errors as necessary
to demonstrate map reading techniques
the significance of calculations
revision of headings and ETA's
use of radio
use of navaids, including ADF/NDB, VOR, VHF/DF, DME, Transponder
log keeping
importance of decision making
procedure to deal with uncertainty of position
lost procedure
aerodrome joining procedure
parking and shut-down procedures
post-flight administration procedures

EXERCISE 23 - ADVANCED TAKE-OFF, LANDINGS, TRANSITIONS

LONG BRIEFING
Objectives
to revise landing and takeoff out of wind (performance reduction)
wind limitations
directional stability variation when out of wind
power required diagram
to explain technique for downwind transitions
technique for vertical take-off over obstacles
reconnaissance technique for landing site
power checks
technique for running landing
technique for zero speed landing
technique for cross wind and downwind landings

steep approach, including dangers
to revise go around procedures

AIR EXERCISE
Objectives
to demonstrate technique for downwind transition
technique for vertical take-off over obstacles
reconnaissance technique for landing site
power check and assessment
technique for running landing
technique for zero speed landing
technique for cross wind and downwind landings
technique for steep approach
go around procedures

EXERCISE 24 - SLOPING GROUND

LONG BRIEFING
Objectives
to explain limitations
wind and slope relationship, including blade and control stops
the effect of C of G when on slope
ground effect and power required when on slope
landing technique when on slope, left, right and nose-up
avoidance of dynamic rollover, dangers of soft ground and sideways movement
dangers of overcontrolling near ground on slope
danger of striking main/tail rotor on up slope

AIR EXERCISE
Objectives
to demonstrate technique for assessing slope angle
technique for landing/take-off left skid up slope
technique for landing/take-off right skid up slope
technique for landing nose up slope
dangers of overcontrolling near ground

EXERCISE 25 - LIMITED POWER

LONG BRIEFING
Objectives
to explain use of appropriate helicopter performance graphs
selection of technique according to available power
effect of wind on available power

AIR EXERCISE
Objectives
to revise and refine techniques demonstrated in Exercise 23

EXERCISE 26 - CONFINED AREAS

LONG BRIEFING
Objectives
to revise use of helicopter performance graphs
to explain procedure for locating landing site and selecting site marker
procedures for assessing wind speed/direction
landing site reconnaissance techniques
reason for selecting landing markers
procedure for selecting direction and type of approach

dangers of out of wind approach
circuit procedures
reason for approach to committal point and go around, (practice approach)
approach technique
to revise clearing turn and landing, (sloping ground technique)
to explain hover power check/performance assessment IGE and OGE, (if necessary)
take-off procedures

AIR EXERCISE
Objectives
to demonstrate procedure for locating landing site and selecting site marker
procedure for assessing wind speed/direction
landing site reconnaissance techniques
selecting landing markers, direction and type of approach
circuit procedure
practice approach, go around and approach technique
to revise clearing turn and landing, (sloping ground technique)
to demonstrate hover power check/performance assessment IGE and OGE, (if necessary)
take-off procedures

EXERCISE 27 - BASIC INSTRUMENT FLIGHT

LONG BRIEFING
Objectives
to explain physiological sensations
instrument appreciation
attitude instrument flight
instrument scan
instrument limitations
basic manoeuvres by sole reference to instruments, including:
straight and level flight at various airspeeds and configurations
climbing and descending
standard rate turns, climbing and descending , onto selected headings
recoveries from climbing and descending turns (unusual attitudes)

AIR EXERCISE
Objectives
to demonstrate attitude instrument flight and instrument scan
basic manoeuvres by sole reference to instruments, including:
straight and level flight at various airspeeds and configurations
climbing and descending
standard rate turns, climbing and descending, onto selected headings
recoveries from climbing and descending turns (unusual attitudes)

EXERCISE 28 - NIGHT FLYING (if night instructional qualification required)

LONG BRIEFING
Objectives
to explain medical/physiological aspects of night vision
requirement for torch to be carried, (pre-flight inspection, etc.)
use of the landing light
take-off and hover taxi procedures at night
night take-off procedure
cockpit procedures at night
approach techniques
night landing techniques
night autorotation techniques (power recovery at safe height)

technique for practice forced landing at night (using appropriate illumination)
Emergency procedures at night
navigation principles at night
map marking for night use, (highlighting built up/lit areas with thicker lines, etc.)

AIR EXERCISE
Objectives
to demonstrate use of torch for pre-flight inspection
use of landing light
night take-off to hover, (no sideways or backwards movement)
night hover taxi, (higher and slower than by day)
night transition procedure
night circuit
night approach and landing, (including use of landing light)
night autorotation (power recovery at safe height)
practice forced landing at night, (using appropriate illumination)
night Emergency procedures
night cross country techniques, as appropriate

C. Airships

Part 2

AIR EXERCISES

1 The air exercises are similar to those used for the training of PPL(As) but with additional items designed to cover the needs of a flight instructor.

2 The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide: therefore the demonstrations and practices need not necessarily be given in the order listed. The actual order and content will depend upon the following interrelated factors:

The applicant's progress and ability
The weather conditions affecting the flight
The flight time available
Instructional technique considerations
The local operating environment

3 It follows that student instructors will eventually be faced with similar interrelated factors. They should be shown and taught how to construct flight lesson plans, taking these factors into account, so as to make the best use of each flight lesson, combining parts of the set exercises as necessary.

GENERAL

4 The briefing normally includes a statement of the aim and a brief allusion to principles of flight only if relevant. An explanation is to be given of exactly what air exercises are to be taught by the instructor and practised by the student during the flight. It should include how the flight will be conducted with regard to who is to fly the airship and what airmanship, weather and flight safety aspects currently apply. The nature of the lesson will govern the order in which the constituent parts are to be taught.

5 The four basic components of the briefing will be:

1 The aim
2 Principles of Flight (briefest reference only)

3 The Air Exercise(s) (what, and how and by whom)
4 Airmanship (weather, flight safety etc.)

PLANNING OF FLIGHT LESSONS

6 The preparation of lesson plans is an essential pre-requisite of good instruction and the student instructor is to be given supervised practice in the planning and practical application of flight lesson plans.

GENERAL CONSIDERATIONS

7 The student instructor should complete flight training to practise the principles of basic instruction at the PPL(As) level.

8 During this training, except when acting as a student pilot for mutual flights, the student instructor occupies the seat normally occupied by the FI(As).

9 It is to be noted that airmanship is a vital ingredient of all flight operations. Therefore, in the following air exercises the relevant aspects of airmanship are to be stressed at the appropriate times during each flight.

10 The exercises 15 and 16 of the flight instruction syllabus should be undertaken at night in addition to by day as part of the course.

FLIGHT INSTRUCTION SYLLABUS CONTENTS

LONG BRIEFINGS AND AIR EXERCISES

1 Familiarisation with the airship

1E Emergency drills

2 Preparation before and action after flight

3 Air experience

4 Effects of controls

5 Ground manoeuvring

6 Take off procedures

6E Emergencies

7 Climbing

8 Straight and level flight

9 Descending

10 Turning

11 Hovering

12 Approach and landing

12E Emergencies

13 Precautionary landing

14A Navigation

14B Navigation problems at lower levels / reduced visibility

14C Radio navigation

15 Basic Instrument Flight

16 Basic night flight

NOTE: Although exercise 16 is not required for the PPL(As) course it is a requirement for the FI(As) course.

FLIGHT INSTRUCTION SYLLABUS CONTENTS

LONG BRIEFINGS AND AIR EXERCISES

EXERCISE 1 - FAMILIARISATION WITH THE AIRSHIP

LONG BRIEFING
Objectives
to familiarise the student with the airship
to explain the characteristics of the airship
the cockpit layout
the airship and engine systems
the use of the check list(s) and procedures

to familiarise the student with the airship controls
to explain the differences when occupying the instructor's seat

EMERGENCY DRILLS
to explain the action in the event of a fire on the ground or in the air:
engine fire
cockpit/cabin fire
electrical fire
system failure drills as applicable to type
escape exits

to demonstrate escape drills including use of Emergency equipment

EXERCISE 2 - PREPARATION FOR AND ACTION AFTER FLIGHT

LONG BRIEFING
Objectives
to explain flight authorisation and airship acceptance including tech log (if applicable) and certificate of maintenance
equipment required for flight (maps, etc.)
external checks
internal checks
harness, seat and rudder pedal adjustment, (student comfort)
to demonstrate starting and after starting checks
system/power/serviceability checks (as applicable)
closing down/shutting down the airship (including system checks)
to explain parking, masting / unmasting, leaving the airship (including safety/security as applicable)
completion of the authorisation sheet and airship serviceability documents
to advise student and correct errors as necessary

EXERCISE 3 - AIR EXPERIENCE

NOTE: there is no requirement for a long briefing for this exercise

AIR EXERCISE
Objectives
to give the student air experience
to familiarise the student with the cockpit layout, ergonomics, controls
to demonstrate cockpit procedures

EXERCISE 4 - EFFECTS OF CONTROLS

LONG BRIEFING
Objectives
to explain the function of the flying controls (primary and secondary effect)
the effect of airspeed
the effect of power changes
the effect of trimming and other controls
the instruments
the use of carburettor heat

AIR EXERCISE
Objectives
to demonstrate the function of the flying controls
the effects of airspeed
the effect of power changes
the effect of trimming and other controls
the instruments (including instrument scan)
the use of carburettor heat

to advise student and correct errors as necessary

EXERCISE 5 – GROUND MANOUEVERING

LONG BRIEFING
Objectives
to explain the pre-taxi checks
starting, control of speed and stopping
engine handling
masting procedures
control of direction and turning
effects of wind
effects of ground surface
marshalling signals
instrument checks
air traffic control procedures
emergencies

AIR EXERCISE
Objectives
to demonstrate starting, control of speed and stopping
engine handling
masting procedures
control of direction and turning
effects of wind
to advise student and correct errors as necessary

EXERCISE 6 – TAKE OFF PROCEDURES

LONG BRIEFING
Objectives

to explain pre take off checks
take off with different static heaviness
drills during and after take-off
noise abatement procedures

AIR EXERCISE
Objectives

to demonstrate take off with different static heaviness

drills during and after take-off

to advise student and correct errors as necessary

EXERCISE 6E – EMERGENCIES

LONG BRIEFING
Objectives
to explain the abandoned take-off
engine failures and actions after take-off
malfunctions of thrust vector control
aerodynamic control failures
electrical and system failures

AIR EXERCISE
Objectives
to demonstrate how to abandon a take-ff
an engine failure and suitable action
malfunctions of thrust vector control
aerodynamic control failures

to advise student and correct errors as necessary

EXERCISE 7 – CLIMBING

LONG BRIEFING
Objectives
to explain the entry and how to maintain the normal and max rate of climb
the levelling off procedure
how to level off at selected altitudes
the maximum angle of climb
the maximum rate of climb

AIR EXERCISE

Objectives
to demonstrate how to level off at selected altitudes
the maximum angle of climb
the maximum rate of climb

to advise student and correct errors as necessary

EXERCISE 8 – STRAIGHT AND LEVEL FLIGHT

LONG BRIEFING
Objectives
to explain how to attain and maintain straight and level flight
flight at or close to pressure height
the control in pitch, including use of trim
at selected airspeeds (use of power)
during speed changes
the use of instruments for precision

AIR EXERCISE
Objectives

to demonstrate how to attain and maintain straight and level flight
a flight at or close to pressure height
the control in pitch, including use of trim
at selected airspeeds (use of power)
during speed changes
to advise student and correct errors as necessary

EXERCISE 9 - DESCENDING

LONG BRIEFING
Objectives
to explain entry, maintaining and levelling off techniques
levelling off at selected altitudes
maximum rate of descent
maximum angle of descent
the use of instruments for precision flight

AIR EXERCISE
Objectives
to demonstrate levelling off at selected altitudes
maximum rate of descent
maximum angle of descent
to advise student and correct errors as necessary

EXERCISE 10 - TURNING

LONG BRIEFING
Objectives
to explain the entry and maintaining level turns
resuming straight flight
faults in the turn
climbing turns
descending turns
turns onto selected headings, use of gyro heading indicator and compass
use of instruments for precision

AIR EXERCISE
Objectives
to demonstrate the faults in the turn and correction techniques
climbing turns
descending turns
to advise student and correct errors as necessary

EXERCISE 11 - HOVERING

LONG BRIEFING
Objectives
to explain hovering manoeuvres (as applicable)

AIR EXERCISE
Objectives
to demonstrate hovering manoeuvres (as applicable)
to advise student and correct errors as necessary

EXERCISE 12 – APPROACH AND LANDING

LONG BRIEFING
Objectives

to explain the effect of wind on approach and touchdown speeds
landing with different static heaviness
missed approach/go around procedures
noise abatement procedures

AIR EXERCISE
Objectives
to demonstrate a landing with different static heaviness
missed approach/go around procedures
to advise student and correct errors as necessary

EXERCISE 12E - EMERGENCIES

Objectives
to explain the action in the event of:
an aborted approach / go around
a malfunction of thrust vector control
envelope emergencies
fire emergencies
aerodynamic control failures
electrical and system failures

to demonstrate emergency drills and actions
to advise student and correct errors as necessary

EXERCISE 13 – PRECAUTIONARY LANDING

LONG BRIEFING
Objectives
to explain occasions necessitating a precautionary landing
in-flight conditions
landing area selection
circuit and approach

AIR EXERCISE
Objectives
to demonstrate how to perform the landing area selection
circuit and approach
to advise student and correct errors as necessary

EXERCISE 14 A - NAVIGATION

LONG BRIEFING
Objectives
to explain how to do the flight planning
the departure for a navigation flight
in flight navigational techniques
the arrival and aerodrome joining procedures

AIR EXERCISE
Objectives
to demonstrate the complete flight planning of a navigation flight
the departure for a navigation flight
in flight navigational techniques
the arrival and aerodrome joining procedures
to advise student and correct errors as necessary

EXERCISE 14B – NAVIGATION PROBLEMS AT LOWER LEVELS AND IN REDUCED VISIBILITY

LONG BRIEFING
Objectives
to explain actions prior to descending
possible hazards (e.g. obstacles, and terrain) and actions
student difficulties of map reading
effects of winds, turbulence and precipitation
vertical situational awareness
avoidance of noise sensitive areas
joining the circuit
bad weather circuit and landing

AIR EXERCISE
Objectives
to demonstrate actions prior to descending
map reading techniques
vertical situational awareness
avoidance of noise sensitive areas
joining the circuit
bad weather circuit and landing
to advise student and correct errors as necessary

EXERCISE 14C – RADIO NAVIGATION

LONG BRIEFING
Objectives
to explain the use of VHF Omni Range
the use of automatic direction finding equipment (ADF)
the use of non-directional beacons (NDBs)
the use of VHF direction finding (VHF/DF)
the use of en-route/terminal radar
the use of distance measuring equipment (DME)

AIR EXERCISE
Objectives
to demonstrate the use of navaids
procedure to deal with uncertainty of position
to advise student and correct errors as necessary

EXERCISE 15 – BASIC INSTRUMENT FLIGHT

LONG BRIEFING
Objectives
to explain physiological sensations
instrument appreciation
attitude instrument flight
instrument scan
instrument limitations
the basic manoeuvres by sole reference to the instruments:
straight and level
climbing and descending
turns, climbing and descending, onto selected headings
recoveries from climbing and descending turns

AIR EXERCISE
Objectives
to demonstrate attitude instrument flight and instrument scan

the basic manoeuvres:
straight and level
climbing and descending
turns, climbing and descending, onto selected headings
recoveries from climbing and descending turns
to advise student and correct errors as necessary

EXERCISE 16 - NIGHT FLYING (if night instructional qualification required)

LONG BRIEFING
Objectives
to explain medical/physiological aspects of night vision
requirement for torch to be carried, (pre-flight inspection, etc.)
use of the landing light
ground manoeuvring procedures at night
night take-off procedure
cockpit procedures at night
approach techniques
night landing techniques
Emergency procedures at night
navigation principles at night

AIR EXERCISE
Objectives
to demonstrate use of landing light
night ground manoeuvring
night take-off / circuit / approach and landing (including use of landing light)
to advise student and correct errors as necessary

D. Sailplanes
For the FI certificate (sailplanes) training course the AMC to FCL.930LAFI may be used.

E. Balloons
For the FI certificate (balloons) training course the AMC to FCL.930LAFI may be used.

AMC to FCL.940.FI(a)(2)

Flight Instructor (FI)/Instrument Rating Instructor (IRI) refresher seminar

1 FI/IRI refresher seminars made available in member States should have due regard to geographical location, numbers attending, and periodicity throughout the State concerned.

2 Such seminars should run for at least two days, and attendance from participants will be required for the whole duration of the seminar including breakout groups/workshops. Different aspects, such as inclusion of participants holding certificates in other categories of aircraft should be considered.

3 Some experienced FIs/IRIs currently involved with flying training and with a practical understanding of the revalidation requirements and current instructional techniques should be included as speakers at these seminars.

4 The attendance form will be completed and signed by the organiser of the seminar as approved by the Authority, following attendance and satisfactory participation by the FI/IRI.

5 The content of the FI/IRI refresher seminar should be selected from the following:

a. new and/or current rules/regulations, with emphasis on knowledge of Part-FCL and Part-OPS requirements;

b. teaching and learning;

c. instructional techniques;

d. the role of the instructor;

e. national regulations (as applicable);

f. human factors;

g. flight safety, incident and accident prevention;

h. airmanship;

i. legal aspects and enforcement procedures;

j. navigational skills including new/current radio navigation aids;

k. teaching instrument flying; and

l. weather related topics including methods of distribution.

m. any additional topic selected by the Authority.

Formal sessions should allow for a presentation time of 45 minutes, with 15 minutes for questions. The use of visual aids is recommended, with interactive video and other teaching aids (where available) for breakout groups/workshops.

GM to FCL.940.FI(a)(2) and to FCL.940.LAFI

Flight instructor and Light Aircraft Flight Instructor certificate – Revalidation and renewal form

A. Aeroplanes

INSTRUCTIONAL FLYING EXPERIENCE				
Instructors applying for revalidation of the Flight Instructor Certificate / Light Aircraft Flight Instructor Certificate should enter the instructional hours flown during the preceding 36 months.				
SINGLE-ENGINE		MULTI-ENGINE		INSTRUMENT
DAY	NIGHT	DAY	NIGHT	
Total instructional hours (preceding 36 months):				
Total instructional hours (preceding 12 months):				

FLIGHT INSTRUCTOR / LIGHT AIRCRAFT FLIGHT INSTRUCTOR REFRESHER SEMINAR		
1	**This is to certify that the undersigned attended a Flight Instructor / Light Aircraft Flight Instructor Seminar approved by the Authority**	
2	**Attendee's personal particulars:**	
Name:		Address:
Licence number:		Exp. date of FI(A) / LAFI(A) certificate
3	**Seminar particulars:**	
Date/s of seminar:		Place:

4	**Declaration by the responsible organiser:**
I certify that the above data are correct and that the Flight Instructor Seminar / Light Aircraft Flight Instructor Seminar was carried out as approved by the Authority..	
Date of approval:	Name of organiser: (block letters)
Date and place:	Signature:

5	**Declaration by the attendee:**
I confirm the data under 1 through 3	
Attendee's signature:	

PROFICIENCY CHECK	
.......................................(Name of applicant) has given proof of flying instructional ability during a proficiency check flight. This was done to my satisfaction.	
Flying time:	Aeroplane/Sim. used:
Main exercise:	
Name of FIE:	Licence number:
Date and place:	Signature:

B. Helicopters

INSTRUCTIONAL FLYING EXPERIENCE [ ]
Instructors applying for revalidation of the Flight Instructor Certificate / Light Aircraft Flight Instructor Certificate should enter the instructional hours flown during the preceding 36 months.
INSTRUMENT:
Total instructional hours (preceding. 36 months):
Total instructional hours (preceding. 12 months):

<table>
<tr><th colspan="4">FLIGHT INSTRUCTOR / LIGHT AIRCRAFT FLIGHT INSTRUCTOR REFRESHER SEMINAR</th></tr>
<tr><td>1</td><td colspan="3">This is to certify that the undersigned attended a Flight Instructor Seminar / Light Aircraft Flight Instructor Seminar approved by the Authority</td></tr>
<tr><td>2</td><td colspan="3">Attendees personal particulars:</td></tr>
<tr><td colspan="2">Name:</td><td colspan="2">Address:</td></tr>
<tr><td colspan="2">Licence number:</td><td colspan="2">Exp. date of FI(H) / LAFI(H) certificate:</td></tr>
<tr><td>3</td><td colspan="3">Seminar particulars:</td></tr>
<tr><td colspan="2">Date/s of seminar:</td><td colspan="2">Place:</td></tr>
<tr><td>4</td><td colspan="3">Declaration by the responsible organiser:</td></tr>
<tr><td colspan="4">I certify that the above data are correct and that the Flight Instructor / Light Aircraft Flight Instructor Seminar was carried out as approved by the Authority.</td></tr>
<tr><td>Date of approval:</td><td></td><td>Name of organiser:</td><td></td></tr>
<tr><td>Date and place:</td><td></td><td>Signature:</td><td></td></tr>
<tr><td>5</td><td colspan="3">Declaration by the attendee:</td></tr>
<tr><td colspan="4">I confirm the data under 1 through 3</td></tr>
<tr><td colspan="4">Attendee’s signature:</td></tr>
<tr><th colspan="4">PROFICIENCY CHECK</th></tr>
<tr><td colspan="4">..(Name of applicant) has given proof of flying instructional ability during a proficiency check flight. This was done to my satisfaction.</td></tr>
<tr><td colspan="2">Flying time:</td><td colspan="2">Helicopter/Flight simulator used:</td></tr>
<tr><td colspan="4">Main exercise:</td></tr>
<tr><td colspan="2">Name of FIE:</td><td colspan="2">Licence number:</td></tr>
<tr><td colspan="4">Date and place:
Signature:</td></tr>
</table>

C. Airships

INSTRUCTIONAL FLYING EXPERIENCE				
Instructors applying for revalidation of the Flight Instructor Certificate should enter the instructional hours flown during the preceding 36 months.				
SINGLE-ENGINE		MULTI-ENGINE		INSTRUMENT
DAY	NIGHT	DAY	NIGHT	
Total instructional hours (preceding 36 months):				
Total instructional hours (preceding 12 months):				

FLIGHT INSTRUCTOR REFRESHER SEMINAR		
1	**This is to certify that the undersigned attended a Flight Instructor Seminar approved by the Authority**	
2	**Attendee's personal particulars:**	
Name:		Address:
Licence number:		Exp. date of FI(AS) certificate:
3	**Seminar particulars:**	
Date/s of seminar:		Place:
4	**Declaration by the responsible organiser:**	
I certify that the above data are correct and that the Flight Instructor Seminar was carried out as approved by the Authority.		
Date of approval:		Name of organiser: (block letters)
Date and place:		Signature:
5	**Declaration by the attendee:**	
I confirm the data under 1 through 3		
Attendee's signature:		

PROFICIENCY CHECK	
..(Name of applicant) has given proof of flying instructional ability during a proficiency check flight. This was done to my satisfaction.	
Flying time:	Airship/Sim. used:
Main exercise:	

Name of FIE:	Licence number:
Date and place:	Signature:

D. Sailplanes

INSTRUCTIONAL FLYING EXPERIENCE			
Instructors applying for revalidation of the Flight Instructor / Light Aircraft Flight Instructor Certificate should enter the instructional hours and take offs flown during the preceding 36 months.			
SAILPLANE (hours/take-offs)		TOURING MOTOR GLIDER (hours/take-offs)	
DAY	NIGHT	DAY	NIGHT
Total instructional hours (preceding 36 months):			
Total instructional hours (preceding 12 months):			
Total amount of take-offs (preceding 36 months):			
Total amount of take-offs (preceding 12 months):			

FLIGHT INSTRUCTOR REFRESHER SEMINAR		
1	**This is to certify that the undersigned attended a Flight Instructor / Light Aircraft Flight Instructor Seminar approved by the Authority**	
2	**Attendee's personal particulars:**	
Name:		Address:
Licence number:		Exp. date of FI(S) / LAFI(S) certificate:
3	**Seminar particulars:**	
Date/s of seminar:		Place:
4	**Declaration by the responsible organiser:**	
I certify that the above data are correct and that the Flight Instructor / Light Aircraft Flight Instructor Seminar was carried out as approved by the Authority.		
Date of approval:		Name of organiser: (block letters)
Date and place:		Signature:

5	**Declaration by the attendee:**
I confirm the data under 1 through 3	
Attendee's signature:	
PROFICIENCY CHECK	
……………………………….(Name of applicant) has given proof of flying instructional ability during a proficiency check flight. This was done to my satisfaction.	
Flying time:	Sailplane/TMG used:
Main exercise:	
Name of FIE/FIE(LAFI):	Licence number:
Date and place:	Signature:

E. Balloons

INSTRUCTIONAL FLYING EXPERIENCE					
Instructors applying for revalidation of the Flight Instructor / Light Aircraft Flight Instructor Certificate should enter the instructional hours flown during the preceding 36 months.					
Balloons (gas)		Balloons (hot air)		Hot air airships	
DAY	NIGHT	DAY	NIGHT	DAY	NIGHT
Total instructional hours (preceding 36 months):					
Total instructional hours (preceding 12 months):					

FLIGHT INSTRUCTOR REFRESHER SEMINAR		
1	**This is to certify that the undersigned attended a Flight Instructor / Light Aircraft Flight Instructor Seminar approved by the Authority**	
2	**Attendee's personal particulars:**	
Name:		Address:
Licence number:		Exp. date of FI(B)/LAFI(B) certificate:
3	**Seminar particulars:**	
Date/s of seminar:		Place:
4	**Declaration by the responsible organiser:**	
I certify that the above data are correct and that the Flight Instructor / Light Aircraft Flight Instructor Seminar was carried out as approved by the Authority.		
Date of approval:		Name of organiser:

	(block letters)
Date and place:	Signature:
5 **Declaration by the attendee:**	
I confirm the data under 1 through 3	
Attendee's signature:	
PROFICIENCY CHECK	
......................................(Name of applicant) has given proof of flying instructional ability during a proficiency check flight. This was done to my satisfaction.	
Flying time:	Balloon/Hot Air Airship used:
Main exercise:	
Name of FIE/FIE(LAFI):	Licence number:
Date and place:	Signature:

AMC No 1 to FCL.930.TRI

TRI training course - aeroplanes

GENERAL

The aim of the TRI (A) course is to train aircraft licence holders to the level of competence defined in FCL.920 and adequate for a TRI.

The course should develop safety awareness throughout by teaching the knowledge, skills and attitudes relevant to the TRI task, and should be designed to give adequate training to the applicant in theoretical knowledge instruction, flight instruction and synthetic flight instruction in order to instruct for a multi-pilot aeroplane type rating for which the applicant is qualified.

The TRI course should give particular emphasis to the role of the individual in relation to the importance of human factors in the man-machine environment and the role of CRM. Special attention should be given to the applicant's maturity and judgment including an understanding of adults, their behavioral attitudes and variable levels of learning ability. During the course the applicants should be made aware of their own attitudes to the importance of flight safety. It will be important during the course of training to aim at giving the applicant the knowledge, skills and attitudes relevant to the role of the Type Rating Instructor.

For a TRI the amount of flight training will vary depending on the complexity of the aircraft type.

A similar number of hours should be used for the instruction and practice of pre-flight and post flight briefing for each exercise. The flight instruction should aim to ensure that the applicant is able to teach the air exercises safely and efficiently and should be related to the type of aircraft on which the applicant wishes to instruct. The content of the training program should only cover training exercises applicable to the aircraft type as set out in the applicable type rating courses.

CONTENT

The course consists of 2 parts:

- Part 1, that should comply with AMC to FCL.920
- Part 2, that should have the following content:

FLIGHT AND/OR SYNTHETIC DEVICE TRAINING INSTRUCTOR COMPETENCY COURSE

1 The course should be related to the type of aircraft on which the applicant wishes to instruct.

2 TEM, CRM and the appropriate use of behavioural markers should be integrated throughout

3 The content of the training programme should cover identified and significant exercises applicable to the aircraft type.

SYNTHETIC DEVICE TRAINING

4 The applicant for a TRI(A) certificate should be taught and made familiar with the device, its limitations, capabilities and safety features, and the instructor station.

5 The applicant for a TRI(A) certificate should be taught and made familiar with giving instruction from the seat normally occupied by the co-pilot, including demonstrations of appropriate handling exercises.

6 Courses should be developed in order to give the applicant experience in training a variety of exercises, covering both normal and abnormal operations. The syllabus should be tailored appropriate to the aircraft type, using exercises considered more demanding for the student. This should include engine-out handling and engine out operations in addition to representative exercises from the type transition course.

7 The applicant should be required to plan, brief, train and debrief sessions using all relevant training techniques.

8 At the completion of training the applicant should be required to pass a formal test demonstrating all of the competencies listed in FCL.920.

AIRCRAFT TRAINING

9 (a) The applicant for a TRI(A) certificate should receive instruction in a synthetic device to a satisfactory level in:

i) Right Hand Seat familiarisation, which should include at least the following as pilot flying:

(a) Pre-flight preparation and use of checklists
(b) taxiing;
(c) take-off;
(d) rejected take-off
(e) engine failure during take-off, after V1
(f) engine inoperative approach and go-around; and
(g) one engine (critical) simulated inoperative landing
(h) other emergency and abnormal operating procedures (as necessary)

ii) Aircraft training techniques

(a) Methods for giving appropriate commentary
(b) Particularities of handling the aircraft in touch and go manoeuvres
(c) Intervention strategies developed from situations role-played by a TRI course instructor, taken from but not limited to:

(i) Take-off configuration warning
(ii) Over controlling
(iii) High flare - long float
(iv) Long flare
(v) Baulked landing
(vi) Immediate go around from touch
(vii) Too high on approach - no flare
(viii) Incorrect configuration
(ix) GPWS warning
(x) Misuse of rudder
(xi) Over control in roll axis during flare
(xii) Incapacitation
(xiii) Actual abnormal or emergencies

9 (b) Additionally, if the applicant is required to train emergency/abnormal procedures in an aircraft, synthetic device training as follows:

Appropriate methods and minimum altitudes for simulating failures

Incorrect rudder inputs

Failure of a critical engine

Approach and full-stop landing with simulated engine-out

In this case, the abnormal manoeuvres refer to engine-out handling as necessary for completion of type rating training. If the applicant is required to train other abnormal items in the transition course, additional training will be required.

10 Upon successful completion of the training above, the applicant should receive training in an aircraft in flight under the supervision of a TRI instructor. At the completion of training the applicant instructor should be required to conduct a training flight under the supervision and to the satisfaction of a TRI (A) designated for this purpose by the Authority.

TRAINING WHERE NO FSTD EXISTS

Where no synthetic device exists for the type for which the certificate is sought, a similar course of training should be conducted in the applicable aircraft type. This includes all elements listed under this sub paragraph, the synthetic device elements being replaced with appropriate exercises in an aircraft of the applicable type.

AMC No 2 to FCL.915.TRI

TRI training course - helicopters

GENERAL

The aim of the TRI (H) course is to train helicopter licence holders to the level of competence defined in FCL.920 and adequate for a TRI

The course should develop safety awareness throughout by teaching the knowledge, skills and attitudes relevant to the TRI(H) task, and should be designed to give adequate training to the applicant in theoretical knowledge instruction, flight instruction and synthetic flight instruction in order to instruct for a helicopter type rating for which the applicant is qualified

The TRI(H) course should give particular emphasis to the role of the individual in relation to the importance of human factors in the man-machine environment and the role of CRM. Special attention should be given to the applicant's maturity and judgment including an understanding of adults, their behavioural attitudes and variable levels of learning ability. During the course the applicants should be made aware of their own attitudes to the importance of flight safety. It will be important during the course of training to aim at giving the applicant the knowledge, skills and attitudes relevant to the role of the Type Rating Instructor.

For a TRI(H) certificate the amount of flight training will vary depending on the complexity of the helicopter type.

A similar number of hours should be used for the instruction and practice of pre-flight and post flight briefing for each exercise. The flight instruction should aim to ensure that the applicant is able to teach the air exercises safely and efficiently and should be related to the type of aircraft on which the applicant wishes to instruct. The content of the training program should only cover training exercises applicable to the aircraft type as set out in the applicable type rating course syllabus.

TRI(H) COURSE CONTENT

The course consists of 3 parts:

- Part 1 Teaching and Learning that should comply with AMC to FCL.920
- Part 2 Technical Training
- Part 3 Flight Training

PART 2 TECHNICAL TRAINING

The technical theoretical knowledge instruction should comprise of not less than 10 hours training to include the revision of technical knowledge, the preparation of lesson plans and the development of classroom instructional skills to enable the TRI(H) to instruct the technical theoretical knowledge syllabus.

If a TRI(H) certificate for multi-pilot helicopters is sought, particular attention should be given to multi-crew cooperation.

The type rating theoretical syllabus should be used to develop the TRI(H)'s teaching skills in relation to the type technical course syllabus. The course instructor should deliver example lectures from the applicable type technical syllabus and the candidate instructor should prepare and deliver at least five lectures, each of 45 minutes duration, on topics selected by the course instructor from the subject list below.

(a) Helicopter structure, transmissions, rotor and equipment, normal and abnormal operation of systems.

- Dimensions
- Engine including aux. power unit, rotors and transmissions
- Fuel system-
- Air-conditioning
- Ice protection, windshield wipers and rain repellent
- Hydraulic system
- Landing gear
- Flight controls, stability augmentation and autopilot systems
- Electrical power supply
- Flight instruments, communication, radar and navigation equipment

- Cockpit, cabin and cargo compartment
- Emergency equipment

(b) Limitations

- General limitations, according to the helicopter flight manual
- Minimum equipment list

(c) Performance, flight planning and monitoring

- Performance
- Flight planning

(d) Load and balance and servicing

- Load and balance
- Servicing on ground

(e) Emergency procedures

(f) Special requirements for helicopters with electronic flight instrument systems (EFIS)

(g) Optional equipment

PART 3 FLIGHT TRAINING

The amount of flight training will vary depending on the complexity of the helicopter type. At least 5 hours flight instruction for a single pilot helicopter and at least 10 hours for a multi-pilot multi-engine helicopter should be counted. A similar number of hours should be used for the instruction and practice of pre-flight and post flight briefing for each exercise. The flight instruction should aim to ensure that the applicant is able to teach the air exercises safely and efficiently and related to the type of helicopter on which the applicant wishes to instruct. The content of the training programme should only cover training exercises applicable to the helicopter type as set out in Appendix 9 to Part-FCL.

If a TRI(H) certificate for multi-pilot helicopters is sought, particular attention should be given to multi-crew cooperation.

If a TRI(H) certificate for revalidation of instrument ratings is sought, then the applicant should hold a valid instrument rating.

FLIGHT AND/OR FSTD TRAINING

1 The course should be related to the type of aircraft on which the applicant wishes to instruct.

2 For multi-pilot helicopter type ratings MCC, CRM and the appropriate use of behavioural markers should be integrated throughout.

3 The content of the training programme should cover identified and significant exercises applicable to the helicopter type.

FSTD TRAINING

4 The applicant for a TRI(H) certificate should be taught and made familiar with the device, its limitations, capabilities and safety features, and the instructor station.

5 The applicant for a TRI(H) certificate should be taught and made familiar with giving instruction from the instructor station seat as well as the pilot's seats, including demonstrations of appropriate handling exercises.

6 Courses should be developed in order to give the applicant experience in training a variety of exercises, covering both normal and abnormal operations. The syllabus should be tailored appropriate to the aircraft type, using exercises considered more demanding for the student. This should include engine-out handling and engine out operations in addition to representative exercises from the type transition course.

AIRCRAFT TRAINING

7 The applicant for a TRI(H) certificate should receive instruction in an FSTD to a satisfactory level in

7.1 Left Hand Seat familiarisation, and in addition Right Hand Seat familiarisation where instruction is to be given to co-pilots operating in the Left Hand Seat, which should include at least the following as pilot flying:

(a) pre-flight preparation and use of checklists

(b) taxiing – ground and air;

(c) take-off and landings;

(d) engine failure during take-off, before DPATO;

(e) engine failure during take-off, after DPATO;

(f) engine inoperative approach and go-around;

(g) one engine simulated inoperative landing;

(h) autorotation to landing or power recovery

(i) other emergency and abnormal operating procedures (as necessary)

(j) instrument departure, approach and go-around with one engine simulated inoperative should be covered where TRI(H) privileges include giving instrument instruction for the extension of an IR(H) to additional types.

7.2 Aircraft training techniques

(a) Methods for giving appropriate commentary

(b) Instructor demonstrations of critical manoeuvres with commentary

(c) Particularities and safety considerations associated with handling the aircraft in critical manoeuvres such as one engine inoperative and autorotation exercises.

(d) Where relevant, the conduct of instrument training with particular emphasis on weather restrictions, dangers of icing and limitations on the conduct of critical manoeuvres in instrument meteorological conditions.

(e) Intervention strategies developed from situations role-played by a TRI(H) course instructor, taken from but not limited to:

(i) Incorrect helicopter configuration

(ii) Over controlling

(iii) Incorrect control inputs

(iv) Excessive flare close to the ground

(v) One Engine Inoperative take-off and landings

(vi) Incorrect handling of autorotation

(vii) Static or dynamic rollover on take-off or landing

(viii) Too high on approach with associated danger of vortex ring or settling with power

(ix) Incapacitation

(x) Abnormal and emergency procedures and appropriate methods and minimum altitudes for simulating failures in the aircraft

(xi) Failure of the driving engine during OEI manoeuvres

8 Upon successful completion of the training above, the applicant should receive sufficient training in an aircraft in flight under the supervision of a TRI(H) instructor to a level where the applicant is able to conduct the critical items of the type rating course to a safe standard. Of the minimum course requirements of 5 hours flight training for a single-pilot helicopter or 10 hours for a multi-pilot helicopter, up to 3 hours of this may be conducted in an FSTD.

TRAINING WHERE NO FSTD EXISTS

Where no synthetic device exists for the type for which the TRI(H) certificate is sought, a similar course of training should be conducted in the applicable aircraft type. This includes all elements listed under sub paragraphs 7 and 8, the FSTD elements being replaced with appropriate exercises in an aircraft of the applicable type, subject to any restrictions placed on the conduct of critical exercises associated with helicopter flight manual limitations and safety considerations.

AMC to FCL.930.CRI
CRI Training course

GENERAL

The aim of the CRI course is to train aircraft licence holders to the level of competence defined in FCL.920 and adequate to a CRI.

The training course should be designed to give adequate training to the applicant in theoretical knowledge instruction, flight instruction and synthetic flight instruction in order to instruct for any single-pilot multi-engine aeroplane class or type rating for which the applicant is qualified

The flight training should be aimed at ensuring that the applicant is able to teach the air exercises safely and efficiently to students undergoing a course of training for the issue of a single-pilot multi-engine class/type rating. The flight training may take place on the aeroplane or a flight simulator.

CONTENT

The course consists of 3 parts:

- Part 1, that should comply with AMC to FCL.920
- Part 2 and 3, that should have the following content:

PART 2

This syllabus is concerned only with the training on multi-engine aeroplanes. Therefore, other knowledge areas, common to both single- and multi-engine aeroplanes, should be revised as necessary to cover the handling and operating of the aeroplane with all engines operative, using the applicable sections of the Ground Subjects Syllabus for the flight instructor course. Additionally, the ground training should include 25 hours of classroom work to develop the applicant’s ability to teach a student the knowledge and understanding required for the air exercise section of the multi-engine training course. This part will include the long briefings for the air exercises.

THEORETICAL KNOWLEDGE INSTRUCTION SYLLABUS

SUGGESTED BREAKDOWN OF COURSE CLASSROOM HOURS

Tuition hours	Practice in class	Topic	Internal progress test
1.00		Aviation legislation	1.00
2.00		Performance, all engines operating, including mass and balance	
2.00		Asymmetric flight Principles of flight	
2.00	2.00	Control in asymmetric flight Minimum control and safety speeds Feathering and unfeathering	
2.00		Performance in asymmetric flight	1.00
2.00		Specific type of aeroplane – operation of systems. Airframe and engine limitations	1.00
4.00	5.00	Briefings for air exercises progress	
15.00	7.00		3.00
Course total	25.00 (including progress test)		

SYLLABUS OF THEORETICAL KNOWLEDGE SUBJECTS

AIR LEGISLATION

Aeroplane performance group definitions (JAA).
Methods of factoring gross performance.

ASYMMETRIC POWER FLIGHT

PRINCIPLES OF FLIGHT

THE PROBLEMS
- asymmetry
- control
- performance

THE FORCES AND COUPLES
- offset thrust line
- asymmetric blade effect
- offset drag line

failed engine propeller drag
total drag increase
asymmetry of lift
uneven propeller slipstream effect
effect of yaw in level and turning flight
thrust and rudder side force couples
effect on moment arms

CONTROL IN ASYMMETRIC POWER FLIGHT
use, misuse and limits of:
rudder
aileron
elevators
effect of bank/sideslip/balance
decrease of aileron/rudder effectiveness
fin stall possibility
effect of ias/thrust relationship
effect of residual unbalanced forces
foot loads and trimming

MINIMUM CONTROL AND SAFETY SPEEDS
minimum control speed (V_{mc})
definition
origin
factors affecting (V_{mc})
thrust
mass and centre of gravity position
altitude
landing gear
flaps
cowl flaps/cooling gills
turbulence/gusts
pilot reaction/competence
banking towards the operating engine
drag
feathering
critical engine
take-off safety speed
definition/origin of V_2
other relevant V codes

AEROPLANE PERFORMANCE – ONE ENGINE INOPERATIVE
effect on excess power available
single-engine ceiling
cruising, range and endurance
acceleration/deceleration
zero thrust, definition and purpose

PROPELLERS
variable pitch – general principles
feathering/unfeathering mechanism and limitations
(e g minimum rpm)

SPECIFIC AEROPLANE TYPE

AEROPLANE AND ENGINE SYSTEMS
operation normal
operation abnormal

emergency procedures

LIMITATIONS – AIRFRAME
load factors
landing gear/flap limiting speeds (V_{lo} and V_{fe})
rough air speed (V_{ra})
maximum speeds (V_{no} and V_{ne})

LIMITATIONS – ENGINE
rpm and manifold pressure
oil temperature and pressure
emergency procedures

MASS AND BALANCE
(To be covered in conjunction with the flight/owner's manual/pilot's operating handbook)
mass and balance documentation for aeroplane type
revision of basic principles
calculations for specific aeroplane type

MASS AND PERFORMANCE
(To be covered in conjunction with the flight/owner's manual/pilot's operating handbook)
calculations for specific aeroplane type (all engines operating)
take-off run
take-off distance
accelerate/stop distance
landing distance
landing run
take-off/climb out flight path
calculations for specific aeroplane type (one engine operating)
climb out flight path
landing distance
landing run

PART 3
FLIGHT INSTRUCTION SYLLABUS – NORMAL FLIGHT

This part is similar to the Air Exercise Sections of the single-engine Flight Instructor course, including 'Introduction to Instrument Flying' except that the objectives, airmanship considerations and common errors are related to the operation of a multi-engine aeroplane.

The purpose of this part is to acquaint the applicant with the teaching aspects of the operational procedures and handling of a multi-engine aeroplane with all engines functioning.

The following items should be covered:

1 Aeroplane familiarisation

2 Pre-flight preparation and aeroplane inspection

3 Engine starting procedures

4 Taxiing

5 Pre-take-off procedures

6 The take-off and initial climb

into wind

crosswind

short field

7 Climbing

8 Straight and level flight

9 Descending (including emergency descent procedures)

10 Turning

11 Slow flight

12 Stalling and recoveries

13 Instrument flight – basic

14 Emergency drills (not including engine failure)

15 Circuit, approach and landing

into wind

crosswind

short field

16 Mislanding and going round again

17 Actions after flight

AIR EXERCISES
The following air exercises are developments of the Basic (single-engine) syllabus which are to be related to the handling of multi-engine types in order to ensure that the student learns the significance and use of controls and techniques which may be strange to the student in all normal, abnormal and emergency situations, except that engine failure and flight on asymmetric power are dealt with separately in the Air Exercises in Part 2.

LONG BRIEFING 1

AEROPLANE FAMILIARISATION
introduction to the aeroplane
explanation of the:
cockpit layout
systems and controls
aeroplane power plant
check lists and drills
differences when occupying the instructor's seat

EMERGENCY DRILLS
action in event of fire:
in the air
on the ground

Escape drills:
location of exits
emergency equipment, e.g. fire extinguishers, etc.

PRE-FLIGHT PREPARATION AND AEROPLANE INSPECTION
aeroplane documentation
external checks
internal checks
harness, seat/rudder pedal adjustment

ENGINE STARTING PROCEDURES
use of checklists

checks prior to starting
checks after starting

AIR EXERCISE 1

AEROPLANE FAMILIARISATION
external features
cockpit layout
aeroplane systems
check lists, drills
action in the event of fire in the air and on the ground
- engine
- cabin
- electrical
systems failure (as applicable to type)
escape drills
- location and use of emergency equipment and exits

PREPARATION FOR AND ACTION AFTER FLIGHT
flight authorisation and aeroplane acceptance
technical log/certificate of maintenance release
mass and balance and performance considerations
external checks
internal checks, adjustment of harness and/or rudder pedals
starting and warming up engines
checks after starting
radio nav/com checks
altimeter checks and setting procedures
power checks
running down and switching off engines
completion of authorisation sheet and aeroplane serviceability documents

LONG BRIEFING 2

TAXIING
pre-Taxiing area precautions
greater mass – greater inertia
effect of differential power
precautions on narrow taxiways
common errors

PRE TAKE-OFF PROCEDURES
use of checklist
engine power checks
pre take-off checks
instructor's briefing to cover the procedure to be followed should an emergency occur during take-off, e.g. engine failure
common errors

THE TAKE-OFF AND INITIAL CLIMB
ATC considerations
factors affecting the length of the take-off run/distance
correct lift-off speed
importance of safety speed
crosswind take-off, considerations and procedures
short field take-off, considerations and procedures
engine handling after take-off, throttle/pitch/engine synchronisation
common errors

CLIMBING
airmanship considerations
    pre-climbing checks
engine considerations
    use of throttle/pitch controls
maximum rate of climb speed
maximum angle of climb speed
synchronising the engines
common errors

AIR EXERCISE 2

TAXIING
checks before taxiing
starting and stopping
control of speed
control of direction and turning
turning in confined spaces
leaving the parking area
freedom of rudder movement (importance of pilot ability to use full rudder travel)
instrument checks

EMERGENCIES
brake/steering failure

PRE TAKE-OFF PROCEDURES
use of checklist
engine power and system checks
pre take-off checks
instructor's briefing in the event of:
    – emergencies during take-off

THE TAKE-OFF AND INITIAL CLIMB
ATC considerations
directional control and use of power
lift-off speed
crosswind effects and procedure
short field take-off and procedure
procedures after take-off
- landing gear retraction
- flap retraction (as applicable)
- selection of manifold pressure and rpm
- engine synchronisation
- other procedures (as applicable)

at an appropriate stage of the course

CLIMBING
Pre-Climbing checks
Power Selection for Normal and Maximum Rate Climb
Engine and RPM Limitations
Effect of Altitude on Manifold Pressure, Full Throttle
Levelling Off – Power Selection
Climbing with Flaps Down
Recovery to Normal Climb
En Route Climb (Cruise Climb)
Maximum Angle of Climb
Altimeter Setting Procedures

Prolonged Climb and use of Cowl Flaps/Cooling Gills
Instrument Appreciation

LONG BRIEFING 3

STRAIGHT AND LEVEL FLIGHT
Airmanship considerations
Selection of power – throttle/pitch controls
Engine synchronisation
Fuel consumption aspects
Use of trimming controls
    elevator, rudder (aileron as applicable)
Operation of flaps
    effect on pitch attitude
    effect on airspeed
Operation of landing gear
    effect on pitch attitude
    effect on airspeed
Use of mixture controls
Use of alternate air/carburettor heat controls
Operation of cowl flaps/cooling gills
Use of cabin ventilation and heating systems
Operation and use of the other systems (as applicable to type)
Common errors

DESCENDING
Airmanship considerations
    pre-descent checks
Normal descent
    selection of throttle/pitch controls
    engine cooling considerations
Emergency descent procedure
Common errors

TURNING
Airmanship considerations
Medium turns
Climbing/descending turns
Steep turns (45 degrees of bank or more)
Common errors

AIR EXERCISE 3

STRAIGHT AND LEVEL FLIGHT
At Normal Cruising Power
– selection of cruise power
– manifold pressure/RPM
– engine synchronisation
– use of trimming controls
– performance considerations – range/endurance
Instrument Appreciation
Operation of Flaps (in stages)
– airspeed below V_{fe}
– effect on pitch attitude
– effect on airspeed
Operation of Landing Gear
– airspeed below V_{lo}/V_{le}

– effect on pitch attitude
– effect on airspeed
Use of Mixture Controls
Use of Alternate Air/Carburettor Control
Operation of Cowl Flaps/Cooling Gills
Operation of Cabin Ventilation/Heating Systems
Operation and use of Other Systems (as applicable to type)

DESCENDING
Pre-Descent Checks
Power Selection – Manifold Pressure/RPM
Powered Descent (Cruise Descent)
Engine Cooling Considerations
– use of cowl flaps/cooling gills
Levelling Off
Descending with Flaps Down
Descending with Landing Gear Down
Altimeter Setting Procedure
Instrument Appreciation
Emergency Descent
– as applicable to type
– limitations in turbulence V_{no}

TURNING
Medium Turns
Climbing and Descending Turns
Steep Turns –45 degrees of Bank
Instrument Appreciation

LONG BRIEFING 4

SLOW FLIGHT
Airmanship considerations
flight at V_{s1} and V_{so} +5 knots
aircraft handling characteristics
Simulated 'go around' from slow flight
at V_{sse} with flaps down
note pitch trim change
Common errors

STALLING
Airmanship considerations
Power selection
Symptoms approaching the stall
Full stall characteristics
Recovery from the full stall
Recovery at the incipient stall
Stalling and recovery in the landing configuration
Recovery at the incipient stage in the landing configuration

INSTRUMENT FLIGHT (BASIC)
Straight and level
Climbing
Turning
Descending

EMERGENCY DRILLS (not including engine failure)
As applicable to type

CIRCUIT APPROACH AND LANDING

Airmanship and ATC consideration
Downwind leg
- airspeed below V_{fe}
- use of flaps (as applicable)
- pre-landing checks
- position to turn onto base leg

Base leg
- selection of power (throttle/pitch), flaps and trimming controls
- maintenance of correct airspeed

Final approach
- power adjustments (early reaction to undershooting)
- use of additional flaps (as required)
- confirmation of landing gear down
- selection 'touch down' point
- airspeed reduction to V_{at}
- maintenance of approach path

Landing
- greater sink rate
- longer landing distance and run
- crosswind approach and landing
- crosswind considerations
- short field approach and landing
- short field procedure – considerations

AIR EXERCISE 4

SLOW FLIGHT
Safety Checks
Setting up and Maintaining (Flaps Up)
- V_{s1} + 5 knots
- note aeroplane handling characteristics

Setting up and Maintaining (Flaps Down)
- V_{so} + 5 knots
- note aeroplane handling characteristics

Simulated 'Go Around' from a Slow Flight with Flaps
- Down and airspeed not below V_{sse}, e.g. airspeed at V_{sse} or V_{mca} + 10 knots
- increase to full power and enter a climb
- note pitch change

Resume Normal Flight

STALLING
- airmanship considerations
- selection of RPM
- stall symptoms
- full stall characteristics
- recovery from the full stall
  - care in application of power
- recovery at the incipient stage
- stalling and recovery in landing configuration
- stall recovery at the incipient stage in the landing configuration

INSTRUMENT FLIGHT (BASIC)

- straight and level
- climbing
- turning
- descending

EMERGENCY DRILLS (not including engine failure)
As applicable to type

CIRCUIT, APPROACH AND LANDING

Airmanship and ATC considerations
Downwind leg
- control of speed (below V_{fe})
- flaps as applicable
- pre-landing checks
- control of speed and height
- base leg turn

Base leg
- power selection
- use of flap and trimming controls
- maintenance of correct airspeed

Final approach
- use of additional flap (as required)
- confirmation of landing gear down
- selection of touchdown point
- airspeed reduction to V_{at}
- maintaining correct approach path
  - use of power

Landing
- control of sink rate during flare
- crosswind considerations
- longer landing roll
- short/soft field approach and landing
  - considerations and precautions

ASYMMETRIC POWER FLIGHT

During this part, special emphasis is to be placed on the:

a. Circumstances in which actual feathering and unfeathering practice will be done, i.e. safe altitude; compliance with regulations concerning minimum altitude/height for feathering practice, weather conditions, distance from nearest available aerodrome.

b. Procedure to use for instructor/student co-operation, e.g. the correct use of touch drills and the prevention of misunderstandings, especially during feathering and unfeathering practice and when zero thrust is being used for asymmetric circuits. This procedure is to include positive agreement as to which engine is being shut down/re-started or set at zero thrust and identifying each control and naming the engine it is going to affect.

c. Consideration to be given to avoid over-working the operating engine, and the degraded performance when operating the aeroplane during asymmetric flight.

d. Need to use the specific check list for the aeroplane type.

LONG BRIEFINGS

FLIGHT ON ASYMMETRIC POWER

Introduction to asymmetric flight
Feathering the propeller
- method of operation

Effects on aeroplane handling at cruising speed
Introduction to effects upon aeroplane performance
Note foot load to maintain a constant heading (No rudder trim)
Unfeathering the propeller
- regain normal flight

Finding the zero thrust setting
- comparison of foot load when feathered and with zero thrust set

Effects and Recognition of Engine Failure in Level Flight
The forces and the effects of yaw
Types of failure
- sudden or gradual
- complete or partial

Yaw, direction and further effects of yaw
Flight instrument indications
Identification of Failed Engine
The couples and residual out of balance forces
- resultant flight attitude

Use of rudder to counteract yaw
Use of aileron
- dangers of mis-use

Use of elevator to maintain level flight
Use of power to maintain a safe airspeed and altitude
Supplementary recovery to straight and level flight
- simultaneous increase of speed and reduction in power

Identification of failed engine
- idle leg = idle engine

Use of engine instruments for identification
- fuel pressure/flow
- RPM gauge response effect of CSU action at lower and higher airspeed
- engine temperature gauges

Confirmation of identification
- close the throttle of identified failed engine

Effects and recognition of engine failure in turns
Identification and control
Side forces and effects of yaw

DURING TURNING FLIGHT:

Effect of 'inside' engine failure
- effect sudden and pronounced

Effect of 'outside' engine failure
- effect less sudden and pronounced

The possibility of confusion in identification (particularly at low power)
- correct use of rudder
- possible need to return to lateral level flight to confirm correct identification

Visual and flight instrument indications
Effect of varying speed and power
Speed/thrust relationship
At normal cruising speed and cruising power
- engine failure clearly recognised

At low safe speed and climb power

- engine failure most positively recognised

High speed descent and low power

- possible failure to notice asymmetry (engine failure)

MINIMUM CONTROL SPEEDS

ASI colour coding – red radial line

NOTE: This exercise is concerned with the ultimate boundaries of controllability in various conditions that a student can reach in a steady asymmetric power state, approached by a gradual speed reduction. Sudden and complete failure should not be given at the Flight Manual Vmca. The purpose of the exercise is to continue the gradual introduction of a student to control an aeroplane in asymmetric power flight during extreme or critical situations. It is not a demonstration of Vmca.

Techniques for assessing critical speeds with wings level and recovery – dangers involved when minimum control speed and the stalling speed are very close

- use of V_{sse}

Establish a minimum control speed for each asymmetrically disposed engine

- to establish critical engine (if applicable)

Effects on minimum control speeds of:

- bank
- zero thrust setting
- take-off configuration
  - landing gear down/take-off flap set
  - landing gear up/take-off flap set

It is important to appreciate that the use of 5ø of bank towards the operating engine produces a lower V_{mca} and also a better performance than that obtained with the wings held level. It is now normal for manufacturers to use 5ø of bank in this manner when determining the V_{mca} for the specific type. Thus the V_{mca} quoted in the aeroplane manual will have been obtained using the technique.

FEATHERING AND UNFEATHERING

Minimum heights for practising feathering/unfeathering drills

Engine handling – Precautions (overheating, icing conditions, priming, warm up, method of simulating engine failure – reference to Aircraft Engine Manual and Service Instructions and Bulletins).

ENGINE FAILURE PROCEDURE

Once the maintenance of control has been achieved, the order in which the procedures are carried out will be determined by the phase of operation and the aircraft type.

Flight Phase

In cruising flight
Critical phase such as immediately after take-off or during the approach to landing or during a 'go around'.

AIRCRAFT TYPE

Variations will inevitably occur in the order of certain drills and checks due to differences between aeroplane types and perhaps between models of the same type, and the Flight/Owner's Manuals, Pilot's Operating Handbooks are to be consulted to establish the exact order of these procedures.

For example, one Flight/Owner's Manual/Pilot's Operating Handbook may call for the raising of flaps and landing gear prior to feathering, whilst another may recommend feathering as a first step. The reason for this latter procedure could be due to the fact that some engines cannot be feathered if the RPM drops below a certain figure.

Again, in some aeroplanes, the raising of the landing gear may create more drag during retraction due to the transient position of the landing gear doors and as a result of this retraction would best be left until feathering has been accomplished and propeller drag reduced.

Therefore, the order in which the drills and checks are shown in this syllabus under IMMEDIATE and SUBSEQUENT actions are to be used as a general guide only and the exact order of precedence is determined by reference to the Flight/Owner's Manual, Pilot's Operating Handbook for the specific aeroplane type being used on the course.

IN FLIGHT ENGINE FAILURE

In cruise or other flight phase not including take-off or landing.

Immediate Actions:

Recognition of Asymmetric Condition
Identification and Confirmation of Failed Engine

- idle leg – idle engine
- closing of throttle for confirmation

Cause and Fire Check

- typical reasons for failure
- methods of rectification

Feathering Decision and Procedure

- reduction of other drag
- need for speed but not haste
- use of rudder trim

Subsequent Actions:

Live Engine

- temperature, pressures and power
- remaining services
- electrical load – assess and reduce as necessary
- effect on power source for air driven instruments
- landing gear
- flaps and other services

Re-plan Flight

- ATC and weather
- terrain clearance, single-engine cruise speed
- decision to divert or continue

Fuel Management

- best use of remaining fuel

Dangers of re-starting damaged engine
Action if unable to maintain altitude

- effect of altitude on power available

Effects on Performance
Effects on power available and power required
Effects on various airframe configuration and propeller settings

Use of Flight/Owner's Manual

- cruising
- climbing – ASI colour coding (blue line)
- descending
- turning

'Live' Engine Limitations and Handling

Take-Off and Approach – Control and Performance

SIGNIFICANT FACTORS

Significance of Take-off safety speed

- effect of landing gear, flap, feathering, take-off, trim setting, systems for operating landing gear and flaps
- Effect on mass, altitude and temperature (performance)

Significance of Best Single-engine Climb Speed (V_{yse})

- acceleration to best engine climb speed and establishing a positive climb
- relationship of S/E climb speed to normal climb speed
- action if unable to climb

Significance of Asymmetric Committal Height and Speed

- action if baulked below asymmetric committal height

Engine Failure During Take-Off:

Below V_{mca} or unstick speed
accelerate/stop distance considerations
prior use of Flight Manual data if available

Above V_{mca} or unstick speed and below safety speed
Immediate re-landing or use of remaining power to achieve forced landing

Considerations:

- degree of engine failure
  - speed at the time
  - mass, altitude, temperature (performance)
  - configuration
  - length of runway remaining
  - position of any obstacles ahead

Engine Failure After Take-Off

Simulated at a safe height and at or above take-off safety speed

Considerations:

- need to maintain control
- use of bank towards operating engine
- use of available power achieving best single-engine climb speed
- mass, altitude, temperature (performance)
- effect of prevailing conditions and circumstances

IMMEDIATE ACTIONS:

Maintenance of control including airspeed and use of power.
Recognition of asymmetric condition
Identification and confirmation of failed engine

Feathering and removal of drag (procedure for type)
Establishing best single-engine climb speed

SUBSEQUENT ACTIONS:

Whilst carrying out an asymmetric power climb to the downwind position at single-engine best rate of climb speed:

Cause and fire check
Live engine, handling considerations
Remaining services
ATC liaison
Fuel management

NOTE: These procedures are applicable to aeroplane type and flight situation.

ASYMMETRIC COMMITTAL HEIGHT

Asymmetric Committal Height is the minimum height needed to establish a positive climb whilst maintaining adequate speed for control and removal of drag during an approach to a landing

Because of the significantly reduced performance of many JAR 23 aeroplanes when operating on one engine, consideration is to be given to a minimum height from which it would be safely possible to attempt a 'go around' procedure, during an approach when the flight path will have to be changed from a descent to a climb with the aeroplane in a high drag configuration.

Due to the height loss which will occur during the time that the operating engine is brought up to full power, landing gear and flap retracted, and the aeroplane established in a climb at V_{yse} a minimum height (often referred to as 'Asymmetric Committal Height') is to be selected, below which the pilot should not attempt to take the aeroplane round again for another circuit. This height will be compatible with the aeroplane type, all up weight, altitude of the aerodrome being used, air temperature, wind, the height of obstructions along the climb out path, and pilot competence.

Circuit Approach and Landing on Asymmetric Power

- Definition and use of Asymmetric Committal Height
- Use of Standard Pattern and Normal Procedures
- Action if unable to maintain Circuit Height
- Speed and Power Settings Required
- Decision to land or go around at asymmetric committal height
  - factors to be considered

Undershooting
- importance of maintaining correct airspeed, (not below V_{yse})

SPEED AND HEADING CONTROL

Height/speed/power relationship
- need for minimum possible drag

Establishing positive climb at best single-engine rate of climb speed
- effect of availability of systems, power for flap and landing gear
- operation and rapid clean up

NOTE 1: The airspeed at which the decision is made to commit the aeroplane to a landing or to go around should normally be the best single-engine rate of climb speed and in any case not less than the safety speed.

NOTE 2: On no account should instrument approach 'Decision Height' and its associated procedures be confused with the selection of minimum Height for initiating a go around in asymmetric power flight.

ENGINE FAILURE DURING AN ALL ENGINES APPROACH OR MISSED APPROACH

Use of asymmetric committal height and speed considerations
speed and heading control
- decision to attempt a landing, 'go around' or force land as circumstances dictate

NOTE: At least one demonstration and practice of engine failure in this situation should be performed during the course.

INSTRUMENT FLYING ON ASYMMETRIC POWER

Considerations relating to aircraft performance during:
- straight and level flight
- climbing and descending
- standard rate turns:
- level, climbing and descending turns including turns onto pre-selected headings

Vacuum operated instruments
- availability

Electrical power source
- availability

FLIGHT INSTRUCTION AIR EXERCISES

ASYMMETRIC POWER FLIGHT

This section covers the operation of a single-pilot multi-engine aeroplane when one engine has failed and it is applicable to all such light piston aeroplanes. Check lists should be used as applicable.

AIR EXERCISES

FLIGHT ON ASYMMETRIC POWER

Introduction to asymmetric flight
- close the throttle of one engine
- feather its propeller
- effects on aeroplane handling at cruising speed
- effects on aeroplane performance e.g. cruising speed and rate of climb
- note foot load to maintain a constant heading
- unfeather the propeller
- return to normal flight finding the zero thrust throttle setting
- comparison of foot load when feathered and with zero thrust set

Effects and Recognition of Engine Failure in Level Flight with the aeroplane straight and level at cruise speed
- slowly close the throttle of one engine
- note yaw, roll and spiral descent

Return to normal flight
- close throttle of other engine
- note same effects in opposite direction

Methods of Control and identification of Failed Engine close one throttle and maintain heading and level flight by use of

- rudder to control yaw
  - aileron to hold wings level
  - elevators to maintain level flight
  - power (as required) to maintain airspeed and altitude

Alternative/supplementary Method of Control
  - simultaneously:
    - lower aeroplane nose to increase airspeed
    - reduce power
    - loss of altitude – inevitable

Identification of failed engine
  - idle foot = idle engine

Use of instruments for identification
  - fuel pressure/fuel flow
  - RPM gauge/CSU action may mask identification
  - engine temperature gauges

Confirmation of identification
  - close the throttle of the identified failed engine

Effects and recognition of Engine Failure in Turns/Effects of 'inside' engine failure
  - more pronounced yaw
  - more pronounced roll
  - more pronounced pitch down

Effects of 'outside' engine failure
  - less pronounced yaw
  - less pronounced roll
  - less pronounced pitch down

Possibility of confusion in identification
  - use of correct rudder application
  - return to lateral level flight if necessary

Flight instrument indications

Effect of Varying Speed and Power

Failure of one engine at cruise speed and power
  - engine failure clearly recognised

Failure of one engine at low speed and high power (not below V_{sse})
  - engine failure most positively recognised

Failure of one engine at higher speeds and low power
  - possible failure to recognise engine failure

Minimum Control speeds
Establish the V_{yse}
  - select maximum permitted manifold pressure and RPM
  - close the throttle on one engine

- raise the aeroplane nose and reduce the airspeed
  - note the airspeed when maximum rudder deflection is being applied and when directional control can no longer be maintained
  - lower the aeroplane nose and reduce power until full directional control is regained
  - the lowest airspeed achieved prior to the loss of directional control will be the V_{mc} for the flight condition

- repeat the procedure closing the throttle of the other engine
- the higher of these two airspeeds will identify the most critical engine to fail

Warning

In the above situations the recovery is to be initiated immediately before directional control is lost with full rudder applied, or when a safe margin above the stall remains, e.g. when the stall warning device operates, for the particular aeroplane configuration and flight conditions. On no account should the aeroplane be allowed to decelerate to a lower airspeed.

Establish the effect of using 5ø of bank at V_{mc}

- close the throttle of one engine
- increase to full power on the operating engine
- using 5ø of bank towards the operating engine reduce speed to the V_{mc}
- note lower V_{mc} when 5ø of bank is used

'In flight' Engine Failure Procedure

In cruise and other flight circumstances not including take-off and landing.

IMMEDIATE ACTIONS:

Maintenance of control and use of power

- identification of failed engine
- confirmation of failed engine
- failure cause and fire check
- feathering decision and implementation
- reduction of any other drag, e.g. flaps, cowl flaps etc.
- retrim and maintain altitude

SUBSEQUENT ACTIONS:

Live Engine:

- oil temperature and pressure. Fuel flow and power
- remaining services
- electrical load – assess and reduce as necessary
- effect on power source for air driven instruments
- landing gear
- flaps and other services

Re-plan Flight

- ATC and weather
- terrain clearance
- single-engine cruise speed
- decision to divert or continue

Fuel Management

- best use of fuel

Dangers of Re-starting Damaged Engine
Action if unable to maintain altitude

- adopt V_{yse}
- effect of altitude on power available

Effects on performance
Effects on Power Available and Power Required
Effects on various airframe configurations and propeller settings

Use of Flight/Owner's Manual

- cruising
- climbing – ASI colour coding (blue line)
- descending
- turning

'Live' Engine Limitations and Handling

Take-Off and Approach – Control and handling

NOTE: To be done at a safe height away from the circuit

Take-off case with Landing Gear Down and Take-Off Flap Set (if applicable)

Significance of Take-Off at or above Safety Speed

- at safety speed. The ability to maintain control and to accelerate to SE climb speed with aeroplane clean and zero thrust set. Thereafter to achieve a positive climb.

Significance of flight below Safety Speed

- below safety speed and above V_{mca}. A greater difficulty to maintain control, a possible loss of height whilst maintaining speed, cleaning up, accelerating to SE climb speed and establishing a positive climb.

Significance of Best Single-engine Climb Speed

- the ability to achieve the best rate of climb on one engine with minimum delay.

Significance of Asymmetric Committal Height

- the ability to maintain or accelerate to the best single-engine rate of climb speed and to maintain heading whilst cleaning up with perhaps a slight height loss before climbing away
- below this height, the aeroplane is committed to continue the approach to a landing.

Engine Failure During Take-Off

- during the take-off run and below safety speed briefing only

Engine Failure after take-Off

NOTE: To be initiated at a safe height and at not less than take-off safety speed with due regard to the problems of a prolonged single-engine climb in the prevailing conditions.

Immediate Actions:

control of direction and use of bank
control of airspeed and use of power
recognition of asymmetric condition
identification and confirmation of failed engine feathering and reduction of drag (procedure for type)
re-trim

Subsequent Actions

Whilst carrying out an asymmetric power climb to the downwind position at single-engine best rate of climb speed:

- cause and fire check
- live engine, handling considerations
- drills and procedures applicable to aeroplane type and flight situation
- ATC liaison
- fuel management

Asymmetric Circuit, Approach and Landing

Downwind and Base Legs
- use of standard pattern
- normal procedures
- landing gear and flap lowering considerations
- position for base leg
- live engine handling
- airspeed and power settings
- maintenance of height

Final Approach
- Asymmetric Committal Height drill
- control of airspeed and descent rate
- flap considerations

Going Round Again on Asymmetric Power (Missed Approach)
- not below Asymmetric Committal Height
- speed and heading control
- reduction of drag, landing gear retraction
- maintaining V_{yse}
- establish positive rate of climb

Engine failure during ALL engines approach or missed approach

NOTE: To be started at not less than asymmetric committal height and speed and not more than part flap set.
- speed and heading control
- reduction of drag flap
- decision, attempt landing or go around
- control of descent rate if approach is continued
- if go around is initiated, maintain V_{yse}, flaps and landing gear retracted and establish positive rate of climb

NOTE: At least one demonstration and practice of engine failure in this situation should be performed during the course.

Instrument flying on asymmetric power

Flight instrument checks and services available
- straight and level flight
- climbing and descending
- standard rate turns
- level, climbing and descending turns including turns onto pre-selected headings

AMC to FCL.940.CRI

Revalidation and renewal of CRI certificate – refresher training

1. Paragraph (c)(1) of FCL.940.CRI determine that an applicant for renewal of a CRI certificate shall complete refresher training as a CRI at an approved training organization. Paragraph (a)(2) also establishes that an applicant for revalidation of the CRI certificate that has not completed a minimum amount of instruction hours [established in paragraph (a)(1)] during the validity period of the certificate shall undertake refresher training at an approved training organization for the revalidation of the certificate. The amount of refresher training needed should be determined on a case by case basis by the approved training organisation, taking into account the following factors:

   1.1 the experience of the applicant.

   1.2 whether the training is for revalidation or renewal;

1.3 the amount of time lapsed since the last time the applicant has conducted training, in the case of revalidation, or since the certificate has lapsed, in the case of renewal. The amount of training needed to reach the desired level of competence should increase with the time lapsed.

2. Once the training organisation has determined the needs of the applicant, it should develop an individual training programme, that should be based on the CRI training course and focus on the aspects where the applicant has shown the greatest needs.

AMC to FCL.930.IRI

IRI Training course

GENERAL

The aim of the IRI course is to train aircraft licence holders to the level of competence defined in FCL.920, and adequate for a IRI.

CONTENT

1 The IRI course should give particular stress to the role of the individual in relation to the importance of human factors in the man-machine environment. Special attention should be paid to the applicant's levels of maturity and judgement including an understanding of adults, their behavioural attitudes and variable levels of education.

2 With the exception of the section on Teaching and Learning, all the subject detail contained in the theoretical and Flight Training Syllabus is complementary to the Instrument Rating Pilot Course Syllabus which should already be known by the applicant. Therefore the objective of the course is to:

a. refresh and bring up to date the technical knowledge of the student instructor;

b. train pilots in accordance with the requirements of the modular instrument flying training course;

c. enable the applicant to develop the necessary instructional techniques required for teaching of instrument flying, radio navigation and instrument procedures to the level required for the issue of an instrument rating; and

d. ensure that the student instrument rating instructor's flying is of a sufficiently high standard.

3 Some of the air exercises in Part Three – Flight Training Syllabus of this AMC may be combined in the same flight.

4 During the course, the applicants should be made aware of their own attitudes to the important aspect of flight safety. Improving safety awareness should be a fundamental objective throughout the course. It will be of major importance for the course of training to aim at giving applicants the knowledge, skills and attitudes relevant to an instructor's task and to achieve this, the course curriculum, in terms of objectives should comprise at least the following areas.

The course consists of 3 parts

- Part 1, that should follow the content of AMC to FCL.920;

- Part 2 Instrument Theoretical Knowledge Training. The instrument theoretical knowledge instruction should comprise not less than 10 hours training to include the revision of instrument theoretical knowledge, the preparation of lesson plans and the development of classroom instructional skills to enable the IRI to instruct the instrument theoretical knowledge syllabus.
- Part 3, Flight Training. An approved IRI course should comprise of at least 10 hours of flight instruction in an aircraft or FSTD. A similar number of hours should be used for the instruction and practice of pre-flight and post-flight briefing for each exercise. The flight

instruction should aim to ensure that the applicant is able to teach the air exercises safely and efficiently.

Parts 2 and 3 should comply with the following detailed content:

PART 2

THEORETICAL KNOWLEDGE INSTRUCTION SYLLABUS

All the subject detail contained in the theoretical and Flight Training Syllabus is complementary to the Instrument Rating Pilot Course syllabus which should already be known by the applicant. Therefore the objective of the course is to:

a. refresh and bring up to date the technical knowledge of the student instructor;

b. train pilots in accordance with the requirements of the modular instrument flying training course

c. enable the applicant to develop the necessary instructional techniques required for teaching of instrument flying, radio navigation and instrument procedures to the level required for the issue of an instrument rating; and

d. ensure that the student instrument rating instructor's flying is of a sufficiently high standard.

The theoretical subjects covered below should be used to develop the instructor's teaching skills. The items selected should relate to the student's background and should be applied to training for an IR.

GENERAL SUBJECTS

PHYSIOLOGICAL/PSYCHOLOGICAL FACTORS
The Senses
Spatial Disorientation
Sensory Illusions
Stress

FLIGHT INSTRUMENTS
Airspeed Indicator
Altimeter
Vertical Speed Indicator
Attitude Indicator
Heading Indicator
Turn and Slip Indicator
Magnetic Compass

In relation to the above instruments the following items should be covered:

Principles of Operation
Errors and in-flight Serviceability Checks
System Failures

RADIO NAVIGATION AIDS
Basic Radio Principles
Use of VHF RTF Channels
The Morse Code
Basic Principles of Radio Aids
VHF Omni Range (VOR)
Ground and Aeroplane Equipment
Non Directional Beacons (NDB/ADF)

Ground and Aeroplane Equipment
VHF Direction Finding (VHF/DF)
Radio Detection and Ranging (RADAR)
Ground Equipment
Primary Radar
Secondary Surveillance Radar
Aeroplane Equipment
Transponders
Precision Approach System
Other Navigational Systems (as applicable) in current Operational use
Ground and Aeroplane Equipment
Distance Measuring Equipment (DME)
Ground and Aeroplane Equipment
Marker Beacons
Ground and Aeroplane Equipment
Pre-flight Serviceability Checks
Range, Accuracy and Limitations of Equipment

FLIGHT PLANNING CONSIDERATIONS

AERONAUTICAL INFORMATION PUBLICATIONS

The course of training should cover the items listed below, but the applicant's aptitude and previous aviation experience should be taken into account when determining the amount of instructional time allotted.

Although a number of items contained under this heading are complementary to those contained in the PPL/CPL/IR syllabi, the instructor should ensure that they have been covered during the applicant's training and due allowance should be made for the time needed to revise these items as necessary.

The Aeronautical Information Publication
NOTAM Class 1 and 2
Aeronautical Information Circulars
Information of an Operational Nature

The Rules of the Air and Air Traffic Services (RAC)
Visual Flight Rules and Instrument Flight Rules
Flight Plans and ATS Messages
Use of Radar in Air Traffic Services
Radio Failure

Classification of Airspace
Airspace Restrictions and Hazards

Holding and Approach to Land Procedures
Precision Approaches/Non Precision Approaches
Radar Approach Procedures
Missed Approach Procedures
Visual Manoeuvring after an Instrument Approach
Conflict Hazards in Uncontrolled Airspace

Communications
Types of Services
Extraction of AIP Data Relating to Radio Aids

Charts Available
En-route

Departure and Arrival
Instrument Approach and Landing
Amendments, Corrections and Revision Service

FLIGHT PLANNING GENERAL

The Objectives of Flight Planning
Factors Affecting Aeroplane and Engine Performance
Selection of Alternate(s)
Obtaining Meteorological Information
Services Available
Met Briefing

Telephone or Electronic Data Processing
Actual Weather Reports (TAFs, METARs and SIGMET Messages)
The Route Forecast
The Operational Significance of the Meteorological Information Obtained (including Icing, Turbulence and Visibility)
Altimeter Considerations
Definitions of
Transition Altitude
Transition Level
Flight Level
QNH
Regional QNH
Standard Pressure Setting
QFE
Altimeter Setting Procedures
Pre-flight Altimeter Checks
Take off and Climb
En-Route
Approach and Landing
Missed Approach
Terrain Clearance
Selection of a Minimum Safe En-Route Altitude
Instrument Flight Rules
Preparation of Charts
Choice of Routes and Flight Levels
Compilation of Flight Plan/Log Sheet
Log Sheet Entries
Navigation Ground Aids to be used
Frequencies/Identification
Radials and Bearings
Tracks and Fixes
Safety Altitude(s)
Fuel Calculations
ATC Frequencies (VHF)
Tower, Approach, En-Route, Radar, FIS, ATIS, and Weather Reports
Minimum Sector Altitudes at Destination and Alternate Aerodromes
Determination of Minimum Safe Descent Heights/Altitudes (Decision Heights) at Destination and Alternate Aerodromes

THE PRIVILEGES OF THE INSTRUMENT RATING

Outside Controlled Airspace
Within Controlled Airspace

Period of Validity and Renewal Procedures

PART 3

FLIGHT TRAINING SYLLABUS

A. Aeroplanes

LONG BRIEFINGS AND AIR EXERCISES

1 Instrument Flying (For revision as deemed necessary by the Course Instructor)

2 Instrument Flying (Advanced)

3 Radio Navigation (Applied Procedures) – use of VOR

4 Radio Navigation (Applied Procedures) – use of NDB

5 Radio Navigation (Applied Procedures) – use of VHF/DF

6 Radio Navigation (Applied Procedures) – use of DME

7 Radio Navigation (Applied Procedures) – use of Transponders

8 Radio Navigation (Applied Procedures) – use of En-Route Radar Services

9 Pre-flight and Aerodrome Departure and Arrival Procedures

10 Instrument Approach – ILS Approaches to Specified Minima – Missed Approach Procedures

11 Instrument Approach – NDB Approaches to Specified Minima – Missed Approach Procedures

12 Radio Navigation (applied procedures) use of GPS (to be developed)

LONG BRIEFING 1

INSTRUMENT FLYING (Basic)
Flight Instruments
Physiological Considerations
Instrument Appreciation
- Attitude Instrument Flight
- Pitch Indications
- Bank Indications
- Different Instrument Presentations
- Introduction to the Use of the Attitude Indicator
- Pitch Attitude
- Bank Attitude
- Maintenance of Heading and Balanced flight
- Instrument Limitations (inc. System Failures)

ATTITUDE, POWER & PERFORMANCE
Attitude Instrument Flight
Control Instruments
Performance Instruments
Effect of Changing Power and configuration
Cross Checking the Instrument Indications
Instrument Interpretation
Direct and Indirect Indications (Performance Instruments)
Instrument Lag
Selective Radial Scan

THE BASIC FLIGHT MANOEUVRES (FULL PANEL)
Straight and Level Flight at Various Airspeeds and Aeroplane Configurations
Climbing
Descending

Standard Rate Turns

Level, Climbing and Descending On to Pre-Selected Headings

AIR EXERCISE 1

INSTRUMENT FLYING (Basic)
Physiological Sensations
Instrument Appreciation
Attitude Instrument Flight
Pitch Attitude
Bank Attitude
Maintenance of Heading and Balanced Flight
Attitude Instrument Flight
Effect of Changing Power and configuration
Cross Checking the Instruments
Selective Radial Scan

THE BASIC FLIGHT MANOEUVRES (FULL PANEL)
Straight and Level Flight at various Airspeeds and Aeroplane Configurations
Climbing
Descending
Standard Rate Turns
Level, Climbing and Descending on to Pre-Selected Headings

LONG BRIEFING 2

INSTRUMENT FLYING (Advanced)
Full Panel
30ø Level Turns
Unusual Attitudes – Recoveries
Transference to Instruments after Take-off
Limited Panel
Basic Flight Manoeuvres
Unusual Attitudes – Recoveries

AIR EXERCISE 2
Full Panel
30ø Level Turns
Unusual Attitudes – Recoveries

Limited Panel
Repeat of the Above Exercises

LONG BRIEFING 3

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VOR (VHF OMNI RANGE)
Availability of VOR Stations En-Route
Station Frequencies and Identification
Signal Reception Range
Effect of Altitude
VOR Radials
Use of Omni Bearing Selector
To/From Indicator
Orientation
Selecting Radials

Intercepting a Pre-Selected Radial
Assessment of Distance to Interception
Effects of Wind
Maintaining a Radial
Tracking To/From a VOR Station
Procedure Turns
Station Passage
Use of Two Stations for Obtaining a Fix
Pre-Selecting Fixes Along a Track
Assessment of Ground Speed and Timing
Holding Procedures
Various Entries
Communication (R/T Procedures and ATC Liaison)

AIR EXERCISE 3

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VOR (VHF OMNI RANGE)
Station Selection and Identification
Orientation
Intercepting a Pre-Selected Radial
R/T Procedures and ATC Liaison
Maintaining a Radial Inbound
Recognition of Station Passage
Maintaining a Radial Outbound
Procedure Turns
Use of Two Stations to Obtain a Fix Along the Track
Assessment of Ground Speed and Timing

Holding Procedures/Entries
Holding at a Pre-Selected Fix
Holding at a VOR Station

LONG BRIEFING 4

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF ADF (AUTOMATIC DIRECTION FINDING EQUIPMENT)
Availability of NDB (Non Directional Beacons) Facilities En-Route
Location, Frequencies, Tuning (as applicable) and Identification Codes
Signal Reception Range
Static Interference
Night Effect
Station Interference
Mountain Effect
Coastal Refraction
Orientation in Relation to a NDB
Homing
Intercepting a Pre-Selected Magnetic Bearing and Tracking Inbound
Station Passage
Tracking Outbound
Time/Distance Checks
Use of Two NDBs to Obtain a Fix or alternatively use of One NDB and One other Navaid
Holding Procedures/Various Approved Entries
Communication (R/T Procedures and ATC Liaison)

AIR EXERCISE 4

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF ADF (AUTOMATIC DIRECTION FINDING EQUIPMENT)
Selecting, Tuning and Identifying a NDB
ADF Orientation
Communication (R/T Procedures and ATC Liaison)
Homing
Tracking Inbound
Station Passage
Tracking Outbound
Time/Distance Checks
Intercepting a Pre-Selected Magnetic Bearing
Determining the Aeroplane's position from Two NDBs or alternatively from One NDB and One Other Navaid
ADF Holding Procedures/Various Approved Entries

LONG BRIEFING 5

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VHF/DF (Very High Frequency/Direction Finding)
Availability of VHF/DF Facilities En-Route
Location, Frequencies, Station Call Signs and Hours of Operation
Signal and Reception Range
Effect of Altitude
Communication (R/T Procedures and ATC Liaison)
Obtaining and Using Types of Bearings, e.g. QTE, QDM, QDR
Homing to a Station
Effect of Wind
Use of Two VHF/DF Stations to Obtain a Fix (or alternatively One VHF/DF Station and One other Navaid)
Assessment of Groundspeed and Timing

AIR EXERCISE 5

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VHF/DF (Very High Frequency/Direction Finding)
Establishing Contact with a VHF/DF Station
R/T Procedures and ATC Liaison
Obtaining and Using a QDR and QTE
Homing to a Station
Effect of Wind
Use of Two VHF/DF Stations to Obtain a Fix (or alternatively One VHF/DF Station and One other Navaid)
Assessment of Groundspeed and Timing

LONG BRIEFING 6

USE OF DME (Distance Measuring Equipment)
Availability of DME Facilities
Location, Frequencies and Identification Codes
Signal Reception Range
Slant Range
Use of DME to obtain Distance, Groundspeed and Timing
Use of DME to obtain a Fix

AIR EXERCISE 6

USE OF DME (Distance Measuring Equipment)
Station Selection and Identification
Use of Equipment Functions
Distance
Groundspeed
Timing
DME Arc Approach
DME Holding

LONG BRIEFING 7

USE OF TRANSPONDERS (SSR)
Operation of Transponders
Code Selection Procedure
Emergency Codes
Precautions when using Airborne Equipment

AIR EXERCISE 7

USE OF TRANSPONDERS (SSR)
Operation of Transponders

Types of Transponders
Code Selection Procedure
Emergency Codes
Precautions when Selecting the Required Code

LONG BRIEFING 8

USE OF EN-ROUTE RADAR
Availability of Radar Services
Location, Station Frequencies, Call Signs and Hours of Operation
AIP and NOTAMs
Provision of Service
Communication (R/T, Procedures and ATC Liaison)
Airspace Radar Advisory Service
Emergency Service
Aircraft Separation Standards

AIR EXERCISE 8

USE OF EN-ROUTE RADAR
Communication (R/T Procedures and ATC Liaison)
Establishing the Service Required and Position Reporting
Method of Reporting Conflicting Traffic
Terrain Clearance

LONG BRIEFING 9

PRE-FLIGHT AND AERODROME DEPARTURE
Determining the Serviceability of the Aeroplane Radio
Navigation Equipment
Obtaining the Departure Clearance
Setting up Radio Navaids prior to Take-off e.g. VOR Frequencies, Required Radials, etc.
Aerodrome Departure Procedures, Frequency Changes
Altitude and Position Reporting as Required

Standard Instrument Departure Procedures (SIDs)
Obstacle Clearance Considerations

AIR EXERCISE 9

PRE-FLIGHT AND AERODROME DEPARTURE
Radio Equipment Serviceability Checks
Departure Clearance
Navaid Selection
Frequencies, Radials, etc.
Aerodrome Departure Checks, Frequency Changes, Altitude and Position Reports
Standard Instrument Departure Procedures (SIDs)
LONG BRIEFING 10

INITIAL/INTERMEDIATE/FINAL APPROACH PROCEDURES
Precision Approach Charts
Approach to the Initial Approach Fix and Minimum Sector Altitude
Navaid Requirements, e.g. Radar, ADF, etc.
Communication (ATC Liaison and R/T Phraseology)

Review:
Holding Procedure
The Final Approach Track
Forming a Mental Picture of the Approach
Completion of Aerodrome Approach Checks
Initial Approach Procedure

Selection of the ILS Frequency and Identification
Obstacle Clearance Altitude/Height
Operating Minima
Achieving the Horizontal and Vertical Patterns
Assessment of Distance, Groundspeed Time, and Rate of Descent from the Final Approach Fix to the Aerodrome
Use of DME (as applicable)
Go Around and Missed Approach Procedure
Review of the Published Instructions
Transition from Instrument to Visual Flight (Sensory Illusions)

VISUAL MANOEUVRING AFTER AN INSTRUMENT APPROACH
Circling Approach
Visual Approach to Landing

AIR EXERCISE 10

PRECISION APPROACH PROCEDURE
Initial Approach to the ILS
Completion of Approach Planning
Holding Procedure
Frequency Selection and Identification of ILS

Review of the Published Procedure and Minimum Sector Altitude
Communication (ATC Liaison and R/T Phraseology)
Determination of Operating Minima and Altimeter Setting
Weather Consideration, e.g. Cloud Base and Visibility
Availability of Runway Lighting
ILS Entry Methods
Radar Vectors
Procedural Method
Assessment of Approach Time from the Final Approach Fix to the Aerodrome

Determination of:
The Descent Rate on Final Approach
The Wind Velocity at the Surface and the Length of the Landing Runway
The Obstruction Heights to be borne in mind during Visual manoeuvring after an Instrument Approach
Circling approach

The Approach:
At the Final Approach Fix
Use of DME (as applicable)
ATC liaison
Note Time and establish Airspeed and Descent Rate
Maintaining the Localiser and Glide Path
Anticipation in Change of Wind Velocity and its Effect on Drift
Decision Height
Runway Direction
Overshoot and Missed Approach Procedure
Transition from Instrument to Visual Flight
Circling Approach
Visual Approach to Landing

LONG BRIEFING 11

NON-PRECISION APPROACH PROCEDURE

Non-Precision Approach Charts
Initial Approach to the Initial Approach Fix and Minimum Sector Altitude
ATC Liaison
Communication (ATC Procedures and R/T Phraseology)

Approach Planning:
Holding Procedure
The Approach Track
Forming a Mental Picture of the Approach
Initial Approach Procedure
Operating Minima
Completion of Approach Planning
Achieving the Horizontal and Vertical Patterns
Assessment of Distance, Groundspeed Time, and Rate of Descent from the Final Approach Fix (FAF) to the Aerodrome
Use of DME (as applicable)
Go around and Missed Approach Procedure
Review of the Published Instructions
Transition from Instrument to Visual Flight (Sensory Illusions)
Visual Manoeuvring after an Instrument Approach
Circling Approach
Visual Approach to Landing

AIR EXERCISE 11

NON-PRECISION APPROACH PROCEDURE

Completion of Approach Planning including

Determination of:
Descent Rate from the Final Approach Fix
The Wind Velocity at the Surface and Length of the Landing Runway

The Obstruction Heights to be Borne in Mind During Visual Manoeuvring after an Instrument Approach
Circling Approach
Go Around and Missed Approach Procedure

Initial Approach
Frequency Selection and Identification
Review of the Published Procedure and Minimum Safe Sector Altitude
ATC liaison and R/T Phraseology
Determination of Decision Height and Altimeter Setting
Weather Considerations, e.g. Cloud Base and Visibility
Availability of Runway Lighting
Determination of Inbound Track
Assessment of Time from Final Approach Fix to the Missed Approach Point
ATC Liaison
The Outbound Procedure (incl. Completion of Pre-Landing Checks)
The Inbound Procedure
Re-Check of Identification Code
Altimeter Setting Re-Checked
The Final Approach
Note Time and Establish Airspeed and Descent Rate
Maintaining the Final Approach Track
Anticipation of Change in Wind Velocity and its Effect on the Drift
Minimum Descent Altitude/Height
Runway Direction
Go around and Missed Approach Procedure
Transition from Instrument to Visual Flight (Sensory Illusions)
Visual Approach

LONG BRIEFING 12

AIR EXERCISES

Use of GPS (to be developed)

B. Helicopters

LONG BRIEFINGS AND AIR EXERCISES

1 Instrument Flying (For revision as deemed necessary by the Course Instructor)

2 Instrument Flying (Advanced)

3 Radio Navigation (Applied Procedures) – use of VOR

4 Radio Navigation (Applied Procedures) – use of NDB

5 Radio Navigation (Applied Procedures) – use of VHF/DF

6 Radio Navigation (Applied Procedures) – use of DME

7 Radio Navigation (Applied Procedures) – use of Transponders

8 Radio Navigation (Applied Procedures) – use of En-Route Radar Services

9 Pre-Flight and Aerodrome Departure and Arrival Procedures

10 Instrument Approach – precision approach aid to Specified Minima- Missed Approach Procedures

11 Instrument Approach – non-precision approach to Specified Minima- Missed Approach Procedures

12 Radio navigation (Applied Procedures) – use of GPS (to be developed)

LONG BRIEFING 1

INSTRUMENT FLYING (Basic)

Flight Instruments
Physiological Considerations
Instrument Appreciation
    Attitude Instrument Flight
    Pitch Indications
    Bank Indications
    Different Instrument Presentations
    Introduction to the Use of the Attitude Indicator
    Pitch Attitude
    Bank Attitude
    Maintenance of Heading and Balanced flight
    Instrument Limitations (inc System Failures)

ATTITUDE, POWER & PERFORMANCE
Attitude Instrument Flight

Control Instruments
Performance Instruments
Effect of Changing Power
Cross Checking the Instrument Indications
Instrument Interpretation
Direct and Indirect Indications (Performance Instruments)
Instrument Lag
Selective Radial Scan

THE BASIC FLIGHT MANOEUVRES (FULL PANEL)
Straight and Level Flight at Various Airspeeds
Climbing
Descending
Standard Rate Turns
Level, Climbing and Descending On to Pre-Selected Headings

AIR EXERCISE 1

INSTRUMENT FLYING (Basic)
Physiological Sensations
Instrument Appreciation
Attitude Instrument Flight
Pitch Attitude
Bank Attitude
Maintenance of Heading and Balanced Flight
Attitude Instrument Flight
Effect of Changing Power
Cross Checking the Instruments
Selective Radial Scan

THE BASIC FLIGHT MANOEUVRES (FULL PANEL)
Straight and Level Flight at various Airspeeds and Helicopter Configurations
Climbing
Descending
Standard Rate Turns
Level, Climbing and Descending on to Pre-Selected Headings

[Manoeuvring at minimum and maximum IMC speed]

LONG BRIEFING 2

INSTRUMENT FLYING (Advanced)
Full Panel
30 degrees Level Turns
Unusual Attitudes – Recoveries
Transition to Instruments after Take-off
Limited Panel
Basic Flight Manoeuvres
Unusual Attitudes – Recoveries

AIR EXERCISE 2
Full Panel
30 degrees Level Turns
Unusual Attitudes – Recoveries
Identification and Recovery from Low Pitch Steep Bank and High Pitch Steep Bank Attitudes (at low and high power settings)
Limited Panel
Repeat of the Above Exercises

LONG BRIEFING 3

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VOR (VHF OMNI RANGE)
Availability of VOR Stations En-Route
Station Frequencies and Identification
Signal Reception Range
Effect of Altitude
VOR Radials
Use of Omni Bearing Selector
To/From Indicator
Orientation
Selecting Radials
Intercepting a Pre-Selected Radial
Assessment of Distance to Interception
Effects of Wind
Maintaining a Radial
Tracking To/From a VOR Station
Procedure Turns
Station Passage
Use of Two Stations for Obtaining a Fix
Pre-Selecting Fixes Along a Track
Assessment of Ground Speed and Timing
Holding Procedures
Various Entries
Communication (R/T Procedures and ATC Liaison)

AIR EXERCISE 3

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VOR (VHF OMNI RANGE)
Station Selection and Identification
Orientation
Intercepting a Pre-Selected Radial

R/T Procedures and ATC Liaison
Maintaining a Radial Inbound
Recognition of Station Passage
Maintaining a Radial Outbound
Procedure Turns
Use of Two Stations to Obtain a Fix Along the Track
Assessment of Ground Speed and Timing

Holding Procedures/Entries
Holding at a Pre-Selected Fix
Holding at a VOR Station

LONG BRIEFING 4

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF ADF (AUTOMATIC DIRECTION FINDING EQUIPMENT)
Availability of NDB (Non Directional Beacons) Facilities En-Route
Location, Frequencies, Tuning (as applicable) and Identification Codes
Signal Reception Range
Static Interference
Night Effect
Station Interference
Mountain Effect
Coastal Refraction
Orientation in Relation to a NDB
Homing
Intercepting a Pre-Selected Magnetic Bearing and Tracking Inbound
Station Passage
Tracking Outbound
Time/Distance Checks
Use of Two NDBs to Obtain a Fix or alternatively use of One NDB and One other Navaid
Holding Procedures
Communication (R/T Procedures and ATC Liaison)

AIR EXERCISE 4

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF ADF (AUTOMATIC DIRECTION FINDING EQUIPMENT)
Selecting, Tuning and Identifying a NDB
ADF Orientation
Communication (R/T Procedures and ATC Liaison)
Homing
Tracking Inbound
Station Passage
Tracking Outbound
Time/Distance Checks
Intercepting a Pre-Selected Magnetic Bearing
Determining the Helicopter's position from Two NDBs or alternatively from One NDB and One Other Navaid
ADF Holding Procedures

LONG BRIEFING 5

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VHF/DF (Very High Frequency/Direction Finding)

Availability of VHF/DF Facilities En-Route
Location, Frequencies, Station Call Signs and Hours of Operation
Signal and Reception Range
Effect of Altitude
Communication (R/T Procedures and ATC Liaison)
Obtaining and Using Types of Bearings, e.g. QTE, QDM, QDR
Homing to a Station
Effect of Wind
Use of Two VHF/DF Stations to Obtain a Fix (or alternatively One VHF/DF Station and One other Navaid)
Assessment of Groundspeed and Timing

AIR EXERCISE 5

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VHF/DF (Very High Frequency/Direction Finding)
Establishing Contact with a VHF/DF Station
R/T Procedures and ATC Liaison
Obtaining and Using a QDR and QTE
Homing to a Station
Effect of Wind
Use of Two VHF/DF Stations to Obtain a Fix (or alternatively One VHF/DF Station and One other Navaid)
Assessment of Groundspeed and Timing

LONG BRIEFING 6

USE OF DME (Distance Measuring Equipment)
Availability of DME Facilities
Location, Frequencies and Identification Codes
Signal Reception Range
Slant Range
Use of DME to obtain Distance, Groundspeed and Timing
Use of DME to obtain a Fix

AIR EXERCISE 6

USE OF DME (Distance Measuring Equipment)
Station Selection and Identification
Use of Equipment Functions
Distance
Groundspeed
Timing
DME Arc Approach
DME Holding

LONG BRIEFING 7

USE OF TRANSPONDERS (SSR)
Operation of Transponders
Code Selection Procedure
Emergency Codes
Precautions when using Airborne Equipment

AIR EXERCISE 7

USE OF TRANSPONDERS (SSR)

Operation of Transponders
Types of Transponders
Code Selection Procedure
Emergency Codes
Precautions when Selecting the Required Code

LONG BRIEFING 8

USE OF EN-ROUTE RADAR
Availability of Radar Services
Location, Station Frequencies, Call Signs and Hours of Operation
AIP and NOTAMS
Provision of Service
Communication (R/T, Procedures and ATC Liaison)
Airspace Radar Advisory Service
Emergency Service
Aircraft Separation Standards

AIR EXERCISE 8

USE OF EN-ROUTE RADAR
Communication (R/T Procedures and ATC Liaison)
Establishing the Service Required and Position Reporting
Method of Reporting Conflicting Traffic
Terrain Clearance

LONG BRIEFING 9

PRE-FLIGHT AND AERODROME DEPARTURE
Determining the Serviceability of the Radio equipment
Navigation Equipment
Obtaining the Departure Clearance
Setting up Radio Navaids prior to Take-off e.g. VOR Frequencies, Required Radials, etc
Aerodrome Departure Procedures, Frequency Changes
Altitude and Position Reporting as Required
Standard Instrument Departure Procedures (SIDs)
Obstacle Clearance Considerations

AIR EXERCISE 9

PRE-FLIGHT AND AERODROME DEPARTURE
Radio Equipment Serviceability Checks
Departure Clearance
Navaid Selection
Frequencies, Radials, etc
Aerodrome Departure Checks, Frequency Changes, Altitude and Position Reports
Standard Instrument Departure Procedures (SIDs)

LONG BRIEFING 10

INITIAL/INTERMEDIATE/FINAL APPROACH PROCEDURES
Precision Approach Charts
Approach to the Initial Approach Fix and Minimum Sector Altitude
Navaid Requirements, e.g. Radar, ADF, etc
Communication (ATC Liaison and R/T Phraseology)

Review:
Holding Procedure
The Final Approach Track
Forming a Mental Picture of the Approach
Completion of Aerodrome Approach Checks
Initial Approach Procedure
Selection of the ILS Frequency and Identification
Obstacle Clearance Altitude/Height
Operating Minima
Achieving the Horizontal and Vertical Patterns
Assessment of Distance, Groundspeed Time, and Rate of Descent from the Final Approach Fix to the Aerodrome
Use of DME (as applicable)
Go Around and Missed Approach Procedure
Review of the Published Instructions
Transition from Instrument to Visual Flight (Sensory Illusions)

VISUAL MANOEUVRING AFTER AN INSTRUMENT APPROACH
Circling Approach
Visual Approach to Landing

AIR EXERCISE 10

PRECISION APPROACH PROCEDURE
Initial Approach to the ILS
Completion of Approach Planning
Holding Procedure
Frequency Selection and Identification of ILS
Review of the Published Procedure and Minimum Sector Altitude
Communication (ATC Liaison and R/T Phraseology)
Determination of Operating Minima and Altimeter Setting
Weather Consideration, e.g. Cloud Base and Visibility
Availability of Landing site Lighting
ILS Entry Methods
Radar Vectors
Procedural Method
Assessment of Approach Time from the Final Approach Fix to the Aerodrome
Determination of:
The Descent Rate on Final Approach
The Wind Velocity at the Surface and the Length of the Landing Site
The Obstruction Heights to be borne in mind during Visual manoeuvring after an Instrument Approach
Circling approach
The Approach:
At the Final Approach Fix
Use of DME (as applicable)
ATC liaison
Note Time and establish Airspeed and Descent Rate
Maintaining the Localizer and Glide Path
Anticipation in Change of Wind Velocity and its Effect on Drift
Decision Height
Landing Direction
Go Around and Missed Approach Procedure
Transition from Instrument to Visual Flight
Circling Approach
Visual Approach to Landing

LONG BRIEFING 11

NON-PRECISION APPROACH PROCEDURE
Non-Precision Approach Charts
Initial Approach to the Initial Approach Fix and Minimum Sector Altitude
ATC Liaison
Communication (ATC Procedures and R/T Phraseology)
Approach Planning:
Holding Procedure
The Approach Track
Forming a Mental Picture of the Approach
Initial Approach Procedure
Operating Minima
Completion of Approach Planning
Achieving the Horizontal and Vertical Patterns
Assessment of Distance, Groundspeed Time, and Rate of Descent from the Final Approach Fix (FAF) to the Aerodrome
Use of DME (as applicable)
Go Around and Missed Approach Procedure
Review of the Published Instructions
Transition from Instrument to Visual Flight (Sensory Illusions)
Visual Manoeuvring after an Instrument Approach
Circling Approach
Visual Approach to Landing

AIR EXERCISE 11

NON-PRECISION APPROACH PROCEDURE
Completion of Approach Planning including
Determination of:
Descent Rate from the Final Approach Fix
The Wind Velocity at the Surface and Length of the Landing site
The Obstruction Heights to be Borne in Mind During Visual Manoeuvring after an Instrument Approach
Circling Approach
Go Around and Missed Approach Procedure
Initial Approach
Frequency Selection and Identification
Review of the Published Procedure and Minimum Safe Sector Altitude
ATC liaison and R/T Phraseology
Determination of Decision Height and Altimeter Setting
Weather Considerations, e.g. Cloud Base and Visibility
Availability of Landing site Lighting
Determination of Inbound Track
Assessment of Time from Final Approach Fix to the Missed Approach Point
ATC Liaison
The Outbound Procedure (incl. Completion of Pre-Landing Checks)
The Inbound Procedure
Re-Check of Identification Code
Altimeter Setting Re-Checked
The Final Approach
Note Time and Establish Airspeed and Descent Rate
Maintaining the Final Approach Track
Anticipation of Change in Wind Velocity and its Effect on the Drift
Minimum Descent Altitude/Height
Landing site Direction
Go Around and Missed Approach Procedure
Transition from Instrument to Visual Flight (Sensory Illusions)

Visual Approach

C. Airships

LONG BRIEFINGS AND AIR EXERCISES

1 Basic Instrument Flying (For revision as deemed necessary by the Course Instructor)

2 Instrument Flying (Advanced)

3 Radio Navigation (Applied Procedures) – use of VOR

4 Radio Navigation (Applied Procedures) – use of NDB

5 Radio Navigation (Applied Procedures) – use of VHF/DF

6 Radio Navigation (Applied Procedures) – use of DME

7 Radio Navigation (Applied Procedures) – use of Transponders

8 Radio Navigation (Applied Procedures) – use of En-Route Radar Services

9 Pre-flight and Aerodrome Departure and Arrival Procedures

10 Instrument Approaches

ILS Approaches to Specified Minima – Missed Approach Procedures

11 Instrument Approaches

NDB Approaches to Specified Minima – Missed Approach Procedures

12 Radio Navigation (applied procedures) use of GPS (to be developed)

LONG BRIEFING 1

INSTRUMENT FLYING (Basic)

Flight Instruments
Physiological Considerations
Instrument Appreciation
Attitude Instrument Flight
Pitch Indications
Different Instrument Presentations
Introduction to the Use of the Attitude Indicator
Pitch Attitude
Maintenance of Heading and Balanced flight
Instrument Limitations (inc. System Failures)

ATTITUDE, POWER & PERFORMANCE
Attitude Instrument Flight
Control Instruments
Performance Instruments
Effect of Changing Power, Trim and configuration
Cross Checking the Instrument Indications
Instrument Interpretation
Direct and Indirect Indications (Performance Instruments)
Instrument Lag
Selective Radial Scan

THE BASIC FLIGHT MANOEUVRES (FULL PANEL)
Straight and Level Flight at Various Airspeeds and Airship Configurations
Climbing
Descending
Standard Rate Turns
Level, Climbing and Descending On to Pre-Selected Headings

AIR EXERCISE 1

INSTRUMENT FLYING (Basic)
Physiological Sensations
Instrument Appreciation
Attitude Instrument Flight
Pitch Attitude
Bank Attitude
Maintenance of Heading and Balanced Flight
Attitude Instrument Flight
Effect of Changing Power and configuration
Cross Checking the Instruments
Selective Radial Scan

THE BASIC FLIGHT MANOEUVRES (FULL PANEL)
Straight and Level Flight at various Airspeeds and Airship Configurations
Climbing
Descending
Standard Rate Turns
Level, Climbing and Descending on to Pre-Selected Headings

LONG BRIEFING 2

INSTRUMENT FLYING (Advanced)
Full Panel
Unusual Attitudes – Recoveries
Transference to Instruments after Take-off
Limited Panel
Basic Flight Manoeuvres
Unusual Attitudes – Recoveries

AIR EXERCISE 2

Full Panel
Unusual Attitudes – Recoveries
Limited Panel
Repeat of the Above Exercises

LONG BRIEFING 3

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VOR (VHF OMNI RANGE)
Availability of VOR Stations En-Route
Station Frequencies and Identification
Signal Reception Range
Effect of Altitude
VOR Radials
Use of Omni Bearing Selector
To/From Indicator
Orientation
Selecting Radials
Intercepting a Pre-Selected Radial
Assessment of Distance to Interception
Effects of Wind
Maintaining a Radial
Tracking To/From a VOR Station

Procedure Turns
Station Passage
Use of Two Stations for Obtaining a Fix
Pre-Selecting Fixes Along a Track
Assessment of Ground Speed and Timing
Holding Procedures
Various Entries
Communication (R/T Procedures and ATC Liaison)

AIR EXERCISE 3

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VOR (VHF OMNI RANGE)
Station Selection and Identification
Orientation
Intercepting a Pre-Selected Radial
R/T Procedures and ATC Liaison
Maintaining a Radial Inbound
Recognition of Station Passage
Maintaining a Radial Outbound
Procedure Turns
Use of Two Stations to Obtain a Fix Along the Track
Assessment of Ground Speed and Timing

Holding Procedures/Entries
Holding at a Pre-Selected Fix
Holding at a VOR Station

LONG BRIEFING 4

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF ADF (AUTOMATIC DIRECTION FINDING EQUIPMENT)
Availability of NDB (Non Directional Beacons) Facilities En-Route
Location, Frequencies, Tuning (as applicable) and Identification Codes
Signal Reception Range
Static Interference
Night Effect
Station Interference
Mountain Effect
Coastal Refraction
Orientation in Relation to a NDB
Homing
Intercepting a Pre-Selected Magnetic Bearing and Tracking Inbound
Station Passage
Tracking Outbound
Time/Distance Checks
Use of Two NDBs to Obtain a Fix or alternatively use of One NDB and One other Navaid
Holding Procedures/Various Approved Entries
Communication (R/T Procedures and ATC Liaison)

AIR EXERCISE 4

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF ADF (AUTOMATIC DIRECTION FINDING EQUIPMENT)
Selecting, Tuning and Identifying a NDB

ADF Orientation
Communication (R/T Procedures and ATC Liaison)
Homing
Tracking Inbound
Station Passage
Tracking Outbound
Time/Distance Checks
Intercepting a Pre-Selected Magnetic Bearing
Determining the Airship's position from Two NDBs or alternatively from One NDB and One Other Navaid
ADF Holding Procedures/Various Approved Entries

LONG BRIEFING 5

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VHF/DF (Very High Frequency/Direction Finding)
Availability of VHF/DF Facilities En-Route
Location, Frequencies, Station Call Signs and Hours of Operation
Signal and Reception Range
Effect of Altitude
Communication (R/T Procedures and ATC Liaison)
Obtaining and Using Types of Bearings, e.g. QTE, QDM, QDR
Homing to a Station
Effect of Wind
Use of Two VHF/DF Stations to Obtain a Fix (or alternatively One VHF/DF Station and One other Navaid)
Assessment of Groundspeed and Timing

AIR EXERCISE 5

RADIO NAVIGATION (APPLIED PROCEDURES)

USE OF VHF/DF (Very High Frequency/Direction Finding)
Establishing Contact with a VHF/DF Station
R/T Procedures and ATC Liaison
Obtaining and Using a QDR and QTE
Homing to a Station
Effect of Wind
Use of Two VHF/DF Stations to Obtain a Fix (or alternatively One VHF/DF Station and One other Navaid)
Assessment of Groundspeed and Timing

LONG BRIEFING 6

USE OF DME (Distance Measuring Equipment)
Availability of DME Facilities
Location, Frequencies and Identification Codes
Signal Reception Range
Slant Range
Use of DME to obtain Distance, Groundspeed and Timing
Use of DME to obtain a Fix

AIR EXERCISE 6

USE OF DME (Distance Measuring Equipment)
Station Selection and Identification
Use of Equipment Functions

Distance
Groundspeed
Timing
DME Arc Approach
DME Holding

LONG BRIEFING 7

USE OF TRANSPONDERS (SSR)
Operation of Transponders
Code Selection Procedure
Emergency Codes
Precautions when using Airborne Equipment

AIR EXERCISE 7

USE OF TRANSPONDERS (SSR)
Operation of Transponders
Types of Transponders
Code Selection Procedure
Emergency Codes
Precautions when Selecting the Required Code

LONG BRIEFING 8

USE OF EN-ROUTE RADAR
Availability of Radar Services
Location, Station Frequencies, Call Signs and Hours of Operation
AIP and NOTAMs
Provision of Service
Communication (R/T, Procedures and ATC Liaison)
Airspace Radar Advisory Service
Emergency Service
Aircraft Separation Standards

AIR EXERCISE 8

USE OF EN-ROUTE RADAR
Communication (R/T Procedures and ATC Liaison)
Establishing the Service Required and Position Reporting
Method of Reporting Conflicting Traffic
Terrain Clearance

LONG BRIEFING 9

PRE-FLIGHT AND AERODROME DEPARTURE
Determining the Serviceability of the Airship Radio
Navigation Equipment
Obtaining the Departure Clearance
Setting up Radio Navaids prior to Take-off e.g. VOR Frequencies, Required Radials, etc.
Aerodrome Departure Procedures, Frequency Changes
Altitude and Position Reporting as Required
Standard Instrument Departure Procedures (SIDs)
Obstacle Clearance Considerations

AIR EXERCISE 9

PRE-FLIGHT AND AERODROME DEPARTURE

Radio Equipment Serviceability Checks
Departure Clearance
Navaid Selection
Frequencies, Radials, etc.
Aerodrome Departure Checks, Frequency Changes, Altitude and Position Reports
Standard Instrument Departure Procedures (SIDs)

LONG BRIEFING 10

INITIAL/INTERMEDIATE/FINAL APPROACH PROCEDURES
Precision Approach Charts
Approach to the Initial Approach Fix and Minimum Sector Altitude
Navaid Requirements, e.g. Radar, ADF, etc.
Communication (ATC Liaison and R/T Phraseology)

Review:
Holding Procedure
The Final Approach Track
Forming a Mental Picture of the Approach
Completion of Aerodrome Approach Checks
Initial Approach Procedure

Selection of the ILS Frequency and Identification
Obstacle Clearance Altitude/Height
Operating Minima
Achieving the Horizontal and Vertical Patterns
Assessment of Distance, Groundspeed Time, and Rate of Descent from the Final Approach Fix to the Aerodrome
Use of DME (as applicable)
Go Around and Missed Approach Procedure
Review of the Published Instructions
Transition from Instrument to Visual Flight (Sensory Illusions)

VISUAL MANOEUVRING AFTER AN INSTRUMENT APPROACH
Circling Approach
Visual Approach to Landing

AIR EXERCISE 10

PRECISION APPROACH PROCEDURE
Initial Approach to the ILS
Completion of Approach Planning
Holding Procedure
Frequency Selection and Identification of ILS

Review of the Published Procedure and Minimum Sector Altitude
Communication (ATC Liaison and R/T Phraseology)
Determination of Operating Minima and Altimeter Setting
Weather Consideration, e.g. Cloud Base and Visibility
Availability of Runway Lighting
ILS Entry Methods
Radar Vectors
Procedural Method
Assessment of Approach Time from the Final Approach Fix to the Aerodrome

Determination of:
The Descent Rate on Final Approach
The Wind Velocity at the Surface (and the Length of the Landing Runway)

The Obstruction Heights to be borne in mind during Visual manoeuvring after an Instrument Approach
Circling approach

The Approach:
At the Final Approach Fix
Use of DME (as applicable)
ATC liaison
Note Time and establish Airspeed and Descent Rate
Maintaining the Localiser and Glide Path
Anticipation in Change of Wind Velocity and its Effect on Drift
Decision Height
Runway Direction
Missed Approach Procedure
Transition from Instrument to Visual Flight
Circling Approach
Visual Approach to Landing

LONG BRIEFING 11

NON-PRECISION APPROACH PROCEDURE
Non-Precision Approach Charts
Initial Approach to the Initial Approach Fix and Minimum Sector Altitude
ATC Liaison
Communication (ATC Procedures and R/T Phraseology)

Approach Planning:
Holding Procedure
The Approach Track
Forming a Mental Picture of the Approach
Initial Approach Procedure
Operating Minima
Completion of Approach Planning
Achieving the Horizontal and Vertical Patterns
Assessment of Distance, Groundspeed Time, and Rate of Descent from the Final Approach Fix (FAF) to the Aerodrome
Use of DME (as applicable)
Go around and Missed Approach Procedure
Review of the Published Instructions
Transition from Instrument to Visual Flight (Sensory Illusions)
Visual Manoeuvring after an Instrument Approach
Circling Approach
Visual Approach to Landing

AIR EXERCISE 11

NON-PRECISION APPROACH PROCEDURE
Completion of Approach Planning including
Determination of:
Descent Rate from the Final Approach Fix
The Wind Velocity at the Surface and Length of the Landing Runway
The Obstruction Heights to be Borne in Mind During Visual Manoeuvring after an Instrument Approach
Circling Approach
Go Around and Missed Approach Procedure
Initial Approach
Frequency Selection and Identification
Review of the Published Procedure and Minimum Safe Sector Altitude

ATC liaison and R/T Phraseology
Determination of Decision Height and Altimeter Setting
Weather Considerations, e.g. Cloud Base and Visibility
Availability of Runway Lighting
Determination of Inbound Track
Assessment of Time from Final Approach Fix to the Missed Approach Point
ATC Liaison
The Outbound Procedure (incl. Completion of Pre-Landing Checks)
The Inbound Procedure
Re-Check of Identification Code
Altimeter Setting Re-Checked
The Final Approach
Note Time and Descent Rate
Maintaining the Final Approach Track
Anticipation of Change in Wind Velocity and its Effect on the Drift
Minimum Descent Altitude/Height
Runway Direction
Go around and Missed Approach Procedure
Transition from Instrument to Visual Flight (Sensory Illusions)
Visual Approach

LONG BRIEFING 12

AIR EXERCISES
Use of GPS (to be developed)

AMC to FCL.930.MCCI

MCCI training course - aeroplanes

GENERAL

The objective of the technical training is to apply the core instructor competencies acquired during the theoretical knowledge training to MCC training.

During the practical training the applicant should demonstrate the ability to instruct a pilot in MCC.

For the purpose of supervising applicants for MCCI certificates, the adequate experience should include at least 3 type rating or MCC courses.

COURSE OBJECTIVE

1 The course should be designed to give adequate training to the applicant in theoretical knowledge instruction and synthetic flight instruction in order to instruct those aspects of multi-crew co-operation (MCC) required by an applicant for a type rating on a first multi-pilot aeroplane.

2 Confirmation of competency of the applicant to be authorised as an MCCI(A) will be determined by the applicant conducting at least 3 hours MCC instruction to a satisfactory standard on the relevant FNPT or flight simulator under the supervision of a TRI(A), SFI(A) or MCCI(A) notified by the Authority for this purpose.

The course consists of 2 parts

- Part 1, that should follow the content of AMC FCL.920
- Part 2, that should have the following content:

PART 2

TECHNICAL TRAINING

The FSTD training consists of the application of core instructor competencies to MCC training in a commercial air transport environment, including principles of threat and error management and CRM.

The content of the training programme should cover MCC course exercises in sufficient depth to meet the standard required for issue of the MCCI (A) authorization.

1 The course should be related to the type of STD on which the applicant wishes to instruct. A training programme should give details of all theoretical knowledge instruction.

2 Identification and application of human factors (as set in the ATPL syllabus 040) related to multi-crew co-operation aspects of the training.

3 The content of the instruction programme should cover training exercises as applicable to the MCC requirements of an applicant for a multi-pilot type rating.

Training Exercises

The exercises should be accomplished as far as possible in a simulated commercial air transport environment. The instruction should cover the following areas:

a. pre-flight preparation including documentation, and computation of take-off performance data;

b. pre-flight checks including radio and navigation equipment checks and setting;

c. before take-off checks including powerplant checks, and take-off briefing by PF;

d. normal take-offs with different flap settings, tasks of PF and PNF, call-outs;

e. rejected take-offs; crosswind take-offs; take-offs at maximum take-off mass; engine failure after V_1;

f. normal and abnormal operation of aircraft systems, use of checklists;

g. selected emergency procedures to include engine failure and fire, smoke control and removal, windshear during take-off and landing, emergency descent, incapacitation of a flight crew member;

h. early recognition of and reaction on approaching stall in differing aircraft configurations;

i. instrument flight procedures including holding procedures; precision approaches using raw navigation data, flight director and automatic pilot, one engine simulated inoperative approaches, non-precision and circling approaches, approach briefing by PF, setting of navigation equipment, call-out procedures during approaches; computation of approach and landing data;

j. go-arounds; normal and with one engine simulated inoperative, transition from instrument to visual flight on reaching decision height or minimum descent height/altitude.

k. landings, normal, crosswind and with one engine simulated inoperative, transition from instrument to visual flight on reaching decision height or minimum descent height/altitude.

SUBPART K
EXAMINER CERTIFICATES

GM to FCL.1000

Examiner certificates – special conditions

When new aircraft are introduced, requirements such as to hold a licence and rating equivalent to the one for which the skill test is being conducted, or to have adequate flight experience, may not be possible to comply with. In this case, to allow for the first ratings for these aircraft to be issued to applicants, competent authorities need the possibility to issue a specific certificate that does not have to comply with the requirements established in this Subpart.

The competent authority should only give these certificates to holders of other examiner certificates. As far as possible, preference should be given to persons with experience in similar types or classes of aircraft, for example, in aircraft having the same kind and number of engines or rotors and of the same order of mass or technology.

The certificate should ideally be limited in validity to the time needed to qualify the first examiners for the new aircraft in accordance with this Subpart, but in any case it should not exceed the 3 years established in the rule.

AMC to FCL.1015

Examiner standardisation course

GENERAL

1. The competent authority may provide the course itself or through an arrangement with a training organisation. This arrangement should clearly state that the training organisation is acting under the management system of the competent authority.

   1.1 The course should last:

      1.1.1 For the LAFE, FE and FIE, at least one day, divided into theoretical and practical training;

      1.1.2 for other examiners, at least 5 days, divided into ground training and practical training in a simulator conducting role played proficiency checks and skill tests (at least 3 days).

CONTENT

2. The training should comprise:

   2.1 Theoretical training covering at least:

   a. The contents of AMC No 2 to FCL.1015 and the Flight Examiners Manual (FEM).

   b. Part-FCL and related AMCs and GM relevant to their duties;

   c. Part-OPS and related AMC and GM relevant to their duties;

   d. National requirements relevant to their examination duties.

   e. Fundamentals of human performance and limitations relevant to flight examination.

   f. Fundamentals of evaluation relevant to applicant's performance.

   g. Quality System of the Approved Training Organisation;

   h. Multi-Crew Co-operation (MCC), Human Performance and Limitations, if applicable.

      2.1.1 Examiners should also be briefed on the protection requirements for personal data, liability, accident insurance and fees, as applicable in the Member State concerned.

2.1.2 All items above are core knowledge requirements for an examiner and are recommended as core course material. This core course may be studied before recommended examiner training is commenced. The core course may utilise any suitable training format.

2.2 Practical training consisting of at least:

a. Knowledge and management of the test for which the certificate is to be sought. These are described in the relevant Modules in the Flight Examiner Manual (FEM).

b. Knowledge of the administrative procedures pertaining to that test/check.

c. For an initial examiner certificate, practical training should include the examination of the test profile sought, consisting of the conduct of at least two test/check profiles in the role of examiner, including briefing, conduct of the skill test/proficiency check, assessment of the applicant to whom the test/check is given, debriefing and recording/documentation under the supervision of an examiner of the appropriate category on the applicable type. This training is conducted in the aircraft if approval for testing/checking in the aircraft is required. If examiner privileges in FSTD's are required, practical instruction in the use of FSTD(s) for testing/checking should also be completed.

2.2.1 The approved training organisation should determine any further training required before the candidate is presented to the Authority for the examiner assessment of competence.

2.2.2 For helicopters, if examiner privileges are to include the conduct of proficiency checks for the revalidation or renewal of an instrument rating, practical instruction should include the conduct of at least four instrument check profiles in the role of examiner, including briefing, conduct of the skill test/proficiency check, assessment of the applicant to whom the test/check is given, debriefing and recording/documentation under the supervision of an examiner of the appropriate category on the applicable type. This training is conducted in the aircraft if approval for testing/checking in the aircraft is required. If examiner privileges in both FSTD and aircraft are required, at least one of the instrument check profiles should be conducted in an FSTD.

2.3 For extension of an examiner certificate to further types (as required for TRE), further practical training on the new type may be required, consisting of the conduct of at least one test/check profile in the role of examiner on the new type, including briefing, conduct of the skill test/proficiency check, assessment of the applicant to whom the test/check is given, debriefing and recording/documentation under the supervision of an examiner of the appropriate category on the applicable type. A further examiner check on the new type may be required, which may be supervised by an inspector of the Authority or a suitably authorised senior examiner.

AMC 2 to FCL.1015

Standardisation arrangements for examiners

LIMITATIONS

1 An examiner should plan per working day not more than three test checks relating to PPL, CPL, IR, LAFI or class rating, not more than four tests / checks relating to LPL,SPL or GPL, or more than two tests/checks related to FI, CPL/IR and ATPL or more than four tests/checks relating to type rating.

2 An examiner should plan at least two hours for a LPL, SPL or BPL, three hours for a PPL, CPL, IR, LAFI or class rating test/checks, and at least four hours for FI, CPL/IR, MPL, ATPL or type rating tests/checks, including pre-flight briefing and preparation, conduct of the test/check, de-briefing and evaluation of the applicant and documentation.

3 An examiner should allow an applicant adequate time to prepare for a test/check, normally not more than one hour.

4 An examiner should plan a test/check flight so that the flight time in an aircraft or ground time in an approved synthetic training device is not less than:

a. 45 minutes for a LPL(B) / BPL, Basic LPL(A) / (H)

b. 90 minutes for LPL(A) / (H),PPL and CPL, including navigation section;

c. 60 minutes for IR, LAFI, FI and single pilot type/class rating; and

d. 120 minutes for CPL/IR, MPL and ATPL.

For the LPL(S) and SPL test /check flight the flight time must be sufficient to allow that all the items in each test/check section can be fully completed. If not all the items can be completed in one flight, additional flights have to be done.

PURPOSE OF A TEST/CHECK

5 Determine through practical demonstration during a test/check that an applicant has acquired or maintained the required level of knowledge and skill/proficiency;

6 Improve training and flight instruction in registered facilities, Approved Training Organisations by feedback of information from examiners concerning items/sections of tests/checks that are most frequently failed;

7 Assist in maintaining and, where possible, improving air safety standards by having examiners display good airmanship and flight discipline during tests/checks.

CONDUCT OF TEST/CHECK

8 An examiner will ensure that an applicant completes a test/check in accordance with Part-FCL requirements and is assessed against the required test/check standards.

9 Each item within a test/check section should be completed and assessed separately. A failed item is a failed section. The test/check schedule, as briefed, should not normally be altered by an examiner. A failed item is not always a failed section, e.g. type rating skill test where a failure of an item in a section does not fail the entire section, only the failed item is taken again.

10 Marginal or questionable performance of a test/check item should not influence an examiner's assessment of any subsequent items.

11 An examiner should verify the requirements and limitations of a test/check with an applicant during the pre-flight briefing.

12 When a test/check is completed or discontinued, an examiner should debrief the applicant and give reasons for items/sections failed. In the event of a failed or discontinued skill test or proficiency check, the examiner should provide appropriate advice to assist the applicant in re-tests/re-checks.

13 Any comment on, or disagreement with, an examiner's test/check evaluation/assessment made during a debriefing will be recorded by the examiner on the test/check report, and will be signed by the examiner and countersigned by the applicant.

EXAMINER PREPARATION

14 An examiner should supervise all aspects of the test/check flight preparation, including, where necessary, obtaining or assuring an ATC 'slot' time.

15 An examiner will plan a test/check in accordance with Part-FCL requirements. Only the manoeuvres and procedures set out in the appropriate test/check form will be undertaken. The same examiner should not re-examine a failed applicant without the agreement of the applicant.

EXAMINER APPROACH

16 An examiner should encourage a friendly and relaxed atmosphere to develop both before and during a test/check flight. A negative or hostile approach should not be used. During the test/check flight, the examiner should avoid negative comments or criticisms and all assessments should be reserved for the debriefing.

ASSESSMENT SYSTEM

17 Although test/checks may specify flight test tolerances, an applicant should not be expected to achieve these at the expense of smoothness or stable flight. An examiner should make due allowance for unavoidable deviations due to turbulence, ATC instructions, etc.. An examiner should terminate a test/check only for the purpose of assessing the applicant, or for safety reasons. An examiner will use one of the following terms for assessment:

a. A 'pass', provided the applicant demonstrates the required level of knowledge, skill/proficiency and, where applicable, remains within the flight test tolerances for the licence or rating; or

b. A 'fail' provided that any of the following apply:

i. the flight test tolerances have been exceeded after the examiner has made due allowance for turbulence or ATC instructions;

ii. the aim of the test/check is not completed;

iii. the aim of exercise is completed but at the expense of safe flight, violation of a rule or regulation, poor airmanship or rough handling;

iv. an acceptable level of knowledge is not demonstrated;

v. an acceptable level of flight management is not demonstrated; or

vi. the intervention of the examiner or safety pilot is required in the interest of safety.

c. A 'partial pass' in accordance with the criteria shown in the relevant skill test appendix of Part-FCL.

METHOD AND CONTENTS OF THE TEST/CHECK

18 Before undertaking a test/check, an examiner will verify that the aircraft or flight simulation synthetic training device intended to be used, is suitable and appropriately equipped for the test/check. Only aircraft or synthetic flight simulation training devices approved by the Authority for skill testing/proficiency checking may be used.

19 A test/check flight will be conducted in accordance with the aircraft flight manual (AFM) and, if applicable, the aircraft operators manual (AOM).

20 A test/check flight will be conducted within the limitations contained in the operations manual of a Approved Training Organisation and, where applicable, the operations manual of a registered facility.

21 Contents

a. A test/check is comprised of:

- oral examination on the ground (where applicable);
- pre-flight briefing;
- in-flight exercises; and
- post-flight debriefing

b. Oral examination on the ground should include:

- aircraft general knowledge and performance;
- planning and operational procedures; and

   – other relevant items/sections of the test/check

c. Pre-flight briefing should include:

   – test/check sequence;

   – power setting and speeds, if applicable; and

   – safety considerations

d. In-flight exercises will include:

   – each relevant item/section of the test/check

e. Post-flight debriefing should include:

   – assessment/evaluation of the applicant

   – documentation of the test/check with the applicant's FI present, if possible.

22 A test/check is intended to simulate a practical flight. Accordingly, an examiner may set practical scenarios for an applicant while ensuring that the applicant is not confused and air safety is not compromised.

23 An examiner should maintain a flight log and assessment record during the test/check for reference during the post/flight debriefing.

24 An examiner should be flexible to the possibility of changes arising to pre-flight briefs due to ATC instructions, or other circumstances affecting the test/check.

25 Where changes arise to a planned test/check an examiner should be satisfied that the applicant understands and accepts the changes. Otherwise, the test/check flight should be terminated.

26 Should an applicant choose not to continue a test/check for reasons considered inadequate by an examiner, the applicant will be assessed as having failed those items/sections not attempted. If the test/check is terminated for reasons considered adequate by the examiner, only these items/sections not completed will be tested during a subsequent test/check.

27 At the discretion of the examiner, any manoeuvre or procedure of the test/check may be repeated once by the applicant. An examiner may terminate a test/check at any stage, if it is considered that the applicant's competency requires a complete re-test/re-check.

AMC to FCL.1020

Assessment of competence

GENERAL

The competent authority may nominate either one of its inspectors or a senior examiner to assess the competence of applicants for an examiner certificate.

DEFINITIONS

'Inspector' – The inspector of the Authority conducting the examiner competence assessment.

'Examiner Applicant' – The person seeking certification as an Examiner

'Candidate' – The person being tested/checked by the Examiner Applicant. This person may be a pilot for whom the test/check would be required, or the Inspector of the Authority who is conducting the Examiner Certification Acceptance Test.

CONDUCT OF THE ASSESSMENT

An inspector of the Authority, or a senior examiner, will observe all examiner applicants conducting a test on a 'candidate' in an aircraft for which examiner certificate is sought. Items from the related

'Syllabi for training course and skill tests/proficiency checks content for class/type rating' will be selected by the inspector for examination of the 'candidate' by the examiner applicant. Having agreed with the inspector the content of the test, the examiner applicant will be expected to manage the entire test. This will include briefing, the conduct of the flight, assessment and debriefing of the 'candidate'. The inspector will discuss the assessment with the examiner applicant before the 'candidate' is debriefed and informed of the result.

BRIEFING THE 'CANDIDATE'

4 The 'candidate' should be given time and facilities to prepare for the test flight. The briefing should cover the following:

a. the objective of the flight

b. licensing checks, as necessary

c. freedom for the 'candidate' to ask questions

d. operating procedures to be followed (e.g. operators manual)

e. weather assessment

f. operating capacity of 'candidate' and examiner

g. aims to be identified by 'candidate'

h. simulated weather assumptions (e.g. icing, cloud base)

i. contents of exercise to be performed

j. agreed speed and handling parameters (e.g. V-speeds, bank angle)

k. use of R/T

l. respective roles of 'candidate' and examiner (e.g. during emergency)

m. administrative procedures (e.g. submission of flight plan)

5 The examiner TRE applicant should maintain the necessary level of communication with the 'candidate'. The following check details should be followed by the examiner TRE applicant:

a. involvement of examiner in a multi-pilot operating environment

b. the need to give the 'candidate' precise instructions

c. responsibility for safe conduct of the flight

d. intervention by examiner, when necessary

e. use of screens

f. liaison with ATC and the need for concise, easily understood intentions

g. prompting the 'candidate' regarding required sequence of events (e.g. following a go-around)

h. keeping brief, factual and unobtrusive notes

ASSESSMENT

6 The examiner applicant should refer to the flight test tolerances given in the relevant skill test

Appendix.. Attention should be paid to the following points:

a. questions from the 'candidate'

b. give results of the test and any sections failed

c. give reasons for failure

DEBRIEFING

7 The examiner applicant should demonstrate to the inspector the ability to conduct a fair, unbiased, debriefing of the 'candidate' based on identifiable factual items. A balance between friendliness and firmness should be evident. The following points should be discussed with the 'candidate', at the applicant's discretion:

a. advise the candidate on how to avoid or correct mistakes

b. mention any other points of criticism noted

c. give any advice considered helpful

RECORDING/DOCUMENTATION

The examiner applicant should demonstrate to the inspector the ability to complete the relevant records correctly. These records may be:

a. the relevant skill test form

b. licence entry

c. notification of failure form

d. relevant company forms where the examiner has privileges of conducting operator proficiency checks

DEMONSTRATION OF THEORETICAL KNOWLEDGE

The examiner applicant should demonstrate to the inspector a satisfactory knowledge of the regulatory requirements associated with the function of an examiner.

AMC to FCL.1025

Validity, revalidation and renewal

The period of 3 years should be counted in addition to the remainder of the month of issue. If issued within the final 12 calendar months of validity of a previous examiner check, the period of validity should be extended from the date of issue until 3 years from the expiry date of that previous examiner check. When the examiner authorization is revalidated at the same time as his instructor certificate, the validity period of the instructor certificate may be aligned with the examiner certificate.

AMC AND GM TO PART-FCL APPENDICES

AMC to Appendix 3

A. ATP integrated course - aeroplanes

CREDITING

In the case of a PPL(A) or PPL(H) entrant, 50% of the aircraft hours flown by the entrant prior to the course may be credited towards the required flight instruction up to a maximum of 40 hours flying experience, or 45 hours if an aeroplane night rating has been obtained, of which up to 20 hours may be dual instruction. This credit for the hours flown should be entered into the applicant's training record. In the case of a student pilot who does not hold a pilot licence and with the approval of the Authority a ATO may designate certain dual exercises to be flown in a helicopter or a TMG up to a maximum of 20 hours.

THEORETICAL KNOWLEDGE

The 750 hours of instruction can include classroom work, interactive video, slide/tape presentation, learning carrels, computer based training, and other media as approved by the Authority, in suitable proportions.

The 750 hours of instruction should be divided in such a way that in each subject the minimum hours are:

Subject	*hours*
Air Law	40
Aircraft General Knowledge	80
Flight Performance & Planning	90
Human Performance & Limitations	50
Meteorology	60
Navigation	150
Operational Procedures	20
Principles of Flight	30
Communications	30

Other subdivision of hours may be agreed upon between the Authority and the ATO.

THE FLYING INSTRUCTION IS DIVIDED INTO FIVE PHASES:

Phase 1

1 Exercises up to the first solo flight comprise a total of at least 10 hours dual flight instruction on a single-engine aeroplane including:

a. pre-flight operations, mass and balance determination, aeroplane inspection and servicing;

b. aerodrome and traffic pattern operations, collision avoidance and precautions;

c. control of the aeroplane by external visual references;

d. normal take-offs and landings;

e. flight at critically low airspeeds, recognition of and recovery from incipient and full stalls, spin avoidance; and

f. unusual attitudes and simulated engine failure.

Phase 2

2 Exercises up to the first solo cross-country flight comprise a total of at least 10 hours of dual flight instruction and at least 10 hours solo flight including:

a. maximum performance (short field and obstacle clearance) take-offs, short-field landings;

b. flight by reference solely to instruments, including the completion of a 180° turn;

c. dual cross-country flying using external visual references, dead-reckoning and radio navigation aids, diversion procedures;

d. aerodrome and traffic pattern operations at different aerodromes;

e. crosswind take-offs and landings;

f. abnormal and emergency procedures and manoeuvres, including simulated aeroplane equipment malfunctions;

g. operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, radio telephony procedures and phraseology; and

h. knowledge of meteorological briefing arrangements, evaluation of weather conditions for flight and use of Aeronautical Information Services (AIS).

Phase 3

3 Exercises up to the VFR navigation progress test comprise a total of at least 5 hours of dual instruction and at least 25 hours as pilot-in-command.

The dual instruction and testing up to the VFR navigation progress test should comprise:

a. repetition of exercises of Phases 1 and 2;

b. VFR flight at relatively critical high airspeeds, recognition of and recovery from spiral dives;

c. VFR navigation progress test conducted by a flight instructor not connected with the applicant’s training.

Phase 4

4 Exercises up to the instrument rating skill test comprise:

a. at least 55 hours instrument flight, which may contain up to 25 hours of instrument ground time in a FNPT I or up to 40 hours in an FNPT II or flight simulator which should be conducted by a flight instructor and/or an authorised synthetic flight instructor; and

b. 35 hours instrument time flown as SPIC;

c. night flight including take-offs and landings as pilot-in-command;

d. pre-flight procedures for IFR flights, including the use of the flight manual and appropriate air traffic services documents in the preparation of an IFR flight plan;

e. procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least;

– transition from visual 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, including circling;

f. in-flight manoeuvres and specific flight characteristics; and

g. operation of a multi-engine aeroplane in the exercises of 5(e), including operation of the aeroplane solely by reference to instruments with one engine simulated inoperative, and engine shut-down and restart. (The latter training should be at a safe altitude unless carried out in a synthetic training device).

Phase 5

5 Instruction and testing in multi-crew co-operation (MCC) comprise the relevant training requirements.

6 If a type rating for multi-pilot aeroplanes is not required on completion of this part, the applicant will be provided with a certificate of course completion for MCC training.

B. CPL/IR integrated course - aeroplanes

CREDITING

In the case of a PPL(A) or PPL(H) entrant, 50% of the aircraft hours flown by the entrant prior to the course may be credited towards the required flight instruction up to a maximum of 40 hours flying experience, or 45 hours if an aeroplane night rating has been obtained, of which up to 20 hours may be dual instruction. This credit for the hours flown should be entered into the applicant’s training record. In the case of a student pilot who does not hold a pilot licence and with the approval of the Authority a ATO may designate certain dual exercises to be flown in a helicopter or a TMG up to a maximum of 20 hours.

THEORETICAL KNOWLEDGE

The 500 hours of instruction can include classroom work, interactive video, slide/tape presentation, learning carrels, computer based training, and other media as approved by the Authority, in suitable proportions.

The 500 hours of instruction should be divided in such a way that in each subject the minimum hours are:

Subject	*hours*
Air Law	30
Aircraft General Knowledge	50
Flight Performance & Planning	60
Human Performance & Limitations	15
Meteorology	40
Navigation	100
Operational Procedures	10
Principles of Flight	25
Communications	30

Other subdivisions of hours may be agreed between the Authority and the ATO.

THE FLYING INSTRUCTION IS DIVIDED INTO FOUR PHASES:

Phase 1

1 Exercises up to the first solo flight comprise a total of at least 10 hours dual flight instruction on a single-engine aeroplane including:

a. pre-flight operations, mass and balance determination, aeroplane inspection and servicing;

b. aerodrome and traffic pattern operations, collision avoidance and precautions;

c. control of the aeroplane by external visual references;

d. normal take-offs and landings;

e. flight at critically low airspeeds, recognition of and recovery from incipient and full stalls, spin avoidance; and

f. unusual attitudes and simulated engine failure.

Phase 2

2 Exercises up to the first solo cross-country flight comprise a total of at least 10 hours of dual flight instruction and at least 10 hours solo flight including:

a. maximum performance (short field and obstacle clearance) take-offs, short-field landings;

b. flight by reference solely to instruments, including the completion of a 180° turn;

c. dual cross-country flying using external visual references, dead-reckoning and radio navigation aids, diversion procedures;

d. aerodrome and traffic pattern operations at different aerodromes;

e. crosswind take-offs and landings;

f. abnormal and emergency operations and manoeuvres, including simulated aeroplane equipment malfunctions;

g. operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, radio telephony procedures and phraseology; and

h. knowledge of meteorological briefing arrangements, evaluation of weather conditions for flight and use of Aeronautical Information Services (AIS).

Phase 3

3 Exercises up to the VFR navigation progress test comprise a total of at least 5 hours of instruction and at least 40 hours as pilot-in-command.

4 The dual instruction and testing up to the VFR navigation progress test and the skill test should contain the following:

a. repetition of exercises of Phases 1 and 2;

b. VFR flight at relatively critical high airspeeds, recognition of and recovery from spiral dives;

c. VFR navigation progress test conducted by a flight instructor not connected with the applicant's training;

Phase 4

5 Exercises up to the instrument rating skill test comprise:

a. at least 55 hours instrument time, which may contain up to 25 hours of instrument ground time in an FNPT I or up to 40 hours in an FNPT II or flight simulator which should be conducted by a flight instructor and/or an authorised synthetic flight instructor, and;

b. 50 hours instrument time flown as SPIC;

c. night flight including take-offs and landings as pilot-in-command;

d. pre-flight procedures for IFR flights, including the use of the flight manual and appropriate air traffic services documents in the preparation of an IFR flight plan;

e. procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least:

- transition from visual 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, including circling;

f. in flight manoeuvres and particular flight characteristics; and

g. operation of either a single-engine or a multi-engine aeroplane in the exercises of 5(e), including in the case of a multi-engine aeroplane, operation of the aeroplane solely by reference to instruments with one engine simulated inoperative and engine shut down and restart. The latter exercise is to be conducted at a safe altitude unless carried out in a synthetic training device.

C. CPL integrated course - aeroplanes

CREDITING

In the case of a PPL(A) or PPL(H) entrant, 50% of the aircraft hours flown by the entrant prior to the course may be credited towards the required flight instruction up to a maximum of 40 hours flying experience, or 45 hours if an aeroplane night rating has been obtained, of which up to 20 hours may be dual instruction. This credit for the hours flown should be entered into the applicant’s training record. In the case of a student pilot who does not hold a pilot licence and with the approval of the Authority a ATO may designate certain dual exercises to be flown in a helicopter or a TMG up to a maximum of 20 hours.

THEORETICAL KNOWLEDGE

The 350 hours of instruction can include classroom work, inter-active video, slide/tape presentation, learning carrels, computer based training, and other media as approved by the Authority, in suitable proportions.

THE FLYING INSTRUCTION IS DIVIDED INTO FOUR PHASES:

Phase 1

1 Exercises up to the first solo flight comprise a total of at least 10 hours dual flight instruction on a single-engine aeroplane including:

a. pre-flight operations, mass and balance determination, aeroplane inspection and servicing;

b. aerodrome and traffic pattern operations, collision avoidance and precautions;

c. control of the aeroplane by external visual references;

d. normal take-offs and landings;

e. flight at relatively slow airspeeds, recognition of and recovery from incipient and full stalls, spin avoidance; and

f. unusual attitudes and simulated engine failure.

Phase 2

2 Exercises up to the first solo cross-country flight comprise a total of at least 10 hours of dual flight instruction and at least 10 hours solo flight including:

a. maximum performance (short field and obstacle clearance) take-offs, short-field landings;

b. flight by reference solely to instruments, including the completion of a 180° turn;

c. dual cross-country flying using external visual references, dead-reckoning and radio navigation aids, diversion procedures;

d. aerodrome and traffic pattern operations at different aerodromes;

e. crosswind take-offs and landings;

f. abnormal and emergency procedures and manoeuvres, including simulated aeroplane equipment malfunctions;

g. operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, radio telephony procedures and phraseology; and

h. knowledge of meteorological briefing arrangements, evaluation of weather conditions for flight and use of Aeronautical Information Services (AIS).

Phase 3

3 Exercises up to the VFR navigation progress test comprise a total of at least 30 hours instruction and at least 58 hours as pilot-in-command, including:

a. at least 10 hours instrument time, which may contain 5 hours of instrument ground time in a FNPT or a flight simulator and should be conducted by a flight instructor and/or an authorised synthetic flight instructor.

b. repetition of exercises of Phases 1 and 2, which should include at least five hours in an aeroplane certificated for the carriage of at least four persons and have a variable pitch propeller and retractable landing gear;

c. VFR flight at relatively critical high airspeeds, recognition of and recovery from spiral dives; and

d. night flight time including take-offs and landings as pilot-in-command.

Phase 4

4 The dual instruction and testing up to the CPL(A) skill test contain the following:

a. up to 30 hours instruction which may be allocated to specialised aerial work training;

b. repetition of exercises in Phase 3, as required;

c. in-flight manoeuvres and particular flight characteristics; and

d. multi-engine training.

If required, operation of a multi-engine aeroplane including operation of the aeroplane with one engine simulated inoperative, and engine shut down and restart (the latter exercise at a safe altitude unless carried out in a synthetic training device).

D. CPL modular course - aeroplanes

THEORETICAL KNOWLEDGE

The 250 hours of instruction can include classroom work, interactive video, slide/tape presentation, learning carrels, computer based training, and other media as approved by the Authority, in suitable proportions.

FLYING TRAINING

Visual flight training		Suggested Flight time
1	Pre-flight operations; mass and balance determination, aeroplane inspection and servicing.	
2	Take-off, traffic pattern, approach and landing. Use of checklist; collision avoidance; checking procedures.	0:45
3	Traffic patterns: simulated engine failure during and after take-off.	0:45
4	Maximum performance (short field and obstacle clearance) take-offs; short-field landings.	1:00
5	Crosswind take-offs and landings; go-arounds.	1:00
6	Flight at relatively critical high airspeeds; recognition of and recovery from spiral dives.	0:45
7	Flight at critically slow airspeeds, spin avoidance, recognition of, and recovery from, incipient and full stalls.	0:45

8	Cross-country flying – using dead reckoning and radio navigation aids. Flight planning by the applicant; filing of ATC flight plan; evaluation of weather briefing documentation, NOTAM etc; radio telephony procedures and phraseology; positioning by radio navigation aids; operation to, from and transiting controlled aerodromes, compliance with air traffic services procedures for VFR flights, simulated radio communication failure, weather deterioration, diversion procedures; simulated engine failure during cruise flight; selection of an emergency landing strip.	10:00

Instrument flight training

This module is identical to the 10 hour Basic Instrument Flight Module as set out in AMC 2 to Appendix 6. This module is focused on the basics of flying by sole reference to instruments, including limited panel and unusual attitudes.

All exercises may be performed in a FNPT I or II or a flight simulator. If instrument flight training is in VMC, a suitable means of simulating IMC for the student should be used.

A BITD may be used for the following exercises 9, 10, 11, 12, 14 and 16.

The use of the BITD is subject to the following:

- the training is complemented by exercises on an aeroplane;
- the record of the parameters of the flight is available; and
- A FI(A) or IRI(A) conducts the instruction.

9	Basic instrument flying without	0:30

	external visual cues. Horizontal flight; power changes for acceleration or deceleration, maintaining straight and level flight; turns in level flight with 15° and 25° bank, left and right; roll-out onto predetermined headings.	
10	Repetition of exercise 9; additionally climbing and descending, maintaining heading and speed, transition to horizontal flight; climbing and descending turns.	0:45
11	Instrument pattern:	0:45
	a. Start exercise, decelerate to approach speed, flaps into approach configuration;	
	b. Initiate standard turn (left or right);	
	c. Roll out on opposite heading, maintain new heading for 1 minute;	
	d. Standard turn, gear down, descend 500 ft/min;	
	e. Roll out on initial heading, maintain descent (500 ft/min) and new heading for 1 minute;	
	f. Transition to horizontal flight, 1.000 ft below initial flight level;	

	g. Initiate go-around; and	
	h. Climb at best rate of climb speed.	
12	Repetition of exercise 9 and steep turns with 45° bank; recovery from unusual attitudes.	0:45
13	Repetition of exercise 12	0:45
14	Radio navigation using VOR, NDB or, if available, VDF; interception of predetermined QDM, QDR.	0:45
15	Repetition of exercise 9 and recovery from unusual attitudes	0:45
16	Repetition of exercise 9, turns and level change **[**and recovery from unusual attitudes**]** with simulated failure of the artificial horizon and/or directional gyro.	0:45
17	Recognition of, and recovery from, incipient and full stalls.	0:45
18	Repetition of exercises 14, 16 and 17	3:30

Multi-engine training

If required, operation of a multi-engine aeroplane in the exercises 1 through 18, including operation of the aeroplane with one engine simulated inoperative, and engine shutdown and restart. Before commencing training, the applicant should have complied with the type and class ratings requirements as appropriate to the aeroplane used for the test.

E. ATP/IR integrated course - Helicopters

CREDITING

In the case of a PPL(H) entrant, 50% of the helicopter hours flown by the entrant prior to the course may be credited towards the required flight instruction to a maximum of :

(a) up to 40 hours, of which up to 20 hours may be dual instruction, or

(b) if a helicopter night rating has been obtained, up to 50 hours, of which up to 25 hours may be dual instruction.

This credit for the hours flown should be entered into the applicant's training record. In case of a student pilot who does not hold a pilot licence and with the approval of the Authority, a ATO may designate certain dual exercises to be flown in an aeroplane or a TMG up to a maximum of 20 hours.

THEORETICAL KNOWLEDGE

The 750 hours of instruction can include classroom work, inter-active video, slide/tape presentation, learning carrels, computer based training, and other media as approved by the Authority, in suitable proportions.

The 750 hours of instruction should be divided in such a way that in each subject the minimum hours are:

Subject	**hours**
Air Law	40
Aircraft General Knowledge	80
Flight Performance & Planning	90
Human Performance & Limitations	50
Meteorology	60
Navigation	150
Operational Procedures	20
Principles of Flight	30
Communications	30

Other sub-division of hours may be agreed between the Authority and the ATO.

THE FLIGHT INSTRUCTION IS DIVIDED INTO FOUR PHASES:

Phase 1

1 Flight exercises up to the first solo flight comprise a total of not less than 12 hours dual flight instruction on a helicopter including:

a. pre-flight operations, mass and balance determination helicopter inspection and servicing;

b. aerodrome and traffic pattern operations, collision avoidance and procedures;

c. control of the helicopter by external visual reference;

d. take-offs, landings, hovering, look out turns and normal transitions from and to the hover;

e. emergency procedures, basic auto-rotations, simulated engine failure, ground resonance recovery if relevant to type.

Phase 2

2 Flight exercises until general handling and day VFR navigation progress check, and basic instrument flying progress check. This phase comprises a total flight time of not less than 128 hours including 73 hours of dual flight instruction flight time and including at least 5 hours VFR conversion training on a multi-engine helicopter, 15 hours of solo flight and 40 hours flown as student pilot-in-command. The instruction and testing contain the following:

a. sideways and backwards flight, turns on the spot;

b. incipient vortex ring recovery;

c. advanced/touchdown auto-rotations, simulated engine-off landings, practice forced landings. Simulated equipment malfunctions and emergency procedures relating to malfunctions of engines, controls, electrical and hydraulic circuits;

d. steep turns;

e. transitions, quick stops, out of wind manoeuvres, sloping ground landings and take-offs;

f. limited power and confined area operations including low level operations to and from unprepared sites;

g. flight by sole reference to basic flight instruments including completion of a 180° turn and recovery from unusual attitudes to simulate inadvertent entry into cloud;

h. cross-country flying by external visual reference, dead reckoning and radio navigation aids, diversion procedures;

i. aerodrome and traffic pattern operations at different aerodromes;

j. operations to, from and transiting controlled aerodromes; compliance with air traffic services procedures, radio telephony procedures and phraseology;

k. application of meteorological briefing arrangements, evaluation of weather conditions for flight and use of Aeronautical Information Services (AIS);

l. night flight including take-offs and landings as pilot-in-command;

m. general handling, day VFR navigation and basic instrument flying progress checks in accordance with Appendix 4 to Part-FCL, conducted by a flight instructor not connected with the applicants training.

Phase 3

3 Flight exercises up to Instrument Rating skill test. This part comprises a total of 40 hours dual instrument flight time including 10 hours of a multi engine IFR certificated helicopter.

The instruction and testing should contain the following:

a. Pre-flight procedures for IFR flights including the use of the flight manual and appropriate air traffic services documents in the preparation of an IFR flight plan.

b. Procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least:

- transition from visual to instrument flight on take-off.
- standard instrument departures and arrivals.
- en-route IFR procedures.
- holding procedures.
- instrument approaches to specified minima.
- missed approach procedure.
- landings from instrument approaches.
- in-flight manoeuvres and particular flight characteristics.
- instrument exercises with one engine simulated inoperative.

Phase 4

4 Instruction in multi-crew co-operation (MCC) should comprise the relevant training set out in AMC to FCL.H.1.724.

5 If a type rating for multi-pilot helicopter is not required on completion of this part, the applicant should be provided with a certificate of course completion for MCC training.

F. ATP integrated course - Helicopters

CREDITING

In the case of a PPL(H) entrant, 50% of the helicopter hours flown by the entrant prior to the course may be credited towards the required flight instruction to a maximum of :

(a) up to 40 hours, of which up to 20 hours may be dual instruction, or

(b) if a helicopter night rating has been obtained, up to 50 hours, of which up to 25 hours may be dual instruction.

This credit for the hours flown should be entered into the applicant's training record. In case of a student pilot who does not hold a pilot licence and with the approval of the Authority, a ATO may designate certain dual exercises to be flown in an aeroplane or a TMG up to a maximum of 20 hours.

THEORETICAL KNOWLEDGE

The 650 hours of instruction can include classroom work, inter-active video, slide/tape presentation, learning carrels, computer based training, and other media as approved by the Authority, in suitable proportions.

The 650 hours of instruction should be divided in such a way that in each subject the minimum hours are:

Subject	hours
Air Law	30
Aircraft General Knowledge	70
Flight Performance & Planning	65
Human Performance & Limitations	40
Meteorology	40
Navigation	120
Operational Procedures	20
Principles of Flight	30
Communications	25

Other sub-division of hours may be agreed between the Authority and the ATO.

THE FLIGHT INSTRUCTION IS DIVIDED IN THREE PHASES.

Phase 1

1 Flight exercises up to the first solo flight comprise a total of not less than 12 hours dual flight instruction on a helicopter including:

a. pre-flight operations, mass and balance determination helicopter inspection and servicing;

b. aerodrome and traffic pattern operations, collision avoidance and procedures;

c. control of the helicopter by external visual reference;

d. take-offs, landings, hovering, look out turns and normal transitions from and to the hover;

e. emergency procedures, basic auto-rotations, simulated engine failure, ground resonance recovery if relevant to type.

Phase 2

2 Flight exercises until general handling and day VFR navigation progress and basic instrument flying progress check conducted by a flight instructor not connected with the applicant's training. This phase comprises a total flight time of not less than 128 hours including 73 hours of dual instruction flight time and including at least 5 hours VFR conversion training on a multi-engine helicopter, 15 hours of solo flight and 40 hours flown as student pilot-in-command. The instruction and testing contain the following:

a. sideways and backwards flight, turns on the spot;

b. incipient vortex ring recovery;

c. touchdown/advanced auto-rotations, simulated engine-off landings, practice forced landings. Simulated equipment malfunctions and emergency procedures relating to malfunctions of engines, controls, electrical and hydraulic circuits;

d. steep turns;

e. transitions, quick stops, out of wind manoeuvres, sloping ground landings and take-offs;

f. limited power and confined area operations including low level operations to and from unprepared sites;

g. 10 hours flight by sole reference to basic flight instruments, including completion of a 180^{o} turn and recovery from unusual attitudes to simulate inadvertent entry into cloud;

h. cross-country flying by external visual reference, dead reckoning and radio navigation aids, diversion procedures;

i. aerodrome and traffic pattern operations at different aerodromes;

j. operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, radio telephony procedures and phraseology;

k. application of meteorological briefing arrangements, evaluation of weather conditions for flight and use of Aeronautical Information Services (AIS);

l. night flight including take-offs and landings as pilot-in-command;

m. general handling, day VFR navigation and basic instrument flying progress checks in accordance Appendix 4 to Part-FCL, conducted by a flight instructor not connected with the applicants training.

Phase 3

3 Instruction in multi-crew co-operation (MCC) comprise the relevant training set out in AMC to FCL.H.2.724.

4 If a type rating for multi-pilot helicopter is not required on completion of this part, the applicant should be provided with a certificate of course completion for MCC training.

G. CPL/IR integrated course - helicopters

CREDITING

In the case of a PPL(H) entrant, 50% of the helicopter hours flown by the entrant prior to the course may be credited towards the required flight instruction to a maximum of :

(a) up to 40 hours, of which up to 20 hours may be dual instruction, or

(b) if a helicopter night rating has been obtained, up to 50 hours, of which up to 25 hours may be dual instruction.

This credit for the hours flown should be entered into the applicant's training record. In case of a student pilot who does not hold a pilot licence and with the approval of the Authority, a ATO may designate certain dual exercises to be flown in an aeroplane or a TMG up to a maximum of 20 hours.

THEORETICAL KNOWLEDGE

The 500 hours of instruction can include classroom work, inter-active video, slide/tape presentation, learning carrels, computer based training, and other media as approved by the Authority, in suitable proportions.

The 500 hours of instruction should be divided in such a way that in each subject the minimum hours are:

Subject	hours
Air Law	30
Aircraft General Knowledge	50
Flight Performance & Planning	60
Human Performance & Limitations	15
Meteorology	40
Navigation	100
Operational Procedures	10
Principles of Flight	25
Communications	30

Other subdivision of hours may be agreed between the Authority and the ATO.

THE FLIGHT INSTRUCTION IS DIVIDED IN THREE PHASES.

Phase 1

1. Flight exercises up to the first solo flight. This part comprises a total of at least 12 hours dual flight instruction on a helicopter including:
   a. pre-flight operations: mass and balance determination helicopter inspection and servicing;
   b. aerodrome and traffic pattern operations, collision avoidance and procedures;
   c. control of the helicopter by external visual reference;
   d. take-offs, landings, hovering, look out turns and normal transitions from and to the hover;
   e. emergency procedures, basic auto-rotation, simulated engine failure, ground resonance recovery if relevant to type.

Phase 2

2. Flight exercises until general handling and day VFR navigation progress check conducted by a flight instructor not connected with the applicant's training, and basic instrument progress check. This part comprises a total flight time of not less than 128 hours including 73 hours of dual instruction flight time and including at least 5 hours VFR conversion training on a multi-engine helicopter, 15 hours of solo flight and 40 hours flown as SPIC. The instruction and testing contain the following:
   a. sideways and backwards flight, turns on the spot;
   b. incipient vortex ring recovery;
   c. touchdown/advanced auto-rotation and simulated engine-off landings, practice forced landings. Simulated equipment malfunctions and emergency procedures relating to malfunctions of engines, controls, electrical and hydraulic circuits;

d. steep turns;

e. transitions, quick stops, out of wind manoeuvres, sloping ground landings and take-offs;

f. limited power and confined area operations including selection of and low level operations to and from unprepared sites;

g. flight by sole reference to basic flight instruments, including completion of 180^{o} turn and recovery from unusual attitudes to simulate inadvertent entry into cloud;

h. cross-country flying by external visual reference, dead reckoning and radio navigation aids, diversion procedures;

i. aerodrome and traffic pattern operations at different aerodromes;

j. operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, radio telephony procedures and phraseology;

k. application of meteorological briefing arrangements, evaluation of weather conditions for flight and use of Aeronautical Information Services (AIS);

l. general handling progress test conducted by a delegated instructor not connected with the applicant's training;

m. night flight including take-offs and landings as pilot-in-command;

n. general handling, day VFR navigation and basic instrument flying progress checks, conducted by a flight instructor not connected with the applicants training.

Phase 3

3. Flight exercises up to Instrument Rating skill test. This part comprises a total of 40 hours dual instrument flight time including 10 hours of a multi engine IFR certificated helicopter.

The instruction and testing should contain the following:

a. pre-flight procedures for IFR flights including the use of the flight manual and appropriate air traffic services documents in the preparation of an IFR flight plan.

b. procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least:

– transition from visual to instrument flight on take-off.

– standard instrument departures and arrivals.

– en-route IFR procedures.

– holding procedures.

– instrument approaches to specified minima.

– missed approach procedure.

– landings from instrument approaches.

– in-flight manoeuvres and particular flight characteristics.

– instrument exercises with one engine simulated inoperative.

H. CPL integrated course - Helicopters

CREDITING

In the case of a PPL(H) entrant, 50% of the helicopter hours flown by the entrant prior to the course may be credited towards the required flight instruction to a maximum of :

(a) up to 40 hours, of which up to 20 hours may be dual instruction, or

(b) Up to 50 hours if a helicopter night rating has been obtained, of which up to 25 hours may be dual instruction.

This credit for the hours flown should be entered into the applicant's training record. In case of a student pilot who does not hold a pilot licence and with the approval of the Authority, a ATO may designate certain dual exercises to be flown in an aeroplane or a TMG up to a maximum of 20 hours.

THEORETICAL KNOWLEDGE

The 350 hours of instruction can include classroom work, inter-active video, slide/tape presentation, learning carrels, computer based training, and other media as approved by the Authority, in suitable proportions.

The 350 hours of instruction should be divided in such a way that in each subject the minimum hours are:

Subject	hours
Air Law	25
Aircraft General Knowledge	30
Flight Performance & Planning	25
Human Performance & Limitations	10
Meteorology	30
Navigation	55
Operational Procedures	8
Principles of Flight	20
Communications	10

Other sub-division of hours may be agreed between the Authority and the ATO.

THE FLIGHT INSTRUCTION IS DIVIDED IN TWO PHASES.

Phase 1

1 Flight exercises up to the first solo flight. This part comprises a total of not less than 12 hours dual flight instruction on a helicopter including:

a. pre-flight operations, mass and balance determination helicopter inspection and servicing;

b. aerodrome and traffic pattern operations, collision avoidance and procedures;

c. control of the helicopter by external visual reference;

d. take-offs, landings, hovering, look out turns and normal transitions from and to the hover;

e. emergency procedures, basic auto-rotations, simulated engine failure, ground resonance recovery if relevant to type.

Phase 2

2 Flight exercises until general handling and day VFR navigation progress check conducted by a flight instructor not connected with the applicant's training, and basic instrument progress check. This part comprises a total flight time of not less than 123 hours including 73 hours of dual instruction flight time, 15 hours of solo flight and 35 hours flown as SPIC. The instruction and testing contain the following:

a. sideways and backwards flight, turns on the spot;

b. incipient vortex ring recovery;

c. touchdown/advanced auto-rotations and simulated engine-off landings, practice forced landings. Simulated equipment malfunctions and emergency procedures relating to malfunctions of engines, controls, electrical and hydraulic circuits;

d. steep turns;

e. transitions, quick stops, out of wind manoeuvres, sloping ground landings and take-offs;

f. limited power and confined area operations including selection of and low level operations to and from unprepared sites;

g. flight by sole reference to basic flight instruments, including completion of a 180° turn and recovery from unusual attitudes to simulate inadvertent entry into cloud;

h. cross-country flying by external visual reference, dead reckoning and radio navigation aids, diversion procedures;

i. aerodrome and traffic pattern operations at different aerodromes;

j. operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, radio telephony procedures and phraseology;

k. application of meteorological briefing arrangements, evaluation of weather conditions for flight and use of Aeronautical Information Services (AIS);

l. general handling progress test conducted by a delegated instructor not connected with the applicant's training;

m. night flight including take-offs and landings as pilot-in-command;

n. general handling, day VFR navigation and basic instrument flying progress checks in accordance with Appendix 4 to Part-FCL, conducted by a flight instructor not connected with the applicants training.

I. CPL modular course - Helicopters

THEORETICAL KNOWLEDGE

The 250 hours of instruction can include classroom work, inter-active video, slide/tape presentation, learning carrels, computer based training, and other media as approved by the Authority, in suitable proportions.

FLYING TRAINING

The flying instruction comprises the following items. The flight time allocated to each exercise is at the discretion of the flight instructor, provided at least 5 hours flight time is allocated to cross-country flying.

Visual flight

Within the total of dual flight instruction time, the applicant may have completed during the visual phase up to 5 hours in a helicopter FS or FTD 2, 3 or FNPTII, III.

a. Pre-flight operations: mass and balance calculations, helicopter inspection and servicing.

b. Level flight speed changes, climbing, descending, turns, basic auto-rotations, use of checklist, collision avoidance, checking procedures.

c. Take-offs and landings, traffic pattern, approach, simulated engine failures in the traffic pattern. Sideways and backwards flight and spot turns in the hover.

d. Recovery from incipient vortex ring condition.

e. Advanced auto-rotations covering the speed range from low speed to maximum range and manoeuvre in auto-rotations (180° 360° and 'S' turns), simulated engine off landings.

f. Selection of emergency landing areas, auto-rotations following simulated emergencies to given areas. Steep turns at 30° and 45° bank.

g. Manoeuvres at low level and quick-stops.

h. Landings, take-offs and transitions to and from the hover when heading out of wind.

i. Landings and take-offs from sloping or uneven ground.

j. Landings and take-offs with limited power.

k. Low level operations into and out of confined landing sites.

l. Cross-country flying – using dead reckoning and radio navigation aids. Flight planning by the applicant; filing of ATC flight plan; evaluation of weather briefing documentation, NOTAM etc; radiotelephony procedures and phraseology; positioning by radio navigation aids; operation to, from and transiting controlled aerodromes, compliance with air traffic services procedures for VFR flights, simulated radio communication failure, weather deterioration, diversion procedures; location of an off airfield landing site and simulated approach.

Basic Instrument Flight

A maximum of 5 hours of the following exercises may be performed in a FS or FTD or FNPT. Flight training should be carried out in VMC using a suitable means of simulating IMC for the student.

m. Instrument flying without external visual cues. Level flight performing speed changes, maintaining flight altitude (level, heading) turns in level flight at rate one and 30° bank, left and right; roll-out on predetermined headings.

n. Repetition of exercise (m); additionally climbing and descending, maintaining heading and speed, transition to horizontal flight; climbing and descending turns.

o. Repetition of exercise (m); and recovery from unusual attitudes.

p. Radio navigation.

q. Repetition of exercise (m); and turns using standby magnetic compass and standby artificial horizon (if fitted).

GM to Appendix 5

MPL – Integrated Multi-Crew Pilot Licence training course

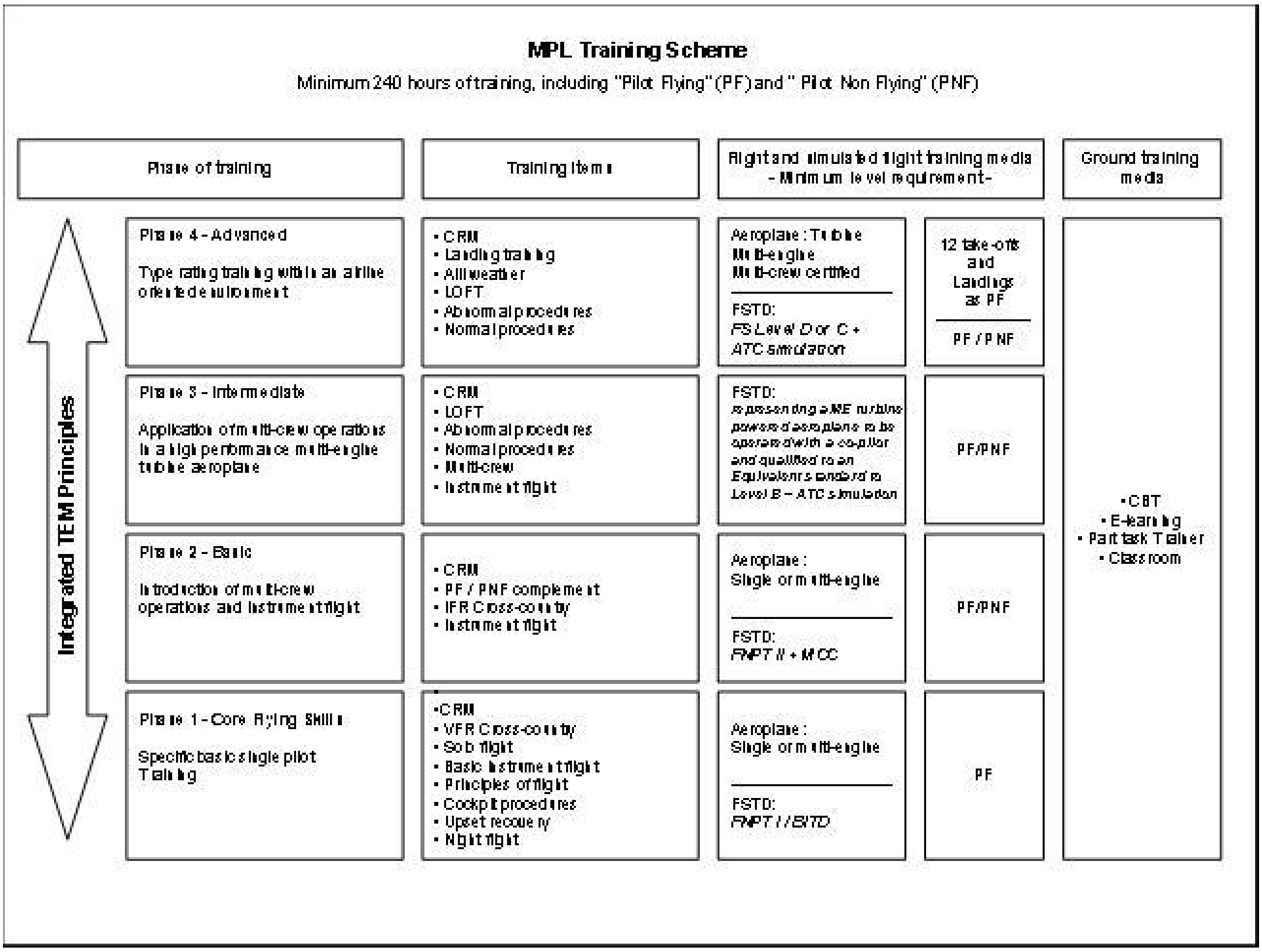
GENERAL

In broad terms, the MPL holder is expected to be able to complete the airline operators conversion course with a high probability of success and within the time frame normally allowed for this phase. The standard is equivalent to what is currently expected from graduates of the ATP(A) integrated course who have completed type rating training.

The general approach is to use the existing ATP(A) integrated training course as a reference and to implement progressively the MPL integrated training course and specifically the transfer from actual flight to simulated flight.

This transfer should be organised in a way that is similar to the approach used for ETOPS. Successive evolutions of the training syllabus introduce progressively a higher level of simulated flight and a reduction of actual flight. Change from one version to the next should only take place after enough experience has been gained and once its results, including those of airline operator conversion courses, have been analysed and taken into account.

MPL TRAINING SCHEME



THEORETICAL KNOWLEDGE INSTRUCTION

The 750 hours of theoretical knowledge instruction can include classroom work, inter-active video, slide/tape presentation, learning carrels, computer based training, and other media as approved by the Authority, in suitable proportions.

COMPETENCY UNITS, COMPETENCY ELEMENTS AND PERFORMANCE CRITERIA

1. Apply human performance principles, including principles of threat and error management

1.1 Cooperation

1.2 Leadership and managerial skills

1.3 Situation awareness

1.4 Decision making

These behaviour categories are intended to help in the effective utilisation of all available resources to achieve safe and efficient operations.

These behaviour categories may be adapted and extended to incorporate issues like communication and use of automation if it is considered to be relevant to the development of the curriculum.

2. Perform Aircraft Ground and Pre-Flight Operations

List of competency elements and performance criteria

2.0 Demonstrate attitudes and behaviours appropriate to the safe conduct of flight, including recognizing and managing potential threats and errors

		Duty	Observation and Assessment
2.1	Perform dispatch duties		satisfactory/unsatisfactory
2.1.1	verifies technical condition of the a/c, including adequate use of MEL	PF/PNF	
2.1.2	checks technical bulletins and notices	PF/PNF	
2.1.3	determines operational environment and pertinent weather	PF/PNF	
2.1.4	determines impact of weather on aircraft performance	PF/PNF	
2.1.5	applies flight planning and load procedures	PF/PNF	
2.1.6	determines fuel requirement	PF/PNF	
2.1.7	files an ATS flight plan (if required)	PF/PNF	
2.2	Provide flight crew and cabin crew briefings		satisfactory /unsatisfactory
2.2.1	briefed flight crew in all relevant matters	PF	
2.2.2.	briefed cabin crew in all relevant matters	PF	

		Duty	Observation and Assessment
2.3	Perform pre-flight checks and cockpit preparation		satisfactory /unsatisfactory
2.3.1	ensures the airworthiness of the aircraft	PF	
2.3.2	performs the cockpit preparation and briefings	PF/PNF	
2.3.3	performs FMS initialisation, data insertion and confirmation	PF/PNF	
2.3.4	optimises and checks takeoff performance and take-off data calculation	PF/PNF	
2.4	Perform engine start		satisfactory /unsatisfactory
2.4.1	asks for, receives acknowledges and checks ATC clearance	PNF	
2.4.2	performs engine start procedure	PF/PNF	
2.4.3	uses standard communication procedures with ground crew and ATC	PF/PNF	
2.5	Perform taxi out		satisfactory /unsatisfactory
2.5.1	receives, checks and adheres to taxi clearance	PNF	
2.5.2	taxis the aircraft including use of exterior lighting	PF	
2.5.3	complies to taxi clearance	PF/PNF	
2.5.4	maintains lookout for conflicting traffic and obstacles	PF/PNF	
2.5.5	operates thrust, brakes and steering	PF	
2.5.6	conducts relevant briefings	PF	
2.5.7	uses standard communication procedures with crew and ATC	PNF	
2.5.8	completes standard operating procedures and checklists	PF/PNF	
2.5.9	updates and confirms FMS data	PF/PNF	
2.5.10	manages changes in performance and departure route	PF/PNF	
2.5.11	completes de / anti ice procedures	PF/PNF	
2.6	Manage abnormal and emergency situations		satisfactory /unsatisfactory
2.6.1	identifies the abnormal condition	PF/PNF	
2.6.2	interprets the abnormal condition	PF/PNF	
2.6.3	performs the procedure for the abnormal condition	PF/PNF	
2.7	Communicate with cabin crew, passengers and company		satisfactory /unsatisfactory
2.7.1	communicates relevant information with cabin crew	PF	
2.7.2	communicates relevant information with company	PF/PNF	
2.7.3	makes passenger announcements when appropriate	PF/PNF	

		Duty	Observation and Assessment

3. Perform Take-off

List of competency elements and performance criteria

3.0 Demonstrate attitudes and behaviours appropriate to the safe conduct of flight, including recognising and managing potential threats and errors

		Duty	Observation and Assessment
3.1	Perform pre-take-off and pre-departure preparation		satisfactory/unsatisfactory
3.1.1	checks and acknowledges line up clearance	PF/PNF	
3.1.2	checks correct runway selection	PF/PNF	
3.1.3	confirms validity of performance data	PF/PNF	
3.1.4	checks approach sector and runway are clear	PF/PNF	
3.1.5	confirms all checklists and take-off preparations completed	PF/PNF	
3.1.6	lines up the aircraft on centreline without losing distance	PF	
3.1.7	checks weather on departure sector	PF/PNF	
3.1.8	checks runway status and wind	PF/PNF	
3.2	Perform take-off roll		satisfactory /unsatisfactory
3.2.1	applies take-off thrust	PF	
3.2.2	checks engine parameters	PNF	
3.2.3	checks airspeed indicators	PF/PNF	
3.2.4	stays on runway centreline	PF	
3.3	Perform transition to instrument flight rules		satisfactory /unsatisfactory
3.3.1	applies V 1 procedures	PF / PNF	
3.3.2	rotates at VR to initial pitch attitude	PF	
3.3.3	establishes initial wings level attitude	PF	
3.3.4	retracts landing gear	PNF	
3.3.5	maintains climb out speed	PF	
3.4	Perform initial climb to flap retraction altitude		satisfactory /unsatisfactory
3.4.1	sets climb power	PF	
3.4.2	adjusts attitude for acceleration	PF	
3.4.3	selects flaps according flap speed schedule	PF/PNF	
3.4.4	observes speed restrictions	PF	

		Duty	Observation and Assessment
3.4.5	completes relevant checklists	PF/PNF	
3.5	Perform rejected take-off		satisfactory /unsatisfactory
3.5.1	recognises the requirement to abort the take-off	PF	
3.5.2	applies the rejected take-off procedure	PF	
3.5.3	assesses the need to evacuate the aircraft	PF/PNF	
3.6	Perform navigation		satisfactory /unsatisfactory
3.6.1	complies to departure clearance	PF	
3.6.2	complies with published departure procedures, e.g speeds	PF	
3.6.3	monitors navigation accuracy	PF/PNF	
3.6.4	communicates and coordinates with ATC	PNF	
3.7	Manage abnormal and emergency situations		satisfactory /unsatisfactory
3.7.1	identifies the abnormal condition	PF/PNF	
3.7.2	interprets the abnormal condition	PF/PNF	
3.7.3	performs the procedure for the abnormal condition	PF/PNF	

4. Perform Climb

List of competency elements and performance criteria

4.0 Demonstrate attitudes and behaviours appropriate to the safe conduct of flight, including recognising and managing potential threats and errors

		Duty	Observation and Assessment
4.1	Perform standard instrument departure / en route navigation		satisfactory/unsatisfactory
4.1.1	complies with departure clearance and procedures	PF	
4.1.2	demonstrates terrain awareness	PF/PNF	
4.1.3	monitors navigation accuracy	PF/PNF	
4.1.4	adjusts flight to weather and traffic conditions	PF	
4.1.5	communicates and coordinates with ATC	PNF	
4.1.6	observes minimum altitudes	PF/PNF	
4.1.7	selects appropriate level of automation	PF	
4.1.8	complies with altimeter setting procedures	PF/PNF	
4.2	Complete climb procedures and checklists		satisfactory /unsatisfactory
4.2.1	performs the after take-off items	PF/PNF	

		Duty	Observation and Assessment
4.2.2	confirms and checks according checklists	PF/PNF	
4.3	Modify climb speeds, rate of climb and cruise altitude		satisfactory /unsatisfactory
4.3.1	recognises the need to change speed / rate of climb / cruise altitude	PF	
4.3.2	selects and maintains the appropriate climb speed / rate of climb	PF	
4.3.3	selects optimum cruise flight level	PF/PNF	
4.4	Perform systems operations and procedures		satisfactory /unsatisfactory
4.4.1	monitors operation of all systems	PF/PNF	
4.4.2	operates systems as required	PF/PNF	
4.5	Manage abnormal and emergency situations		satisfactory /unsatisfactory
4.5.1	identifies the abnormal condition	PF/PNF	
4.5.2	interprets the abnormal condition	PF/PNF	
4.5.3	performs the procedure for the abnormal condition	PF/PNF	
4.6	Communicate with cabin crew, passengers and company		satisfactory /unsatisfactory
4.6.1	communicates relevant information with cabin crew	PF	
4.6.2	communicates relevant information with company	PF/PNF	
4.6.3	makes passenger announcements when appropriate	PF	

5. Perform Cruise

Competency elements and performance criteria

5.0 Demonstrate attitudes and behaviours appropriate to the safe conduct of flight, including recognizing and managing potential threats and errors

		Duty	Observation and Assessment
5.1	Monitor navigation accuracy		satisfactory/unsatisfactory
5.1.1	demonstrates adequate area knowledge	PF/PNF	
5.1.2	demonstrates adequate route knowledge	PF/PNF	
5.1.3	navigates according to flight plan and clearance	PF	
5.1.4	adjusts flight to weather and traffic conditions	PF	
5.1.5	communicates and coordinates with ATC	PNF	

		Duty	Observation and Assessment
5.1.6	observes minimum altitudes	PFPNF	
5.1.7	uses all means of automation	PF	
5.2	Monitor flight progress		satisfactory /unsatisfactory
5.2.1	selects optimum speed	PF	
5.2.2	selects optimum cruise flight level	PF	
5.2.3	monitors and controls fuel status	PF/PNF	
5.2.4	recognises the need for a possible diversion	PF/PNF	
5.2.5	creates a diversion contingency plan if required	PF/PNF	
5.3	Perform descent and approach planning		satisfactory /unsatisfactory
5.3.1	checks weather of destination and alternate airport	PF/PNF	
5.3.2	checks runway in use and approach procedure	PF/PNF	
5.3.3	sets the FMS accordingly	PNF	
5.3.4	checks landing weight and landing distance required	PNF	
5.3.5	checks MEA, MGA and MSA	PF/PNF	
5.3.6	identifies top of descent point	PF	
5.4	Perform systems operations and procedures		satisfactory /unsatisfactory
5.4.1	monitors operation of all systems	PF/PZN	
5.4.2	operates systems as required	PNF	
5.5	Manage abnormal and emergency situations		satisfactory /unsatisfactory
5.5.1	identifies the abnormal condition	PF/PNF	
5.5.2	interprets the abnormal condition	PF/PNF	
5.5.3	performs the procedure for the abnormal condition	PF/PNF	
5.6	Communicate with cabin crew, passengers and company		satisfactory /unsatisfactory
5.6.1	communicates relevant information with cabin crew	PF	
5.6.2	communicates relevant information with company	PF/PNF	
5.6.3	makes passenger announcements when appropriate	PF	

6. Perform Descent

List of competency elements and performance criteria

6.0 Demonstrate attitudes and behaviours appropriate to the safe conduct of flight, including recognizing and managing potential threats and errors

		Duty	Observation and Assessment
6.1	Initiate and manage descent		satisfactory/unsatisfactory
6.1.1	starts descent according to ATC clearance or optimum descent point	PF	
6.1.2	selects optimum speed and descent rate	PF	
6.1.3	adjusts speed to existing environmental conditions	PF	
6.1.4	recognises the need to adjust the descent path	PF	
6.1.5	adjusts the flight path as required	PF	
6.1.6	utilises all means of FMS descent information	PF	
6.2	Monitor and perform en route and descent navigation		satisfactory /unsatisfactory
6.2.1	complies with arrival clearance and procedures	PF	
6.2.2	demonstrates terrain awareness	PF/PNF	
6.2.3	monitors navigation accuracy	PF/PNF	
6.2.4	adjusts flight to weather and traffic conditions	PF	
6.2.5	communicates and coordinates with ATC	PNF	
6.2.6	observes minimum altitudes	PF/PNF	
6.2.7	selects appropriate level / mode of automation	PF	
6.2.8	complies with altimeter setting procedures	PF/PNF	
6.3	Replanning and update of approach briefing		satisfactory /unsatisfactory
6.3.1	rechecks destination weather and runway in use	PNF	
6.3.2	briefs / rebriefs about instrument approach and landing as required	PF	
6.3.3	reprograms the FMS as required	PNF	
6.3.4	rechecks fuel status	PF/PNF	
6.4	Perform holding		satisfactory /unsatisfactory
6.4.1	identifies holding requirement	PF/PNF	
6.4.2	programs FMS for holding pattern	PNF	
6.4.3	enters and monitors holding pattern	PF	
6.4.4	assesses fuel requirements and determines max holding time	PF/PNF	

		Duty	Observation and Assessment
6.4.5	reviews the need for a diversion	PF/PNF	
6.4.6	initiates diversion	PF	
6.5	Perform systems operations and procedures		satisfactory /unsatisfactory
6.5.1	monitors operation of all systems	PF/PNF	
6.5.2	operates systems as required	PF/PNF	
		Duty	
6.6	Manage abnormal and emergency situations		
6.6.1	identifies the abnormal condition	PF/PNF	
6.6.2	interprets the abnormal condition	PF/PNF	
6.6.3	performs the procedure for the abnormal condition	PF/PNF	
6.7	Communicate with cabin crew, passengers and company		satisfactory /unsatisfactory
6.7.1	communicates relevant information with cabin crew	PF	
6.7.2	communicates relevant information with company	PF/PNF	
6.7.3	makes passenger announcements when appropriate	PF	

7. Perform Approach

List of competency elements and performance criteria

7.0 Demonstrate attitudes and behaviours appropriate to the safe conduct of flight, including recognizing and managing potential threats and errors

		Duty	Observation and Assessment
7.1	Perform approach in general		satisfactory/unsatisfactory
7.1.1	executes approach according to procedures and situation	PF	
7.1.2	selects appropriate level / mode of automation	PF	
7.1.3	selects optimum approach path	PF	
7.1.4	operates controls smooth and coordinated	PF	
7.1.5	performs speed reduction and flap extension	PF/PNF	
7.1.6	performs relevant checklists	PF/PNF	
7.1.7	initiates final descent	PF	
7.1.8	achieves stabilised approach criteria	PF	

		Duty	Observation and Assessment
7.1.9	ensures adherence to minima	PF/PNF	
7.1.10	initiates go-around if required	PF	
7.1.11	masters transition to visual segment	PF	
7.2	Perform precision approach		satisfactory /unsatisfactory
7.2.1	performs ILS approach	PF	
7.2.2	performs MLS approach	PF	
7.3	Perform non-precision approach		satisfactory /unsatisfactory
7.3.1	performs VOR approach	PF	
7.3.2	performs NDB approach	PF	
7.3.3	performs SRE approach	PF	
7.3.4	performs GPS / GNSS approach	PF	
7.3.5	performs ILS loc approach	PF	
7.3.6	performs ILS back beam approach	PF	
7.4	Perform approach with visual reference to ground		satisfactory /unsatisfactory
7.4.1	performs standard visual approach	PF	
7.4.2	performs circling approach	PF	
7.5	Monitor the flight progress		satisfactory /unsatisfactory
7.5.1	insures navigation accuracy	PF/PNF	
7.5.2	communicates with ATC, Crew members	PNF	
7.5.3	monitors fuel status	PF/PNF	
7.6	Perform systems operations and procedures		
7.6.1	monitors operation of all systems	PF	
7.6.2	operates systems as required	PF	
7.7	Manage abnormal and emergency situations		satisfactory /unsatisfactory
7.7.1	identifies the abnormal condition	PF/PNF	
7.7.2	interprets the abnormal condition	PF/PNF	
7.7.3	performs the procedure for the abnormal condition	PF/PNF	
7.8	Perform go-around / missed approach		satisfactory /unsatisfactory
7.8.1	initiates go-around procedure	PF	

		Duty	Observation and Assessment
7.8.2	navigates according to missed approach procedure	PF	
7.8.3	completes the relevant checklists	PF/PNF	
7.8.4	initiates approach or diversion after the go-around	PF	
7.8.5	communicates with ATC and crew members	PNF	
7.9	Communicate with cabin crew, passengers and company		satisfactory /unsatisfactory
7.9.1	communicates relevant information with cabin crew	PF	
7.9.2	communicates relevant information with company	PF/PNF	
7.9.3	makes passenger announcements when appropriate	PF	
7.8.1	initiates go-around procedure	PF	

8. Perform Landing

Competency elements and performance criteria

8.0 Demonstrate attitudes and behaviours appropriate to the safe conduct of flight, including recognising and managing potential threats and errors

		Duty	Observation and Assessment
8.1	Land the aircraft		satisfactory/unsatisfactory
8.1.1	maintains a stabilized approach path during visual segment	PF	
8.1.2	recognizes and acts on changing conditions for windshift / wind shear segment	PF	
8.1.3	initiates flare	PF	
8.1.4	controls thrust	PF	
8.1.5	achieves touchdown in touchdown zone on centreline	PF	
8.1.6	lowers nose wheel	PF	
8.1.7	maintains centreline	PF	
8.1.8	performs after-touchdown procedures	PF	
8.1.9	makes use of appropriate braking and reverse thrust	PF	
8.1.10	vacates runway with taxi speed	PF	
8.2	Perform systems operations and procedures		satisfactory /unsatisfactory
8.2.1	monitors operation of all systems	PF	
8.2.2	operates systems as required	PF	

		Duty	Observation and Assessment
8.3	Manage abnormal and emergency situations		satisfactory /unsatisfactory
8.3.1	identifies the abnormal condition	PF/PNF	
8.3.2	interprets the abnormal condition	PF/PNF	
8.3.3	performs the procedure for the abnormal condition	PF/PNF	

9. Perform After Landing and Post Flight Operations

Competency elements and performance criteria

9.0 Demonstrate attitudes and behaviours appropriate to the safe conduct of flight, including recognising and managing potential threats and errors

		Duty	Observation and Assessment
9.1	Perform taxiing and parking		satisfactory/unsatisfactory
9.1.1	receives, checks and adheres to taxi clearance	PNF	
9.1.2	taxies the aircraft including use of exterior lighting	PF	
9.1.3	controls taxi speed	PF/PNF	
9.1.4	maintains centreline	PF	
9.1.5	maintains lookout for conflicting traffic and obstacles	PF	
9.1.6	identifies parking position	PF/PNF	
9.1.7	complies with marshalling / stand guidance	PF/PNF	
9.1.8	applies parking and engine shut down procedures	PF	
9.1.9	completes with relevant checklists	PF/PNF	
9.2	Perform aircraft post-flight operations		satisfactory /unsatisfactory
9.2.1	communicates to ground personnel and crew	PF	
9.2.2	completes all required flight documentation	PF/PNF	
9.2.3	ensures securing of the aircraft	PF	
9.2.4	conducts the debriefings	PF	
9.3	Perform systems operations and procedures		satisfactory /unsatisfactory
9.3.1	monitors operation of all systems	PF/PNF	
9.3.2	operates systems as required	PF/PNF	
9.4	Manage abnormal and emergency situations		satisfactory /unsatisfactory

		Duty	Observation and Assessment
9.4.1	identifies the abnormal condition	PF/PNF	
9.4.2	interprets the abnormal condition	PF/PNF	
9.4.3	performs the procedure for the abnormal condition	PF/PNF	
9.5	Communicate with cabin crew, passengers and company		satisfactory /unsatisfactory
9.5.1	communicates relevant information with cabin crew	PF	
9.5.2	communicates relevant information with company	PF/PNF	
9.5.3	makes passenger announcements when appropriate	PF	

PRINCIPLES OF THREAT AND ERROR MANAGEMENT

One model that explains the principles of threat and error management is the TEM model (Threat and Error Management).

1. The components of the TEM Model

1.1 There are three basic components in the TEM Model, from the perspective of flight crews: threats, errors and undesired aircraft states. The model proposes that threats and errors are part of everyday aviation operations that must be managed by flight crews, since both threats and errors carry the potential to generate undesired aircraft states. Flight crews must also manage undesired aircraft states, since they carry the potential for unsafe outcomes. Undesired state management is an essential component of the TEM Model, as important as threat and error management. Undesired aircraft state management largely represents the last opportunity to avoid an unsafe outcome and thus maintain safety margins in flight operations.

2. Threats

2.1 Threats are defined as events or errors that occur beyond the influence of the flight crew, increase operational complexity, and which must be managed to maintain the margins of safety. During typical flight operations, flight crews have to manage various contextual complexities. Such complexities would include, for example, dealing with adverse meteorological conditions, airports surrounded by high mountains, congested airspace, aircraft malfunctions, errors committed by other people outside of the cockpit, such as air traffic controllers, flight attendants or maintenance workers, and so forth. The TEM Model considers these complexities as threats because they all have the potential to negatively affect flight operations by reducing margins of safety.

2.2 Some threats can be anticipated, since they are expected or known to the flight crew. For example, flight crews can anticipate the consequences of a thunderstorm by briefing their response in advance, or prepare for a congested airport by making sure they keep a watchful eye for other aircraft as they execute the approach.

2.3 Some threats can occur unexpectedly, such as an in-flight aircraft malfunction that happens suddenly and without warning. In this case, flight crews must apply skills and knowledge acquired through training and operational experience.

2.4 Lastly, some threats may not be directly obvious to, or observable by, flight crews immersed in the operational context, and may need to be uncovered by safety analysis. These are considered latent threats. Examples of latent threats include equipment design issues, optical illusions, or shortened turn-around schedules.

2.5 Regardless of whether threats are expected, unexpected, or latent, one measure of the effectiveness of a flight crew's ability to manage threats is whether threats are detected with the necessary anticipation to enable the flight crew to respond to them through deployment of appropriate countermeasures.

2.6 Threat management is a building block to error management and undesired aircraft state management. Although the threat-error linkage is not necessarily straightforward, although it may not be always possible to establish a linear relationship, or one-to-one mapping between threats, errors and undesired states, archival data demonstrates that mismanaged threats are normally linked to flight crew errors, which in turn are often linked to undesired aircraft states. Threat management provides the most proactive option to maintain margins of safety in flight operations, by voiding safety-compromising situations at their roots. As threat managers, flight crews are the last line of defense to keep threats from impacting flight operations.

2.7 Table 1 presents examples of threats, grouped under two basic categories derived from the TEM Model. Environmental threats occur due to the environment in which flight operations take place. Some environmental threats can be planned for and some will arise spontaneously, but they all have to be managed by flight crews in real time. Organizational threats, on the other hand, can be controlled (i.e. removed or, at least, minimised) at source by aviation organizations. Organizational threats are usually latent in nature. Flight crews still remain the last line of defence, but there are earlier opportunities for these threats to be mitigated by aviation organizations themselves.

Environmental Threats	Organizational Threats
▪ Weather: thunderstorms, turbulence, icing, wind shear, cross/tailwind, very low/high temperatures. ▪ ATC: traffic congestion, TCAS RA/TA, ATC command, ATC error, ATC language difficulty, ATC non-standard phraseology, ATC runway change, ATIS communication, units of measurement (QFE/meters). ▪ Airport: contaminated/short runway; contaminated taxiway, lack of/confusing/faded signage/markings, birds, aids U/S, complex surface navigation procedures, airport constructions. ▪ Terrain: High ground, slope, lack of references, "black hole". ▪ Other: similar call-signs.	▪ Operational pressure: delays, late arrivals, equipment changes. ▪ Aircraft: aircraft malfunction, automation event/anomaly, MEL/CDL. ▪ Cabin: flight attendant error, cabin event distraction, interruption, cabin door security. ▪ Maintenance: maintenance event/error. ▪ Ground: ground-handling event, de-icing, ground crew error. ▪ Dispatch: dispatch paperwork event/error. ▪ Documentation: manual error, chart error. ▪ Other: crew scheduling event

Table 1. Examples of threats (List not exhaustive)

3. Errors

3.1 Errors are defined actions or inactions by the flight crew that lead to deviations from organizational or flight crew intentions or expectations. Unmanaged and/or mismanaged errors frequently lead to undesired aircraft states. Errors in the operational context thus tend to reduce the margins of safety and increase the probability of adverse events.

3.2 Errors can be spontaneous (i.e. without direct linkage to specific, obvious threats), linked to threats, or part of an error chain. Examples of errors would include the inability to maintain stabilized approach parameters, executing a wrong automation mode, failing to give a required callout, or misinterpreting an ATC clearance.

3.3 Regardless of the type of error, an error's effect on safety depends on whether the flight crew detects and responds to the error before it leads to an undesired aircraft state and to a potential unsafe outcome. This is why one of the objectives of TEM is to understand error management (i.e. detection and response), rather than solely focusing on error causality (i.e. causation and commission). From the safety perspective, operational errors that are timely detected and promptly responded to (i.e. properly managed), errors that do not lead to undesired aircraft states, do not reduce margins of safety in flight operations, and thus become operationally inconsequential. In addition to its safety value, proper error management represents an example of successful human performance, presenting both learning and training value.

3.4 Capturing how errors are managed is then as important, if not more, than capturing the prevalence of different types of error. It is of interest to capture if and when errors are detected and by whom, the response(s) upon detecting errors, and the outcome of errors. Some errors are quickly detected and resolved, thus becoming operationally inconsequential, while others go undetected or are mismanaged. A mismanaged error is defined as an error that is linked to or induces an additional error or undesired aircraft state.

3.5 Table 2 presents examples of errors, grouped under three basic categories derived from the TEM Model. In the TEM concept, errors have to be "observable" and therefore, the TEM Model uses the "primary interaction" as the point of reference for defining the error categories.

3.6 The TEM Model classifies errors based upon the primary interaction of the pilot or flight crew at the moment the error is committed. Thus, in order to be classified as aircraft handling error, the pilot or flight crew must be interacting with the aircraft (e.g. through its controls, automation or systems). In order to be classified as procedural error, the pilot or flight crew must be interacting with a procedure (i.e. checklists; SOPs; etc). In order to be classified as communication error, the pilot or flight crew must be interacting with people (ATC, ground crew, other crewmembers, etc).

3.7 Aircraft handling errors, procedural errors and communication errors may be unintentional or involve intentional non-compliance. Similarly, proficiency considerations (i.e. skill or knowledge deficiencies, training system deficiencies) may underlie all three categories of error. In order to keep the approach simple and avoid confusion, the TEM Model does not consider intentional non-compliance and proficiency as separate categories of error, but rather as sub-sets of the three major categories of error.

Aircraft handling errors	▪ Manual handling/flight controls: vertical/lateral and/or speed deviations, incorrect flaps/speed brakes, thrust reverser or power settings. ▪ Automation: incorrect altitude, speed, heading, auto throttle settings, incorrect mode executed, or incorrect entries. ▪ Systems/radio/instruments: incorrect packs, incorrect anti-icing, incorrect altimeter, incorrect fuel switches settings, incorrect speed bug, incorrect radio frequency dialled. ▪ Ground navigation: attempting to turn down wrong taxiway/runway, taxi too fast, failure to hold short, missed taxiway/runway.
Procedural errors	▪ SOPs: failure to cross-verify automation inputs. ▪ Checklists: wrong challenge and response; items missed, checklist performed late or at the wrong time. ▪ Callouts: omitted/incorrect callouts. ▪ Briefings: omitted briefings; items missed. ▪ Documentation: wrong weight and balance, fuel information, ATIS, or clearance information recorded, misinterpreted items on paperwork; incorrect logbook entries, incorrect application of MEL procedures.

Communication errors	▪ Crew to external: missed calls, misinterpretations of instructions, incorrect read-back, wrong clearance, taxiway, gate or runway communicated. ▪ Pilot to pilot: within crew miscommunication or mis-interpretation.

Table 2. Examples of errors (List not exhaustive)

4. Undesired Aircraft States

4.1 Undesired aircraft states are flight crew-induced aircraft position or speed deviations, misapplication of flight controls, or incorrect systems configuration, associated with a reduction in margins of safety. Undesired aircraft states that result from ineffective threat and/or error management may lead to compromising situations and reduce margins of safety in flight operations. Often considered at the cusp of becoming an incident or accident, undesired aircraft states must be managed by flight crews.

4.2 Examples of undesired aircraft states would include lining up for the incorrect runway during approach to landing, exceeding ATC speed restrictions during an approach, or landing long on a short runway requiring maximum braking. Events such as equipment malfunctions or ATC controller errors can also reduce margins of safety in flight operations, but these would be considered threats.

4.3 Undesired states can be managed effectively, restoring margins of safety, or flight crew response(s) can induce an additional error, incident, or accident.

4.4 Table 3 presents examples of undesired aircraft states, grouped under three basic categories derived from the TEM Model.

Aircraft handling	▪ Aircraft control (attitude). ▪ Vertical, lateral or speed deviations. ▪ Unnecessary weather penetration. ▪ Unauthorized airspace penetration. ▪ Operation outside aircraft limitations. ▪ Unstable approach. ▪ Continued landing after unstable approach. ▪ Long, floated, firm or off-centreline landing.
Ground navigation	▪ Proceeding towards wrong taxiway/runway. ▪ Wrong taxiway, ramp, gate or hold spot.
Incorrect aircraft configurations	▪ Incorrect systems configuration. ▪ Incorrect flight controls configuration. ▪ Incorrect automation configuration. ▪ Incorrect engine configuration. ▪ Incorrect weight and balance configuration.

Table 3. Examples of undesired aircraft states (List not exhaustive)

4.5 An important learning and training point for flight crews is the timely switching from error management to undesired aircraft state management. An example would be as follows: a flight crew selects a wrong approach in the Flight Management Computer

(FMC). The flight crew subsequently identifies the error during a crosscheck prior to the Final Approach Fix (FAF). However, instead of using a basic mode (e.g. heading) or manually flying the desired track, both flight crew members become involved in attempting to reprogram the correct approach prior to reaching the FAF. As a result, the aircraft "stitches" through the localiser, descends late, and goes into an unstable approach. This would be an example of the flight crew getting "locked in" to error management, rather than switching to undesired aircraft state management. The use of the TEM Model assists in educating flight crews that, when the aircraft is in an undesired state, the basic task of the flight crew is undesired aircraft state management instead of error management. It also illustrates how easy it is to get locked in to the error management phase.

4.6 Also from a learning and training perspective, it is important to establish a clear differentiation between undesired aircraft states and outcomes. Undesired aircraft states are transitional states between a normal operational state (i.e., a stabilised approach) and an outcome. Outcomes, on the other hand, are end states, most notably, reportable occurrences (i.e. incidents and accidents). An example would be as follows: a stabilised approach (normal operational state) turns into an unstabilised approach (undesired aircraft state) that results in a runway excursion (outcome).

4.7 The training and remedial implications of this differentiation are of significance. While at the undesired aircraft state stage, the flight crew has the possibility, through appropriate TEM, of recovering the situation, returning to a normal operational state, thus restoring margins of safety. Once the undesired aircraft state becomes an outcome, recovery of the situation, return to a normal operational state, and restoration of margins of safety is not possible.

5. Countermeasures

5.1 Flight crews must, as part of the normal discharge of their operational duties, employ countermeasures to keep threats, errors and undesired aircraft states from reducing margins of safety in flight operations. Examples of countermeasures would include checklists, briefings, call-outs and SOPs, as well as personal strategies and tactics. Flight crews dedicate significant amounts of time and energies to the application of countermeasures to ensure margins of safety during flight operations. Empirical observations during training and checking suggest that as much as 70 per cent of flight crew activities may be countermeasures-related activities.

5.2 All countermeasures are necessarily flight crew actions. However, some countermeasures to threats, errors and undesired aircraft states that flight crews employ build upon "hard" resources provided by the aviation system. These resources are already in place in the system before flight crews report for duty, and are therefore considered as systemic-based countermeasures. The following would be examples of "hard" resources that flight crews employ as systemic-based countermeasures:

- Airborne Collision Avoidance System (ACAS);
- Ground Proximity Warning System (GPWS),
- Standard Operation Procedures (SOPs);
- Checklists;
- Briefings;
- Training;
- Etc .

5.3 Other countermeasures are more directly related to the human contribution to the safety of flight operations. These are personal strategies and tactics, individual and team countermeasures, that typically include canvassed skills, knowledge and attitudes developed by human performance training, most notably, by Crew Resource Management

(CRM) training. There are basically three categories of individual and team countermeasures:

- Planning countermeasures: essential for managing anticipated and unexpected threats;
- Execution countermeasures: essential for error detection and error response;
- Review countermeasures: essential for managing the changing conditions of a flight.

5.4 Enhanced TEM is the product of the combined use of systemic-based and individual and team countermeasures. Table 4 presents detailed examples of individual and team countermeasures. Further guidance on countermeasures can be found in the sample assessment guides for terminal training objectives (PANS-TRG, Chapter 3, Attachment B) as well as in the ICAO manual, Line Operations Safety Audit (LOSA) (Doc 9803).

Planning Countermeasures		
SOP BRIEFING	The required briefing was interactive and operationally thorough	- Concise, not rushed, and met SOP requirements - Bottom lines were established
PLANS STATED	Operational plans and decisions were communicated and acknowledged	- Shared understanding about plans – "Everybody on the same page"
WORKLOAD ASSIGNMENT	Roles and responsibilities were defined for normal and non-normal situations	- Workload assignments were communicated and acknowledged
CONTINGENCY MANAGEMENT	Crew members developed effective strategies to manage threats to safety	- Threats and their consequences were anticipated - Used all available resources to manage threats
Execution Countermeasures		
MONITOR / CROSS-CHECK	Crew members actively monitored and cross-checked systems and other crew members	- Aircraft position, settings, and crew actions were verified
WORKLOAD MANAGEMENT	Operational tasks were prioritized and properly managed to handle primary flight duties	- Avoided task fixation - Did not allow work overload
AUTOMATION MANAGEMENT	Automation was properly managed to balance situational and/or workload requirements	- Automation setup was briefed to other members - Effective recovery techniques from automation anomalies

Review Countermeasures		
EVALUATION/ MODIFICATION OF PLANS	Existing plans were reviewed and modified when necessary	- Crew decisions and actions were openly analyzed to make sure the existing plan was the best plan
INQUIRY	Crew members asked questions to investigate and/or clarify current plans of action	- Crew members not afraid to express a lack of knowledge – "Nothing taken for granted" attitude
ASSERTIVENESS	Crew members stated critical information and/or solutions with appropriate persistence	- Crew members spoke up without hesitation

Table 4. Examples of individual and team countermeasures

AMC No 1 to Appendix 6

Modular training course for IR

1. The theoretical knowledge instruction may be given at an approved training organisation conducting theoretical knowledge instruction only, in which case the Head of Training of that organisation should supervise that part of the course.
2. The 150 hours of theoretical knowledge instruction can include classroom work, inter-active video, slide/tape presentation, learning carrels, computer based training, and other media as approved by the Authority, in suitable proportions. Approved distance learning (correspondence) courses may also be offered as part of the course.

AMC No 2 to Appendix 6

Modular training course for IR - aeroplanes

BASIC INSTRUMENT FLIGHT MODULE TRAINING COURSE

1. This 10-hour module is focused on the basics of flying by sole reference to instruments, including limited panel and unusual attitude recovery.
2. All exercises may be performed in a FNPT I or II or a flight simulator, for a maximum of 5 hours. If instrument flight training is in VMC, a suitable means of simulating IMC for the student should be used.
3. A BITD may be used for the following exercises 1, 2, 3, 4, 6 and 8.

   The use of the BITD is subject to the following:

   - the training should be complemented by exercises on an aeroplane;
   - the record of the parameters of the flight must be available; and
   - A FI(A)or IRI(A) should conduct the instruction.

EXERCISES

1	Basic instrument flying without external visual cues. Horizontal flight; power changes for acceleration or deceleration, maintaining straight and level flight; turns in level flight with 15° and 25° bank, left and right; roll-out onto predetermined headings.	0:30
2	Repetition of exercise 1; additionally climbing and descending, maintaining heading and speed, transition to horizontal flight; climbing and descending turns.	0:45
3	Instrument pattern:	0:45
	a. Start exercise, decelerate to approach speed, flaps into	

	approach configuration; b. Initiate standard turn (left or right); c. Roll out on opposite heading, maintain new heading for 1 minute; d. Standard turn, gear down, descend 500 ft/min; e. Roll out on initial heading, maintain descent (500 ft/min) and new heading for 1 minute; f. Transition to horizontal flight, 1.000 ft below initial flight level; g. Initiate go-around; and h. Climb at best rate of climb speed.	
4	Repetition of exercise 1 and steep turns with 45° bank; recovery from unusual attitudes.	0:45
5	Repetition of exercise 4	0:45
6	Radio navigation using VOR, NDB or, if available, VDF; interception of predetermined QDM, QDR.	0:45
7	Repetition of exercise 1 and recovery from unusual attitudes	0:45
8	Repetition of exercise 1, turns, level change and recovery from unusual attitudes with simulated failure of the artificial horizon and/or directional gyro.	0:45
9	Recognition of, and recovery from, incipient and full stalls.	0:45
10	Repetition of exercises 6, 8 and 9	3:30

CERTIFICATE OF COMPLETION OF BASIC INSTRUMENT FLIGHT MODULE

CERTIFICATE OF COMPLETION OF BASIC INSTRUMENT FLIGHT MODULE

Pilot's last name:			First names:	
Type of licence:			Number:	State:
Flight training hours performed on single-engine aeroplane:		OR	Flight training hours performed on multi-engine aeroplane:	
Flight training hours performed in a FSTD (maximum 5 hours):				
	Signature of applicant:			

The satisfactory completion of Basic Instrument Flight Module according to requirements is certified below:

TRAINING			
Basic Instrument Flight module training received during period:			
from:	to:	at:	FTO
Location and date:		Signature of Head of Training:	
Type and number of licence and State of issue:		Name in capital letters of authorised instructor:	

AMC No 3 to Appendix 6

Modular training course for IR - airships

BASIC INSTRUMENT FLIGHT MODULE TRAINING COURSE

This 10-hour module is focused on the basics of flying by sole reference to instruments, including limited panel and unusual attitude recovery.

All exercises may be performed in a FNPT I or II or a flight simulator, for a maximum of 5 hours. If instrument flight training is in VMC, a suitable means of simulating IMC for the student should be used.

A BITD may be used for the following exercises 1, 2, 3, 4, 6 and 8.

The use of the BITD is subject to the following:

- the training should be complemented by exercises on an airship;
- the record of the parameters of the flight must be available; and
- a FI(As)or IRI(As) should conduct the instruction.

EXERCISES

1	Basic instrument flying without external visual cues. Horizontal flight; maintaining straight and level flight; turns in level flight, left and right; roll-out onto predetermined headings.	0:30
2	Repetition of exercise 1; additionally climbing and descending, maintaining heading and speed, transition to horizontal flight; climbing and descending turns.	0:45
3	Instrument pattern:	0:45

a. Start exercise, decelerate to approach speed, approach configuration;

b. Initiate standard turn (left or right);

c. Roll out on opposite heading, maintain new heading for

	1 minute;	
	d. Standard turn, descend with given rate (eg 500 ft/min);	
	e. Roll out on initial heading, maintain descent (eg 500 t/min) and new heading for 1 minute;	
	f. Transition to horizontal flight (eg 1000 ft below initial level),	
	g. Initiate go-around; and	
	h. Climb at best rate of climb speed.	
4	Repetition of exercise 1; recovery from unusual attitudes.	0:45
5	Repetition of exercise 4	0:45
6	Radio navigation using VOR, NDB or, if available, VDF; interception of predetermined QDM, QDR.	0:45
7	Repetition of exercise 1 and recovery from unusual attitudes	0:45
8	Repetition of exercise 1, turns, level change and recovery from unusual attitudes with simulated failure of the artificial horizon and/or directional gyro.	0:45
9	Repetition of exercises 6 and 8	4:15

CERTIFICATE OF COMPLETION OF BASIC INSTRUMENT FLIGHT MODULE (AS)

CERTIFICATE OF COMPLETION OF BASIC INSTRUMENT FLIGHT MODULE

Pilot's last name:		First names:	
Type of licence:		Number:	State:
Flight training hours performed on airship:			
Flight training hours performed in a FSTD (maximum 5 hours):			
	Signature of applicant:		

The satisfactory completion of Basic Instrument Flight Module according to requirements is certified below:

TRAINING			
Basic Instrument Flight module training received during period:			
from:	to:	at:	FTO
Location and date:		Signature of Head of Training:	
Type and number of licence and State of issue:		Name in capital letters of authorised instructor:	

GM to Appendix 7

Skill test

For the purpose of the skill test, a multi-engine centreline thrust aeroplane is considered a single-engine aeroplane.

AMC No 1 to Appendix 7

IR skill test and proficiency check form –

A. Aeroplanes

<table>
<tr><th colspan="6">APPLICATION AND REPORT FORM FOR THE IR(A) SKILL TEST</th></tr>
<tr><td colspan="2">Applicant's last name:</td><td colspan="2"></td><td>First name:</td><td></td></tr>
<tr><td colspan="2">Licence held:</td><td colspan="2"></td><td>Number:</td><td></td></tr>
<tr><td>1</td><td colspan="5">Details of the flight</td></tr>
<tr><td colspan="2">Class/Type of aeroplane:</td><td colspan="2"></td><td>Departure aerodrome:</td><td></td></tr>
<tr><td colspan="2">Registration:</td><td colspan="2"></td><td>Destination aerodrome:</td><td></td></tr>
<tr><td colspan="2">Block time off:</td><td colspan="2"></td><td>Block time on:</td><td></td></tr>
<tr><td colspan="2">Total block time:</td><td colspan="2"></td><td>Take-off time:</td><td></td></tr>
<tr><td>2</td><td colspan="5">Result of the test
*delete as necessary</td></tr>
<tr><td colspan="2">Pass*</td><td colspan="2">Fail*</td><td colspan="2">Partial pass *</td></tr>
<tr><td>3</td><td colspan="5">Remarks</td></tr>
<tr><td colspan="6"></td></tr>
<tr><td colspan="6"></td></tr>
<tr><td colspan="6"></td></tr>
<tr><td colspan="6"></td></tr>
<tr><td colspan="6"></td></tr>
<tr><td colspan="2">Location and date:</td><td colspan="2"></td><td>Type and number of FE's licence:</td><td></td></tr>
<tr><td colspan="2">Signature of FE:</td><td colspan="2"></td><td>Name of FE, in capitals:</td><td></td></tr>
</table>

B. Helicopters

<table>
<tr><th colspan="4">APPLICATION AND REPORT FORM FOR THE IR(H) SKILL TEST</th></tr>
<tr><td>Applicant's last name:</td><td></td><td>First names:</td><td></td></tr>
<tr><td>Licence held:</td><td></td><td>Number:</td><td></td></tr>
<tr><td colspan="2">State of licence issue in which test performed:</td><td colspan="2">Signature:</td></tr>
<tr><td>1</td><td colspan="3">Details</td></tr>
<tr><td>Type of helicopter:</td><td></td><td>Registration:</td><td></td></tr>
<tr><td>2</td><td colspan="3">Result of the test</td></tr>
<tr><td colspan="2">Passed*</td><td>Failed*</td><td>Partial pass*</td></tr>
<tr><td>3</td><td colspan="3">Remarks</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Location and date:</td><td></td><td>Type and number of FE’s licence:</td><td></td></tr>
<tr><td>Signature of FE:</td><td></td><td>Name of FE, in capitals:</td><td></td></tr>
</table>

C. Airships

APPLICATION AND REPORT FORM FOR THE IR(AS) SKILL TEST			
Applicant's last name:		First name:	
Licence held:		Number:	
1	**Details of the flight**		
Class/Type of airship:		Departure aerodrome:	
Registration:		Destination aerodrome:	
Block time off:		Block time on:	
Total block time:		Take-off time:	
2	**Result of the test** *delete as necessary		
Passed*	Failed *	Partial pass *	
3	**Remarks**		
Location and date:		Type and number of FE's licence:	
Signature of FE:		Name of FE, in capitals:	

AMC to Appendix 9

ATPL/type rating/training/skill test and proficiency check form

A. Multi-engine multi-pilot aeroplanes

<table>
<tr><td colspan="4">APPLICATION AND REPORT FORM</td></tr>
<tr><td>Applicant's last name:</td><td></td><td>First names:</td><td></td></tr>
<tr><td>Type of licence:</td><td></td><td>Number:</td><td></td></tr>
<tr><td>State:</td><td>Type rating as pilot-in-command/co-pilot*</td><td colspan="2">Signature of applicant:</td></tr>
<tr><td colspan="2">Multi-engine aeroplane:</td><td>Proficiency check:</td><td></td></tr>
<tr><td colspan="2">Training record:</td><td>Type rating:</td><td></td></tr>
<tr><td colspan="2">Skill test:</td><td>ATPL(A):</td><td></td></tr>
</table>

Satisfactory completion of Type rating – training according to requirements is certified below:

<table>
<tr><td>1</td><td colspan="6">Theoretical training for the issue of a type rating performed during period</td></tr>
<tr><td colspan="2">from:</td><td>To:</td><td colspan="4">at:</td></tr>
<tr><td colspan="2">mark obtained:</td><td>% (Pass mark 75%):</td><td colspan="4">Type and number of licence:</td></tr>
<tr><td colspan="3">Signature of instructor:</td><td colspan="4">Name in capital letters:</td></tr>
<tr><td>2</td><td colspan="2">Simulator (aeroplane type):</td><td>Three or more axes:</td><td>YES</td><td>NO</td><td>Ready for service and used</td></tr>
<tr><td colspan="3">Simulator manufacturer:</td><td colspan="4">motion / system:</td></tr>
<tr><td colspan="3">Simulator operator:</td><td>Visual aid:</td><td>YES*</td><td>NO*</td><td></td></tr>
<tr><td colspan="7">Total training time at the controls:</td></tr>
<tr><td colspan="7">Instrument approaches at aerodromes:</td></tr>
<tr><td colspan="7">to a decision altitude/height of:</td></tr>
<tr><td colspan="3">Location/date/time:</td><td colspan="4">Signature of type rating instructor/examiner*:</td></tr>
<tr><td colspan="3">Type and No of licence:</td><td colspan="4">Name in capital letters:</td></tr>
<tr><td>3</td><td colspan="6">Flight training:</td></tr>
<tr><td colspan="2">Type of aeroplane:</td><td>Registration:</td><td colspan="4">Flight time at the controls:</td></tr>
<tr><td colspan="2">Take-offs:</td><td>Landings:</td><td colspan="4">Training aerodromes/sites (take-offs, approaches and landings):</td></tr>
<tr><td colspan="2">Location and date:</td><td></td><td colspan="4">Signature of type rating instructor/examiner*:</td></tr>
<tr><td colspan="2">Type and No of licence:</td><td></td><td colspan="4">Name in capital letters:</td></tr>
</table>

<table>
<tr><td>4</td><td>Skill test/Proficiency Check
Remark: if the applicant failed the examiner indicates the reasons why</td><td>Pass</td><td>Fail</td><td colspan="2">SIM/Aircraft Reg:</td></tr>
<tr><td colspan="2">Location and date</td><td colspan="2"></td><td>Type and number of licence</td><td></td></tr>
<tr><td colspan="2">Signature of authorised examiner*</td><td colspan="2"></td><td>Name in capital letters</td><td></td></tr>
</table>

** delete as necessary*

B. Single-engine and multi-engine single-pilot aeroplanes

APPLICATION AND REPORT FORM			
Applicant's last name:		First name:	
Type of licence:		Number:	State:
Type of aeroplane:	Registration:	Signature of applicant:	

I hereby certify proper completion of the theoretical and practical instruction in accordance with the requirements:

1	**Single-engine / multi-engine / single-pilot Aeroplanes**		
Type rating:	+	Skill test:	+
Class rating:	+	Proficiency check:	+
Training record:	+		

2	**Flight training**:	
Flight time:	Take-offs:	Landings:
Training aerodromes (take-offs, approaches and landings):		
Location and date:		Signature of TRI/CRI*:
Type and No of licence:		Name in capital letters:

3	**Skill test**		
Aerodrome:	Take-off time:	Landing time:	
Skill test/Proficiency Check Remark: if the applicant failed the examiner indicates the reasons why	***Pass***	***Fail***	SIM/Aircraft Reg:
Location and date:		Type and number of licence:	
Signature of authorised examiner*:		Name in capital letters:	

** delete as necessary*

C. Multi-pilot helicopters

APPLICATION AND REPORT FORM					
Applicant's last name			First name		
Type of licence			Number		
State	Type rating as pilot in command/co-pilot*		Signature of applicant		
Multi-engine helicopter			Proficiency check		
Training record			Type rating		
Skill test			ATPL(H)		

Satisfactory completion of Type rating -training according to requirements is certified below:

1	**Theoretical training for the issue of a type rating performed during period**					
from:		to:	at:			
mark obtained:		% (Pass mark 75%):	Type and number of licence:			
Signature of instructor			Name in capital letters			
2	**Flight simulator (helicopter type):**		Three or more axes	YES *	NO*	Ready for service and used
Flight simulator manufacturer:			motion / system			
Flight simulator operator:			Visual aid:	YES *	NO*	
Total training time at the controls:						
Instrument approaches at aerodromes to a decision altitude of:						
Location/date/time:			Signature of type rating instructor/examiner*:			
Type and No of licence:			Name in capital letters:			
3	**Flight training**:					
Type of helicopter:		Registration:	Flight time at the controls:			
Take-offs		Landings:	Training aerodromes/sites (take-offs, approaches and landings)			
Location and date:			Signature of type rating instructor/examiner*:			
Type and No of licence			Name in capital letters			

4	Skill test/Proficiency Check Remark: if the applicant failed the examiner indicates the reasons why	***Pass****	***Fail****	SIM/Aircraft Reg:	
Location and date				Type and number of licence	
Signature of authorised examiner*				Name in capital letters	

**delete as necessary*

D. Single-engine and multi-engine single-pilot helicopters

APPLICATION AND REPORT FORM

Applicant's last name		First name	
Type of licence		Number	
State		Signature of applicant	
Helicopter		Proficiency check	
Training record		Type rating	
Skill test			

Satisfactory completion of Type rating -training according to requirements is certified below:

1	**Theoretical training for the issue of a type rating performed during period**				
from:	to:	at:			
mark obtained:	% (Pass mark 75%):	Type and number of licence:			
Signature of instructor		Name in capital letters			
2	**Flight simulator (helicopter type):**	Three or more axes	YES *	NO*	Ready for service and used
Flight simulator manufacturer:		motion / system			
Flight simulator operator:		Visual aid:	YES *	NO*	
Total training time at the controls:					
Instrument approaches at aerodromes to a decision altitude of:					
Location/date/time:		Signature of type rating instructor/examiner*:			
Type and No of licence:		Name in capital letters:			
3	**Flight training**:				
Type of helicopter:	Registration:	Flight time at the controls:			
Take-offs	Landings:	Training aerodromes/sites (take-offs, approaches and landings)			
Location and date:		Signature of type rating instructor/examiner*:			
Type and No of licence		Name in capital letters			

4	Skill test/Proficiency Check Remark: if the applicant failed the examiner indicates the reasons why	***Pass****	***Fail****	SIM/Aircraft Reg:
Location and date		Type and number of licence		
Signature of authorised examiner*		Name in capital letters		

**delete as necessary*

AMC No 1 to Appendix 12

Skill test and proficiency check form for the flight instructor certificate

A. Aeroplanes

APPLICATION AND REPORT FORM FOR THE INSTRUCTOR SKILL TEST

1	**Applicants personal particulars:**		
Applicant's last name:		First names:	
Date of Birth:		Tel (Home):	Tel (Work):
Address:		Country:	

2	**Licence Details**		
Licence type:		Number:	
Class ratings included in the licence:		Exp. Date:	
Type ratings included in the licence:	1.		
	2.		
	3.		
	4.		
	5.		
Other ratings included in the licence:	1.		
	2.		
	3.		
	4.		
	5.		

3 Pre-course flying experience

TOTAL FLYING HOURS	PIC hours	SINGLE-ENGINE (PISTON) preceding 6 months	INSTRUMENT FLIGHT INSTRUCTION	CROSS-COUNTRY hours

4	**Pre-entry flight test**
I recommend ....for the Flight Instructor Course.	
Name of ATO:	Date of flight test:
Name of FI conducting the test (Block capitals):	
Licence number:	
Signature:	

5	**Declaration by the applicant**				
I have received a course of training in accordance with the syllabus approved by the Authority for the: (Tick as applicable)					
Flight Instructor Certificate FI(A)		Instrument Rating Instructor Certificate (IRI(A))		Class Rating Instructor Certificate for multi-engine SPA – (CRI(A) ME SPA)	
Applicant's name: (Block Letters)			Signature:		
6	**Declaration by the chief flight instructor**				
I certify that .... has satisfactorily completed an approved course of training for the					
Flight Instructor Certificate FI(A)		Instrument Rating Instructor Certificate (IRI(A))		Class Rating Instructor Certificate for multi- engine SPA – (CRI(A) ME SPA)	
in accordance with the relevant syllabus approved by the Authority.					
Flying hours during the course:					
Aeroplane/s, simulator/s or flight and navigation procedure trainers used :					
Name of CFI:					
Signature:					
Name of ATO:					
7	**Flight instructor examiner's certificate**				
I have tested the applicant according to Appendix 12 to Part-FCL					
A – FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT in case of partial pass:					
Theoretical oral examination:			Skill test:		
Passed		***Failed***	***Passed***	***Failed***	
	I recommend further flight/ground training with a FI instructor before re-test				
	I do not consider further flight/theoretical instruction necessary before re-test *Tick as applicable*				
B – FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT:					
	Flight Instructor certificate				
	Instrument Instructor certificate				
	Class Rating Instructor Certificate for multi-engine SPA *Tick as applicable*				
FIE's name (block letters):					
Signature:					
Licence number:				Date:	

B. Helicopters

APPLICATION AND REPORT FORM FOR THE FI(H) SKILL TEST

1	**Applicants personal particulars:**		
Applicant's last name:		First names:	
Date of Birth:		Tel (Home):	Tel (Work):
Address:		Country:	
2	**Licence Details**		
Licence type:		Number:	
		Exp. Date:	
Type ratings included in the licence:	1.		
	2.		
	3.		
	4.		
	5.		
Other ratings included in the licence:	1.		
	2.		
	3.		
	4.		
	5.		
3	**Pre-course flying experience**		
IR (hours)	PIC (hours)	TOTAL (hours)	CROSS-COUNTRY (hours)
4	**Pre-entry flight test**		
I recommend ....for the Flight Instructor Course.			
Name of ATO:	Date of flight test:		
Name of FI conducting the test (Block capitals):			
Licence number:			

Signature:					
5	**Declaration by the applicant**				
I have received a course of training in accordance with the syllabus approved by the Authority for the: *(Tick as applicable)*					
Flight Instructor Certificate FI(H)		Instrument Rating Instructor Certificate (IRI(H))			
Applicant's name: (Block Letters)			Signature:		
6	**Declaration by the chief flight instructor**				
I certify that .... has satisfactorily completed an approved course of training for the					
Flight Instructor Certificate FI(H)		Instrument Rating Instructor Certificate (IRI(H))			
in accordance with the relevant syllabus approved by the Authority.					
Flying hours during the course:					
Helicopter/s, flight simulator/s or flight and navigation procedure trainers used :					
Name of CFI:					
Signature:					
Name of ATO:					
7	**Flight instructor examiner's certificate**				
I have tested the applicant according to Appendix 12 to Part-FCL					

A – FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT in case of partial pass:			
Theoretical oral examination:		Skill test:	
Passed	***Failed***	***Passed***	***Failed***

	I recommend further flight/ground training with a FI instructor before re-test
	I do not consider further flight/theoretical instruction necessary before re-test *Tick as applicable*
B – FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT:	

	Flight Instructor certificate
	Instrument Instructor certificate *Tick as applicable*
FIE's name (block letters):	
Signature:	
Licence number:	Date:

C. Airships

APPLICATION AND REPORT FORM FOR THE INSTRUCTOR SKILL TEST (AIRSHIPS)			
1	**Applicants personal particulars:**		
Applicant's last name:		First names:	
Date of Birth:		Tel (Home):	Tel (Work):
Address:		Country:	
2	**Licence Details**		
Licence type:		Number:	
Type ratings included in the licence:	1.	Exp. Date:	
	2.		
	3.		
	4.		

3	**Pre-course flying experience**			
TOTAL FLYING HOURS	PIC hours	PIC hours holding a CPL(As)		

4	**Pre-entry flight test**
I recommend ....for the Flight Instructor Course.	
Name of ATO:	Date of flight test:
Name of FI conducting the test (Block capitals):	
Licence number:	
Signature:	
5	**Declaration by the applicant**

I have received a course of training in accordance with the syllabus approved by the Authority for the: (Tick as applicable)				
Flight Instructor Certificate FI(As)		Instrument Rating Instructor Certificate (IRI(As))		
Applicant's name: (Block Letters)			Signature:	

6	**Declaration by the chief flight instructor**
I certify that .... has satisfactorily completed an approved course of training for the	

Flight Instructor Certificate FI(As)		Instrument Rating Instructor Certificate (IRI(As))		
in accordance with the relevant syllabus approved by the Authority.				
Flying hours during the course:				
Airship/s, simulator/s or flight and navigation procedure trainers used :				
Name of CFI:				
Signature:				
Name of ATO:				

7	**Flight instructor examiner's certificate**
I have tested the applicant according to Appendix 12	
A – FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT in case of partial pass:	

Theoretical oral examination:		Skill test:	
Passed	***Failed***	***Passed***	***Failed***

	I recommend further flight/ground training with a FI instructor before re-test
	I do not consider further flight/theoretical instruction necessary before re-test *Tick as applicable*
B – FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT:	
	Flight Instructor certificate
	Instrument Instructor certificate *Tick as applicable*

FIE's name (block letters):	
Signature:	
Licence number:	Date:

D. Sailplanes

The AMC No 2 to Appendix 12 (Skill test and proficiency check form for the Light Aircraft Flight Instructor certificate) should be used.

E. Balloons

The AMC No 2 to Appendix 12 (Skill test and proficiency check form for the Light Aircraft Flight Instructor certificate) should be used.

AMC No 2 to Appendix 12

Skill test and proficiency check form for the Light Aircraft Flight Instructor certificate

A. Aeroplanes

<table>
<tr><th colspan="5">APPLICATION AND REPORT FORM FOR THE LIGHT AIRCRAFT FLIGHT INSTRUCTOR SKILL TEST (LAFI(A))</th></tr>
<tr><td>1</td><td colspan="4">Applicants personal particulars:</td></tr>
<tr><td>Applicant's last name:</td><td></td><td>First names:</td><td colspan="2"></td></tr>
<tr><td>Date of Birth:</td><td></td><td>Tel (Home):</td><td colspan="2">Tel (Work):</td></tr>
<tr><td>Address:</td><td></td><td>Country:</td><td colspan="2"></td></tr>
<tr><td>2</td><td colspan="4">Licence Details</td></tr>
<tr><td>Licence type:</td><td></td><td>Number:</td><td colspan="2"></td></tr>
<tr><td>Class included in the licence:</td><td>1.</td><td>Exp. Date:</td><td colspan="2"></td></tr>
<tr><td></td><td>2.</td><td>Exp. Date:</td><td colspan="2"></td></tr>
<tr><td rowspan="3">Ratings included in the licence:</td><td colspan="4">1.</td></tr>
<tr><td colspan="4">2.</td></tr>
<tr><td colspan="4">3.</td></tr>
<tr><td>3</td><td colspan="4">Pre-course flying experience</td></tr>
<tr><td>TOTAL FLYING HOURS
(SEP and TMG)</td><td>PIC hours</td><td>SINGLE-ENGINE total and
preceding 6 months</td><td>INSTRUMENT FLIGHT INSTRUCTION</td><td>CROSS-COUNTRY hours</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>4</td><td colspan="4">Pre-entry flight test</td></tr>
<tr><td colspan="5">I recommend ....for the Light Aircraft Flight Instructor Course.</td></tr>
<tr><td colspan="3">Name of ATO:</td><td colspan="2">Date of flight test:</td></tr>
<tr><td colspan="5">Name of FI conducting the test (Block capitals):</td></tr>
</table>

Licence number:					
Signature:					
5	**Declaration by the applicant**				
I have received a course of training in accordance with the syllabus approved by the Authority for the:					
Light Aircraft Flight Instructor Certificate LAFI(A)					
Applicant's name: (Block Letters)			Signature:		
6	**Declaration by the chief flight instructor**				
I certify that .... has satisfactorily completed an approved course of training for the					
Light Aircraft Flight Instructor Certificate LAFI(A)					
in accordance with the relevant syllabus approved by the Authority.					
Flying hours during the course:					
Aeroplane/s, simulator/s or flight and navigation procedure trainers used :					
Name of CFI:					
Signature:					
Name of ATO:					
7	**Flight instructor examiner's certificate**				
I have tested the applicant according to Appendix 12					
A – LIGHT AIRCRAFT FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT in case of partial pass:					
Theoretical oral examination:			Skill test:		
Passed	***Failed***		***Passed***	***Failed***	
	I recommend further flight/ground training with a LAFI or FI before re-test				
	I do not consider further flight/theoretical instruction necessary before re-test *Tick as applicable*				
B – FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT:					
	Light Aircraft Flight Instructor Certificate				
FIE's name (block letters):					
Signature:					
Licence number:			Date:		

B. Helicopters

APPLICATION AND REPORT FORM FOR THE LAFI(H) SKILL TEST			
1	**Applicants personal particulars:**		
Applicant's last name:		First names:	
Date of Birth:		Tel (Home):	Tel (Work):
Address:		Country:	
2	**Licence Details**		
Licence type:		Number:	
		Exp. Date:	
Ratings included in the licence:	1.		
	2.		
	3.		
3	**Pre-course flying experience**		
IR (hours)	PIC (hours total and on type)	TOTAL (hours)	CROSS-COUNTRY (hours)
4	**Pre-entry flight test**		
I recommend ....for the Light Aircraft Flight Instructor Course.			
Name of ATO:	Date of flight test:		
Name of FI conducting the test (Block capitals):			
Licence number:			
Signature:			
5	**Declaration by the applicant**		
I have received a course of training in accordance with the syllabus approved by the Authority for the: *(Tick as applicable)*			
Light Aircraft Flight Instructor Certificate LAFI(H)			
Applicant's name: (Block Letters)		Signature:	

6	Declaration by the chief flight instructor					
I certify that .... has satisfactorily completed an approved course of training for the						
Flight Instructor Certificate FI(H)						
in accordance with the relevant syllabus approved by the Authority.						
Flying hours during the course:						
Helicopter/s, flight simulator/s or flight and navigation procedure trainers used :						
Name of CFI:						
Signature:						
Name of ATO:						

7	Flight instructor examiner's certificate		
I have tested the applicant according to Appendix 12			
A – LIGHT AIRCRAFT FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT in case of partial pass:			
Theoretical oral examination:		Skill test:	
Passed	***Failed***	***Passed***	***Failed***
	I recommend further flight/ground training with a LAFI / FI instructor before re-test		
	I do not consider further flight/theoretical instruction necessary before re-test *Tick as applicable*		
B – LIGHT AIRCRAFT FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT:			
	Light Aircraft Flight Instructor certificate		
FIE's name (block letters):			
Signature:			
Licence number:		Date:	

C. Sailplanes

APPLICATION AND REPORT FORM FOR THE LAFI(S) / FI(S) SKILL TEST

1	Applicants personal particulars:		
Applicant's last name:		First names:	
Date of Birth:		Tel (Home):	Tel (Work):
Address:		Country:	

2	Licence Details		
Licence type:		Number:	
TMG extension:			

3	Pre-course flying experience			
TOTAL HOURS	PIC hours	SAILPLANE (PIC hours and take offs)	TOURING MOTOR GLIDER (PIC hours and take offs)	

4	Pre-entry flight test
I recommend ....for the Flight Instructor / Light Aircraft Flight Instructor Course.	
Name of ATO:	Date of flight test:
Name of LAFI /FI conducting the test (Block capitals):	
Licence number:	
Signature:	

5	Declaration by the applicant				
I have received a course of training in accordance with the syllabus approved by the Authority for the:					
Light Aircraft Flight Instructor Certificate LAFI(S)		Flight Instructor Certificate FI(S)			
Applicant's name: (Block Letters)		Signature:			

6	Declaration by the chief flight instructor				
I certify that .... has satisfactorily completed an approved course of training for the					
Light Aircraft Flight		Flight Instructor Certificate			

Instructor Certificate LAFI(A)		FI(S)			
in accordance with the relevant syllabus approved by the Authority.					
Flying hours during the course:			Take-offs during the course:		
Sailplanes / powered sailplanes / touring motor gliders used :					
Name of CFI:					
Signature:					
Name of ATO:					

7	**Light Aircraft Flight instructor / Flight Instructor examiner's certificate**			
I have tested the applicant according to Appendix 12				
A – LIGHT AIRCRAFT FLIGHT INSTRUCTOR / FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT in case of partial pass:				
Theoretical oral examination:			Skill test:	
Passed	***Failed***		***Passed***	***Failed***
	I recommend further flight/ground training with a LAFI / FI before re-test			
	I do not consider further flight/theoretical instruction necessary before re-test *Tick as applicable*			
B – LIGHT AIRCRAFT FLIGHT INSTRUCTOR / FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT:				
	Light Aircraft Flight Instructor certificate / Flight Instructor certificate			
	Date:			
FIE's name (block letters):				
Signature:				
Licence number:			Date:	

D. Balloons

APPLICATION AND REPORT FORM FOR THE LAFI(B) / FI(B) SKILL TEST			
1 Applicants personal particulars:			
Applicant's last name:		First names:	
Date of Birth:		Tel (Home):	Tel (Work):
Address:		Country:	

2	**Licence Details**		
Licence type:		Number:	
Class extensions:	1.	Groups:	
	2.	Groups:	
	3.	Groups:	

3	**Pre-course flying experience**			
TOTAL FLYING HOURS	PIC hours	HOT AIR BALLOON	GAS BALLOON	HOT AIR AIRSHIP
small				
mdium				
large				

4	**Pre-entry flight test**
I recommend ....for the Light Aircraft Flight Instructor / Flight Instructor course	
Name of ATO:	Date of flight test:
Name of LAFI / FI conducting the test (Block capitals):	
Licence number:	
Signature:	

5	**Declaration by the applicant**				
I have received a course of training in accordance with the syllabus approved by the Authority for the:					
Light Aircraft Flight Instructor Certificate LAFI(B)		Flight Instructor Certificate FI(B)			
Applicant's name: (Block Letters)			Signature:		

6	**Declaration by the chief flight instructor**			
I certify that .... has satisfactorily completed an approved course of training for the				
Light Aircraft Flight Instructor Certificate LAFI(A)		Flight Instructor Certificate FI(B)		
in accordance with the relevant syllabus approved by the Authority.				
Flying hours during the course:		Take-offs during the course:		
Balloons, hot-air airships used :				

Name of CFI:				
Signature:				
Name of ATO:				
7	**Light Aircraft Flight instructor / Flight Instructor examiner's certificate**			
I have tested the applicant according to Appendix 12				
A – LIGHT AIRCRAFT FLIGHT INSTRUCTOR / FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT in case of partial pass:				
Theoretical oral examination:		Skill test:		
Passed	***Failed***	***Passed***	***Failed***	
	I recommend further flight/ground training with a LAFI or FI before re-test			
	I do not consider further flight/theoretical instruction necessary before re-test *Tick as applicable*			
B – FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT:				
	Light Aircraft Flight Instructor Certificate / Flight Instructor Certificate			
FIE's name (block letters):				
Signature:				
Licence number:		Date:		