

KINGDOM OF BAHRAIN
Ministry of Transportation
and Telecommunications



مملكة البحرين
وزارة المواصلات والاتصالات

ANTR-FCL 1

FLIGHT CREW LICENSING

AEROPLANE

FOREWORD

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Bahrain CAA Publication Revisions Highlight Sheet

ANTR: Part II – ANTR FCL 1 CAP: ____ TPM: ____

The following pages of ANTR PART II (ANTR FCL 1) have been revised to incorporate the changes required for the purpose of customizing the requirement applicable to BCAA Organisations.

Item	Paragraph number	Page	Reason
1	Foreword and Contents (details), Revision Record and LEPs	i, ii, iii, xv & xvi	Foreword Paragraph 10 amended to reflect current revision number and date. Contents (details) pagination changes.
2	ANTR-FCL 1.075	(1-A-15) to (1-A-16)	Format and Specifications for Flight Crew Licences revised based on ICAO State Letter AN 12/1.1.27-22/12

FOREWORD

- 1 The Kingdom of Bahrain Civil Aviation Affairs, shall be known in these regulations as “BCAA”.
- 2 ICAO Annex 1 has been selected to provide the basic structure of ANTR-FCL, but with additional sub-division were considered appropriate.
- 3 ANTR-FCL 1 contains Regulations for Aeroplane Pilots.
ANTR-FCL 2 contains Regulations for Helicopter Pilots.
ANTR-FCL 3 contains Medical Regulations.
ANTR-FCL 4 contains Regulations for Flight Engineers
- 4 The authority has adopted associated compliance or interpretative material wherever possible and, unless specifically stated otherwise, clarification will be based on this material or other BCAA Guidance Material.
- 5 The editing practices used in this document are as follows:
 - (a) ‘Shall’ is used to indicate a mandatory requirement and may appear in ANTRs.
 - (b) ‘Should’ is used to indicate a recommendation and normally appears in AMCs and IEMs.
 - (c) ‘May’ is used to indicate discretion by the Authority, the industry or the applicant, as appropriate.
 - (d) ‘Will’ indicates a mandatory requirement and is used to advise of action incumbent on the Authority.

NOTE: The use of the male gender implies the female gender and vice versa.

- 6 The Authority has adopted associated compliance or interpretative material wherever possible and, unless specifically stated otherwise, clarification will be based on this material or other ANTR documentation.
- 7 Definitions and abbreviations of terms used in ANTR-FCL that are specific to ANTR-FCL are given in ANTR-FCL 1.001, IEM FCL 1.001 and IEM FCL 1.475(b).
- 8 New, amended, and corrected text will be indicated with a side bar beside paragraphs, until a subsequent “amendment” is issued.
- 9 Section 1 regulations are presented in Times Roman font and Section 2 material presented in Arial font.
- 10 This 3rd Edition Revision 6 is dated 22 November, 2022.

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SUBPART A**GENERAL REQUIREMENTS****ANTR-FCL 1.001 Definitions and Abbreviations**

(See IEM FCL 1.001)

Aeroplane required to be operated with a co-pilot.

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.

Airmanship.

The consistent use of good judgement and well-developed knowledge, skills and attitudes to accomplish flight objectives.

Category (of aircraft):

Categorisation of aircraft according to specified basic characteristics, e.g. aeroplane, helicopter, glider, free balloon.

Competency.

A combination of skills, knowledge and attitude required to perform a task to the prescribed standard.

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.

Conversion (of a licence):

The issue of an ANTR-FCL licence on the basis of a licence issued by an ICAO Contracting State.

Co-pilot:

“Co-pilot” means a pilot operating other than as pilot-in-command, an aircraft for which more than one pilot is required under the list of types of aeroplanes or the type certification of the aircraft, or the operational regulations under which the flight is conducted, but excluding a pilot who is on board the aircraft for the sole purpose of receiving flight instruction for a licence or rating.

Credit.

Recognition of alternative means or prior qualifications.

Cross-Country.

A flight between a point of departure and a point of arrival following a pre-planned route using standard navigation procedures.

Dual instruction time:

Flight time or instrument ground time during which a person is receiving flight instruction from a properly authorised instructor.

Error.

An action or inaction by the flight crew that leads to deviations from organisational 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.

Flight Engineer:

A Flight Engineer is a person who complies with the requirements in ANTR-FCL (also in Section 2).

Flight time:

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.

Instrument time:

Instrument flight time or instrument ground time.

Instrument flight time:

Time during which a pilot is controlling an aircraft in flight solely by reference to instruments.

Instrument ground time:

Time during which a pilot is receiving instruction in simulated instrument flight in flight synthetic training devices (FSTDs).

Multi-crew co-operation:

The functioning of the flight crew as a team of co-operating members led by the pilot-in-command.

Multi-pilot aeroplanes:

Aeroplanes certificated for operation with a minimum crew of at least two pilots.

Night:

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.

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.

Pilot-in-command under supervision.

Co-pilot performing, under the supervision of the pilot-in-command, the duties and functions of a pilot-in-command, provided that the method of supervision employed is acceptable to the Authority.

Private pilot:

A pilot who holds a licence which prohibits the piloting of aircraft in operations for which remuneration is given.

Professional pilot:

A pilot who holds a licence which permits 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.

Rating:

An entry in a licence stating special conditions, privileges or limitations pertaining to that licence.

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.

Route sector:

A flight comprising take-off, departure, cruise of not less than 15 minutes, arrival, approach and landing phases.

Single-pilot aeroplanes:

Aeroplanes certificated for operation by one pilot.

Skill tests:

Skill tests are demonstrations of skill for licence or rating issue, including such oral examination as the examiner may require.

Solo flight time:

Flight time during which a student pilot is the sole occupant of an aircraft.

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.

Touring Motor Glider (TMG):

A motor glider having a certificate of airworthiness issued or accepted by the Authority having an integrally mounted, non-retractable engine and a non-retractable propeller plus those listed in Appendix 1 to ANTR-FCL 1.215. It shall be capable of taking off and climbing under its own power according to its flight manual.

Type (of aircraft):

All aircraft of the same basic design, including all modifications except those modifications which result in a change of handling, flight characteristics or flight crew complement.

For abbreviations see IEM FCL 1.001.

ANTR-FCL 1.005 Applicability

(See Appendix 1 to ANTR-FCL 1.005)

(See AMC FCL 1.005 & 1.015)

(See ANTR-FCL 1.010(a)(4))

(a) General

- (1) The requirements set out in ANTR-FCL shall apply to all arrangements made for training, testing and applications for the issue of licences, ratings, authorisations, approvals or certificates received by the Authority from 1 July 2007.
- (2) Whenever licences, ratings, authorisations, approvals or certificates are mentioned in ANTR-FCL, these are meant to be licences, ratings, authorisations, approvals or certificates issued in accordance with ANTR-FCL. In all other cases these documents are specified as ICAO licences.

- (3) All synthetic training devices mentioned in ANTR-FCL substituting an aircraft for training purposes are to be device qualified in accordance with ANTR-FSTD and user approved in accordance with ANTR-FCL by the Authority for the exercises to be conducted.
 - (4) Whenever a reference is made to aeroplanes this does not include micro-lights as defined, unless otherwise specified.
 - (5) A licence issued on the basis of training performed outside of Bahrain, except training performed according to ANTR-FCL 1.055(a)(1), shall limit the privileges to aircraft registered in Bahrain.
 - (6) Rating(s) issued on the basis of training performed outside of Bahrain except training performed according to ANTR-FCL 1.055(a)(1), shall be limited to aircraft registered in Bahrain.
- (b) Transitional arrangements
- (1) Training commenced prior to 1 July 2007 will be acceptable for the issue of licences or ratings provided that training and testing is completed before 30th June 2010 for the applicable licence or rating.
 - (2) Licences and ratings, authorisations, approvals or medical certificates issued before 1 July 2007 or issued in accordance with paragraph (1) above, shall continue to be valid with the same privileges, ratings and limitations, if any, provided that after 1 January 2008 all requirements for revalidation or renewal of such licences or ratings, authorisations, approvals or medical certificates shall be in accordance with the requirements of FCL.
 - (3) Holders of a licence issued before 1 July 2007 or in accordance with (b)(1) above, may apply for the issue of the equivalent licence specified in ANTR-FCL 1(Aeroplane). For the issue of such licences, the holder shall meet the requirements set out in Appendix 1 to ANTR-FCL 1.005.
 - (4) *Intentionally blank*
 - (5) A. The Authority shall:
 - (i) Include a Language Proficiency endorsement in accordance with ANTR-FCL 1.010(a)(4) in all new and re-issued licences. A pilot may have an endorsement for more than one language (see the Note in FCL1.010(a)(4));
 - (ii) Prior to 5 March 2008, introduce a procedure so that existing licences have a Language Proficiency endorsement included in accordance with ANTR-FCL 1.075(a)(2)(XIII).
 - B. Holders of licences prior to 5 March 2008:

Based on existing assessment methods, the Authority may make a language proficiency endorsement at level 4 (operational level) for licence holders with a radiotelephony operator certificate in English and other language, as appropriate.

- (c) Continuation of examiners holding authorisations.

Examiners holding authorisations prior to implementation date, may be authorised as ANTR-FCL 1 (Aeroplane) examiner provided that they have demonstrated a knowledge of ANTR-FCL and ANTR-OPS to the Authority. The authorisation will be for a maximum of 3 years. Thereafter re-authorisation will be subject to completion of the requirements set out in ANTR-FCL 1.425(a) and (b).

ANTR-FCL 1.010 Basic authority to act as a flight crew member

- (a) Licence and rating

(1) A person shall not act as a flight crew member of a civil aeroplane registered in Bahrain unless that person holds a valid licence and rating complying with the requirements of ANTR-FCL and appropriate to the duties being performed, or an authorisation as set out in ANTR-FCL 1.085 and/or 1.230. The licence shall have been issued by:

- (i) the Authority; or
- (ii) another ICAO Contracting State and rendered valid in accordance with ANTR-FCL 1.015(a) or (c).

(2) *Intentionally blank*

(3) *Intentionally blank*

(4) Applicants for a licence and licence holders who are required to use the radio telephone shall demonstrate the ability to speak and understand the language used for radiotelephony communications in accordance with Appendix 1 to ANTR-FCL 1.010. The language proficiency required must be at least Operational Level (level 4) of the ICAO Language Proficiency Rating (see Appendix 2 to ANTR-FCL 1.010 and AMC No. 1 to ANTR-FCL 1.010).

Note: These provisions refer to ICAO Annex 10, Volume II, Chapter 5, whereby the language used for radiotelephony communications may be the language normally used by the station on the ground or English. In practise, therefore, there will be situations whereby a licence holder will only need to speak the language normally used by the station on the ground.

- (b) Exercise of privileges. The holder of a licence, rating, or authorisation shall not exercise privileges other than those granted by that licence, rating, or authorisation.

- (c) Appeals, Enforcement

The Authority may at any time act on appeals, limit privileges, or suspend or revoke any licence, rating, authorisation, approval or certificate it has issued in accordance with the requirements of ANTR-FCL if it is established that an applicant or a licence holder has not met, or no longer meets, the requirements of ANTR-FCL.

ANTR-FCL 1.015 Acceptance of licences, ratings, authorisations, approvals or certificates

(See Appendix 1 to ANTR-FCL 1.015)

(See Appendix 2 to ANTR-FCL 1.015)

(See Appendix 3 to ANTR-FCL 1.015)

(See AMC FCL 1.005 & 1.015)

- (a) Licences issued by ICAO Contracting States
- (1) A licence issued by an ICAO Contracting State may be rendered valid at the discretion of the Authority for use on Bahraini registered aircraft in accordance with Appendix 1 to ANTR-FCL 1.015.
 - (2) Validation of a professional pilot licence and a private pilot licence with instrument rating shall not exceed one year from the date of validation, provided that the basic licence remains valid. Any further validation is subject to agreement by the Authority and to any conditions it sees fit to impose. The user of a licence validated by the Authority shall comply with the requirements stated in ANTR-FCL.
 - (3) The requirements stated in (1) and (2) above shall not apply where Bahraini registered aircraft are leased to a foreign operator, provided that the State of the Operator has accepted for the period of lease the responsibility for the technical and/or operational supervision in accordance with ANTR-OPS 1.165. The licences of the flight crews of the foreign operator may be validated at the discretion of the Authority, provided that the privileges of the flight crew licence validation are restricted for use during the lease period only on nominated aircraft in specified operations not involving a Bahraini operator, directly or indirectly, through a wet lease or other commercial arrangement.
 - (4) In circumstances where validation of a foreign licensed pilot is requested to fulfil specific tasks of finite duration in accordance with Appendix 3 to ANTR-FCL 1.015, the Authority may validate such a licence for those tasks without the holder meeting the requirements of Appendix 1 to ANTR-FCL 1.015.
- (b) *Reserved*
- (c) Conversion of a licence issued by an ICAO Contracting State.
- (1) (a) A pilot licence and IR issued by an ICAO Contracting State may be converted to a Bahraini licence provided that the foreign licence is acceptable to the Authority; and
(b) in addition, as from 01 January, 2015, by complying with the requirements shown in Appendix 1 or 2, as applicable, to ANTR-FCL 1.015.
 - (2) A PPL(A) issued in accordance with ICAO Annex 1 may be converted to a Bahraini licence with a single-pilot aeroplane class/type ratings by complying with the requirements shown in Appendix 2 to ANTR-FCL 1.015.
- (d) When the Authority issues a licence which deviates from ANTR-FCL, an endorsement shall be made on the licence, under item XIII.

ANTR-FCL 1.016 Credit given to a holder of a foreign licence

- (a) An applicant for an ATP licence holding ATPL subject credits from an acceptable organisation may be accepted by the Authority as subject credits for a Bahraini ATP licence.

Note: The Authority may be guided as to the credits to be granted on the basis of a recommendation from an appropriate training organisation.

- (b) The holder of an ATPL(A) issued in accordance with ICAO Annex 1 who meets the 1 500 hours flying experience requirements on multi-pilot aeroplanes as PIC or co-pilot of

Appendix 1 to ANTR-FCL 1.015 may be exempted from the requirements to undergo approved training prior to undertaking the theoretical knowledge examinations and the skill test, if that licence contains a valid multi-pilot type rating for the aeroplane to be used for the ATPL(A) skill test.

ANTR-FCL 1.017 Authorisations/Ratings for special purposes

Authorisations/Ratings for special purposes associated with a licence (e.g. IMC flying, towing, aerobatics, dropping of parachutists, etc.) may be established by the Authority for use solely within the Bahraini airspace.

ANTR-FCL 1.020 Credit for military service

(See Appendix 1 to ANTR-FCL 1.005)

Military flight crew members, having served or serving in Bahrain and applying for licences and ratings specified in ANTR-FCL shall apply to the Authority. The knowledge, experience and skill gained in military service will be credited towards the relevant requirements of ANTR-FCL licences and ratings at the discretion of the Authority. The privileges of such licences shall be restricted to aircraft registered in Bahrain until the requirements set out in the Appendix 1 to ANTR-FCL 1.005 are met.

ANTR-FCL 1.025 Validity of licences and ratings

(See ANTR-FCL 1.010(a)(4))

(See ANTR-FCL 3.105)

- (a) A licence holder shall not exercise the privileges granted by any licence or rating unless the holder maintains competency by meeting the relevant requirements of ANTR-FCL.
- (b) Validity of the licence and revalidation of a rating
 - (1) The validity of the licence is determined by the validity of the ratings contained therein and the medical certificate (see ANTR-FCL 3.105) and, with reference to the use of radiotelephony in ANTR-FCL 1.010(a)(4), a valid language proficiency endorsement.
 - (2) When issuing, revalidating or renewing a rating, the Authority may extend the validity period of the rating until the end of the month in which the validity would otherwise expire, that date remains the expiry date of the rating.
- (c) The licence will be issued for a maximum period of 5 years. Within this period of 5 years the licence will be re-issued by the Authority:
 - (1) after initial issue or renewal of a rating;
 - (2) when paragraph XII in the licence is completed and no further spaces remain;
 - (3) for any administrative reason;
 - (4) at the discretion of the Authority when a rating is revalidated.

Note: Valid ratings will be transferred to the new licence document by the Authority.

- (d) The licence holder shall apply to the Authority for the re-issue of the licence. The application shall include the necessary documentation.

ANTR-FCL 1.030 Arrangements for testing

- (a) Authorisation of examiners. The Authority will designate and authorise as examiners suitably qualified persons of integrity to conduct on its behalf skill tests and proficiency checks. The minimum qualifications for examiners are set out in ANTR-FCL 1 (Aeroplane), Subpart I. Examiners' responsibilities and privileges will be notified to them individually in writing by the Authority.
- (b) Number of examiners. The Authority will determine the number of examiners it requires, taking account of the number and geographic distribution of its pilot population.
- (c) Notification of examiners.
 - (1) The Authority will maintain a list of all examiners it has authorised stating for which roles they are authorised. The list will be made available to ATOs, FTOs and registered facilities within the State of Bahrain. The Authority will determine by which means the examiners will be allocated to the skill test.
 - (2) The Authority designate the examiner(s) for the conduct of the skill test for the issue of a MPL(A) and an ATPL(A).
- (d) Examiners shall not test applicants to whom flight instruction has been given by them for that licence or rating except with the expressed consent in writing of the Authority.
- (e) Pre-requisites for applicants undergoing a skill test. Before a skill test for the issue of a licence or rating is taken the applicant shall have passed the associated theoretical knowledge examination, provided that exceptions may be made by the Authority for applicants undergoing a course of integrated flying training. Instruction for the associated theoretical knowledge examination shall always have been completed before such skill tests are taken. Except for ATPL issue, the applicant for a skill test shall be recommended for the test by the organisation/person responsible for the training.

ANTR-FCL 1.035 Medical fitness

(See IEM FCL 1.035)

- (a) Fitness. The holder of a medical certificate shall be mentally and physically fit to exercise safely the privileges of the applicable licence.
- (b) Requirement for medical certificate. In order to apply for or to exercise the privileges of a licence, the applicant or the holder shall hold a medical certificate issued in accordance with the provisions of ANTR-FCL 3 (Medical) and appropriate to the privileges of the licence.
- (c) Aeromedical disposition. After completion of the examination the applicant shall be advised whether fit, unfit or referred to the Authority. The authorised medical examiner (AME) shall inform the applicant of any condition(s) (medical, operational or otherwise) that may restrict flying training and/or the privileges of any licence issued.
- (d) Operational Multicrew Limitation (OML –Class 1 only).
 - (1) The limitation 'valid only as or with qualified co-pilot' is to be applied when the holder of a CPL or an ATPL does not fully meet the class 1 medical certificate requirements but is considered to be within the accepted risk of incapacitation (see ANTR-FCL 3 (Medical), IEM FCL A, B and C). This limitation is applied by the Authority in the

context of a multi-pilot environment. A ‘valid only as or with qualified co-pilot’ limitation can only be issued or removed by the Authority.

- (2) The other pilot shall be qualified on the type, not be over the age of 60, and not be subject to an OML.
- (e) Operational Safety Pilot Limitation (OSL– Class 2 only). A safety pilot is a pilot who is qualified to act as PIC on the class/type of aeroplane and carried on board the aeroplane, which is fitted with dual controls, for the purpose of taking over control should the PIC holding this specific medical certificate restriction become incapacitated (see IEM FCL 1.035). An OSL can only be issued or removed by the Authority.

ANTR-FCL 1.040 Decrease in medical fitness

(See IEM FCL 3.040)

- (a) Holders of medical certificates shall not exercise the privileges of their licences, related ratings or authorisations at any time when they are aware of any decrease in their medical fitness which might render them unable to safely exercise those privileges.
- (b) Holders of medical certificates shall not take any prescription or non-prescription medication or drug, or undergo any other treatment, unless they are completely sure that the medication or treatment will not have any adverse effect on their ability to perform safely their duties. If there is any doubt, advice shall be sought from the AMS, an AMC, or an AME. Further advice is given in ANTR-FCL 3 (See IEM FCL 3.040).
- (c) Holders of medical certificates shall, without undue delay, seek the advice of the AMS, an AMC or an AME when becoming aware of:
 - (1) hospital or clinic admission for more than 12 hours; or
 - (2) surgical operation or invasive procedure; or
 - (3) the regular use of medication; or
 - (4) the need for regular use of correcting lenses.
- (d) (1) Holders of medical certificates who are aware of:
 - (i) any significant personal injury involving incapacity to function as a member of a flight crew; or
 - (ii) any illness involving incapacity to function as a member of a flight crew throughout a period of 21 days or more; or
 - (iii) being pregnant, shall inform the Authority or the AME, who shall subsequently inform the Authority, in writing of such injury or pregnancy, and as soon as the period of 21 days has elapsed in the case of illness. The medical certificate shall be deemed to be suspended upon the occurrence of such injury or the elapse of such period of illness or the confirmation of the pregnancy:
- (2) In the case of injury or illness the suspension shall be lifted upon the holder by the AME in consultation with the Authority being medically assessed by the AME or under arrangements made by the Authority and being pronounced fit to function as a member

of the flight crew, or upon the Authority exempting, subject to such conditions as it thinks appropriate, the holder from the requirement of a medical examination.

- (3) In the case of pregnancy, the suspension may be lifted by the AME in consultation with the Authority for such period and subject to such conditions as it thinks appropriate (see ANTR-FCL 3.195(c) and 3.315(c). If an AME assesses a pregnant Class 1 pilot as fit Class 1, a multipilot (Class 1 'OML') limitation shall be entered. The suspension shall cease upon the holder being medically assessed by the AME – after the pregnancy has ended – and being pronounced fit. Following fit assessment by an AME at the end of pregnancy, the relevant multi-pilot (Class 1 'OML') limitation may be removed by the AME, informing the Authority.

ANTR-FCL 1.045 Special circumstances

- (a) It is recognised that the provisions of all parts of ANTR-FCL will not cover every possible situation. Where the application of ANTR-FCL would have anomalous consequences, or where the development of new training or testing concepts would not comply with the requirements, an applicant may ask the Authority concerned for an exemption. An exemption may be granted only if it can be shown that the exemption will ensure or lead to at least an equivalent level of safety.
- (b) Exemptions are divided into short term exemptions and long term exemptions (more than 6 months).

ANTR-FCL 1.050 Crediting of flight time and theoretical knowledge

(See Appendix 1 to ANTR-FCL 1.050)

(See Appendix 2 to ANTR-FCL 1.050)

(See Appendix 3 to ANTR-FCL 1.050)

- (a) Crediting of flight time
 - (1) Unless otherwise specified in FCL, flight time to be credited for a licence or rating shall have been flown in the same category of aircraft for which the licence or rating is sought.
 - (2) Pilot-in-command or under instruction
 - (i) A student pilot or the holder of a pilot licence shall be credited in full with all solo, dual instruction or pilot-in-command flight time towards the total flight time required for the initial issue of a pilot licence or the issue of a higher grade of pilot licence or rating.
 - (ii) A graduate of an airline transport pilot integrated flying training course is entitled to be credited with up to 50 hours of student pilot-in-command instrument time towards the pilot-in-command time required for the issue of the airline transport pilot licence, commercial pilot licence and a multiengine type or class rating.
 - (iii) A graduate of a CPL/IR integrated flying training course is entitled to be credited with up to 50 hours of the student pilot-in-command instrument time towards the pilot-in-command time required for the issue of the commercial pilot licence and a multiengine type or class rating.

- (3) Co-pilot
 - (i) The holder of a pilot licence, when acting as co-pilot at a pilot station of an aircraft certificated to be operated with a co-pilot, shall be entitled to be credited with this flight 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 performing under the supervision of the pilot-in-command the functions and duties of a pilot-in-command, 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, provided that the method of supervision is agreed with the Authority.
 - (iii) The holder of a pilot licence, when acting as co-pilot at a pilot station of an aircraft certificated for operation by a single pilot but required by the Authority to be operated with a co-pilot, shall be entitled to be credited with not more than 50 per cent of the co-pilot flight time towards the total flight time required for a higher grade of pilot licence. The Authority may authorise that flight time be credited in full towards the total flight time required if the aircraft is equipped to be operated by a co-pilot and the aircraft is operated in a multi-crew operation.
- (b) Crediting of theoretical knowledge
 - (1) The holder of an IR(H) will be exempted from the theoretical knowledge instruction and examination requirement for an IR(A).
 - (2) In order to obtain a PPL(A), the holder of a PPL(H), CPL(H) or ATPL(H) shall fulfil the requirements specified in Appendix 1 to ANTR-FCL 1.050.
 - (3) In order to obtain a CPL(A), the holder of a CPL(H) or ATPL(H) shall fulfil the requirements specified in Appendix 2 to ANTR-FCL 1.050.
 - (4) In order to obtain an ATPL(A), the holder of an ATPL(H) with an IR rating shall fulfil the requirements specified in Appendix 3 to ANTR-FCL 1.050.
 - (5) The credits specified in paragraphs (b)(2), (b)(3) and (b)(4) above shall also apply to applicants having passed the theoretical knowledge examination in all subjects required for the issue of the relevant helicopter pilot licence, provided they meet the acceptance period in accordance with ANTR-FCL 2.495.
 - (6) An applicant having passed the theoretical knowledge examination for an ATPL(A) is credited with the theoretical knowledge requirements for PPL(A), CPL(A) and IR(A).
 - (7) An applicant having passed the theoretical knowledge examination for CPL(A) is credited with the theoretical knowledge requirement for a PPL(A).
 - (8) An applicant having passed the relevant theoretical knowledge examination for CPL(A) or IR(A) shall be credited with theoretical knowledge requirements as specified in Appendix 4 to ANTR-FCL 1.050.

ANTR-FCL 1.055 Training organisations and registered facilities

(See Appendices 1a and 1b & Appendices 2 and 3 to ANTR FCL 1.055)

(See Appendix 2 to ANTR-FCL 1.125)

- (a) (1) Flying training organisations (FTOs) wishing to offer training for licences and associated ratings whose principal place of business and registered office is located in Bahrain, will be granted approval when in compliance with FCL. Requirements for approval of FTOs are given in Appendix 1a to ANTR-FCL 1.055. Part of the training may be performed outside of Bahrain (see also Appendix 1b to ANTR-FCL 1.055).
- (2) FTOs wishing to offer training for licences and associated ratings whose principal place of business and registered office is located outside of Bahrain, may be granted approval in respect of any such location:
 - (i) if an arrangement has been agreed between the Authority and the State in which the FTO has its principal place of business and registered office, providing for the participation of that Authority in the approval process and provide regulatory oversight of the FTO; or
 - (ii) (A) adequate jurisdiction and supervision by the approving Authority can be assured;
 - (B) the relevant additional requirements of Appendix 1c to ANTR-FCL 1.055 are satisfied; and
- (b) (1) Approved training organisations (ATOs) located in another State, wishing to offer training for type ratings will be granted approval when in compliance with ANTR-FCL. Requirements for approval of ATOs are given in Appendix 2 to ANTR-FCL 1.055.
- (2) For ATOs located outside of Bahrain, approval will be granted, when in compliance with ANTR-FCL. Requirements for approval of ATOs are given in Appendix 2 to ANTR-FCL 1.055.
- (c) *Intentionally blank*
- (d) MPL(A) training course. FTOs wishing to offer training for a MPL(A) shall demonstrate to the satisfaction of the Authority that the MPL(A) training course provides a level of competency in multi-crew operations at least equivalent to what is currently expected from graduates of the ATP(A) integrated course who have completed type rating training for a multipilot aeroplane.
- (e) Safety management
 - (1) The Kingdom of Bahrain shall require, as part of its State safety programme, that an approved training organization that is exposed to safety risks during the provision of its services implement a safety management system acceptable to Bahrain that, as a minimum:
 - (i) identifies safety hazards;
 - (ii) ensures the implementation of remedial action necessary to maintain agreed safety performance;
 - (iii) provides for continuous monitoring and regular assessment of the safety performance; and
 - (iv) aims at a continuous improvement of the overall performance of the safety management system.

- (f) (1) Flying training organisations (FTOs) wishing to offer training for licences and associated ratings whose principal place of business and registered office is located in Bahrain, will be granted approval when in compliance with FCL. Requirements for approval of FTOs are given in Appendix 1a to ANTR-FCL 1.055. Part of the training may be performed outside of Bahrain (see also Appendix 1b to ANTR-FCL 1.055).
- (3) FTOs wishing to offer training for licences and associated ratings whose principal place of business and registered office is located outside of Bahrain, may be granted approval in respect of any such location:
- (i) if an arrangement has been agreed between the Authority and the State in which the FTO has its principal place of business and registered office, providing for the participation of that Authority in the approval process and provide regulatory oversight of the FTO; or
 - (ii) (A) adequate jurisdiction and supervision by the approving Authority can be assured;
(B) the relevant additional requirements of Appendix 1c to ANTR-FCL 1.055 are satisfied; and
- (g) (1) Approved training organisations (ATOs) located in another State, wishing to offer training for type ratings will be granted approval when in compliance with ANTR-FCL. Requirements for approval of ATOs are given in Appendix 2 to ANTR-FCL 1.055.
- (2) For ATOs located outside of Bahrain, approval will be granted, when in compliance with ANTR-FCL. Requirements for approval of ATOs are given in Appendix 2 to ANTR-FCL 1.055.
- (h) *Intentionally blank*
- (i) MPL(A) training course. FTOs wishing to offer training for a MPL(A) shall demonstrate to the satisfaction of the Authority that the MPL(A) training course provides a level of competency in multi-crew operations at least equivalent to what is currently expected from graduates of the ATP(A) integrated course who have completed type rating training for a multipilot aeroplane.
- (j) Safety management
- (1) The Kingdom of Bahrain shall require, as part of its State safety programme, that an approved training organization that is exposed to safety risks during the provision of its services implement a safety management system acceptable to Bahrain that, as a minimum:
- (i) identifies safety hazards;
 - (ii) ensures the implementation of remedial action necessary to maintain agreed safety performance;
 - (iii) provides for continuous monitoring and regular assessment of the safety performance; and
 - (iv) aims at a continuous improvement of the overall performance of the safety management system.

Note: Guidance on defining safety performance is contained in ANTR Volume III, Part 19.

- (2) A safety management system shall clearly define lines of safety accountability throughout the approved training organization, including direct accountability for safety on the part of senior management.

Note: The framework for the implementation and maintenance of a safety management system is contained in ANTR Volume III, Part 19. Guidance on safety management systems is contained in CAP 08 Safety Management.

ANTR-FCL 1.060 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 as a member of a multi-pilot crew.
- (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.
- (c) On attainment of the age 65 years, such privileges shall be restricted to that of Private Pilot's Licence (Aeroplanes).

ANTR-FCL 1.070 Normal Residency

Normal residency means the place where a person usually lives for at least 185 days in each calendar year because of personal and occupational ties or, in the case of a person with no occupational ties, because of personal ties which show close links between that person and the place where she or he is living.

ANTR-FCL 1.075 Format and Specifications for Flight Crew Licences

(See Appendix 1 to ANTR-FCL 1.075)

The flight crew licence issued by the Authority will be in accordance with ANTR-FCL and conform to the following specifications.

- (a) Content. The item number shown will always be printed in association with the item heading. Items I to XI are the 'permanent' items and items XII to XIV are the 'variable' items which may appear on a separate or detachable part of the main form. Any separate or detachable part shall be clearly identifiable as part of the licence.
- (1) Permanent items
- (I) State of licence issue.
- (II) Title of licence.
- (III) Serial number commencing with the postal code of the issuing State and followed by a code of numbers and/or letters in Arabic numerals and in Roman script.
- (IV) Name of holder (in Roman alphabet, if script of national language is other than Roman).
- (V) Date of Birth
- (VI) Holder's address.
- (VII) Nationality of holder.

(VIII) Signature of holder.

(IX) Authority and, where necessary, conditions under which the licence was issued.

(X) Certification of validity and authorisation for holder to exercise privileges appropriate to licence.

(XI) Signature of the officer issuing the licence and the date of issue.

(XII) Seal or stamp of the Authority issuing the licence.

(2) Variable items

(XII) Ratings – e.g. category, class, type of aircraft, airframe, aerodrome control, instructor, etc., with dates of expiry. Radio telephony (R/T) privileges may appear on the licence form or on a separate certificate.

(XIII) Remarks – i.e. special endorsements relating to limitations and endorsements for privileges, including endorsements of language proficiency (see ANTR-FCL 1.005(b)(5)).

(XIV) Any other details required by the Authority.

(b) Material. The paper or other material, including plastic cards used will prevent or readily show any alterations or erasures. Any entries or deletions to the form will be clearly authorised by the Authority.

(c) Colour. White material will be used for pilot licences issued in accordance with ANTR- FCL.

(d) Language. Licences shall be issued in the English language and when issued other than English (such other languages as the Authority deems appropriate), it shall include an English translation of at least item) I, II), VI), IX), XII, XIII) and XIV).

ANTR-FCL 1.080 Recording of Flight Time

(See IEM FCL 1.080)

(a) Details of all flights flown as a pilot shall be kept in a reliable record in a logbook format acceptable to the Authority (see IEM FCL 1.080). Details of flights flown under ANTR–OPS 1, may be recorded in an acceptable computerized format maintained by the operator. In this case the operator shall make the records of all flights operated by the pilot, including differences and familiarisation training, available on request to the flight crew member concerned.

(b) The record shall contain the following information:

(1) Personal details:

Name and address of the holder

(2) For each flight:

(i) Name of Pilot-in-command

(ii) Date (day, month, year) of flight

- (iii) Place and time of departure and arrival (times (UTC) to be block time)
 - (iv) Type (aeroplane make, model and variant) and registration of aeroplane
 - (v) SE, ME
 - (vi) Total time of flight
 - (vii) Accumulated total time of flight
- (3) For each flight simulator or FNPT session:
- (i) Type and qualification number of training device
 - (ii) Synthetic training device instruction
 - (iii) Date (d/m/y)
 - (iv) Total time of session
 - (v) Accumulated total time
- (4) Pilot function:
- (i) Pilot-in-command (including solo, SPIC, PICUS time)
 - (ii) Co-pilot
 - (iii) Dual
 - (iv) Flight instructor / Flight examiner
 - (v) A remarks column will be provided to give details of specific functions e.g. SPIC, PICUS, instrument flight time*, etc.
- * A pilot may log as instrument flight time only that time during which he operates the aircraft solely by reference to instruments, under actual or simulated instrument flight conditions.
- (5) Operational conditions:
- (i) Night
 - (ii) IFR
- (c) Logging of time
- (1) Pilot-in-command flight time
- (i) 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.
 - (ii) 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.

- (iii) The holder of an instructor rating may log as pilot-in-command all flight time during which he acts as an instructor in an aeroplane.
- (iv) The holder of an examiner's authorisation may log as pilot-in-command all flight time during which he occupies a pilot's seat and acts as an examiner in an aeroplane.
- (v) A co-pilot acting as pilot-in-command under the supervision of the pilot-in-command on an aeroplane on which more than one pilot is required under the type certification of the aeroplane or as required by ANTR-OPS provided such pilot-in-command time under supervision (see (c)(5)) is countersigned by the pilot-in-command.
- (vi) 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) 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 aeroplane on which more than one pilot is required under the type certification of the aeroplane, or the regulations under which the flight is conducted.

(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.

(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. shall be certified by the appropriately rated and/or authorised instructor from whom it was received.

(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.

(d) Presentation of flight time record

- (1) The holder of a licence or a student pilot shall without undue delay present his flight time record for inspection upon request by an authorised representative of the Authority.
- (2) A student pilot shall carry his flight time record logbook with him on all solo cross-country flights as evidence of the required instructor authorisations.

Appendix 1 to ANTR-FCL 1.005**Minimum requirements for the issue of an ANTR-FCL licence/authorisation**

(See ANTR-FCL 1.005(b)(3))

(See AMC FCL 1.005 & 1.015)

(See AMC FCL 1.125)

1 Pilot licences

A pilot licence previously issued by the Authority may be replaced by an ANTR- FCL licence subject, where applicable, to conditions. For the replacement of such licences the holder shall:

- (a) for ATPL(A) and CPL(A), complete as a proficiency check, type/class and instrument rating (IR if applicable) revalidation requirements of ANTR-FCL 1.245(b)(1), ANTR- FCL 1.245(c)(1)(i) or 1.245(c)(2) relevant to the privileges of the licence held.
- (b) (i) for ATPL(A) and CPL(A) demonstrate to the satisfaction of the Authority that a knowledge of the relevant parts of ANTR-OPS 1 and ANTR-FCL (see AMC FCL 1.005 & 1.015) has been acquired;

(ii) for PPL(A) only demonstrate to the satisfaction of the Authority that a knowledge of the relevant parts of the ANTR requirements (see AMC FCL 1.125) has been acquired;
- (c) demonstrate a knowledge of English in accordance with ANTR-FCL 1.200 if IR privileges are held;
- (d) comply with the experience requirements.

Appendix 1 to ANTR-FCL 1.010**Requirements for proficiency in languages used for radiotelephony communications**

(See ANTR-FCL 1.010(a)(4))

(See AMC No. 1 to ANTR-FCL 1.010)

(See AMC No. 2 to ANTR-FCL 1.010)

(See IEM FCL 1.010)

- 1 The language proficiency requirements are applicable to the use of both phraseologies and plain language.
- 2 To meet the language proficiency requirements contained in ANTR-FCL 1.010(a)(4), an applicant for a licence or a licence holder shall demonstrate, in a manner acceptable to the Authority, the ability to:
 - (a) communicate effectively in voice-only (telephone/radiotelephone) and in face-to-face situations;
 - (b) communicate on common, and work-related topics with accuracy and clarity;
 - (c) use appropriate communicative strategies, to exchange messages and to recognize and resolve misunderstandings (e.g. to check, confirm, or clarify information) in a general or work related context;
 - (d) 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
 - (e) use a dialect or accent which is intelligible to the aeronautical community.
- 3 The Language Proficiency shall be formally re-evaluated at intervals determined by the Authority (see AMC No. 2 to ANTR-FCL 1.010 paragraphs 4 and 5).
- 4 The method of assessment and re-evaluation shall be determined by the Authority (see AMC No. 2 to ANTR-FCL 1.010).
- 5 A language assessment body offering service on behalf of an Authority shall be acceptable to that Authority (see AMC No. 2 to ANTR-FCL 1.010).
- 6 Where the language assessment referred to above meets the requirements stated in Appendix 1 to ANTR-FCL 1.200, it may be used for the purpose of extending the radiotelephony privileges in English in accordance with ANTR-FCL 1.200 paragraph (b).

Appendix 2 to ANTR-FCL 1.010
Language Proficiency Rating Scale

(See ANTR-FCL 1.010(a)(4))

(See AMC No. 1 to ANTR-FCL 1.010)

(See AMC No. 2 to ANTR-FCL 1.010)

(See IEM FCL 1.010)

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				
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, but rarely interfere with meaning.	Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete, and work related topics. Can often paraphrase successfully when lacking vocabulary particularly in unusual or unexpected circumstances.	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 this does not prevent effective communication. Can make limited use of discourse markers and connectors. Fillers are not distracting.	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. 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.	Responses are usually immediate, appropriate, and informative. Initiates and maintains exchanges even when dealing with an unexpected turn of events. Deals adequately with apparent misunderstandings by checking, confirming, or clarifying.

Note: The Operational Level (Level 4) is the minimum required proficiency level for radiotelephony communication.

Appendix 1 to ANTR-FCL 1.015**Minimum requirements for the conversion or validation of a CPL/ATPL**

(See ANTR-FCL 1.015)

(See AMC FCL 1.005 & 1.015)

- 1 The minimum requirements for the conversion or validation of a CPL/ATPL are specified below.
- 2 A CPL/ATPL issued in accordance with ICAO Annex 1 may be converted to a Bahraini licence or validated, subject to conditions in order to permit flights (other than flight instruction) in aeroplanes registered in Bahrain. To convert or validate such licences, the holder shall:
 - (a) complete, as a skill test, the type or class rating revalidation requirements of ANTR-FCL 1.245 relevant to the privileges of the licence held;
 - (b) demonstrate to the satisfaction of the Authority that a knowledge of the relevant parts of ANTR-OPS and ANTR-FCL (see AMC FCL 1.005 & 1.015) has been acquired;
 - (c) demonstrate a knowledge of English in accordance with ANTR-FCL 1.200;
 - (d) hold a valid ANTR-FCL 3 Class 1 medical certificate;
 - (e) meet any published additional requirements that the Authority deems necessary; and
 - (f) as from 01 January, 2015, comply with the experience requirements set out in column (2) of the following table in relation to the conversion/validation conditions specified in column (3):

Licence held	Total flying hours experience	Conversion/Validation conditions	
(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 ANTR-OPS	(d)
CPL(A)	>700 hours in aeroplanes other than TMGs, including 200 hours in the activity role for which validation is sought, and 50 hours in that role in the last 12 months	Activities in aeroplanes other than commercial air transport	(e)

Appendix 2 to ANTR-FCL 1.015**Minimum requirements for the conversion or validation of a PPL**

(See ANTR-FCL 1.015(c)(2))

The minimum requirements for the conversion of a private pilot licence issued by an ICAO Contracting State to an ANTR-FCL licence are:

- (a) the applicant shall hold a licence issued in accordance with ICAO Annex 1
- (b) the applicant shall hold at least a ANTR-FCL 3 Class 2 medical certificate
- (c) demonstrate a knowledge of English in accordance with ANTR-FCL 1.200;
- (d) to hold R/T privileges acceptable to the Authority
- (e) the applicant shall comply with the flying experience requirements set out in the table below

Licence held	Experience requirement	Any further FCL requirements
Current and valid ICAO PPL	>100 hours as pilot of aeroplanes	<ul style="list-style-type: none"> (a) Pass a written examination in Air Law and Human Performance and Limitations (b) Pass the PPL skill test as set out in Appendix 1 to ANTR-FCL 1.130 and 1.135 and Appendix 2 to ANTR-FCL 1.135 (c) Fulfil the relevant requirements of Subpart F

Private pilot licences with Instrument Rating

A private pilot licence with instrument rating issued in accordance with ICAO Annex 1 may be converted to a Bahraini licence or validated, subject to conditions in order to permit flights (other than flight instruction) in aeroplanes registered in Bahrain. To convert or validate such licences, the holder shall:

- (a) complete, as a skill test, the type/class and instrument rating of Appendix 1 and 2 to ANTR-FCL 1.210 and Appendix 3 to ANTR-FCL 1.240;
- (b) demonstrate to the satisfaction of the Authority in accordance with Subpart J, that a knowledge of Air Law and the Aeronautical Weather codes, subject number 050 10 03 01, as well as the Flight Planning & Performance (IR), subject number 030 00 00 00, Human Performance subject number 040 00 00 00 in accordance with Appendix 1 to ANTR-FCL 1.470 has been acquired;
- (c) demonstrate a knowledge of English in accordance with ANTR-FCL 1.200;
- (d) hold at least a valid ANTR-FCL 3 Class 2 medical certificate including hearing requirements in accordance with ANTR-FCL 3.355(b);
- (e) hold R/T privileges acceptable to the Authority,
- (f) comply with the experience requirements set out in column (2) of the following table:

Licence held	Total flying hours experience
(1)	(2)
PPL/IR	> 100 hrs PIC instrument flight time

Appendix 3 to ANTR-FCL 1.015**Validation of pilot licences for specific tasks of finite duration**

(See ANTR-FCL 1.015)

(See Appendix 1 to ANTR-FCL 1.015)

TEMPORARY VALIDATION/AUTHORISATION OF PILOT LICENCES

1. A pilot licence issued in accordance with ICAO Annex 1, including an instructor rating or examiner authorisation issued by another State may be validated or otherwise authorised subject to conditions, for a maximum of 1 year, in order to permit flights to demonstrate, operate, ferry or test Bahraini registered aircraft. When validating a licence under the provisions of this Appendix, the licence holder may be exempt from the requirements contained in Appendix 1 to ANTR-FCL 1.015, subject to the following conditions:

To be eligible for validation of such a licence, the holder shall:

- (a) Possess an appropriate licence, medical certificate, type ratings, and qualifications, to include instructor or examiner qualifications, valid in the other State for the duties proposed, and
 - (b) Be employed by an aeroplane manufacturer or a ATO performing training on behalf of an aeroplane manufacturer, and
 - (c) 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.
2. Whenever conducting or supervising line flying, the pilot shall also be required to meet the relevant requirements of ANTR-OPS as determined by the Authority.

Appendix 1 to ANTR-FCL 1.050**Crediting of theoretical knowledge for the issue of a PPL(A)– Bridge instruction and examination requirements**

(See ANTR-FCL 1.050(b)(2))

For the issue of a PPL(A), the holder of an helicopter licence shall pass PPL(A) theoretical knowledge examinations (from AMC-FCL 1.125 Syllabus of theoretical knowledge for the Private Pilot Licence (Aeroplane)) in the following topics:

Aircraft General Knowledge; Flight Performance and Planning; Operational Procedures and Principles of Flight.

Appendix 2 to ANTR-FCL 1.050**Crediting of theoretical knowledge for the issue of a CPL(A)– Bridge instruction and examination requirements**

(See ANTR-FCL 1.050(b)(3))

1. An applicant shall have received theoretical knowledge bridge instruction on an approved course at an approved flying training organisation (FTO) according to the syllabus subjects and headline topics below (refer to the Theoretical Knowledge Learning Objectives).

021 01 00 00	AIRCRAFT GENERAL KNOWLEDGE – AIRFRAME AND SYSTEMS, ELECTRICS, ENGINE, EMERGENCY EQUIPMENT
021 02 00 00	AIRFRAME
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 10 00 00	PISTON ENGINES
021 11 00 00	TURBINE ENGINES
021 13 00 00	OXYGEN SYSTEMS

022 00 00 00	AIRCRAFT GENERAL KNOWLEDGE - INSTRUMENTATION
022 02 00 00	MEASUREMENT OF AIR DATA PARAMETERS
022 06 00 00	AEROPLANE: AUTOMATIC FLIGHT CONTROL SYSTEMS
022 08 00 00	TRIMS – YAW DAMPER – FLIGHT ENVELOPE PROTECTION
022 12 00 00	ALERTING SYSTEMS, PROXIMITY SYSTEMS
022 13 00 00	INTEGRATED INSTRUMENTS – ELECTRONIC DISPLAYS

030 00 00 00	FLIGHT PERFORMANCE AND PLANNING
031 00 00 00	MASS AND BALANCE – AEROPLANES
031 01 00 00	PURPOSE OF MASS AND BALANCE CONSIDERATIONS
031 02 00 00	LOADING
031 04 00 00	MASS AND BALANCE DETAILS OF AEROPLANE
031 05 00 00	DETERMINATION OF CG POSITION

032 00 00 00	PERFORMANCE - AEROPLANES
032 01 01 02	GENERAL
032 01 02 00	PERFORMANCE CLASS B – SINGLE-ENGINES AEROPLANES
032 02 01 03	PERFORMANCE CLASS B – MULTI-ENGINES AEROPLANES
032 02 04 00	PERFORMANCE CLASS A –AEROPLANES CERTIFIED UNDER CS 25 ONLY

033 00 00 00	FLIGHT PLANNING AND FLIGHT MONITORING
033 03 00 00	FUEL PLANNING

070 00 00 00	OPERATIONAL PROCEDURES - AEROPLANE
071 01 00 00	GENERAL REQUIREMENTS
071 02 00 00	SPECIAL OPERATIONAL PROCEDURES AND HAZARDS (GENERAL ASPECTS)

080 00 00 00	PRINCIPLES OF FLIGHT
081 00 00 00	PRINCIPLES OF FLIGHT - AEROPLANE
081 01 00 00	SUBSONIC AERODYNAMICS
081 02 00 00	HIGH SPEED AERODYNAMICS
081 03 00 00	Intentionally left blank
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

2. An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of a CPL(A) and shall meet the requirements set out in ANTR-FCL 1 (Aeroplane) Subpart J. The applicant shall pass theoretical bridge examinations in the following subjects: Aircraft General Knowledge, Flight Performance and Planning, Operational Procedures and Principles of Flight (Aeroplane), as follows:
- (a) the examination papers in subjects Flight Performance and Principles of Flight (Aeroplane) are those defined in ANTR-FCL 1.470(b).
 - (b) the examination papers in subjects Airframe and Systems, Electrics, Engine, Emergency Equipment, Instrumentation, Mass and Balance, Flight Planning and Flight Monitoring, and Operational Procedures shall cover the bridge topics defined in the syllabus above.

Appendix 3 to ANTR-FCL 1.050**Crediting of theoretical knowledge for the issue of a ATPL(A)– Bridge instruction and examination requirements**

(See ANTR-FCL 1.050(b)(4))

1. An applicant shall have received theoretical knowledge bridge instruction on an approved course at an approved flying training organisation (FTO) according to the syllabus subjects and headline topics below (refer to the Theoretical Knowledge Learning Objectives).

021 01 00 00	AIRCRAFT GENERAL KNOWLEDGE – AIRFRAME AND SYSTEMS, ELECTRICS, ENGINE, EMERGENCY EQUIPMENT
021 02 00 00	AIRFRAME
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 09 00 00	ELECTRICS
021 10 00 00	PISTON ENGINES
021 11 00 00	TURBINE ENGINES
021 13 00 00	OXYGEN SYSTEMS

022 00 00 00	AIRCRAFT GENERAL KNOWLEDGE – INSTRUMENTATION (A)
022 02 00 00	MEASUREMENT OF AIR DATA PARAMETERS
022 06 00 00	AEROPLANE: AUTOMATIC FLIGHT CONTROL SYSTEMS
022 08 00 00	TRIMS – YAW DAMPER – FLIGHT ENVELOPE PROTECTION
022 09 00 00	AUTOTHROTTLE – AUTOMATIC THRUST CONTROL SYSTEM
022 12 00 00	ALERTING SYATEMS, PROXIMITY SYSTEMS
022 13 00 00	INTEGRATED INSTRUMENTS – ELECTRONIC DISPLAYS

030 00 00 00	FLIGHT PERFORMANCE AND PLANNING
031 00 00 00	MASS AND BALANCE – AEROPLANES
031 01 00 00	PURPOSE OF MASS AND BALANCE CONSIDERATIONS
031 02 00 00	LOADING
031 04 00 00	MASS AND BALANCE DETAILS OF AEROPLANES
031 05 00 00	DETERMINATION OF CG POSITION

032 00 00 00	PERFORMANCE - AEROPLANES
032 01 01 02	GENERAL
032 01 02 00	PERFORMANCE CLASS B – SINGLE-ENGINES AEROPLANES
032 02 01 03	PERFORMANCE CLASS B – MULTI-ENGINES AEROPLANES
032 02 04 00	PERFORMANCE CLASS A –AEROPLANES CERTIFIED UNDER CS 25 ONLY

033 00 00 00	FLIGHT PLANNING AND FLIGHT MONITORING
033 03 00 00	FUEL PLANNING

070 00 00 00	OPERATIONAL PROCEDURES - AEROPLANE
071 01 00 00	GENERAL REQUIREMENTS
071 02 00 00	SPECIAL OPERATIONAL PROCEDURES AND HAZARDS (GENERAL ASPECTS)

080 00 00 00	PRINCIPLES OF FLIGHT
081 00 00 00	PRINCIPLES OF FLIGHT - AEROPLANE
081 01 00 00	SUBSONIC AERODYNAMICS
081 02 00 00	HIGH SPEED AERODYNAMICS
081 03 00 00	Intentionally left blank
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

2. An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of a ATPL(A) and shall meet the requirements set out in ANTR-FCL 1 (Aeroplane) Subpart J.

The applicant shall pass theoretical bridge examinations in the following subjects: Aircraft General Knowledge, Flight Performance and Planning, Operational Procedures and Principles of Flight (Aeroplane), as follows:

- (a) the examination papers in subjects Flight Performance and Principles of Flight (Aeroplane) are those defined in ANTR-FCL 1.470(a).
- (b) the examination papers in subjects Airframe and Systems, Electrics, Engine, Emergency Equipment, Instrumentation, Mass and Balance, Flight Planning and Flight Monitoring, and Operational Procedures shall cover the bridge topics defined in the syllabus above.

Appendix 4 to ANTR-FCL 1.050**Crediting of theoretical knowledge requirements for the issue of a CPL(A), an IR(A) or an ATPL(A)**

(See ANTR-FCL 1.050(b)(8))

1. An applicant for an IR(A) having passed the relevant theoretical examinations for a CPL(A) is credited towards the theoretical knowledge requirements in the following subjects:
 - Human Performance and Limitations
 - Meteorology.
2. An applicant for a CPL(A) having passed the relevant theoretical examinations for an IR(A) is credited towards the theoretical knowledge requirements in the following subjects:
 - Human Performance and Limitations
 - Meteorology.
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.
4. 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.

Appendix 1a to ANTR-FCL 1.055**Flying Training Organisations for pilot licences and ratings**

(See ANTR-FCL 1.055)

(See IEM No. 1 to ANTR-FCL 1.055)

(See IEM No. 2 to ANTR-FCL 1.055)

(See IEM No. 3 to ANTR-FCL 1.055)

(See AMC FCL 1.261(c)(2))

INTRODUCTION

- 1 A Flying Training Organisation (FTO) is an organisation staffed, equipped and operated in a suitable environment offering flying training, and/or synthetic flight instruction and/or theoretical knowledge instruction for specific training programmes.
- 2 A FTO wishing to offer approved training to meet ANTR-FCL requirements shall obtain the approval of the Authority. No such approval will be granted by the Authority unless:
 - (a) the Authority can enforce the ANTR-FCL requirements; and
 - (b) the FTO meets all requirements of ANTR-FCL.

This Appendix gives the requirements for the issue, revalidation and variation of the approval of a FTO. A FTO needs only to meet the requirements to the instruction it is providing.

OBTAINING APPROVAL

- 3 A FTO seeking approval shall provide to the Authority such operations and training manuals as required by paragraph 31. A FTO shall establish procedures acceptable to the Authority to ensure compliance with all relevant ANTR-FCL requirements. The procedures shall include a quality system (see AMC FCL 1.055 and IEM FCL No. 1 to ANTR-FCL 1.055) within the FTO to readily detect any deficiencies for self-remedial action. After consideration of the application the FTO will be inspected to ensure that it meets the requirements set out in this Appendix. Subject to satisfactory inspection, approval of the FTO will initially be granted for a period of one year, revalidation of the approval may be granted for further periods of up to three years. The Authority is not obliged to grant an approval for a FTO outside of Bahrain if the personnel resources are not available or the cost of processing the application for approval and inspections puts undue burden on the Authority.
- 4 All training courses shall be approved (see IEM FCL 1.055 (to be developed)).
- 5 The Authority will monitor course standards and will sample training flights with students. During such visits, access shall be given by the FTO to training records, authorisation sheets, technical logs, lectures, study notes and briefings and any other relevant material. A copy of the report on a visit to a FTO will be made available by the Authority to that FTO.
- 6 Approval will be varied, suspended or revoked by the Authority if any of the approval requirements or standards cease to be maintained to the minimum approved level.
- 7 If a FTO wishes to make changes to an approved course or to its operations or training manual the approval of the Authority shall be obtained before the changes are implemented. FTOs need not advise the Authority of minor changes in day-to-day operations. Where any doubt exists as to whether a proposed change is minor, the Authority shall be consulted.

- 8 A FTO may make training arrangements with other training organisations or make use of alternative base aerodromes as part of its overall training organisation, subject to the approval of the Authority.

FINANCIAL RESOURCES

- 9 (a) A FTO shall satisfy the Authority that sufficient funding is available to conduct training to the approved standards (see IEM No. 2 to ANTR-FCL 1.055).
- (b) A FTO shall nominate a person acceptable to the Authority who shall satisfy the Authority that sufficient funding is available to conduct training to the approved standard. Such person shall be known as the accountable manager.

MANAGEMENT AND STAFFING

- 10 The management structure shall ensure supervision of all grades of staff by persons having the experience and qualities necessary to ensure the maintenance of high standards. Details of the management structure, indicating individual responsibilities, shall be included in the FTO's Operations Manual.
- 11 The FTO shall satisfy the Authority that an adequate number of qualified, competent staff are employed. For integrated courses, three persons on the staff shall be employed full time in the following positions:

Head of Training (HT)

Chief Flying Instructor (CFI)

Chief Ground Instructor (CGI)

For modular training courses, these positions may be combined and filled by one or two persons, full time or part time, depending upon the scope of training offered. At least one person on the staff must be full time. At FTOs conducting theoretical knowledge instruction only, the positions of HT and CGI may be combined. The nominated person shall have a sound managerial capability, hold or have held a professional pilot licence related to the course to be conducted with ratings as appropriate and shall meet the requirements set out in paragraph 19 below.

- 12 The number of part time instructors in relation to the scope of training offered shall be acceptable to the Authority.
- 13 The ratio of all students to flight instructors, excluding the HT, shall not normally exceed 6:1. Class numbers in ground subjects involving a high degree of supervision or practical work shall not normally exceed 12 students.

HEAD OF TRAINING (HT)

- 14 The HT shall have overall responsibility for ensuring satisfactory integration of flying training, synthetic flight training and theoretical knowledge instruction, and for supervising the progress of individual students. The HT shall have had extensive experience in training as a flight instructor for professional pilot licences and possess a sound managerial capability. The HT shall hold or have held in the three years prior to first appointment as a HT, a professional pilot licence and rating(s) issued in accordance with ICAO Annex 1, related to the flying training courses conducted.

CHIEF FLYING INSTRUCTOR (CFI)

- 15 The CFI shall be responsible for the supervision of flight and synthetic flight instructors and for the standardisation of all flight instruction and synthetic flight instruction. The CFI shall:
- (a) hold the highest professional pilot licence related to the flying training courses conducted;
 - (b) hold the rating(s) related to the flying training courses conducted;
 - (c) hold a flight instructor rating for at least one of the types of aeroplane used on the course; and
 - (d) have completed 1 000 hours pilot-in-command flight time of which a minimum of 500 hours shall be on flying instructional duties related to the flying courses conducted of which 200 hours may be instrument ground time.

INSTRUCTORS, OTHER THAN SYNTHETIC FLIGHT INSTRUCTORS

- 16 Instructors shall hold:
- (a) a professional pilot licence and rating(s) related to the flying training courses they are appointed to conduct;
 - (b) an instructor rating relevant to the part of the course being conducted e.g. instrument rating instructor, flight instructor, type/class rating instructor, as appropriate; or
 - (c) an authorisation from the Authority to conduct specific training in a FTO (see ANTR-FCL 1.300).
- 17 The maximum flying hours, maximum flying duty hours and minimum rest time between instructional duties of instructors shall be acceptable to the Authority.

INSTRUCTORS FOR SYNTHETIC FLIGHT TRAINING

- 18 For flight training duties on a FTD and a FNPT I, instructors shall hold or have held 3 years prior to the first appointment, a professional pilot licence and rating(s), except for instructors having an authorisation according to item 3 and/or 4 of Appendix 1 to ANTR-FCL 1.005, appropriate to the training courses they are appointed to conduct, and have had instructional training experience. For flight training duties on a flight simulator and/or FNPT II, instructors shall hold a FI(A), TRI(A) or CRI(A) rating or a SFI(A) or STI (A) or MCCI(A) authorisation relevant to the course the instructor is conducting.

CHIEF GROUND INSTRUCTOR (CGI)

- 19 The CGI shall be responsible for the supervision of all ground instructors and for the standardisation of all theoretical knowledge instruction. The CGI shall have a practical background in aviation and have undergone a course of training in instructional techniques or have had extensive previous experience in giving theoretical knowledge instruction.

THEORETICAL KNOWLEDGE INSTRUCTORS

- 20 Theoretical Knowledge Instructors in licence and ratings examination subjects shall have appropriate experience in aviation and shall, before appointment, give proof of their

competency by giving a test lecture based on material they have developed for the subjects they are to teach.

RECORDS

- 21 A FTO shall maintain and retain the following records for a period of at least 5 years, using appropriate administrative staff:
- (a) details of ground, flying, and simulated flight training given to individual students;
 - (b) detailed and regular progress reports from instructors including assessments, and regular progress flight tests and ground examinations; and
 - (c) personal information, e.g. expiry dates of medical certificates, ratings, etc.
- 22 The format of the student training records shall be specified in the Training Manual.
- 23 The FTO shall submit training records and reports as required by the Authority.

TRAINING PROGRAMME

- 24 A training programme shall be developed for each type of course offered. This programme shall include a breakdown of flying and theoretical knowledge instruction in either a week-by-week or phase presentation, a list of standard exercises and a syllabus summary. In particular, synthetic flight training and theoretical knowledge instruction shall be phased in such a manner as to ensure that students shall be able to apply to flying exercises the knowledge gained on the ground. Arrangements should be made so that problems encountered in instruction can be resolved during subsequent training. The content and sequence of the training programme shall be acceptable to the Authority.

TRAINING AEROPLANES

- 25 An adequate fleet of training aeroplanes appropriate to the courses of training shall be provided. Each aeroplane shall be fitted with duplicated primary flight controls for use by the instructor and the student. Swing-over flight controls shall not be acceptable. The fleet shall include, as appropriate to the courses of training, aeroplane(s) suitable for demonstrating stalling and spin avoidance and aeroplane(s) suitably equipped to simulate instrument meteorological conditions and suitably equipped for the instrument flight training required.
- 26 Only aeroplanes approved by the Authority for training purposes shall be used.

AERODROMES

- 27 The base aerodrome, and any alternative base aerodrome, at which flying training is being conducted shall have at least the following facilities:
- (a) at least one runway or take-off area that allows training aeroplanes to make a normal take-off or landing at the maximum take-off or maximum landing mass authorised, as appropriate,
 - (i) under calm wind (not more than four knots) conditions and temperatures equal to the mean high temperature for the hottest month of the year in the operating area,
 - (ii) clearing all obstacles in the take-off flight path by at least 50 feet,

- (iii) with the engine operation and the landing gear and flap operation (if applicable) recommended by the manufacturer, and
- (iv) with a smooth transition from lift-off to the best rate of climb speed without exceptional piloting skills or techniques;
- (b) a wind direction indicator that is visible at ground level from the ends of each runway;
- (c) adequate runway electrical lighting if used for night training; and
- (d) an air traffic control service except where, with the approval of the Authority, the training requirements may be satisfied safely by another means of air/ground communications.

FLIGHT OPERATIONS ACCOMMODATION

28 The following accommodation shall be available:

- (a) An operations room with facilities to control flying operations.
- (b) A flight planning room with the following facilities:
 - appropriate current maps and charts
 - current AIS information
 - current meteorological information
 - communications to ATC and the operations room
 - maps showing standard cross-country routes
 - maps showing current prohibited, danger and restricted areas
 - any other flight safety related material.
- (c) Adequate briefing rooms/cubicles of sufficient size and number.
- (d) Suitable offices for the supervisory staff and room(s) to allow flying instructors to write reports on students, complete records, etc.
- (e) Furnished crew-room(s) for instructors and students.

THEORETICAL KNOWLEDGE INSTRUCTION FACILITIES

29 The following facilities for theoretical knowledge instruction shall be available:

- (a) Adequate classroom accommodation for the current student population.
- (b) Suitable demonstration equipment to support the theoretical knowledge instruction.
- (c) An R/T training and testing facility.
- (d) A reference library containing publications giving coverage of the syllabus.
- (e) Offices for the instructional staff.

REQUIREMENTS FOR ENTRY TO TRAINING

30 A student accepted for training shall possess the appropriate medical certificate for the licence required and shall meet the entrance requirements set by the FTO, as approved by the Authority.

TRAINING MANUAL AND OPERATIONS MANUAL

- 31 A FTO shall prepare and maintain a Training Manual and an Operations Manual containing information and instructions to enable staff to perform their duties and to give guidance to students on how to comply with course requirements. A FTO shall make available to staff and, where appropriate, to students the information contained in the Training Manual, the Operations Manual and the FTO's approval documentation. The amendment procedure shall be stated and amendments properly controlled.
- 32 The Training Manuals shall state the standards, objectives and training goals for each phase of training that the students are required to comply with and shall include the following:

Part 1 – The Training Plan

Part 2 – Briefing and Air Exercises

Part 3 – Synthetic Flight Training

Part 4 – Theoretical Knowledge Instruction

For further guidance see IEM No. 3 to ANTR-FCL 1.055.

- 33 The Operations Manual shall provide relevant information to particular groups of staff, e.g. FIs, synthetic flight instructors, ground instructors, operations and maintenance staff, etc., and shall include the following:

(a) General

(b) Technical

(c) Route

(d) Staff Training

For further guidance see IEM No. 3 to ANTR-FCL 1.055.

Appendix 1b to ANTR-FCL 1.055
Partial Training outside of Bahrain
(See ANTR-FCL 1.055(a)(1))

FTOs partly training outside of Bahrain may perform training according to the following:

- (a) Provided the requirements set out in this Appendix are met, approval may be granted. Provided that the approving Authority considers proper supervision to be possible, training will be confined to all or part of the ATP integrated course (see Appendix 1 to ANTR-FCL 1.300).
- (b) The navigation progress test in Phase 3 of the ATP integrated course may be conducted by a locally based flight instructor not connected with the applicant's training, provided that the instructor holds an ANTR-FCL licence containing FI(A) or CRI(A) privileges, as appropriate. On completion of the required training, the skill test for a CPL(A) in Phase 4 of the ATP course may be taken with a locally based Flight Examiner (Aeroplane) (FE(A)), provided that the examiner is authorised in accordance with ANTR-FCL Subpart I and completely independent from the relevant FTO except with the express consent in writing of the Authority.
- (c) The skill test for the instrument rating is to be taken at the discretion of the Authority. A FTO providing approved training for the instrument rating outside of Bahrain will need to make arrangements for the approved course to include acclimatisation flying at the discretion of the Authority prior to any student taking the instrument rating skill test.
- (d) Training for ATPL theoretical knowledge may be given at an FTO conducting approved training outside of Bahrain. The theoretical knowledge examinations for licence or rating issue shall be conducted by the Authority (see ANTR-FCL 1.485). The arrangements for testing (see ANTR-FCL 1.030) shall be carefully considered in regard to their training outside of Bahrain.
- (e) Instruction may only be given under the direct control of a CFI(A) or nominated deputy holding either a FCL issued by the contracting State and validated by BCAA or ANTR-FCL licence and instructor rating as set out in paragraph 16 of Appendix 1a to ANTR-FCL 1.055, who is to be present when training is given in the other State.

Appendix 1c to ANTR-FCL 1.055**Additional Requirements for training in FTOs whose principal place of business and registered offices are located outside of Bahrain**

(See ANTR-FCL 1.055(a)(2))

(See Appendix 1 to ANTR-FCL 1.300)

APPROVAL PROCESS

- 1 FTOs whose principal place of business and registered office are located outside of Bahrain wishing to train for ANTR-FCL licences and associated ratings shall apply for approval of such courses to the Authority. Approval will be subject to the following:
 - (a) The FTO shall meet the requirements of Appendix 1a to ANTR-FCL 1.055 and any additional requirements of this Appendix; and
 - (b) The Authority considers it possible to discharge its regulatory responsibilities for the approval process and an adequate level of supervision as required by the Authority procedures. The cost and process of approval and supervision shall not put undue burden on the resources of the Authority; and
 - (c) The Authority can ensure adequate jurisdiction over the FTO during the approval process and the conduct of subsequent training courses; and
 - (d) The State in which the FTO has its principal place of business and registered office may assist the Authority in the approval process and provide oversight of training courses subject to an arrangement being agreed between the two States.
- 2 Subject to satisfactory inspection, the approval of the FTO will be granted for a period of one year, revalidation of the approval may be granted for further periods of one year.

JURISDICTION

- 3 In the context of approval of FTOs located outside of Bahrain, the term 'adequate jurisdiction' shall mean that the Authority shall be able to:
 - (a) conduct initial and routine inspections of the FTO located in that State to ensure compliance with the requirements of FCL; and
 - (b) conduct flight tests and other standardisation checks as deemed necessary by the approving Authority; and
 - (c) discharge its legal responsibilities for the grant, variation, suspension or revocation of approvals in accordance with the applicable law of Bahrain.

The Authority may, subject to an arrangement with the State in which the FTO has its principal place of business and registered office, delegate responsibility for the provisions of paragraph 3(a) above to that State.

FTOs TRAINING FOR PROFESSIONAL LICENCES AND RATINGS

- 4 Provided that the requirements set out in this Appendix are met, approval may be granted if the Authority considers adequate supervision in accordance with Authority procedures to be possible.
- 5 Unless specifically approved by the Authority, the skill test for the Instrument Rating shall be conducted in Bahrain. FTOs shall make arrangements for the approved course to include acclimatisation flying within Bahrain at the discretion of the Authority prior to any student taking the instrument rating skill test with an examiner authorised by the Authority.
- 6 The navigation progress test in Phase 3 of the ATP(A) integrated course may be conducted by a locally-based FI(A) approved by the Authority and not connected with the applicant's training, provided that the instructor holds either a FCL issued by the contracting State and validated by BCAA or ANTR-FCL licence containing

FI(A) privileges, as appropriate. On completion of the required training, the skill test for the CPL(A) in Phase 4 of the ATP integrated course may be taken with a locally-based FE(A) designated and authorised by the Authority, provided that the examiner is authorised in accordance with ANTR-FCL Subpart I and completely independent from the FTO except with the expressed consent in writing of the approving Authority.

FTOs TRAINING FOR THE PPL(A) AND ASSOCIATED RATINGS ONLY

- 7 Provided that the requirements of this Appendix are met, approval to conduct courses for the ANTR-FCL PPL(A) and associated ratings may be granted if the Authority considers adequate supervision in accordance with Authority procedures to be possible.
- 8 Training aeroplanes, airfields and navigation training routes used for PPL training shall be acceptable to the Authority.
- 9 On completion of the required training the PPL(A) skill test may be taken by a locally-based FE(A) authorised by the Authority provided that the examiner has taken no part in the student's flight instruction.
- 10 The Training and Operations Manuals required by Appendix 1a to ANTR-FCL 1.055 may, for FTOs conducting training for the PPL(A) and associated ratings only, be combined and contain only those references relevant to training for the PPL(A).

THEORETICAL KNOWLEDGE

- 11 Training for theoretical knowledge may be given at a FTO conducting approved training outside of Bahrain. The theoretical knowledge examinations for licence or rating issue shall be conducted by the Authority (see ANTR-FCL 1.485).

Appendix 2 to ANTR-FCL 1.055**Approved Training Organisations for the issue of type ratings only to pilot licence holders or associated instructor ratings/authorisations for TRI, SFI or MCCI**

(See ANTR-FCL 1.055)

(See also ANTR-FCL 1.261(c) & (d) for approval of courses)

(See IEM No. 1 to ANTR-FCL 1.055)

(See IEM No. 2 to ANTR-FCL 1.055)

(See IEM No. 3 to ANTR-FCL 1.055)

(See AMC FCL 1.261(c)(2))

INTRODUCTION

- 1 An Approved Training Organisation (ATO) is an organisation staffed, equipped and operated in a suitable environment offering type rating training, and/or MCC-training, and/or synthetic flight instruction and, if applicable, theoretical instruction for specific training programmes.
- 2 A ATO wishing to offer approved training to meet ANTR-FCL requirements shall obtain the approval of the Authority. No such approval will be granted by the Authority unless:
 - (a) the Authority can enforce the ANTR-FCL requirements;
 - (b) the ATO meets all requirements of ANTR-FCL.

This Appendix gives the requirements for the issue, revalidation and variation of the approval of a ATO.

OBTAINING APPROVAL

- 3 A ATO seeking approval shall provide to the Authority operations and training manuals, including quality systems, and descriptions of its training schemes as required by paragraph 17 and 25 through 27. After consideration of the application, the ATO will be inspected to ensure that it meets the requirements set out in this Appendix. Subject to satisfactory inspection, approval of the ATO will initially be granted for a period of one year, revalidation of the approval may be granted for further periods of up to three years (see AMC FCL 1.055 and IEM FCL No. 1 to ANTR-FCL 1.055). No Authority is obliged to grant an approval for an ATO outside of Bahrain if the personnel resources are not available or the cost of processing the application for approval and inspections puts undue burden on the Authority.
- 4 All training courses shall be approved (see IEM FCL 1.055).
- 5 Approval will be varied, suspended or revoked by the Authority if any of the approval requirements or standards cease to be maintained to the minimum approved level.
- 6 If an ATO wishes to make changes to an approved course or to its operations or training manual the approval of the Authority shall be obtained before the changes are implemented. ATOs need not advise the Authority of minor changes in day-to-day operations. Where any doubt exists as to whether a proposed change is minor, the Authority shall be consulted.
- 7 An ATO may make training arrangements with other training organisations or make use of alternative base aerodromes as part of its overall training organisation, subject to the approval of the Authority.

FINANCIAL RESOURCES

- 8 (a) An ATO shall satisfy the Authority that sufficient funding is available to conduct training to the approved standards (see IEM No. 2 to ANTR-FCL 1.055).

- (b) An ATO shall nominate a person acceptable to the Authority who shall satisfy the Authority that sufficient funding is available to conduct training to the approved standard. Such person shall be known as the accountable manager.

INSPECTION

- 9 In addition to the initial inspection, the Authority will make certain inspections to determine the ATO's compliance with ANTRs and the approval.
- 10 During such visits, access shall be given by the ATO to training records, authorisation sheets, technical logs, lectures, study notes and briefings and any other relevant material. A copy of any report on a visit to an ATO will be made available to that ATO.

MANAGEMENT AND STAFFING

- 11 The management structure shall ensure supervision of all grades of staff by persons having the experience and qualities necessary to ensure the maintenance of high standards. Details of the management structure, indicating individual responsibilities, shall be included in the ATO's Operations Manual.
- 12 A Head of Training (HT) acceptable to the Authority shall be nominated. The HT's responsibilities shall include ensuring that the ATO is in compliance with ANTR-FCL requirements. This person is ultimately directly responsible to the Authority.
- 13 The ATO shall have adequate personnel necessary to accomplish the training objectives. The duties of each instructor shall be identified and documented.

TYPE RATING INSTRUCTOR

- 14 Type Rating Instructors (TRI) shall hold:
- (a) a professional pilot licence and rating(s) related to the flying training courses they are appointed to conduct;
 - (b) a type rating instructor rating for the aeroplanes used on the course(s); or
 - (c) an authorisation from the Authority to conduct specific training in an ATO (see ANTR-FCL 1.300).

INSTRUCTORS FOR SYNTHETIC FLIGHT TRAINING

- 15 For flight training duties on a FTD, instructors shall have instructional experience appropriate to the training courses they are appointed to conduct and hold or have held 3 years prior to the first appointment, a professional pilot licence, except for instructors having an authorisation according to item 3 and/or 4 of Appendix 1 to ANTR-FCL 1.005. For multi-pilot type rating and/or MCC flight training on a flight simulator and/or FTD and/or FNPT II, instructors shall hold a TRI rating or a SFI authorisation.

THEORETICAL KNOWLEDGE INSTRUCTION

- 16 The theoretical knowledge instruction shall be conducted by an authorised instructor holding the appropriate type/class rating or any instructor having appropriate experience in aviation and knowledge of the aircraft concerned, e.g. flight engineer, maintenance engineer, flight operations officer.

TRAINING STANDARDS

- 17 The ATO shall establish a system to ensure that the training centre operations and training are run efficiently and effectively. The quality system shall determine the effectiveness of ATO policies, procedures, and training.

RECORDS

- 18 An ATO shall maintain the following records and retain for a period of at least 5 years, using appropriate administrative staff:
- (a) pilot trainee's assessments before and during the course;
 - (b) details of theoretical knowledge, flying, and simulated flight training given to individual trainees; and
 - (c) personal information, (expiry dates of medical certificates, ratings, etc.) related to ATO's personnel.
- 19 The format of the trainee's training records shall be specified in the Training Manual.
- 20 The ATO shall submit training records and reports as required by the Authority.

TRAINING PROGRAMME

- 21 A training programme shall be developed for each type of course offered. This programme shall include a breakdown of flying and ground training in either a week-by-week or phase presentation, a list of standard exercises and a syllabus summary. In particular, synthetic flight training and theoretical knowledge instruction shall be phased in such a manner as to ensure that trainees shall be able to apply to flying exercises the knowledge gained on the ground. Arrangements should be made so that problems encountered in instruction can be resolved during subsequent flight training.

TRAINING AEROPLANES

- 22 Each aeroplane must be equipped as required in the training specifications concerning the approved course in which it is used.

FACILITIES

- 23 Suitable training facilities shall be provided.

REQUIREMENTS FOR ENTRY TO TRAINING

- 24 The ATOs shall be responsible for ensuring that trainees meet at least the pre-requisite conditions for type rating training as set out in ANTR-FCL 1.250.

TRAINING MANUAL AND OPERATIONS MANUAL

- 25 An ATO shall provide and maintain a Training Manual and an Operations Manual containing information and instructions to enable staff to perform their duties and to give guidance to trainees on how to comply with course requirements. An ATO shall make available to staff and, where appropriate, to trainees the information contained in the Training Manual, the Operations Manual and the ATO's approval documentation. The amendment procedure shall be stated and amendments properly controlled.

- 26 The Training Manual shall state the standards, objectives and training goal for each phase of training that the trainees are required to comply with, including stating the entry requirements for each course, as applicable. It shall include the following:

Part 1 – The Training Plan

Part 2 – Briefing and Air Exercises

Part 3 – Synthetic Flight Training

Part 4 – Theoretical Knowledge Instruction

For further guidance see IEM No. 3 to ANTR-FCL 1.055.

- 27 The Operations Manual shall provide relevant information to particular groups of staff, e.g. TRIs, synthetic flight instructors, ground instructors, operations and maintenance staff, etc. and shall contain the following:

- (a) General
- (b) Technical
- (c) Route
- (d) Staff Training

For further guidance see IEM No. 3 to ANTR-FCL 1.055.

Appendix 3 to ANTR-FCL 1.055**Approval of Modular Theoretical Knowledge Distance Learning Courses**

(See Appendix 1 to ANTR-FCL 1.130 & 1.135)

(See Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(4))

(See Appendix 1 to ANTR-FCL 1.205)

(See Appendix 1 to ANTR-FCL 1.251)

(See Appendix 1 to ANTR-FCL 1.285)

(See AMC FCL 1.055(a))

TRAINING ORGANISATION

1. Classroom accommodation shall be available either at the principal place of registration of the training organisation or, subject to the approval of the Authority, within a suitable facility elsewhere. In either case, both classrooms and all associated teaching facilities shall conform to the requirements for organisation approval. Before training commences, approval will be obtained from the Authority to conduct a modular course programme using distance learning.
2. The Head of Training or CGI of an FTO undertaking distance learning shall comply with the requirements of Appendix 1a to ANTR-FCL 1.055. All theoretical knowledge instructors shall meet the requirements of ANTR-FCL and have appropriate qualification or relevant experience which is satisfactory to the Authority.
3. FTOs delivering only theoretical knowledge training will be subject to the same approval and audit requirements as are applied to FTOs in accordance with Appendix 1a to ANTR-FCL 1.055.
4. It is open to the approved FTO to provide some or all of these courses either on a full time attendance basis, or by distance learning. An element of classroom instruction shall be included in all subjects of modular distance learning courses. The amount of time spent in actual classroom instruction shall be not less than 10% of the total duration of the course.

INSTRUCTORS

5. All instructors shall be fully conversant in the requirements of the distance learning programme, including the quality assurance system. Their initial training shall take place at the principal place of registration; all subsequent training shall be to the same standard as for resident instructors. Wherever instructors are located, the Quality System shall provide a satisfactory means of monitoring individual performance and adhere to approved training programmes.

TRAINING COURSES

6. Distance Learning will only be approved as a component of a course of theoretical knowledge instruction for the following courses:
 - (a) modular courses of theoretical knowledge instruction for the PPL(A), CPL(A), IR(A) and ATPL(A).
 - (b) courses of additional theoretical knowledge for a class or type rating for a single pilot high performance aeroplane.

Appendix 1 to ANTR-FCL 1.075
Specifications for flight crew licences

GENERAL

- 1 A valid licence including a valid medical certificate has always to be carried by the pilot when exercising the privileges of the licence.
- 2 A document containing a photo shall be carried for purposes of identification of the holder of the licence.
- 3 Any medical endorsements (e.g. use of spectacles, etc.) will be entered on the medical certificate (see ANTR-FCL 3 and IEM FCL 3.100) and at the discretion of the Authority in the licence.

SUBPART B**STUDENT PILOT (Aeroplane)****ANTR-FCL 1.085 Requirements**

- (a) A student pilot shall meet requirements specified by the Authority. In prescribing such requirements the Authority shall ensure that the privileges granted would not permit student pilots to constitute a hazard to air navigation.
- (b) A student pilot shall not fly solo unless authorised by a flight instructor.
- (f) A student pilot shall not fly solo in an aircraft on an international flight unless by special or general arrangement between the Contracting states concerned.

ANTR-FCL 1.090 Minimum age

A student pilot shall be at least 16 years of age before the first solo flight.

ANTR-FCL 1.095 Medical fitness

A student pilot shall not fly solo unless that student pilot holds a valid Class 1 or Class 2 medical certificate.

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SUBPART C**PRIVATE PILOT LICENCE (Aeroplane) – PPL(A)****ANTR-FCL 1.100 Minimum age**

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

ANTR-FCL 1.105 Medical fitness

An applicant for a PPL(A) shall hold a valid Class 1 or Class 2 medical certificate. In order to exercise the privileges of a PPL(A) a valid Class 1 or Class 2 medical certificate shall be held.

ANTR-FCL 1.110 Privileges and conditions

- (a) *Privileges.* Subject to any other conditions specified in ANTRs, the privileges of the holder of a PPL(A) are to act, but not for remuneration, as pilot-in-command or co-pilot of any aeroplane engaged in non-revenue flights.
- (b) *Conditions*
- (1) An applicant for a PPL(A) who has complied with the conditions specified in ANTR-FCL 1.100, 1.105, 1.120, 1.125(a) and (b), 1.130, 1.135 and if applicable, 1.010(a)(4) shall have fulfilled the requirements for the issue of a PPL(A) including at least the class/type rating for the aeroplane used in the skill test.
 - (2) If the privileges of the licence are to be exercised at night, the holder shall have complied with ANTR-FCL 1.125(c).

ANTR-FCL 1.120 Experience and crediting

(See Appendix 1 to ANTR-FCL 1.125)

[An applicant for a PPL(A) shall have completed not less than 40 hours of flight time, or 35 hours if completed during a course of approved training, as a pilot of aeroplanes appropriate to the class sought; a total of 5 hours of these flight time hours may have been completed in a BITD (see Appendix 1 to ANTR-FCL 1.125), a FNPT or a flight simulator.] Holders of pilot licences or equivalent privileges for helicopters, microlight helicopters, gyroplanes and microlights having fixed wings and moveable aerodynamic control surfaces acting in all three dimensions, gliders, self-sustaining gliders or self-launching gliders may be credited with 10% of their total flight time as pilot-in-command in such aircraft up to a maximum of 10 hours towards a PPL(A).

ANTR-FCL 1.125 Training course

(See Appendix 1, 2 & 3 to ANTR-FCL 1.125)
(See AMC FCL 1.125)

- (a) *General.* An applicant for a PPL(A) shall complete at an FTO or an accepted registered facility the required instruction in accordance with the syllabus as set out in Appendix 1 to ANTR-FCL 1.125. The requirements for registration are set out in Appendix 2 and 3 to ANTR-FCL 1.125.
- (b) *Flight instruction.* An applicant for a PPL(A) shall have completed on aeroplanes, having a certificate of airworthiness issued or accepted by the Authority, at least 25 hours dual instruction and at least 10 hours of supervised solo flight time, including at least five hours of solo cross-country flight time with at least one 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. When the applicant has been credited for pilot-in-

command flight time on other aircraft in accordance with ANTR-FCL 1.120, the requirement for dual instruction on aeroplanes may be reduced to not less than 20 hours.

- (c) *Night qualification.* If the privileges of the licence are to be exercised at night, at least five additional hours flight time in aeroplanes shall be completed at night comprising 3 hours of dual instruction including at least 1 hour of cross-country navigation and five solo take-offs and five solo full-stop landings. This qualification will be endorsed on the licence.

ANTR-FCL 1.130 Theoretical knowledge examination

(See Appendix 1 to ANTR-FCL 1.130 & 1.135)

The applicant for a PPL(A) shall have demonstrated to the Authority a level of theoretical knowledge appropriate to the privileges granted to the holder of a PPL(A). The requirements and procedures for the theoretical knowledge examinations are set out in Appendix 1 to ANTR-FCL 1.130 & 1.135.

ANTR-FCL 1.135 Skill

(See Appendix 1 to ANTR-FCL 1.130 & 1.135, and Appendix 2 to ANTR-FCL 1.135)

An applicant for a PPL(A) shall have demonstrated the ability to perform, as pilot-in-command of an aeroplane, the relevant procedures and manoeuvres described in Appendix 1 to ANTR-FCL 1.130 & 1.135 with a degree of competency appropriate to the privileges granted to the holder of a PPL(A). The skill test shall be taken within six months of completing the flight instruction (see ANTR-FCL 1.125(a)).

Appendix 1 to ANTR-FCL 1.125**PPL(A) training course – Summary**

(See ANTR-FCL 1.125)

(See AMC FCL 1.125)

- 1 The aim of the PPL(A) course is to train the student pilot to fly safely and efficiently under Visual Flight Rules.

THEORETICAL KNOWLEDGE INSTRUCTION

- 2 The theoretical knowledge syllabus of the PPL(A) course shall cover the following : Air Law, Aircraft General Knowledge, Flight Performance and Planning, Human Performance and Limitations, Meteorology, Navigation, Operational Procedures, Principles of Flight and Communication. Further details of all theoretical knowledge instruction are set out in AMC FCL 1.125.

FLIGHT INSTRUCTION

- 3 The PPL(A) flight instruction syllabus shall cover the following:
 - (a) pre-flight operations, including mass and balance determination, aeroplane inspection and servicing;
 - (b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;
 - (c) control of the aeroplane by external visual reference;
 - (d) flight at critically slow airspeeds, recognition of, and recovery from, incipient and full stalls;
 - (e) flight at critically high airspeeds, recognition of, and recovery from, spiral dives;
 - (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 (this training may be conducted by a FI(A) or STI(A));
 - (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.

BASIC INSTRUMENT TRAINING DEVICES (BITD)

- 4 A BITD may be used for flight training for:
 - flight by reference solely to instruments;
 - navigation using radio navigation aids (see exercises paragraph 3 above); and
 - basic instrument flight (see AMC FCL 1.125, exercises 18C and 19)

The use of the BITD is subjected to the following:

- the training shall 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) shall conduct the instruction.

TRAINING AEROPLANES

- 5 An adequate fleet of training aeroplane(s) appropriate to the courses of training, equipped and maintained to the relevant ANTR standards shall be provided. Training conducted on aeroplanes having a certificate of airworthiness issued or accepted by the Authority will enable an applicant to obtain a single-engine piston class rating for licence issue. Each aeroplane shall be fitted with duplicated primary flight controls for use by the instructor and the student: swing-over flight controls shall not be acceptable. The fleet should include, as appropriate to the courses of training, aeroplane(s) suitable for demonstrating stalling and spin avoidance and aeroplane(s) suitably equipped to simulate instrument meteorological conditions.

Aeroplanes used for training shall be approved by the Authority for training purposes.

AERODROMES

- 6 The base aerodrome, and any alternative base aerodrome, at which training is being conducted shall meet the following requirements.
- (a) Have at least one runway or take-off area that allows training aeroplane to make a normal take-off or landing at the maximum take-off or maximum landing mass authorised, as appropriate:
 - (i) under calm wind (not more than four knots) conditions and temperatures equal to the mean high temperature for the hottest month of the year in the operating area;
 - (ii) clearing all obstacles in the take-off flight path by at least 50 feet;
 - (iii) with the engine operation and the landing gear and flap operation (if applicable) recommended by the manufacturer; and
 - (iv) with a smooth transition from lift-off to the best rate of climb speed without exceptional piloting skills or techniques.
 - (b) Have a wind direction indicator that is visible at ground level from the ends of each runway.
 - (c) Have adequate runway lights if used for night training.
 - (d) Have available a means of air/ground communications acceptable to the Authority.

For all details see AMC FCL 1.125.

Appendix 2 to ANTR-FCL 1.125**Registration of facilities for PPL instruction only**

(See ANTR-FCL 1.125)

- 1 Application for acceptance of registration shall be made by the owner or responsible person in charge of the facility to the Authority which will provide the applicant with a registration form.
- 2 The application form for registration shall contain the information as shown in Appendix 3 to ANTR-FCL 1.125.
- 3 Upon receipt of the completed application form the Authority will register the facility to conduct PPL training within the State of Bahrain, without formal approval procedure, at the discretion of the Authority unless it has reason to doubt that the instruction can be carried out safely. The Authority will inform the applicant to this effect.
- 4 Any changes to the information entered on this form shall be communicated to the Authority.
- 5 The facility will remain registered until the Authority is informed by its operator that PPL training is to cease, or the Authority establishes that instruction is not being carried out safely and/or in compliance with FCL. In both these situations the registration of the facility will be revoked.

Appendix 3 to ANTR-FCL 1.125**Contents of an application form for registration of a facility for PPL instruction**

(See ANTR-FCL 1.125)

a	Name and address under which the facility operates, i.e. Club, School, Group;
b	Name of Owner(s);
c	Date of intended commencement of operations;
d	Name, address and telephone number of FI's and qualifications;
e	(i) Name and address of aerodrome, if applicable, from which training operations are to be conducted; (ii) Name of aerodrome operator;
f	List of aeroplanes to be used, including any means of synthetic flight instruction (if applicable) to be used by the facility, stating: Class of aeroplanes, Registration(s), Registered Owner(s), C of A Categories;
g	Type of training to be conducted by the facility: Theoretical instruction for PPL(A) Flight instruction for PPL(A) Night qualification Single-engine piston and TMG Class ratings others (specify) (see ANTR-FCL 1.017)
h	Details of aircraft insurance held;
i	State whether your facility intends to operate full or part time;
j	Any additional information the Authority may require;
k	A declaration below by the applicant that the information provided in (a) to (j) above is correct and that training will be conducted in accordance with FCL.
Date:	
Signature:	

Appendix 1 to ANTR-FCL 1.130 & 1.135**Theoretical knowledge examination and skill test for the PPL(A)**

(See ANTR-FCL 1.130 and 1.135)

(See Appendix 1 to ANTR-FCL 1.125)

(See IEM FCL 1.135)

THEORETICAL KNOWLEDGE EXAMINATION

- 1 The procedures for the conduct of the PPL examination shall be determined by the Authority. This examination shall be in written form and may be taken on one or more days at the discretion of the Authority and shall comprise nine Subjects as indicated below. An examination paper may cover several Subjects. There shall be a total of at least 120 questions. The times shall not exceed the following:

Subject	
Air Law and ATC Procedures	Subdivision of times is at the discretion of the Authority
Aircraft General Knowledge	
Flight Performance and Planning	
Human Performance and Limitations	
Meteorology	
Navigation	
Operational Procedures	
Principles of Flight	
Communications	
Total	

Communication practical classroom testing may be conducted at the discretion of the Authority.

- 2 The majority of the questions shall be multiple choice.
- 3 The examinations will be provided in the language(s) considered appropriate by the Authority.

The Authority shall inform applicants of the language(s) in which the examinations will be conducted.

- 4 A pass in a Subject will be awarded to an applicant achieving at least 75% of the marks allocated to that Subject. Marks shall only be awarded for correct answers.
- 5 Subject to any other conditions in FCL, an applicant shall be deemed to have successfully completed the theoretical examinations for the PPL(A) when awarded a pass in all parts within a period of 18 months. A pass in the theoretical knowledge examination will be accepted for the grant of the private pilot licence during the 24 months from the date of successfully completing the examinations.

SKILL TEST

- 6 An applicant for a skill test for the PPL(A) shall have received instruction on the same class/type of aeroplane to be used for the skill test. The applicant shall be permitted to choose to take the test on a single-engine aeroplane or, subject to the experience requirement in ANTR-FCL 1.255 or 1.260 of 70 hours flight time as pilot-in-command, on a multi-engine aeroplane. The aeroplane used for the skill test shall meet the requirements for training aeroplanes (see Appendix 1 to ANTR-FCL 1.125).

- 7 The administrative arrangements for confirming the applicant's suitability to take the test, including disclosure of the applicant's training record to the examiner, will be determined by the Authority.
- 8 An applicant shall pass sections 1 through 5 of the skill test, and section 6 if a multi-engine aeroplane is used. 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 take the failed section again. Failure in any section of the re-test, 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.
- 9 Further training may be required following any one failed skill test. Failure to achieve a pass in all sections of the test in two attempts will require further training as determined by the Authority. There is no limit to the number of skill tests that may be attempted.

CONDUCT OF THE TEST

- 10 The Authority will provide the FE with adequate safety advice to ensure that the test is conducted safely.
- 11 Should the applicant choose to terminate a skill test for reasons considered inadequate by the 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.
- 12 Any manoeuvre or procedure of the test may be repeated once by the applicant. The FE may stop the test at any stage if it is considered that the applicant's demonstration of flying skill requires a complete re-test.
- 13 An applicant shall be required to fly the aeroplane 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 Bahraini regulations.
- 14 The route to be flown for the navigation test shall be chosen by the FE. The route may end at the aerodrome of departure or at another 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 navigation section of the test, as set out in Appendix 2 to ANTR-FCL 1.135 shall be at least 60 minutes and may, as agreed between applicant and FE, be flown as a separate test.
- 15 An applicant shall indicate to the FE the checks and duties carried out, including the identification of radio facilities. Checks shall 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 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 aeroplane used.
- 16 The FE will take no part in the operation of the aeroplane except where intervention is necessary in the interests of safety or to avoid unacceptable delay to other traffic.

FLIGHT TEST TOLERANCE

- 17 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.

18 The following limits are for general guidance. The FE will 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

CONTENT OF THE SKILL TEST

19 The skill test contents and sections set out in Appendix 2 to ANTR-FCL 1.135 shall be used for the skill test for the issue of a PPL(A) on single-engine and multi-engine aeroplanes. The format and application form for the skill test may be determined by the Authority (see IEM FCL 1.135).

Appendix 2 to ANTR-FCL 1.135**Contents of the skill test for the issue of a PPL(A)**

(See ANTR-FCL 1.135)

(See IEM FCL 1.135)

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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 (SINGLE ENGINE ONLY)
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 (SINGLE-ENGINE ONLY)
b	* Simulated forced landing (SINGLE-ENGINE ONLY)
c	Simulated precautionary landing (SINGLE-ENGINE ONLY)
d	Simulated emergencies
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: <ul style="list-style-type: none"> i. Aeroplane systems including handling of auto pilot ii. Operation of pressurisation system iii. Use of de-icing and anti-icing system
g	Oral questions

* some of these items may be combined at the discretion of the Flight Examiner.

SUBPART D**COMMERCIAL PILOT LICENCE (Aeroplane) – CPL(A)****ANTR-FCL 1.140 Minimum age**

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

ANTR-FCL 1.145 Medical fitness

An applicant for a CPL(A) shall hold a valid Class 1 medical certificate. In order to exercise the privileges of the CPL(A) a valid Class 1 medical certificate shall be held.

ANTR-FCL 1.150 Privileges and conditions

- (a) *Privileges.* Subject to any other conditions specified in ANTRs, the privileges of the holder of a CPL(A) are to:
- (1) exercise all the privileges of the holder of a PPL(A);
 - (2) act as pilot-in-command or co-pilot of any aeroplane engaged in operations other than commercial air transportation;
 - (3) act as pilot-in-command in commercial air transportation of any single-pilot aeroplane;
 - (4) act as co-pilot in commercial air transportation.
- (b) *Conditions.* An applicant for a CPL(A) who has complied with the conditions specified in ANTR-FCL 1.140, 1.145, 1.155, 1.160, 1.170 and, if applicable, 1.010(a)(4) shall have fulfilled the requirements for the issue of a CPL(A) including at least the class/type rating for the aeroplane used on the skill test and, if an instrument rating course and test completed in accordance with ANTR-FCL 1 Subpart E are included, the instrument rating.

ANTR-FCL 1.155 Experience and crediting

(See ANTR-FCL 1.050(a)(3))

(See Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(1) through (4))

(See Appendix 1 and 2 to ANTR-FCL 1.170)

(See Appendix 1 to ANTR-FCL 1.205)

(See ANTR-FCL 1.510(a)(2))

(See AMC FCL 1.160 & 1.165(a)(1) through (3))

(a) *Integrated courses*

- (1) *Experience.* An applicant for a CPL(A) who has satisfactorily followed and completed an integrated flying training course shall have completed as a pilot of aeroplanes having a certificate of airworthiness issued or accepted by the Authority at least 150 hours of flight time.
- (2) *Crediting.* For details on crediting of flight time required in (a)(1), see paragraph 4 in Appendix 1 to ANTR-FCL 1.160 and 1.165(a)(1), paragraph 4 in Appendix 1 to ANTR-FCL 1.160 and 1.165(a)(2) or paragraph 4 in Appendix 1 to ANTR-FCL 1.160 and 1.165(a)(3).

- (b) *Modular course.*
- (1) *Experience.* An applicant for a CPL(A) who is not a graduate from an integrated flying training course shall have completed as a pilot on aeroplanes having a certificate of airworthiness issued or accepted by the Authority at least 200 hours of flight time.
 - (2) *Crediting.* From the 200 hours of flight time:
 - (i) 30 hours as pilot-in-command holding a PPL(H) on helicopters; or
 - (ii) 100 hours as pilot-in-command holding a CPL(H) on helicopters.
 - (iii) 30 hours as pilot-in-command in touring motor gliders or gliders.
- (c) *Flight time.* The applicant shall have completed in aeroplanes during the integrated course 150 hours of flight time (see also ANTR-FCL 1.050(a)(3)) and the modular course 200 hours of flight time including at least:
- (1) 100 hours as pilot-in-command, or 70 hours as pilot-in-command if completed during a course of integrated flying training as set out in Appendix 1 to ANTR-FCL 1.160 & 1.165(a) (1) through (3) and AMC FCL 1.160 & 1.165(a) (1), (2) and (3);
 - (2) 20 hours of VFR cross-country flight time as pilot-in-command, including a cross-country flight totalling at least 540 km (300 NM) in the course of which full-stop landings at two aerodromes different from the aerodromes of departure shall be made;
 - (3) 10 hours of instrument instruction time, of which not more than 5 hours is to be instrument ground time; and
 - (4) 5 hours of night flight time, as set out in ANTR-FCL 1.165(b).
- (d) An applicant holding a Course Completion Certificate for the Basic Instrument Flight module, as set out in Appendix 1 to ANTR-FCL 1.205, may be credited up to 10 hours towards the required instrument instruction time in the integrated or modular course.
- (e) MPL(A) holders. Before exercising the privileges of a CPL(A), the holder of a MPL(A) shall have completed in aeroplane:
- (1) 70 hours, either as pilot-in-command, or made up by not less than 10 hours as pilot-in-command and the necessary additional flight time as PICUS, of which 20 hours shall be of VFR cross-country flight time as pilot-in-command, or cross country time made up of not less than 10 hours as pilot-in-command and 10 hours as pilot-in-command under supervision. This shall include a VFR cross-country flight of not less than 540 km (300 NM) in the course of which full-stop landings at two different aerodromes shall be flown as pilot-in-command;
 - (2) the elements of the CPL(A) modular course as specified in Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(4) paragraphs 11(a) and 12; and
 - (3) the CPL(A) skill test on either a single-engine or a multi-engine aeroplane in accordance with Appendix 1 and 2 to ANTR-FCL 1.170.

ANTR-FCL 1.160 Theoretical knowledge

(See Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(1) through (4))

- (a) *Course.* An applicant for a CPL(A) shall have received theoretical knowledge instruction on an approved course at an approved flying training organisation (FTO). The course should be combined with a flying training course as set out in ANTR-FCL 1.165.
- (b) *Examination.* An applicant for a CPL(A) shall have demonstrated a level of knowledge appropriate to the privileges granted to the holder of a CPL(A) and shall meet the requirements set out in ANTR-FCL 1 (Aeroplane) Subpart J.
- (c) An applicant who has undertaken an integrated flying training course shall demonstrate at least the level of knowledge required by that course, as set out in the relevant Appendix 1 to ANTR-FCL 1.160 & 1.165(a) (1) through (3).

ANTR-FCL 1.165 Flight instruction

(See Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(1) through (4) and AMC FCL 1.160 & 1.165(a)(1) through (4))

- (a) *Course.* An applicant for a CPL(A) shall have completed an approved course of integrated or modular flying training on aeroplanes having a certificate of airworthiness issued or accepted the Authority at an approved flying training organisation. The course should be combined with a theoretical knowledge training course. For details of the approved courses see as follows:
 - (1) ATP(A) integrated course – Appendix 1 ANTR-FCL 1.160 and 1.165(a)(1) and AMC FCL 1.160 & 1.165(a)(1);
 - (2) CPL(A)/IR integrated course – Appendix 1 to ANTR-FCL 1.160 and 1.165(a)(2) and AMC FCL 1.160 & 1.165(a)(2);
 - (3) CPL(A) integrated course – Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(3) and AMC FCL 1.160 & 1.165(a)(3); and
 - (4) CPL(A) modular course – Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(4) and AMC FCL 1.160 & 1.165(a)(4).
- (b) *Night training.* The applicant shall have completed at least 5 hours flight time in aeroplanes at night comprising at least 3 hours of dual instruction, including at least 1 hour of cross-country navigation, and 5 solo take-offs and 5 full-stop landings.

ANTR-FCL 1.170 Skill

(See Appendices 1 and 2 to ANTR-FCL 1.170)

(See Appendix 1 to ANTR-FCL 1.160 and 1.165(a)(1) through (4))

An applicant for a CPL(A) shall have demonstrated the ability to perform, as pilot-in-command of an aeroplane, the relevant procedures and manoeuvres described in Appendices 1 and 2 to ANTR-FCL 1.170 with a degree of competency appropriate to the privileges granted to the holder of a CPL(A). An applicant shall take the skill test as required by the relevant Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(1) through (4).

Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(1)**ATP(A) integrated course**

(See ANTR-FCL 1.160, 1.165 & 1.170)

(See Appendix 1 and 2 to ANTR-FCL 1.170)

(See Appendix 1 and 2 to ANTR-FCL 1.210)

(See AMC FCL 1.160 & 1.165(a)(1))

(See Appendix 1 to ANTR-FCL 1.470)

(See IEM FCL 1.170)

- 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, under the supervision of the Head of Training of an approved flying training organisation (FTO), complete all the instructional stages in one continuous approved course of training as arranged by that FTO.
- 3 The course shall last for between 12 and 36 months. Special arrangements may be made with the approval of the Authority to extend the course beyond 36 months where additional flying training or ground instruction is provided by the FTO.
- 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. An ab-initio entrant shall meet the student pilot requirements of ANTR-FCL Subpart B. 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 (ANTR-FCL 1.165(a)(1) and Appendix 1 to ANTR-FCL 1.165(a)(1), paragraph 13) up to a credit of 40 hours flying experience or 45 hours if an aeroplane night flying qualification has been obtained, of which up to 20 hours may be dual instruction. This credit for the hours flown shall be at the discretion of the FTO and 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 FTO may designate certain dual exercises (see AMC FCL 1.160 & 1.165(a)(1), phase 2 & 3) to be flown in a helicopter or a TMG up to a maximum of 20 hours.
- 5 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, if applicable, an instrument rating.
- 6 Any applicant wishing to transfer to another FTO during a course of training shall apply to the Authority for a formal assessment of the further hours of training required at another FTO.
- 7 The FTO shall ensure that before being admitted to the course the applicant has sufficient knowledge of Mathematics, Physics and English, to facilitate an understanding of the theoretical knowledge instruction content of the course. The required level of English shall be in accordance with Appendix 1 to ANTR-FCL 1.200.
- 8 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.

- 9 The successful completion of the theoretical knowledge examination(s) at paragraph 12 and of the skill test(s) at paragraph 14 fulfil the theoretical knowledge and skill requirements for the issue of a CPL(A) including a class or type rating for the aeroplane(s) used in the test(s) and a multi-engine instrument rating (A).

THEORETICAL KNOWLEDGE

- 10 The theoretical knowledge syllabus is set out in Appendix 1 to ANTR-FCL 1.470. An approved ATP(A) theoretical knowledge course shall comprise at least 750 hours (1 hour = 60 minutes instruction) of instruction which 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 shall be divided in such a way that in each subject the minimum hours are:

<i>Subject</i>	<i>hours</i>
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 FTO.

- 11 MCC course shall comprise at least 25 hours of theoretical knowledge instruction and exercises.

THEORETICAL KNOWLEDGE EXAMINATION

- 12 An applicant shall demonstrate the level of knowledge appropriate to the privileges of the holder of an ATPL(A), in accordance with the requirements in ANTR-FCL 1 (Aeroplane) Subpart J.

FLYING TRAINING

- 13 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 atleast:
- 95 hours of dual instruction of which up to 55 hours may be instrument ground time;
 - 70 hours as pilot-in-command including VFR flight and instrument flight time as student pilot-in-command (SPIC). (SPIC time shall be credited as pilot-in-command time, unless the flight instructor had to influence or control any part of the flight. A ground de-briefing by the flight instructor does not affect the crediting as pilot-in-command time);

- (c) 50 hours of cross-country flight as pilot-in-command including a VFR cross-country flight totalling 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 in aeroplanes shall be completed at night comprising 3 hours of dual instruction including 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:
 - (i) 50 hours of instrument flight instruction of which up to 25 hours may be instrument ground time in a FNPT I, or 40 hours if the instrument ground training is conducted in an FNPT II or flight simulator. With the agreement of the approving Authority not more than 10 hours of FNPT II or flight simulator instrument ground time may be conducted in a FNPT I.
 - (ii) 20 hours as SPIC; and
 - (iii) 15 hours multi-crew co-operation, for which a flight simulator or FNPT II may be used.

See AMC-ANTR-FCL 1.160 & 1.165(a)(1) for the flight instruction syllabus.

SKILL TESTS

- 14 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 in accordance with Appendix 1 and 2 to ANTR-FCL 1.170 and the instrument rating skill test on a multi-engine aeroplane in accordance with Appendix 1 and 2 to ANTR-FCL 1.210 and such other tests as are required by ANTR-FCL 1.262(c).

Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(2)**CPL(A)/IR integrated course**

(See ANTR-FCL 1.160, 1.165 & 1.170)

(See Appendix 1 and 2 to ANTR-FCL 1.170)

(See Appendix 1 and 2 to ANTR-FCL 1.210)

(See AMC FCL 1.160 & 1.165(a)(2))

(See Appendix 1 to ANTR-FCL 1.470)

(See IEM FCL 1.170)

- 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, under the supervision of the Head of Training of an approved flying training organisation (FTO), complete all the instructional stages in one continuous approved course of training as arranged by that FTO.
- 3 The course shall last for between 9 and 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. An ab-initio entrant shall meet the student pilot requirements of ANTR FCL Subpart B. 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 (ANTR-FCL 1.165(a)(2) and Appendix 1 to ANTR-FCL 1.165(a)(2), paragraph 12) up to a credit of 40 hours flying experience or 45 hours if an aeroplane night flying qualification has been obtained, of which up to 20 hours may be dual instruction. This credit for the hours flown shall be at the discretion of the FTO and 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 FTO may designate certain dual exercises (see AMC FCL 1.160 & 1.165(a)(2), phase 2 & 3) to be flown in a helicopter or a TMG up to a maximum of 20 hours.
- 5 An applicant failing or unable to complete the entire CPL(A)/IR course may apply to the Authority for the theoretical knowledge examination and skill test for a lower licence and, if applicable, an instrument rating.
- 6 Any applicant wishing to transfer to another FTO during a course of training shall apply to the Authority for a formal assessment of the further hours of training required at another FTO.
- 7 The FTO shall ensure that before being admitted to the course the applicant has sufficient knowledge of Mathematics, Physics and English to facilitate an understanding of the theoretical knowledge instruction content of the course. The required level of English shall be in accordance with Appendix 1 to ANTR-FCL 1.200.
- 8 The course shall comprise:
 - (a) theoretical knowledge instruction to CPL(A) and IR knowledge level; and
 - (b) visual and instrument flying training.
- 9 The successful completion of the theoretical knowledge examination(s) at paragraph 11 and of the skill test at paragraph 13 fulfil the theoretical knowledge and skill

requirements for the issue of a CPL(A) including a class or type rating for the aeroplane(s) used in the test(s) and either a multi-engine or a single engine instrumentrating (A).

THEORETICAL KNOWLEDGE

- 10 The theoretical knowledge syllabus is set out in Appendix 1 to ANTR-FCL 1.470. An approved CPL(A)/IR theoretical knowledge course shall comprise at least 500 hours of instruction which 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 (1 hour = 60 minutes instruction) of instructions shall be divided in such a way that in each subject the minimum hours are:

<i>Subject</i>	<i>hours</i>
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 sub-divisions of hours may be agreed between the Authority and the FTO.

THEORETICAL KNOWLEDGE EXAMINATION

- 11 An applicant shall demonstrate a level of knowledge appropriate to the privileges of the holder of a CPL(A) and an instrument rating, in accordance with the requirements in ANTR- FCL 1 (Aeroplane) Subpart J.

FLYING TRAINING

- 12 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 atleast:
- 80 hours of dual instruction of which up to 40 hours may be instrument ground time;
 - 70 hours as pilot-in-command including VFR flight and instrument flight time as student pilot-in-command (SPIC). (SPIC time shall be credited as pilot-in- command time, unless the flight instructor had to influence or control any part of the flight. A ground de-briefing by the flight instructor does not affect the crediting as pilot-in-command time);
 - 50 hours of cross-country flight as pilot-in-command including a VFR cross- country flight totalling 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 in aeroplanes shall be completed at night comprising at least 3 hours of dual instruction including at least one 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:
 - (i) 50 hours of instrument flight instruction of which up to 25 hours may be instrument ground time in a FNPT I or 40 hours if all the instrument ground training is conducted in an FNPT II or flight simulator. With the agreement of the approving Authority not more than 10 hours of FNPT II or flight simulator instrument ground time may be conducted in a FNPT I.
 - (ii) 20 hours as SPIC.

See AMC FCL 1.160 & 1.165(a)(2) for the flight instruction syllabus.

SKILL TESTS

- 13 On completion of the related flying training the applicant shall take the CPL(A) skill test on either a multi-engine aeroplane or a single-engine aeroplane in accordance with Appendix 1 and 2 to ANTR-FCL 1.170 and the instrument rating skill test on either a single-engine or a multi-engine aeroplane in accordance with Appendix 1 and 2 to ANTR-FCL 1.210.

Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(3)**CPL(A) integrated course**

(See ANTR-FCL 1.160, 1.165 & 1.170)

(See Appendix 1 and 2 to ANTR-FCL 1.170)

(See AMC FCL 1.160 & 1.165(a)(3))

(See Appendix 1 to ANTR-FCL 1.470)

(See IEM-ANTR-FCL 1.170)

- 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), and any further aerial work training that the applicant wishes to receive, excluding flight instructor training and instrument rating instruction.
- 2 An applicant wishing to undertake a CPL(A) integrated course shall, under the supervision of the Head of Training of an approved flying training organisation (FTO), complete all the instructional stages in one continuous approved course of training as arranged by that FTO.
- 3 The course shall last for between 9 and 24 months.
- 4 An applicant may be admitted to training either as an ab-initio entrant, or as the holder of a PPL(A) or PPL(H) issued in accordance with ICAO Annex 1. An ab-initio entrant shall meet the student pilot requirements of ANTR FCL Subpart B. 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 (ANTR-FCL 1.165(a)(3) and Appendix 1 to ANTR-FCL 1.165(a)(3), paragraph 12) up to a credit of 40 hours flying experience, or 45 hours if an aeroplane night flying qualification has been obtained, of which up to 20 hours may be dual instruction. This credit for the hours flown shall be at the discretion of the FTO and 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 FTO may designate certain dual exercises (see AMC FCL 1.160 & 1.165(a)(3), phase 2 & 3) to be flown in a helicopter or a TMG up to a maximum of 20 hours.
- 5 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.
- 6 Any applicant wishing to transfer to another FTO during a course of training shall apply to the Authority for a formal assessment of the further hours of training required at another FTO.
- 7 The FTO shall ensure that before being admitted to the course the applicant has sufficient knowledge of Mathematics and Physics to facilitate an understanding of the theoretical knowledge instruction content of the course.
- 8 The course shall comprise:
 - (a) theoretical knowledge instruction to CPL(A) knowledge level; and
 - (b) visual and instrument flying training.
- 9 The successful completion of the theoretical knowledge examinations at paragraph 11 and of the skill test(s) at paragraph 13 fulfil the knowledge and skill requirements for the issue of a CPL(A) including a class or type rating for the aeroplane(s) used in the test(s).

THEORETICAL KNOWLEDGE

- 10 The theoretical knowledge syllabus for the CPL(A) is set out in Appendix 1 to ANTR-FCL 1.470. An approved CPL(A) theoretical knowledge course shall comprise at least 300 hours (1 hour = 60 minutes instruction) of instruction (or 200 hours if the applicant is the holder of a PPL) which 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.

THEORETICAL KNOWLEDGE EXAMINATION

- 11 An applicant shall demonstrate a level of knowledge appropriate to the privileges of the holder of a CPL(A) in accordance with the requirements in ANTR FCL 1 (Aeroplane) Subpart J.

FLYING TRAINING

- 12 The flying training not including the 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 maybe instrument ground time. Within the 150 hours total, 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 totalling at least 540 km (300 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 aeroplanes shall be completed at night comprising 3 hours of dual instruction including at least 1 hour of cross-country navigation and 5 solo take-offs and 5 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 II or flight simulator.
 - (f) 5 hours to be carried out in an aeroplane certificated for the carriage of at least four persons and have a variable pitch propeller and retractable landing gear.

See AMC FCL 1.160 & 1.165(a)(3) for the flight instruction syllabus.

SKILL TEST

- 13 On completion of the flying training the applicant shall take the CPL(A) skill test on a single-engine or a multi-engine aeroplane in accordance with Appendix 1 and 2 to ANTR-FCL 1.170.

Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(4)**CPL(A) modular course**

(See ANTR-FCL 1.125(c))

(See ANTR-FCL 1.160, 1.165 & 1.170)

(See Appendix 1 and 2 to ANTR-FCL 1.170)

(See AMC FCL 1.160 & 1.165(a)(4))

(See Appendix 1 to ANTR-FCL 1.470)

(See IEM-ANTR-FCL 1.170)

- 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
 - (a) Before commencing a CPL(A) modular course an applicant shall be the holder of a PPL(A) issued in accordance with ICAO Annex 1;
 - (b) Before commencing the flight training an applicant shall:
 - (i) have completed 150 hours flight time as a pilot; and
 - (ii) have complied with ANTR-FCL 1.225 and 1.240 if a multi-engine aeroplane is to be used on the skill test.
- 3 An applicant wishing to undertake a modular CPL(A) course shall, under the supervision of the Head of Training of an approved flying training organisation (FTO), complete all the instructional stages in one continuous approved course of training as arranged by that FTO. The theoretical knowledge instruction may be given at an approved FTO conducting theoretical knowledge instruction only, in which case the Head of Training of that organisation shall supervise that part of the course.
- 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 the theoretical examinations, as set out in ANTR-FCL 1.495.
- 5 The FTO shall ensure that before being admitted to the course the applicant has sufficient knowledge of mathematics and physics to facilitate an understanding of the theoretical knowledge instruction content of the course.
- 6 The course shall comprise:
 - (a) theoretical knowledge instruction to CPL(A) knowledge level; and
 - (b) visual and instrument flying training.
- 7 The successful completion of the theoretical knowledge examination at paragraph 9 and of the skill test at paragraph 13 fulfil the knowledge and skill requirements for the issue of a CPL(A) including a class or type rating for the aeroplane used in the test.

THEORETICAL KNOWLEDGE

- 8 The theoretical knowledge syllabus for the CPL(A) is set out in Appendix 1 to ANTR-FCL 1.470. An approved CPL(A) theoretical knowledge course shall comprise at least 200 hours (1 hour = 60 minutes instruction) of instruction, which 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. Approved distance

learning (correspondence) courses may also be offered as part of the course at the discretion of the Authority.

THEORETICAL KNOWLEDGE EXAMINATION

- 9 An applicant shall demonstrate a level of knowledge appropriate to the privileges of the holder of a CPL(A) in accordance with the requirements in ANTR-FCL 1 (Aeroplane)Subpart J.

FLYING TRAINING

- 10 Applicants without an instrument rating shall be given at least 25 hours dual flight instruction (see AMC FCL 1.160 & 1.165(a)(4)), 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 (See AMC FCL 1.160 & 1.165(a)(4)). Applicants holding a valid IR(A) shall be fully credited towards the dual instrument instruction time. Applicants holding a valid IR(H) may 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.
- 11 (a) Applicants with a valid instrument rating shall be given at least 15 hours dual visual flight instruction.
- (b) Applicants without a night flying qualification aeroplane shall be given additionally at least 5 hours night flight instruction (see ANTR-FCL 1.125(c)).
- 12 At least five hours of the flight instruction shall be carried out in an aeroplane certificated for the carriage of at least four persons and have a variable pitch propeller and retractable landing gear.

See AMC FCL 1.160 & 1.165(a)(4) for the flight instruction syllabus.

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 in accordance with Appendix 1 and 2 to ANTR-FCL 1.170.

Appendix 1 to ANTR-FCL 1.170
Skill test for the issue of a CPL(A)

(See ANTR-FCL 1.170)

(See Appendix 2 to ANTR-FCL 1.170)

(See IEM FCL 1.170)

- 1 An applicant for a skill test for the CPL(A) shall have satisfactorily completed all of the required training, including instruction on the same type/class of aeroplane to be used in the test. The applicant shall be permitted to choose to take the test on a single-engine aeroplane or, subject to the experience requirement in ANTR-FCL 1.255 or ANTR-FCL 1.260 of 70 hours flight time as pilot-in-command of aeroplanes, on a multi-engine aeroplane. The aeroplane used for the skill test shall meet the requirements for training aeroplanes set out in Appendix 1a to ANTR-FCL 1.055 and shall be certificated for the carriage of at least four persons, have a variable pitch propeller and retractable landing gear.
- 2 The administrative arrangements for confirming the applicant's suitability to take the test, including disclosure of the applicant's training record to the examiner, will be determined by the Authority.
- 3 An applicant shall pass sections 1 through 5 of the skill test, and section 6 if a multi-engine aeroplane is used. 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 take the failed section again. Failure in any section of the re-test, 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.
- 4 Further training may be required following any failed skill test. Failure to achieve a pass in all sections of the test in two attempts shall require further training as determined by the Authority. There is no limit to the number of skill tests that may be attempted.

CONDUCT OF THE TEST

- 5 The Authority will provide the FE with adequate safety advice to ensure that the test is conducted safely.
- 6 Should the applicant choose to terminate a skill test for reasons considered inadequate by the 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.
- 7 At the discretion of the FE, any manoeuvre or procedure of the test may be repeated once by the applicant. The FE may stop the test at any stage if it is considered that the applicant's demonstration of flying skill requires a complete re-test.
- 8 An applicant shall be required to fly the aeroplane 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 the regulations.
- 9 The route to be flown shall be chosen by the FE and the destination shall be a controlled aerodrome. The route may end at the aerodrome of departure or at another 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.

- 10 An applicant shall indicate to the FE the checks and duties carried out, including the identification of radio facilities. Checks shall 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 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 aeroplane used.
- 11 The FE shall take no part in the operation of the aeroplane except where intervention is necessary in the interests of safety or to avoid unacceptable delay to other traffic.

FLIGHT TEST TOLERANCES

- 12 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.
- 13 The following limits are for general guidance. The FE shall 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

- 14 The skill test contents and sections set out in Appendix 2 to ANTR-FCL 1.170 shall be used for the skill test. The format and application form for the skill test may be determined by the Authority (see IEM FCL 1.170). Items in Section 2 paragraphs c and e(iv), and the whole of Sections 5 and 6 may be performed in a FNPT II or a flight simulator.

Appendix 2 to ANTR-FCL 1.170**Contents of the skill test for the issue of a CPL(A)**

(See ANTR-FCL 1.170)

(See IEM FCL 1.170)

SECTION 1 PRE-FLIGHT OPERATIONS AND DEPARTURE	
<i>Use of checklist, airmanship (control of aeroplane by external visual reference, anti/de-icing procedures, etc.) apply in all sections.</i>	
a	Pre-flight, including: 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, lookout
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: <ul style="list-style-type: none"> 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	
<i>This section may be combined with sections 1 through 4.</i>	
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	
<i>This section may be combined with Sections 1 through 5.</i>	
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: <ul style="list-style-type: none"> i. Aeroplane systems including handling of autopilot ii. Operation of pressurisation system iii. Use of de-icing and anti-icing system
g	Oral questions

SUBPART E**INSTRUMENT RATING (Aeroplane) – IR(A)****ANTR-FCL 1.174 Medical Fitness**

An applicant for an IR(A) shall be medically fit in accordance with ANTR-FCL 3.355(b).

ANTR-FCL 1.175 Circumstances in which an IR(A) is required

- (a) The holder of a pilot licence (A) shall not act in any capacity as a pilot of an aeroplane under Instrument Flight Rules (IFR), except as a pilot undergoing skill testing or dualtraining, unless the holder has an instrument rating (IR(A)) appropriate to the category of aircraft issued in accordance with FCL.

ANTR-FCL 1.180 Privileges and Conditions

(a) *Privileges*

- (1) Subject to the rating restrictions imposed by use of another pilot functioning as a co-pilot (multi-pilot restriction) during the skill test set out in Appendices 1 and 2 to ANTR-FCL 1.210, and any other conditions specified in ANTRs, the privileges of a holder of a multi-engine IR(A) are to pilot multi-engine and single-engine aeroplanes under IFR with a minimum decision height of 200 feet (60 m). Decision heights lower than 200 feet (60 m) may be authorised by the Authority after further training and testing in accordance with ANTR-OPS, AMC FCL 1.261(a) paragraph 6 and with Appendix 2 to ANTR-FCL 1.240, section 6.
- (2) Subject to the skill test conditions set out in Appendices 1 and 2 to ANTR-FCL 1.210, and any other conditions specified in ANTRs, the privileges of a holder of a single-engine IR(A) shall be to pilot single-engine aeroplanes under IFR with a minimum decision height of 200 feet (60 m).

(b) *Conditions.*

An applicant who has complied with the conditions specified in ANTR-FCL 1.185 through 1.210 shall have fulfilled the requirements for the issue of an IR(A).

ANTR-FCL 1.185 Validity, Revalidation and Renewal

- (a) An IR(A) is valid for one year from the date of issue or renewal, or from the expiry date of a current IR(A) if revalidated in accordance with ANTR-FCL 1.246(a).
- (b) If the IR(A) is restricted for use in multipilot operations only, the revalidation or renewal shall be completed in multi-pilot operations.
- (c) If the IR(A) has not been revalidated/renewed within the preceding 7 years, the holder will be required to retake the IR(A) theoretical knowledge examination and skill test in accordance with Appendix 1 to ANTR-FCL 1.210.

ANTR-FCL 1.190 Experience and Crediting

(See Appendix 1 to ANTR-FCL 1.205)

(See AMC FCL 1.205)

- (a) An applicant for an IR(A) shall hold a PPL(A) including a night qualification or CPL(A) and shall have completed at least 50 hours cross-country flight time as pilot-in-command in aeroplanes or helicopters of which at least 10 hours shall be in aeroplanes.
- (b) If the applicant is the holder of an IR(H) the total amount of flight instruction required by Appendix 1 to ANTR-FCL 1.205 may be reduced to 10 hours on aeroplanes.
- (c) If the applicant is the holder of a CPL(A) issued in accordance with ICAO, the total amount of flight instruction required by Appendix 1 to ANTR-FCL 1.205 may be reduced by up to 10 hours; or
- (d) If the applicant is the holder of a Course Completion Certificate for the Basic Instrument Flight Module, as set out in Appendix 1 to ANTR-FCL 1.205, or the holder of a CPL(A) the total amount of flight instruction required by Appendix 1 to ANTR-FCL 1.205 may be reduced by up to 10 hours if the applicant holds a CPL(A).

ANTR-FCL 1.195 Theoretical Knowledge

- (a) *Course.* An applicant for an IR(A) shall have received theoretical knowledge instruction on an approved course at an approved flying training organisation (FTO). The course should, wherever possible, be combined with a flying training course.
- (b) *Examination.* An applicant shall demonstrate a level of knowledge appropriate to the privileges granted to the holder of an IR(A) and shall meet the requirements set out in ANTR-FCL 1 (Aeroplane) Subpart J.

ANTR-FCL 1.200 Use of English Language

(See Appendix 1 to ANTR-FCL 1.200)

- (a) An applicant for an IR(A), MPL(A), ATPL(A) or validation shall have demonstrated the ability to use the English language as set out in Appendix 1 to ANTR-FCL 1.200.
- (b) The holder of an IR(A) issued in accordance with Appendix 1 to ANTR-FCL 1.200 shall have the PPL(A), CPL(A), MPL(A) or ATPL(A) extended with radiotelephony privileges in English.

ANTR-FCL 1.205 Flight Instruction

(See Appendix 1 to ANTR-FCL 1.205)

An applicant for an IR(A) shall have participated in a course of integrated flying training which includes training for the IR(A) (see ANTR-FCL 1.165) or shall have completed an approved modular flying training course as set out in Appendix 1 to ANTR-FCL 1.205.

ANTR-FCL 1.210 Skill

(See Appendices 1 and 2 to ANTR-FCL 1.210)

- (a) *General.* An applicant for an IR(A) shall have demonstrated the ability to perform the procedures and manoeuvres as set out in Appendices 1 and 2 to ANTR-FCL 1.210 with a degree of competency appropriate to the privileges granted to the holder of an IR(A).
- (b) *Multi-engine aeroplanes.* For a multi-engine aeroplane instrument rating the test shall be taken in a multi-engine aeroplane.

An applicant wishing to obtain a type/class rating for the aeroplane used in the skill test shall also meet the requirements of ANTR-FCL 1.262.

- (c) *Single-engine aeroplanes.* For a single-engine aeroplane instrument rating the test shall be taken in a single-engine aeroplane. A multi-engine centreline thrust aeroplane shall be considered a single-engine aeroplane for the purposes of a single-engine aeroplane IR.

Appendix 1 to ANTR-FCL 1.200**IR(A) – Use of English Language**

(See ANTR-FCL 1.200)

(See ANTR-FCL 1.005(b)(5))

(See ANTR-FCL 1.010(a)(4))

(See Appendix 1 to ANTR-FCL 1.005)

(See Appendix 1 to ANTR-FCL 1.015)

USE OF ENGLISH LANGUAGE

1 An applicant for or the holder of the IR(A) shall have the ability to use the English language for the following purposes:

(a) flight:

radio telephony relevant to all phases of flight, including emergency situations.

This item 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.

(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, an Aeroplane 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.

This item is considered to be fulfilled, if the applicant has graduated from an IR, MPL or ATP course given in English or if he has passed the theoretical IR or ATPL examination in English.

(c) communication:

be able to communicate with other crew members in English during all phases of flight, including flight preparation

This item is considered to be fulfilled, if the applicant for or the holder of an IR(A) has graduated from an MCC course given in English and is holding a certificate of satisfactory completion of that course in accordance with ANTR-FCL 1.250(a)(3) or if he has passed a multi-pilot skill test/proficiency check in accordance with Appendix 1 to ANTR-FCL 1.240 & 1.295, during which the two-way radiotelephony communication and the communication with other crew members are performed in English.

2 Alternatively, the above stated requirements may be demonstrated by having passed a specific examination given by or on behalf of 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.

- 3 Where the above method of examination referred to in paragraphs (1) and (2) above meets the language proficiency requirements stated in ANTR-FCL 1.010(a)(4), it may be used for the purpose of issuing a Language Proficiency endorsement in accordance with ANTR-FCL 1.005(b)(5).

Appendix 1 to ANTR-FCL 1.205**IR(A) – Modular Flying Training Course**

(See ANTR-FCL 1.205)

(See Appendix 1 to ANTR-FCL 1.470)

(See AMC FCL 1.205)

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 in accordance with ICAO PANS-OPS Document 8168. 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 (See AMC FCL 1.205). This module shall be conducted at an approved flying training organisation (FTO). All modules shall be approved by the Authority. Upon completing the Basic Instrument Flight Module under the supervision and to the satisfaction of the Head of Training, the candidate shall be issued a Course Completion Certificate (See Appendix 1 to AMC FCL 1.205).

(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). This module shall be conducted at an approved FTO. All modules shall be approved by the Authority.

2 An applicant for a modular IR(A) course shall be the holder of a PPL(A) or a CPL(A), either licence to include the privileges to fly by night, issued in accordance with ICAO Annex 1. 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 multiengine aeroplane class or type rating has received the multi-engine training specified in ANTR-FCL 1.261(b)(2) prior to commencing the flight training for IR(A) course.

3 An applicant wishing to undertake the Procedural Instrument Flight Module of a modular IR(A) course shall be required, under the supervision of the Head of Training of an approved FTO, to complete all the instructional stages in one continuous approved course of training as arranged by that FTO. Prior to commencing the Procedural Instrument Flight Module the FTO shall ensure the competence of the applicant in basic Instrument flying skills. Refresher training shall be given as required. The theoretical knowledge instruction may be given at an approved FTO conducting theoretical knowledge instruction only, in which case the Head of Training of that organisation shall supervise that part of the course.

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 the theoretical examinations, as set out in ANTR-FCL 1.495.

5 The course shall comprise :

(a) theoretical knowledge instruction to the instrument rating knowledge level;

- (b) instrument flight instruction.
- 6 The successful completion of the theoretical knowledge examination(s) at paragraph 8 and of the skill test at paragraph 14 fulfil the knowledge and skill requirements for the issue of an IR(A).

THEORETICAL KNOWLEDGE

- 7 The theoretical knowledge syllabus for the IR(A) is set out in Appendix 1 to ANTR-FCL 1.470. An approved modular IR(A) course shall comprise at least 200 hours (1 hour = 60 minutes instruction) of instruction, which 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 at the discretion of the Authority

THEORETICAL KNOWLEDGE EXAMINATION

- 8 An applicant shall demonstrate a level of knowledge appropriate to the privileges of an IR(A) in accordance with the procedures in ANTR FCL Subpart J.

FLYING TRAINING

- 9 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 a FNPT I, or up to 35 hours in a flight simulator or FNPT II. With the agreement of the approving Authority not more than 10 hours of FNPT II or flight simulator instrument ground time may be conducted in a FNPT I.
- 10 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, if agreed by the Authority. The remaining instrument flight instruction shall include at least 15 hours in multi-engine aeroplanes.
- 11 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 satisfactorily complete a course at an approved FTO/ATO comprising at least five hours instruction in instrument flying in multi-engine aeroplanes, of which 3 hours may be in a flight simulator or FNPT II.
- 12 The holder of a CPL(A) issued in accordance with ICAO or 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. The total instrument flight instruction in aeroplanes shall comply with paragraph 9 or 10, as appropriate.
- 13 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
- Descending
- Turns in level flight, climbing, descending
- Instrument pattern
- Steep turn

- Radio navigation
 - 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).

SKILL TESTS

- 14 (a) On completion of the related flying training and completion of the experience requirements as stated in ANTR-FCL 1.190, the applicant shall take the IR(A) skill test on either a multi-engine aeroplane or a single-engine aeroplane in accordance with Appendix 1 and 2 to ANTR-FCL 1.210.
- (b) On completion of the course mentioned in paragraph 11 above, the applicant shall take a skill test on a multi-engine aeroplane in accordance with Appendix 1 and 2 to ANTR-FCL 1.210.

Appendix 1 to ANTR-FCL 1.210**IR(A) – Skill Test**

(See ANTR-FCL 1.185 and 1.210)

(See IEM FCL 1.210)

- 1 An applicant for a skill test for the IR(A) shall have received instruction on the same class or type of aeroplane to be used for the skill test. The aeroplane used for the skill test shall meet the requirements for training aeroplanes set out in Appendix 1a to ANTR-FCL 1.055.
- 2 The administrative arrangements for confirming the applicant's suitability to take the test, including disclosure of the applicant's training record to the examiner, will be determined by the Authority.
- 3 An applicant shall pass sections 1 through 5 of the test/check, and section 6 of Appendix 2 to ANTR-FCL 1.210 if a multi-engine aeroplane is used. 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 take the failed section again. Failure in any section of the re-test, 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.
- 4 Further training may be required following any failed test/check. Failure to achieve a pass in all sections of the test in two attempts shall require further training as determined by the Authority. There is no limit to the number of skill tests that may be attempted.

CONDUCT OF THE TEST

- 5 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 one hour.
- 6 The Authority will provide the examiner with safety advice to be observed in the conduct of the test.
- 7 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.
- 8 At the discretion of the examiner, 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.
- 9 An applicant shall fly the aeroplane 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 aeroplane, except when intervention is necessary in the interests of safety or to avoid unacceptable delay to other traffic. Whenever the examiner or another pilot functions as a co-pilot during the test, the privileges of the instrument rating will be restricted to multi-pilot operations. A multi-pilot restriction may be removed by the applicant carrying out a skill test in accordance with Appendix 1 to ANTR-FCL 1.210 in a single-pilot aeroplane with no other crew member involved in the conduct of the flight. The

skill test for this purpose may be conducted in a FNPT II or a flight simulator. Responsibility for the flight shall be allocated in accordance with the regulations.

- 10 Decision heights/altitude, minimum descent heights/altitudes and missed approach point shall be determined by the applicant and agreed by the examiner.
- 11 An applicant for IR(A) 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 check list for the aeroplane 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 aeroplane used. During the proficiency check for revalidation or renewal of the IR(A) according to ANTR-FCL 1.185(a) the licence holder has to demonstrate the same as above to the examiner involved.

FLIGHT TEST TOLERANCES

- 12 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.
- 13 The following limits are for general guidance. The examiner shall 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/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

- 14 The skill test contents and sections set out in Appendix 2 to ANTR-FCL 1.210 shall be used for the skill test. The format and application form for the skill test may be determined by the Authority (see IEM FCL 1.210). Section 2 item d, and Section 6 of the skill test and the proficiency check may, for safety reasons, be performed in a FNPT II or flight simulator.

Appendix 2 to ANTR-FCL 1.210**Contents of the Skill Test for the Issue of an IR(A)**

(See ANTR-FCL 1.185 and 1.210)

(See IEM FCL 1.210)

SECTION 1 PRE-FLIGHT OPERATIONS AND DEPARTURE	
<i>Use of checklist, airmanship, anti/de-icing procedures, etc., apply in all sections.</i>	
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	Taxiing
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 sp 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 configurati
e	Limited panel, stabilised climb or descent at Rate 1 turn onto given headings, recovery from un attitudes.

* May be performed in a Flight Simulator or FNPT II

+ May be performed in either Section 4 or Section 5

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

* May be performed in a Flight Simulator or FNPT II

+ May be performed in either Section 4 or Section 5

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 (if applicable) Simulated asymmetric flight	
a	Simulated engine failure after take-off or on go-around
b	Asymmetric approach and procedural go-around
c	Asymmetric approach and landing, missed approach procedure
d	ATC liaison: compliance, R/T procedures

* May be performed in a Flight Simulator or FNPT II

+ May be performed in either Section 4 or Section 5

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SUBPART F**CLASS AND TYPE RATING (Aeroplane)****ANTR-FCL 1.215 Class Ratings (A)**

- (a) *Divisions.* Class ratings shall be established for single-pilot aeroplanes not requiring a type rating as follows:
- (1) all single-engine piston aeroplanes (land);
 - (2) all single-engine piston aeroplanes (sea);
 - (3) all touring motor gliders;
 - (4) each manufacturer of single-engine turbo-prop aeroplanes (land);
 - (5) each manufacturer of single-engine turbo-prop aeroplanes (sea);
 - (6) all multi-engine piston aeroplanes (land); and
 - (7) all multi-engine piston aeroplanes (sea).

- (b) *Listings.*

Class ratings for aeroplanes will be issued according to the associated administrative procedures accepted by the Authority. In order to change to another type or variant of the aeroplane within one class rating, differences or familiarisation training is required.

- (c) The requirements for the issue, the revalidation, renewal for the following class ratings are at the discretion of the Authority:
- (1) sea-planes
 - (2) multi-engine centreline thrust aeroplanes.
 - (3) single seat aeroplanes.

ANTR-FCL 1.220 Type ratings (A)

- (a) *Criteria.* For the establishment of type ratings for aeroplanes other than those included in ANTR-FCL 1.215, all of the following shall be considered:
- (1) airworthiness type certificate;
 - (2) handling characteristics;
 - (3) certificated minimum flight crew complements;
 - (4) level of technology.
- (b) *Divisions.* Type ratings for aeroplanes shall be established for:
- (1) each type of multi-pilot aeroplane; or

- (2) each type of single-pilot multi-engine aeroplane fitted with turbo-prop or turbojet engines;
or
 - (3) each type of single-pilot single-engine aeroplane fitted with a turbojet engine; or
 - (4) any other type of aeroplane if considered necessary.
- (c) *Listing*
- (1) Type ratings for aeroplanes will be issued in accordance with the associated administrative procedures accepted by the Authority. In order to change to another variant of the aeroplane within one type rating, differences or familiarisation training is required.
 - (2)
 - (i) aeroplanes not type certificated in accordance with FAR/CS 23, FAR/CS 23 Commuter Category, FAR/CS 25, BCAR or AIR 2051; or
 - (ii) aeroplanes type certificated under special registration such as military, ex- military, experimental or vintage aeroplanes; are not listed in the associated administrative procedures.
 - (3) Aeroplanes not listed in the associated administrative procedures may be entered into the ANTR-FCL licence.

ANTR-FCL 1.221 High Performance Single Pilot Aeroplanes

- (a) *Criteria.* For the establishment of a class or type rating of a single-pilot aeroplane designated as high performance, all the following shall be considered:
- (1) type of power plant;
 - (2) provision and capabilities of airframe systems;
 - (3) cabin pressurisation;
 - (4) capabilities of navigation systems;
 - (5) performance both airfield and en route;
 - (6) handling characteristics.
- (b) *Listings.* Aeroplanes designated as high performance shall be listed as such in the associated administrative procedures within the relevant class or type rating list using the annotation HPA.

ANTR-FCL 1.225 Circumstances in which Type or Class Ratings are Required

The holder of a pilot licence shall not act in any capacity as a pilot of an aeroplane except as a pilot undergoing skill testing or receiving flight instruction unless the holder has a valid and appropriate class or type rating. When a class or type rating is issued limiting the privileges to acting as co-pilot only, or to any other conditions agreed within the Authority, such limitations shall be endorsed on the rating.

ANTR-FCL 1.230 Special Authorisation of Type or Class Ratings

For the non-revenue special purpose flights e.g. aircraft flight testing, special authorisation may be provided in writing to the licence holder by the Authority in place of issuing the class or type rating in accordance with ANTR-FCL 1.225. This authorisation shall be limited in validity to completing a specific task.

ANTR-FCL 1.235 Type and Class Ratings – Privileges, Number and Variants

- (a) *Privileges.* Subject to ANTR-FCL 1.215(b) and (c) and ANTR-FCL 1.220(a) & (b) above, the privileges of the holder of a type or class rating are to act as a pilot on the type or class of aeroplane specified in the rating.
- (b) *Number of type/class ratings held.* There is no ANTR-FCL limit to the number of ratings that may be held at one time. ANTR-OPS, however, may restrict the number of ratings that can be exercised at any one time.
- (c) *Variants.* 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 will be required except for types or variants within the SEP class rating.
 - (1) Differences training requires additional knowledge and training on an appropriate training device or the aeroplane.

The differences training shall be entered in the pilot's logbook or equivalent document and signed by a CRI/TRI/SFI(A) or FI(A) as appropriate.

- (2) Familiarisation training requires the acquisition of additional knowledge.

ANTR-FCL 1.240 Type and Class Ratings – Requirements

(See Appendices 1 to 3 to ANTR-FCL 1.240)

- (a) *General*
 - (1) An applicant for a type rating for a multi-pilot type of aeroplane shall comply with the requirements for type ratings set out in ANTR-FCL 1.250, 1.261 and 1.262 and shall complete upset prevention and recovery training;
 - (2) An applicant for a type rating for a single-pilot type of aeroplane shall comply with the requirements set out in ANTR-FCL 1.255, 1.261(a), (b) and (c) and 1.262(a), and if applicable ANTR-FCL 1.251 and shall complete upset prevention and recovery training.
 - (3) An applicant for a class rating for a class of aeroplanes shall comply with the requirements set out in ANTR-FCL 1.260, 1.261(a), (b) and (c) and 1.262(a), and if applicable ANTR-FCL 1.251.
 - (4) The type rating course, including theoretical knowledge, shall be completed within the 6 months preceding the skill test.
 - (5) At the discretion of the Authority, an aeroplane class or type rating may be issued to an applicant who meets the requirements for that rating of another State, provided ANTR-FCL 1.250, 1.255 or 1.260 as applicable, are met. Such a rating will be restricted to aeroplanes registered in that State, or operated by the operator of that State. The restriction may be removed when the holder has completed at least 500

hours of flight as a pilot on the type/class and complied with the revalidation requirements of ANTR-FCL 1.245, and if applicable ANTR-FCL 1.251.

- (6) A valid type rating contained in a licence issued by another State may be transferred to an ANTR-FCL licence, subject to the appropriate proficiency check, provided the applicant is in current flying practice and has not less than 500 hours flying experience as a pilot on that type, provided ANTR-FCL 1.250, 1.251, 1.255 or 1.260 as applicable, are met.
 - (7) A valid class rating contained in a licence issued by another State may be transferred to an ANTR-FCL licence, subject to the appropriate proficiency check provided the applicant is in current flying practice and has not less than 100 hours flying experience as a pilot in that class, provided ANTR-FCL 1.251 or 1.260, as applicable, are met.
 - (8) A valid class/type rating contained in a licence issued by a ICAO Contracting State may be transferred to an ANTR-FCL licence provided it is currently valid and the last revalidation/renewal of the rating was performed in accordance with the requirements of ANTR-FCL and ANTR-FCL 1.250, 1.255 or 1.260, as applicable.
- (b) *Skill test*
- (1) The skill test contents and sections for a rating for multi-engine multi-pilot aeroplanes are set out in Appendices 1 and 2 to ANTR-FCL 1.240; and
 - (2) the skill test contents and sections for a rating for multi-engine single-pilot aeroplanes and for single-engine aeroplanes are set out in Appendices 1 and 3 to ANTR-FCL 1.240.

Each applicable item in the appropriate skill test shall be satisfactorily completed within the six months immediately preceding the date of receipt of the application for the rating.

ANTR-FCL 1.245 Type and Class Ratings – Validity, Revalidation and Renewal

(See Appendices 1 to 3 to ANTR-FCL 1.240)

- (a) *Type ratings and multi-engine class ratings, aeroplane – Validity.* Type ratings and multi-engine class ratings for aeroplanes are valid for one year from the date of issue, or the date of expiry if revalidated within the validity period.
- (b) *Type ratings and multi-engine class ratings, aeroplane – Revalidation.* For revalidation of type ratings and multi-engine class ratings, aeroplane, the applicant shall complete:
 - (1) a proficiency check in accordance with Appendix 1 to ANTR-FCL 1.240 in the relevant type or class of aeroplane within the three months immediately preceding the expiry date of the rating; and
 - (2) at least ten route sectors as pilot of the relevant type or class of aeroplane, or one route sector as pilot of the relevant type or class of aeroplane or flight simulator flown with an examiner during the period of validity of the rating.
 - (3) The revalidation of an IR(A), if held, should be combined with the type/class rating proficiency check in accordance with Appendix 1 to ANTR-FCL 1.240 & 1.295.

- (c) *Single-pilot single-engine class ratings – Validity and Revalidation.* Single-pilot single-engine class ratings are valid for two years from the date of issue, or the date of expiry if revalidated within the validity period.
- (1) *All single-engine piston aeroplane class ratings (land) and all touring motor glider's ratings – Revalidation.* For revalidation of single-pilot single-engine piston aeroplane (land) class ratings and/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 accordance with Appendix 1 and 3 to ANTR-FCL 1.240 or Appendix 1 and 2 to ANTR-FCL 1.210 with an authorised examiner in the relevant class or
 - (ii) within the 12 months preceding the expiry of the rating complete 12 hours flight time in the relevant class including:
 - (A) 6 hours of pilot-in-command time;
 - (B) 12 take-offs and 12 landings; and
 - (C) a training flight of at least one hour's duration with a FI(A) or CRI(A). This flight may be replaced by any other proficiency check or skill test.
 - (iii) When the applicant holds both a single-engine piston aeroplane (land) class rating and a touring motor glider rating, he may complete the requirements in (i) above in either class or in (ii) above in either class or a mixture of the classes, and achieve a revalidation of both ratings.
- (2) *Single-engine turbo-prop aeroplanes (land) single-pilot – Revalidation.* For revalidation of single-engine turbo-prop (land) class ratings the applicant shall within the three months preceding the expiry date of the rating, pass a proficiency check with an authorised examiner on the relevant class of aeroplane.
- (d) An applicant who fails to achieve a pass in 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 the proficiency check has successfully been completed.
- (e) Extension of the validity period or revalidation of ratings in special circumstances:
- (1) When the privileges of an aircraft type, class or instrument rating are being exercised solely on an aeroplane registered in another State, the Authority may at its discretion extend the validity period of the rating, or revalidate the rating provided the requirements of that other State are fulfilled.
 - (2) When the privileges of an aircraft type, class or instrument rating are being exercised in a Bahraini registered aeroplane being operated by the operator of another State under the provisions of Article 83bis of the International Convention on Civil Aviation, Chicago, the Authority may at its discretion extend the validity period of the rating, or revalidate the rating provided the requirements of that other State are fulfilled.
 - (3) Any rating extended or revalidated under the provisions of (1) or (2) above shall be revalidated in accordance with ANTR-FCL 1.245(b) or (c) and, if applicable,

ANTR-FCL 1.185 before the privileges are exercised on aircraft registered in and operated by a Bahraini operator.

- (4) A rating issued or used in another State may remain in a ANTR-FCL licence at the discretion of the Authority provided the requirements of that State are fulfilled and the rating is restricted to aircraft registered in that State.

(f) *Expired Ratings*

- (1) If a type rating or multi-engine class rating has expired, the applicant shall:
- (i) meet any refresher training requirements as determined by the BCAA (see AMC FCL 1.245(f)(1); and
 - (ii) complete a proficiency check in accordance with Appendices 1 and 2 or 3 to ANTR-FCL 1.240.

The rating will be valid from the date of completion of the renewal requirements.

- (2) If a single-pilot single-engine class rating has expired, the applicant shall complete the skill test in Appendices 1 and 3 to ANTR-FCL 1.240.
- (g) Compliance with ANTR-OPS. The revalidation requirements of ANTR-FCL 1.245 (b) will be met when an applicant operating under ANTR-OPS 1 fulfils the Operator Proficiency Check requirements contained in ANTR-OPS 1.965, and if the operator demonstrates to the satisfaction of the Authority that the mandatory items from Appendix 2 or 3 to ANTR-FCL 1.240 are fulfilled during the 12 months prior to the revalidation in accordance with ANTR-OPS 1.965(a)(2). For this purpose the Operator Proficiency Check shall be performed in the three months immediately preceding the expiry date of the rating.

ANTR-FCL 1.246 Instrument Rating, Revalidation and Renewal

(See ANTR-FCL 1.185)

(See Appendix 1 to ANTR-FCL 1.246)

(a) Revalidation

An IR(A) shall be revalidated within the three months immediately preceding the expiry date of the rating. Whenever possible, revalidation of an IR(A) shall be combined with the proficiency check for revalidation of a type or class rating.

- (1) An applicant for the revalidation of an IR (A) when combined with a class rating or a type rating shall complete a proficiency check in accordance with Appendix 1 and 2 to ANTR-FCL 1.240 & 1.295 or Appendix 3 to ANTR-FCL 1.240. In this case the instrument rating will be valid for the same period as the class or type rating, except in the case of a single-engine aeroplane class rating revalidation where the validity period of the instrument rating will be 12 months.
- (2) An applicant for the revalidation of an IR(A) when not combined with the revalidation of a class or type rating shall :
- (i) complete section 3b of Appendix 3 to ANTR-FCL 1.240;
 - (ii) and those parts of Section 1 relevant to the intended flight;

- (iii) and, for multi-engine aeroplane, section 6 of Appendix 3 to ANTR-FCL 1.240 as a proficiency check by sole reference to instruments. An FNPT II or flight simulator may be used but at least each alternate proficiency check for the revalidation of an IR(A) in these circumstances shall be performed in an aeroplane.
 - (3) Cross-credit shall be given in accordance with the Appendix 1 to ANTR-FCL 1.246.
 - (4) An applicant who fails to achieve a pass in the relevant section of an IR(A) proficiency check in accordance with ANTR-FCL 1.246 (a)(1) or (a)(2), before the expiry date of an instrument rating shall not exercise the IR(A) privileges until the proficiency check has successfully been completed.
- (b) Renewal
- (1) If an instrument rating, has expired, the applicant shall
 - (i) meet refresher training and additional requirements as determined by the Authority, and
 - (ii) complete section 3b of Appendix 3 to ANTR-FCL 1.240 including the flight preparation as a skill test. The rating will be valid from the date of completion of the renewal requirements.

ANTR-FCL 1.250 Type Rating, Multi-Pilot – Conditions

(See AMC FCL 1.261(d))

(See Appendix 1 to ANTR-FCL 1.261(d))

(See Appendix 1 to ANTR-FCL 1.520 & 1.525)

- (a) *Pre-requisite conditions for training:* An applicant for the first type rating for a multi-pilot aeroplane type shall:
 - (1) (i) [have at least 70 hours as pilot-in-command of aeroplanes;]
 - (ii) have a valid multi-engine instrument rating (A);
 - (iii) hold a certificate of satisfactory completion of multi-crew co-operation (MCC). If the MCC course is to be added to the type rating course (see ANTR-FCL 1.261 and 1.262 and AMC FCL 1.261(d) and Appendix 1 to ANTR-FCL 1.261(d), this requirement is not applicable; and
 - (2) be a student currently undergoing training on a MPL(A) integrated training course.
- (b) Applicants having:
 - (1) either a certificate of satisfactory completion of MCC in accordance with ANTR-FCL 2 and experience of more than 100 hours as a pilot of a multi-pilot helicopter, or
 - (2) experience of more than 500 hours as a pilot on multi-pilot helicopter, or
 - (3) experience of at least 500 hours as a pilot in multi-pilot operation in accordance with ANTR-OPS on single pilot aeroplanes. CS/FAR 23 multi-engine aeroplanes, shall be considered to meet the requirements of MCC;

- (c) The level of knowledge assumed to be held by holders of the PPL(A) or CPL(A) and type ratings for multi-pilot aeroplanes issued under requirements other than ANTR FCL will not be a substitute for showing compliance with the requirements of (4) above.
- (d) The issue of an additional multi-pilot type ratings requires a valid multi-engine instrument rating.

ANTR-FCL 1.251 Type, Class Ratings or Single Pilot High Performance Aeroplanes – Conditions

(See Appendix 1 to ANTR-FCL 1.251)

(See AMC FCL 1.251)

- (a) *Pre-requisite conditions for training:* An applicant for a first type or class rating for a single-pilot high performance aeroplane (HPA) shall:
 - (1) have at least 200 hours total flying experience;
 - (2) have met the requirements of ANTR-FCL 1.255 or 1.260, as appropriate; and
 - (3)
 - (i) hold a certificate of satisfactory completion of a pre-entry approved course in accordance with Appendix 1 to ANTR-FCL 1.251 to be conducted by a FTO or an ATO; or
 - (ii) have passed at least the ATPL(A) theoretical knowledge examinations in accordance with ANTR-FCL 1.285; or
 - (iii) hold a valid ICAO ATPL(A) or CPL/IR with theoretical knowledge credit for ATPL(A);
- (b) The holder of a licence issued by a ICAO Contracting State which includes a class or type rating for a high performance single pilot aeroplane shall be credited with the theoretical knowledge requirement of paragraph (a)(3) above when that rating is transferred to an ANTR FCL licence issued by the Authority. For other licences the Authority shall satisfy itself that those theoretical knowledge requirements have been met.

ANTR-FCL 1.255 Type Rating, Single-Pilot – Conditions

Experience – multi-engine aeroplanes only

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

ANTR-FCL 1.260 Class Rating – Conditions

Experience – multi-engine aeroplanes only

An applicant for a class rating for a single-pilot multi-engine aeroplane shall have completed at least 70 hours as pilot-in-command of aeroplanes.

ANTR-FCL 1.261 Type and Class Ratings – Knowledge and Flight Instruction

(See Appendix 1 to ANTR-FCL 1.261 (a) and AMC FCL 1.261 (a))

(See Appendix 1 to ANTR-FCL 1.261 (c)(2))

(See Appendices 1, 2 and 3 to ANTR-FCL 1.240)

(See Appendix 1 to ANTR-FCL 1.261(d))

(See Appendix 2 to ANTR-FCL 1.055)

(See AMC FCL 1.261(c)(2))

(See AMC FCL 1.261(d))

(See ANTR-FCL 1.251)

(See AMC FCL 1.251)

(a) *Theoretical knowledge instruction and checking requirements*

- (1) An applicant for a class or type rating for single- or multi-engine aeroplanes shall have completed the required theoretical knowledge instruction (see Appendix 1 to ANTR-FCL 1.261(a) and AMC FCL 1.261(a)) and demonstrated the level of knowledge required for the safe operation of the applicable aeroplane type.
- (2) *Multi-engine aeroplanes only.* An applicant for a single-pilot multi-engine class rating shall have completed not less than 7 hours theoretical knowledge instruction in multi-engine aeroplane operation.

(b) *Flight instruction*

- (1) An applicant for a class/type rating for single-engine and multi-engine single-pilot aeroplanes shall have completed a course of flight instruction related to the class/type rating skill test (see Appendix 3 to ANTR-FCL 1.240).
- (2) *Multi-engine aeroplanes only.* An applicant for a single-pilot multi-engine class/type rating shall have completed not less than 2 hrs 30 min dual flight training under normal conditions of multi-engine aeroplane operation, and not less than 3 hrs 30 min dual flight training in engine failure procedures and asymmetric flight techniques;
- (3) An applicant for a type rating for multi-pilot aeroplanes shall have completed a course of flight instruction related to the type rating skill test (see Appendix 2 to ANTR-FCL 1.240).

(c) *Conduct of training courses*

- (1) Training courses for the above purpose shall be conducted by a FTO or an ATO. Training courses may also be conducted by a facility or a sub-contracted facility provided by the operator or a manufacturer or, in special circumstances, by an individually authorised instructor.
- (2) Such courses shall be approved by the Authority (see AMC FCL 1.261(c)(2)) and such facilities shall meet the relevant requirements of Appendix 2 to ANTR-FCL 1.055, as determined by the Authority. For Zero Flight time Training (ZFTT) see Appendix 1 to ANTR-FCL 1.261 (c)(2)).
- (3) Notwithstanding paragraphs (c)(1) and (2) above, training courses for a single-engine aeroplane class rating or touring motor glider class rating may be conducted by an FI or a CRI.

(d) *Multi-crew co-operation training* (see also ANTR-FCL 1.250(a)(3))

- (1) The course is intended to provide MCC training in two circumstances:

- (i) for students attending an ATP integrated course in accordance with the aim of that course (see Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(1))
- (ii) for PPL/IR or CPL/IR holders, who have not graduated from an ATP integrated course but who wish to obtain an initial type rating on multi-pilot aeroplanes (see ANTR-FCL 1.250(a)(3)).

The MCC course shall comprise at least 25 hours of theoretical knowledge instruction and exercises and 20 hours of MCC training. Students attending an ATP integrated course may have the practical training reduced by 5 hours. Wherever possible, the MCC training should be combined with the initial type rating course on multi-pilot aeroplanes.

- (2) The MCC training shall be accomplished within six months under the supervision of either the Head of Training of an approved FTO or an approved ATO or on an approved training course conducted by the operator. A course conducted by the operator shall meet the relevant requirements of Appendix 2 to ANTR-FCL 1.055, as determined by the Authority. For further details on MCC training see Appendix 1 to ANTR-FCL 1.261(d) and AMC FCL 1.261(d). A FNPT II or a flight simulator shall be used. Wherever possible, the MCC training should be combined with the initial type rating training for a multi-pilot aeroplane, in which case the practical MCC training may be reduced to not less than 10 hours if the same flight simulator is used for both the MCC and type rating training.

ANTR-FCL 1.262 Type and class ratings – Skill

(See Appendices 1, 2 and 3 to ANTR-FCL 1.240)

(See Appendix 1 to AMC FCL 1.261(d))

- (a) *Single-pilot skill test.* An applicant for a type or class rating for a single pilot aeroplane shall have demonstrated the skill required for the safe operation of the applicable type or class of aeroplane, as set out in Appendices 1 and 3 to ANTR-FCL 1.240.
- (b) *Multi-pilot skill test.* An applicant for a type rating for a multi-pilot aeroplane shall have demonstrated the skill required for the safe operation of the applicable type of aeroplane in a multi-crew environment as a pilot-in-command or a co-pilot as applicable, as set out in Appendices 1 and 2 to ANTR-FCL 1.240.
- (c) *Multi-crew co-operation.* On completion of the MCC training the applicant shall either demonstrate the ability to perform the duties of a pilot on multi-pilot aeroplanes by passing the type rating skill test on multi-pilot aeroplanes as set out in Appendices 1 and 2 to ANTR-FCL 1.240, or shall be given a certificate of completion of MCC as shown in Appendix 1 to AMC FCL 1.261(d).

Appendix 1 to ANTR-FCL 1.240 & 1.295**Skill test and proficiency check for aeroplane type/class ratings and ATPL**

(See ANTR-FCL 1.240 through 1.262 and 1.295)

(See Appendix 1 to ANTR-FCL 1.261(a))

(See Appendix 1 to ANTR-FCL 1.520 & 1.525)

(See AMC FCL 1.261(a))

- 1 The applicant shall have completed the required instruction in accordance with the syllabus (see also Appendix 1 to ANTR-FCL 1.261(a) and Appendices 2 & 3 to ANTR-FCL 1.240). When agreed by the Authority, the syllabus may be reduced to give credit for previous experience on similar aircraft types. The administrative arrangements for confirming the applicant's suitability to take the test, including disclosure of the applicant's training record to the examiner, shall be determined by the Authority.
- 2 Items to be covered in skill tests/proficiency checks are given in the applicable Appendix 2 & 3 to ANTR-FCL 1.240. When agreed by the Authority, credit may be given for skill test items common to other types or variants where the pilot is experienced on that other type. With the approval of the Authority, several different skill test/proficiency check scenarios may be developed containing simulated line operations. The examiner will select one of these scenarios. Flight simulators, if available and other training devices as approved shall be used.
- 3
 - (a) For SPA: 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.
 - (b) For MPA: 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.
 - (c) In case the applicant fails only or does not take Section 6, the type rating will be issued without Cat II or III privileges.
 - (d) Section 6 is not part of the ATPL or MPL skill test.
- 4 Further training may be required after a failed test/check. Failure to achieve a valid pass in all sections in two attempts shall require further training as determined by the examiner. There is no limit to the number of skill tests/proficiency checks that may be attempted.

CONDUCT OF THE TEST/CHECK – GENERAL

- 5 The Authority will provide the examiner with safety criteria to be observed in the conduct of the test/check.
- 6 Should an applicant choose not to continue with a test/check for reasons considered inadequate by the examiner, the applicant will be regarded as having failed those items not attempted. If the test/check is terminated for reasons considered adequate by the examiner, only those items not completed shall be tested in a further flight.

- 7 At the discretion of the examiner any manoeuvre or procedure of the test/check may be repeated once by the applicant. The examiner may stop the test/check at any stage if it is considered that the applicant's competency requires a complete re-test/re-check.
- 8 Checks and procedures shall be carried out/completed in accordance with the authorised check list for the aeroplane used in the test/check 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 aeroplane used. Decision heights/altitude, minimum descent heights/altitudes and missed approach point shall be determined by the applicant for the ATPL(A) and/or for the type/class rating holder during the proficiency check, as applicable.

SPECIAL REQUIREMENTS FOR THE SKILL TEST/PROFICIENCY CHECK FOR A MULTI-PILOT AEROPLANE AND FOR THE SKILL TEST REQUIRED FOR THE ATPL(A)

- 9 The test/check for a multi-pilot aeroplane shall be performed in a multi-crew environment. Another applicant or another pilot, may function as second pilot. If an aeroplane, rather than a simulator, is used for the test/check, the second pilot shall be an instructor.
- 10 An applicant shall be required to operate as 'pilot flying' (PF) during all sections of the test/check, except item 2.6 and abnormal and emergency procedures items 3.4.0 to 3.4.14 and items 3.6.0 to 3.6.9 which may be conducted as PF or PNF in accordance with Multi-Crew Co-operation (in accordance with Appendix 2 to 1.240 & 1.295). The applicant for the initial issue of a multi-pilot aeroplane type rating or ATPL(A) shall also demonstrate the ability to act as 'pilot not flying' (PNF). The applicant may choose either the left hand or the right hand seat for the test/check if all items in the test/check can be executed from the selected seat.
- 11 The following matters shall be specifically checked when testing/checking applicants for the ATPL(A) or a type rating for multi-pilot aeroplanes 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 aeroplane 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.
- 12 The test/check should be accomplished under IFR and as far as possible in a simulated commercial air transport environment. An essential element is the ability to plan and conduct the flight from routine briefing material.

FLIGHT TEST TOLERANCE

- 13 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.
- 14 The following limits are for general guidance. The examiner shall make allowance for turbulent conditions and the handling qualities and performance of the type of 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	$\pm 5^\circ$
Precision approach	half scale deflection, azimuth and glide path

Heading

all engines operating	$\pm 5^\circ$
with simulated engine failure	$\pm 10^\circ$

Speed

all engines operating	± 5 knots
with simulated engine failure	+10 knots/ -5 knots

CONTENT OF THE SKILL TEST/PROFICIENCY CHECK

- 15 (a) The skill test and proficiency check contents and sections are set out in Appendix 2 to ANTR-FCL 1.240 for multi-pilot aeroplanes and at Appendix 3 to ANTR-FCL 1.240 for single-pilot aeroplanes. The format and application form to the skill test may be determined by the Authority (See IEM FCL 1.240(1) and (2))
- (b) When the type rating course includes less than 2 hours flight training on the aeroplane, the skill test may be flight simulator only and may be completed before the flight training on the aeroplane. In that case, a certificate of completion of the type rating course including the flight training on the aeroplane shall be forwarded to the Authority before the new type rating is entered in the applicant's licence.

Appendix 2 to ANTR-FCL 1.240 & 1.295**Contents of the ATPL/type rating/training/skill test and proficiency check on multi pilot aeroplanes**

(See ANTR-FCL 1.240 through 1.262 and 1.295)

(See Appendix 1 to ANTR-FCL 1.520 and 1.525)

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.

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.

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 (----->).

The following abbreviations are used to indicate the training equipment used:

A = Aeroplane

FS = Flight Simulator

FTD = Flight Training Device

OTD = Other Training Devices

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.

4 Where the letter 'M' appears in the skill test/proficiency check column this will indicate the mandatory exercise.

5 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 as set out in ANTR-FSTD;

(b) the qualifications of the instructor and examiner;

(c) the amount of line-orientated simulator training provided on the course;

(d) the qualifications and previous line operating experience of the pilot under training; and

(e) the amount of supervised line flying experience provided after the issue of the new type rating.

	PRACTICAL TRAINING					ATPL/MPL/TYPE-RATING SKILL TEST/PROF CHECK	
	OTD	FTD	FS	A	Instructor's initials when training completed	Chkd in FS A	Examiners initials when test completed
Manoeuvres/Procedures (including Multi-Crew Cooperation)							
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 (A, if practicable)			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			P ---->	---->			
2.5.1 * shortly after reaching V_2 ,			P ---->	---->			

	PRACTICAL TRAINING					ATPL/MPL/TYPE-RATING SKILL TEST/PROF CHECK	
	OTD	FTD	FS	A	Instructor's initials when training completed	Chkd in FS A	Examiner's initials when test completed
Manoeuvres/Procedures (including Multi-Crew Cooperation)							
(In aeroplanes which are notcertificated as transport category aeroplanes (CS/FAR 25) or as commuter category aeroplanes (SFAR 23), 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 shortlyafter reaching V_2 .)							
2.5.2* between V_1 and V_2			P	X		M FS Only	
2.6 Rejected take-off at a reasonable speed before reaching V_1 .			P----->	----->X		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----->	----->	----->	----->			

	PRACTICAL TRAINING					ATPL/MPL/TYPE-RATING SKILL TEST/PROF CHECK	
	OTD	FTD	FS	A	Instructor's initials when training completed	Chkd in FS A	Examiner's initials when test completed
Manoeuvres/Procedures (including Multi-Crew Cooperation)							
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---->	---->	---->	---->			
Intentionally left blank							

	PRACTICAL TRAINING					ATPL/MPL/TYPE-RATING SKILL TEST/PROF CHECK	
	OTD	FTD	FS	A	Instructor's initials when training completed	Chkd in FS A	Examiner's initials when test completed
Manoeuvres/Procedures (including Multi-Crew Cooperation)							
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→	----->	-->			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			

	PRACTICAL TRAINING					ATPL/MPL/TYPE-RATING SKILL TEST/PROF CHECK	
					Instructor's initials when training completed	Chkd in	Examiner's initials when test completed
Manoeuvres/Procedures (including Multi-Crew Cooperation)	OTD	FTD	FS	A		FS A	
3.9 Instrument flight procedures							
3.9.1* Adherence to departure and arrival routes and ATC instructions		P----->	----->	----->		M	
3.9.2* Holding procedures		P----->	----->	----->			
3.9.3* Precision approaches down to a decision height (DH) not less than 60 m (200 ft)							
3.9.3.1* manually, without flight director			P----->	----->		M (skill test only)	
3.9.3.2* manually, with flight director			P----->	----->			
3.9.3.3* with autopilot			P----->	----->			
3.9.3.4* manually, with one engine simulated inoperative; engine failure has to be simulated during final approach from before passing the outer marker (OM) until touchdown or through the complete missed approach procedure In aeroplanes which are not certificated as transport category aeroplanes (CS/FAR 25) or as commuter category aeroplanes (SFAR 23), the approach with simulated engine failure and the ensuing go-around shall be initiated in conjunction with the non-precision approach as described in 3.9.4. The go-around shall be initiated when reaching the published obstacle clearance height (OCH/A), however, not later than reaching a minimum descent height/altitude (MDH/A) of 500 ft above runway threshold elevation. 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 in accordance with 3.9.3.4.			P----->	----->		M	

	PRACTICAL TRAINING					ATPL/MPL/TYPE-RATING SKILL TEST/PROF CHECK	
	OTD	FTD	FS	A	Instructor's initials when training completed	Chkd in FS A	Examiner's initials when test completed
Manoeuvres/Procedures (including Multi-Crew Cooperation)							
3.9.4* NDB or VOC/LOC-approach down to the MDH/A			P* ---- >	----->		M	
3.9.5 Circling approach under following conditions: (a) * approach to the authorised minimum circling approach altitude at the aerodrome in question in accordance with the local instrument approach facilities in simulated instrument flight conditions; followed by: (b) circling approach to another runway at least 90° off centreline from final approach used in item a), at the authorised minimum circling approach altitude; Remark: if a) and b) are not possible due to ATC reasons a simulated low visibility pattern may be performed			P* ---- >	----->			
SECTION 4							
4 Missed Approach Procedures							
4.1 Go-around with all engines operating* after an ILS approach on reaching decision height.			P* ---- >	----->			
4.2 Other missed approach procedures			P* ---- >	----->			
4.3* Manual Go-around with the critical engine simulated inoperative after an instrument approach on reaching DH, MDH or MAPt			P* ---- >	----->		M	
4.4 Rejected landing at 15 m (50 ft) above runway threshold and go- around			P----- >	----->			

	PRACTICAL TRAINING					ATPL/MPL/TYPE-RATING SKILL TEST/PROF CHECK	
	OTD	FTD	FS	A	Instructor's initials when training completed	Chkd in FS A	Examiner's initials when test completed
Manoeuvres/Procedures (including Multi-Crew Cooperation)							
SECTION 5							
5 Landings			P				
5.1 Normal landings* also after an ILS approach with transition to visual flight on reaching DH.							
5.2 Landing with simulated jammed horizontal stabiliser in any out-of-trim position.			P ---->	An aircraft may not be used for this exercise			
5.3 Cross wind landings (a/c, if practicable).			P ---->	----->			
5.4 Traffic pattern and landing without extended or with partly extended flaps and slats.			P ---->	----->			
5.5 Landing with critical engine simulated inoperative.			P ---->	----->		M	
5.6 Landing with two engines inoperative – Aeroplanes with three engines: the centre engine and one outboard engine as far as practicable according to data of the AFM. – Aeroplanes with four engines, two engines at one side.			P	X		M FS only (skill test only)	

General remarks:

Special requirements for extension of a type rating for instrument approaches down to a decision height of less than 200 feet (60 m), i.e. Cat II/III operations.

(Refer to Subpart E, ANTR-FCL 1.180)

	PRACTICAL TRAINING					TYPE-RATING SKILL TEST/PROF CHECK	
					Instructor's initials when training completed	Chkd in	Examiner's initials when test completed
Manoeuvres/Procedures (including Multi-Crew Cooperation)	OTD	FTD	FS	A		FS A	
SECTION 6							
<p>6 Additional authorisation on a type rating for instrument approaches down to a decision height of less than 60 m (200 ft) (CAT II/III)</p> <p>The following manoeuvres and procedures are the minimum training requirements to permit instrument approaches down to a DH of less than 60 m (200 ft). During the following instrument approaches and missed approach procedures all aeroplane equipment required for type certification of instrument approaches down to a DH of less than 60 m (200 ft) shall be used..</p> <p>6.1* Rejected take-off at minimum authorised RVR</p>			P* ---- >	----->X An aircraft may not be used for this exercise		M*	
<p>6.2* ILS Approaches</p> <p>In simulated instrument flight conditions down to the applicable DH, using flight guidance system. Standard procedures of crew co-ordination (tasksharing, call out procedures, mutual surveillance, information exchange and support) shall be observed.</p>			P ---- >	----->		M	

	PRACTICAL TRAINING					TYPE-RATING SKILL TEST/PROF CHECK	
					Instructor's initials when training completed	Chkd in	Examiners initials when test completed
Manoeuvres/Procedures (including Multi-Crew Cooperation)	OTD	FTD	FS	A		FS A	
6.3* Go-around after approaches as indicated in 6.2 on reaching DH. The training also shall include a go-around due to (simulated) insufficient RVR, wind shear, aeroplane 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 DH following an instrument approach. Depending on the specific flight guidance system, an automatic landing shall be performed			P ---- >	----->		M	

NOTE: CAT I/III operations shall be accomplished in accordance with Operational Rules.

Appendix 3 to ANTR-FCL 1.240**Contents of the Class/Type Rating/Training/Skill Test and Proficiency Check on Single Engine and Multi-Engine Single-Pilot Aeroplanes**

(See ANTR-FCL 1.240 through 1.262 and 1.295)

1 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.

2 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
FSTD= Flight Synthetic Training Device
FTD = Flight Training Device (including FNPT II for ME class rating)

- 3 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, the type/class rating will be restricted to VFR only.
- 4 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.
- 5 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.
- 6 When a proficiency check on a single-pilot aeroplane is performed in a multi-pilot operation in accordance with ANTR-OPS, the type/class rating will be restricted to multi-pilot.
- 7 A flight simulator or FNPT II shall be used for practical training for type or multi-engine class ratings if the simulator or FNPT II 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 flight simulator or FNPT II as set out in ANTR-FSTD;
 - (b) the qualifications of the instructors and examiner;
 - (c) the amount of flight simulator or FNPT II training provided on the course; and
 - (d) the qualifications and previous experience of the pilot under training.

Manoeuvres/Procedures	PRACTICAL TRAINING				TYPE/CLASS RATING SKILL TEST/ PROF CHECK	
	FTD	FS	A	Instructors initials when training completed	Chkd in FS A	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 Taxiing		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 --->	---->			
1.7 Climbing: V _x /V _y Turns onto headings Level off		P --->	---->		M	
1.8 ATC liaison – Compliance, R/T procedure						
SECTION 2						
2 Airwork (VFR)						
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	

		PRACTICAL TRAINING			TYPE/CLASS RATING SKILL TEST/ PROF CHECK		
Manoeuvres/Procedures					Instructors initials when training completed	Chkd in	Examiners initials when test completed
		FTD	FS	A		FS A	
2.5	ATC liaison – Compliance, R/T procedure						
SECTION 3A							
3A	En route procedures VFR (see Appendix 3 to ANTR-FCL 1.240 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 checks including 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		P --- >	---->		M	

Manoeuvres/Procedures	PRACTICAL TRAINING				TYPE/CLASS RATING SKILL TEST/ PROF CHECK	
	FTD	FS	A	Instructors initials when training completed	Chkd in FS A	Examiners initials when test completed
4.1 Aerodrome arrival procedure						
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	
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						

Appendix 1 to ANTR-FCL 1.246**Cross-Crediting of the IR Part of a Type or Class Rating Proficiency Check**

(See ANTR-FCL 1.246)

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 Appendix 3 to FCL 1.240	(a)
SP ME type rating, operated as single pilot	a. SP ME class , and b. SE class and type rating	(b)
SP ME type rating, restricted to MP operation	a. SP ME class * , and b. SE class and type rating *	(c)
SP ME class rating, operated as single pilot	a. SE class and type rating, and b. SP ME type rating	(d)
SP ME class rating, restricted to MP operation	a. SE class and type rating * , and b. SP ME type rating *	(e)
SP SE class rating	SE class and type rating	(f)
SP SE type rating	SE class and type rating	(g)

* Provided within the previous 12 months at least 3 IFR departures and approaches have been performed on a SP class or type of aeroplane in a single pilot operation.

Appendix 1 to ANTR-FCL 1.251**Course of Additional Theoretical Knowledge for a Class or Type Rating for High Performancesingle-Pilot Aeroplane**

(See Appendix 3 to ANTR-FCL 1.055)

(See ANTR-FCL 1.251)

(See Appendix 1 to ANTR-FCL 1.285)

(See AMC FCL 1.055(a))

(See AMC FCL 1.251)

HIGH PERFORMANCE AEROPLANE TRAINING

- 1 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.
- 2 The holder of an ICAO ATPL(A) or a pass in the theoretical knowledge examinations at ATPL(A) level is credited with meeting the requirement of ANTR-FCL 1.251(a)(3).
- 3 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).

COURSE PROVIDERS

- 4 Theoretical knowledge instruction for the HPA may be provided by an FTO approved to conduct theoretical knowledge training for the ATPL(A). Courses may also be provided by ATOs offering training for HPA class and type ratings, in which case the course will be subject to specific approval. Course providers will be required to certify completion of the training and demonstration of knowledge by the applicant as a pre-requisite for training for an initial type or class rating for aeroplanes designated as high performance.

COURSE SYLLABUS

- 5 There is no mandatory minimum or maximum duration of the theoretical knowledge instruction, which may be conducted by distance learning. The subjects to be covered in the course and written examination are shown in the accompanying table. Main subject headings are shown in Capital type, syllabus coverage by subject number in normal type. Subject numbers refer to those of the aeroplane syllabus of theoretical knowledge instruction contained in Appendix 1 to ANTR-FCL 1.470. Syllabus content is a general indication of areas to be covered and examination content should cover all subject numbers irrespective of their relevance to any specific type or class of aeroplane.

Subject Ref:	Syllabus Content:
021 00 00 00	AIRFRAME AND SYSTEMS, ELECTRICS, ENGINE
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 turbopropellor)
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 CS/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	Jetstreams 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

EXAMINATION

6. The written examination should consist of not less than 60 multi-choice questions, and may be split into individual subject papers at the discretion of FTO/ATO. The pass mark for the examination will be 75%.

Appendix 1 to ANTR-FCL 1.261(a)**Theoretical Knowledge Instruction Requirements for Skill Test/Proficiency Checking for Class/Type Ratings**

(See ANTR-FCL 1.261(a))

(See AMC FCL 1.261(a))

- 1 The theoretical knowledge instruction shall be conducted by an authorised instructor holding the appropriate type/class rating or any instructor having appropriate experience in aviation and knowledge of the aircraft concerned, e.g. flight engineer, maintenance engineer, flight operations officer.
- 2 The theoretical knowledge instruction shall cover the syllabus in AMC FCL 1.261(a), as appropriate to the aeroplane class/type concerned. Depending on the equipment and systems installed, the instruction shall include but is not limited to the following content:
 - (a) Aeroplane structure and equipment, normal operation of systems and malfunctions
 - Dimensions
 - Engine including auxiliary power unit
 - Fuel system
 - Pressurisation and air-conditioning
 - Ice protection, windshield wipers and rain repellent
 - Hydraulic systems
 - Landing gear
 - Flight controls, lift devices
 - Electrical power supply
 - Flight instruments, communication, radar and navigation equipment
 - Cockpit, cabin and cargo compartment
 - Emergency equipment
 - (b) Limitations
 - General limitations
 - Engine limitations
 - System limitations
 - Minimum equipment list
 - (c) Performance, flight planning and monitoring
 - Performance
 - Flight planning
 - Flight monitoring
 - (d) Load, balance and servicing
 - Load and balance
 - Servicing on ground
 - (e) Emergency procedures
 - (f) Special requirements for extension of a type rating for instrument approaches down to a decision height of less than 200 ft (60 m)
 - Airborne equipment, procedures and limitations
 - (g) Special requirements for “glass cockpit” aeroplanes
 - Electronic flight instrument systems (e.g. EFIS, EICAS)
 - (h) Flight Management systems (FMS)

- 3 For the initial issue of type ratings for multi-pilot aeroplanes the written or computer based examination shall at least comprise one hundred multi-choice questions distributed appropriately across the main subjects of the syllabus. The pass mark shall be 75% in each of the main subjects of the syllabus.
- 4 For the initial issue of type and class ratings for single-pilot multi-engine aeroplanes the number of multi-choice questions in the written or computer based examination shall depend on the complexity of the aeroplane. The pass mark shall be 75%.
- 5 For single-engine single-pilot aeroplanes the examiner may conduct the theoretical knowledge part of the skill test and proficiency check orally and shall determine whether or not a satisfactory level of knowledge has been achieved.
- 6 For proficiency checks multi-pilot and single-pilot multi-engine aeroplanes theoretical knowledge shall be verified by a multi-choice questionnaire or other suitable methods.

Appendix 1 to ANTR-FCL 1.261(c)(2)
Approval of Aeroplane Zero Flight Time Type Rating Courses

1 GENERAL

- (a) Approval for ZFTT will only be given to a Training Organisation of a ANTR-OPS 1 operator or a Training Organisation having a specific approved arrangement with a ANTR-OPS 1 operator.
- (b) The training organisation shall ensure that the student pre-requisites are met before starting the Type Rating Course.
- (c) The Type Rating will be restricted to that Operator until flying under supervision has been accomplished.

2 APPROVAL OF TYPE RATING COURSE USING ZFTT

- (a) The flight simulator to be used shall be qualified in accordance with ANTR-FSTD and user approved for ZFTT by the Authority. User approval will only be given if the flight simulator is representative of the aeroplane flown by the operator.
- (b) The flight simulator approved for ZFTT shall be serviceable according to the quality system criteria of the FSTD operator (see AMC FSTD A.025). Some equipment may be unserviceable provided that it is not required during the simulator lesson. The motion and the visual shall be fully serviceable.
- (c) Unless specified otherwise, a specific simulator session including a minimum of six additional take-offs and landings included in the type rating course shall be conducted according to ANTR-OPS 1.945(d)(2).
- (d) For an initial approval to conduct ZFTT the operator shall have held a ANTR-OPS Air Operator's Certificate for at least one year. This period may be reduced at the discretion of the Authority where the operator and the ATO have experience of type rating training.
- (e) Approval for ZFTT shall only be given if the operator has at least 90 days operational experience of the aeroplane type. In the case of ZFTT provided by a training organisation having a specific approved arrangement with a ANTR-OPS 1 Operator, the 90 days operational experience requirements will not apply if the TRI (A) involved in the additional take-offs and landings requirement in ANTR-OPS 1.945 (d)(2), has operational experience acceptable to the Authority on the aeroplane type.
- (f) The check required in ANTR-OPS 1.965(b) may be combined with the type rating skill test. When this is not, a conversion course shall be conducted and a check completed according to ANTR-OPS 1.945 before the specific simulator session.

3 REQUIRED PILOT EXPERIENCE

A pilot undertaking ZFTT course shall have completed, on a multi-pilot turbo-jet transport category aeroplane or on a multi-pilot turbo-prop aeroplane having a MTOM of not less than 10 tonnes or an approved passenger seating configuration of more than 19 passengers, at least:

- (a) 1500 hours flight time or 250 route sectors if a flight simulator qualified to level CG, C or interim C is used during the course; or
- (b) 500 hours flight time or 100 route sectors if a flight simulator qualified to level DG, Interim D or D is used during the 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 approved by the Authority shall be required.

Appendix 1 to ANTR-FCL 1.261(d)
Multi-Crew Co-Operation Course (Aeroplane)

(See ANTR-FCL 1.261(d))

(See AMC FCL 1.261(d))

- 1 The aim of the course is to become proficient in multi-crew co-operation (MCC) in order to operate safely multi-pilot multi-engine aeroplanes under IFR and, for that purpose, to ensure that:
 - (a) The pilot-in-command fulfils his managing and decision-making functions irrespective whether he is PF or PNF.
 - (b) The tasks of PF and PNF are clearly specified and distributed in such a manner that the PF can direct his full attention to the handling and control of the aircraft.
 - (c) Co-operation is effected in an orderly manner appropriate to the normal, abnormal or emergency situations encountered.
 - (d) Mutual supervision, information and support is ensured at all times.

INSTRUCTORS

- 2 Instructors for MCC training shall be thoroughly familiar with human factors and crew resource management (CRM). They should be current with the latest developments in human factors training and CRM techniques.

THEORETICAL KNOWLEDGE

- 3 The theoretical knowledge syllabus is set out in AMC FCL 1.261(d). An approved MCC theoretical knowledge course shall comprise not less than 25 hours.

FLYING TRAINING

- 4 The flying training syllabus is set out in AMC FCL 1.261(d).

CERTIFICATE OF COMPLETION

- 5 On completion of the course, the applicant may be issued with a certificate of satisfactory completion of the course.

CROSS-CREDITING

- 6 A holder of a certificate of completion of MCC training on helicopters shall be exempted from the requirement to complete the theoretical knowledge syllabus as set out in AMC FCL 1.261(d).

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SUBPART G**AIRLINE TRANSPORT PILOT LICENCE (Aeroplane) – ATPL(A)****ANTR-FCL 1.265 Minimum Age**

An applicant for an ATPL(A) shall be at least 21 years of age.

ANTR-FCL 1.270 Medical Fitness

An applicant for an ATPL(A) shall hold a valid Class 1 medical certificate. In order to exercise the privileges of the ATPL(A) a valid Class 1 medical certificate shall be held.

ANTR-FCL 1.275 Privileges and Conditions

- (a) Privileges of an ATPL(A) based on a CPL(A). Subject to any other conditions specified in ANTRs, the privileges of the holder of an ATPL(A) based on a CPL(A) are to:
 - (1) exercise all the privileges of the holder of a PPL(A), a CPL(A) and an IR(A); and
 - (2) act as pilot-in-command or co-pilot in aeroplanes engaged in commercial air transportation.
- (b) When the holder of an ATPL(A) has previously held only a multi-crew pilots licence, the privileges of the licence shall be restricted to multi-pilot operations unless the holder has met the requirements of ANTR-FCL 1 Subpart C and ANTR-FCL 1.510(a)(2) and (a)(3) as applicable to the operation of single pilot aeroplanes. Any such limitations shall be endorsed on the licence.
- (c) Conditions. An applicant for an ATPL(A) who has complied with the conditions specified in ANTR-FCL 1.010(a)(4), 1.265, 1.270, 1.280, 1.285, 1.290 and 1.295 shall have fulfilled the requirements for the issue of an ATPL(A) containing a type rating for the aeroplane type used on the skill test.

ANTR-FCL 1.280 Experience and Crediting

(See ANTR-FCL 1.050(a)(3))

- (a) An applicant for an ATPL(A) shall have completed as a pilot of aeroplanes at least 1500 hours of flight time (see also ANTR-FCL 1.050(a)(3)). Of the 1500 hours flight time, up to 100 hours of flight time may have been completed in FS and FNPT of which a maximum of 25 hours may have been completed in FNPT, including at least:
 - (1) 500 hours in multi-pilot operations on aeroplanes type certificated in accordance with the CS/FAR–25 Transport category or the CS/FAR–23 Commuter category, or BCAR or AIR 2051;
 - (2)
 - (i) 500 hours as pilot-in-command under supervision; or
 - (ii) 250 hours either as pilot-in-command; or
 - (iii) 250 hours made up by at least 70 hours as pilot-in-command and the necessary additional flight time 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 as pilot-in-command or as co-pilot.
- (b) (1) Holders of a pilot licence or equivalent document for other categories of aircraft will be credited with flight time in such other categories of aircraft as set out in ANTR-FCL 1.155 except flight time in helicopters which will be credited up to 50% of all the flight time requirements of sub-paragraph (a).
- (2) Holders of a flight engineer licence will be credited with 50% of the flight engineer time up to a maximum credit of 250 hours. This 250 hours may be credited against the 1 500 hours requirement of sub-paragraph (a), and the 500 hours requirement of sub-paragraph (a)(1), provided that the total credit given against any of these sub-paragraphs does not exceed 250 hours.
- (c) The experience required shall be completed before the skill test given in ANTR-FCL 1.295 is taken.

ANTR-FCL 1.285 Theoretical Knowledge

- (a) *Course.* An applicant for an ATPL(A) shall have received theoretical knowledge instruction on an approved course at an approved flying training organisation (FTO) An applicant who has not received the theoretical knowledge instruction during an integrated course of training shall take the course set out in Appendix 1 to ANTR-FCL 1.285.
- (b) *Examination.* An applicant for an ATPL(A) shall have demonstrated a level of knowledge appropriate to the privileges granted to the holder of an ATPL(A) and in accordance with the requirements in ANTR-FCL 1 (Aeroplane) Subpart J.

ANTR-FCL 1.290 Flight Instruction

(See Appendix 1 to ANTR-FCL 1.261(d))

(See AMC FCL 1.261(d))

An applicant for an ATPL(A) shall be the holder of a CPL(A), a multi-engine instrument rating (A) and have received instruction in multi-crew co-operation as required by ANTR-FCL 1.261(d) (see Appendix 1 to ANTR-FCL 1.261(d) and AMC FCL 1.261(d)) or be the holder of an MPL(A).

ANTR-FCL 1.295 Skill

- (a) [An applicant for an ATPL(A) shall have demonstrated the ability to perform, as pilot-in-command of an aeroplane type certificated for a minimum crew of two pilots under IFR, the procedures and manoeuvres described in Appendices 1 and 2 to ANTR-FCL 1.240 and 1.295 with a degree of competency appropriate to the privileges granted to the holder of an ATPL(A).]
- (b) The ATPL(A) skill test may serve at the same time as a skill test for the issue of the licence and a proficiency check for the revalidation of the type rating for the

aeroplane used in the test and may be combined with the skill test for the issue of a multi-pilot type rating.

Appendix 1 to ANTR-FCL 1.285**ATPL(A) – Modular Theoretical Knowledge Course**

(See ANTR-FCL 1.285)

(See Appendix 1a to ANTR-FCL 1.055)

(See Appendix 1 to ANTR-FCL 1.470)

- 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(A).
- 2 An applicant wishing to undertake an ATPL(A) modular course of theoretical knowledge instruction shall be required under the supervision of the Head of Training of an approved FTO to complete 650 hours (1 hour = 60 minutes instruction) of instruction for ATPL theory within a period of 18 months. An applicant shall be the holder of a PPL(A) issued in accordance with ICAO Annex 1.

Holders of a CPL(A)/IR may have the theoretical instruction hours reduced by 350 hours.

Holders of a CPL(A) may have the theoretical instruction hours reduced by 200 hours and holders of an IR may have the theoretical instruction hours reduced by 200 hours.

- 3 The FTO shall ensure that before being admitted to the course the applicant has a sufficient level of knowledge of Mathematics and Physics to facilitate an understanding of the content of the course.
- 4 The instruction shall cover all items in the relevant syllabi set out in the Appendix 1 to ANTR-FCL 1.470. An approved course should include formal classroom work and may include the use of such facilities as inter-active video, slide/tape presentation, learning carrels, computer based training and other media as approved by the Authority. Approved distance learning (correspondence) courses may also be offered as part of the course at the discretion of the Authority.

SUBPART H**INSTRUCTOR RATINGS (Aeroplane)****ANTR-FCL 1.300 Instruction – General**

- (a) A person shall not carry out the flight instruction required for the issue of any pilot licence or rating unless that person has:
- (1) a pilot licence containing an instructor rating; or
 - (2) a specific authorisation granted by the Authority in cases where:
 - (i) new aeroplanes are introduced; or
 - (ii) vintage aeroplanes or aeroplanes of special manufacture are registered, for which no person has an instructor rating; or
 - (iii) training is conducted outside of Bahrain by instructors not holding an ANTR-FCL licence (see Appendix 1 to ANTR-FCL 1.300).
- (b) A person shall not carry out synthetic flight instruction unless holding a FI(A), TRI(A), IRI(A), CRI(A) rating or a MCCI(A), SFI(A) or STI (A) authorisation. Paragraph (a)(2) above is also valid for the synthetic flight instruction.

ANTR-FCL 1.305 Instructor Ratings and Authorisation – Purposes

Seven instructor categories are recognised.

- (a) Flight instructor rating – aeroplane (FI(A)).
- (b) Type rating instructor rating – aeroplane (TRI(A)).
- (c) Class rating instructor rating – aeroplane (CRI(A)).
- (d) Instrument rating instructor rating – aeroplane (IRI(A)).
- (e) Synthetic flight instructor authorisation – aeroplane (SFI(A)).
- (f) Multi crew Co-operation instructor Authorisation Aeroplanes (MCCI(A)).
- (g) Synthetic training instructor authorisation – aeroplane (STI(A))

ANTR-FCL 1.310 Instructor Ratings – General

(See Appendix 1 to ANTR-FCL 1.310(d))

- (a) Pre-requisites. All instructors shall (unless specified otherwise):
- (i) hold at least the licence, rating and qualification for which instruction is being given , and
 - (ii) have at least 15 hours experience as pilot on the type or class of aeroplane on which instruction is being given, and

- (iii) shall be entitled to act as pilot-in-command of the aircraft during such training.
- (b) *Multiple roles.* Provided that they meet the qualification and experience requirements set out in this Subpart for each role undertaken, instructors are not confined to a single role as flight instructors (FIs), type rating instructors (TRIs), class rating instructors (CRIs) or instrument rating instructors (IRIs).
- (c) *Credit towards further authorisations or ratings.* Applicants for further instructor authorisations or ratings may be credited with the teaching and learning skills already demonstrated for the instructor authorisation or rating held.
- (d) (1) Instructor competencies for the MPL(A).

Instructors wishing to instruct at a training course with a competency based training approach shall:

- (i) hold a valid instructor rating or authorisation; and
 - (ii) have met the relevant requirements of this Subpart; and
 - (iii) have successfully completed the MPL(A) Instructors Training course as set out in Appendix 1 to ANTR-FCL 1.310(d).
 - (iv) for the basic, intermediate and advanced phases of the MPL(A) integrated training course, have experience in multi-pilot operations acceptable to the Authority and undertake the CRM elements of the operators conversion course in accordance with ANTR-OPS 1.945 paragraph (a)(9).
- (2) Maintenance of MPL(A) instructors qualification. To maintain the MPL(A) instructors qualification the instructor shall within the last 12 months, conduct one of the following parts of a complete MPL(A) training course:
- (i) one simulator session of at least 3 hours; or
 - (ii) one air exercise of at least 1 hour comprising a minimum of 2 take-offs and landings.
- (3) If the MPL(A) instructor, has not fulfilled the requirements of (2) above, he shall receive MPL(A) instructor refresher training acceptable to the Authority.

ANTR-FCL 1.315 Instructor Ratings and Authorisations – Period of Validity

- (a) All instructor ratings and authorisations are valid for a period of 3 years.
- (b) The validity period for a specific authorisation shall not exceed 3 years.
- (c) An applicant who fails to achieve a pass in all sections of a proficiency check before the expiry date of an instructor rating shall not exercise the privileges of that rating until the proficiency check has successfully been completed.

ANTR-FCL 1.320 Flight Instructor rating (aeroplane) (FI(A)) – Minimum age

An applicant for a flight instructor rating shall be at least 18 years of age.

ANTR-FCL 1.330 FI(A) – Privileges and Requirements

(See ANTR-FCL 1.325)

(See Appendix 1 to ANTR-FCL 1.330 & 1.345)

(See Appendix 1 to ANTR-FCL 1.395)

(See Appendix 1 to ANTR-FCL 1.520 & 525)

(See AMC FCL 1.395)

The privileges of the holder of a FI(A) rating (for restrictions see ANTR-FCL 1.325) are to conduct flight instruction for:

- (a) the issue of the PPL(A) and class and type ratings for single-engine aeroplanes;
- (b) the issue of a CPL(A), provided that the FI(A) has completed at least 500 hours of flight time as a pilot of aeroplanes including at least 200 hours of flight instruction;
- (c) night flying, provided a night qualification is held, the ability to instruct at night has been demonstrated to an FI(A) authorised to conduct FI(A) training in accordance with ANTR-FCL 1.330(f) and the night currency requirement of ANTR-FCL 1.026 is satisfied;
- (d)
 - (1) the issue of an IR(A) provided that the instructor has:
 - (i) At least 200 hours flight time in accordance with instrument flight rules, of which up to 50 hours may be instrument ground time in a flight simulator or FNPT II; and
 - (ii) completed as a student an approved course comprising at least 5 hours of flight instruction in an aeroplane, flight simulator or FNPT II (see Appendix 1 to ANTR-FCL 1.395 and AMC FCL 1.395) and has passed the appropriate skill test as set out in Appendix 1 to ANTR-FCL 1.330 & 1.345;
 - (2) in addition, for the issue an IR(A) multi-engine aeroplanes the instructor shall meet the requirements of ANTR-FCL 1.380(a).the issue of an IR(A) multi-engine aeroplanes, provided that the instructor meet the requirements of ANTR-FCL 1.380(a);
- (e) the issue of a single-pilot multi-engine type or class rating, provided that the instructor meets the requirements of ANTR-FCL 1.380(a);
- (f) the issue of a FI(A) rating, provided that the instructor:
 - (1) has completed at least 500 hours of instruction in aeroplanes; and
 - (2) has demonstrated to a FI(A) examiner the ability to instruct a FI(A) during a skill test conducted in accordance with Appendix 1 to ANTR-FCL 1.330 & 1.345; and
 - (3) is authorised by the Authority for this purpose.
- (g) the issue of a MPL(A):
 - (1) meet the requirements of ANTR-FCL 1.310(d)
 - (2) for the core flying phase of training (see Appendix 1 to ANTR-FCL 1.520 & 1.525), provided that the FI(A) has completed at least 500 hours of flight time as a pilot of aeroplanes including at least 200 hours of flight
 - (3) for the basic phase of training (see Appendix 1 to ANTR-FCL 1.520 & 1.525), provided that the FI(A) has an IR(A) ME, IR(A) instructional privileges; and

- (i) completed at least 1500 hours of flight time in multi-crew operations; or
- (ii) for existing FI(A) on ATP(A) or CPL(A)/IR integrated course, follow a structured course of training consisting of:
 - (A) MCC qualification; and
 - (B) observing 5 sessions of instruction in Phase 3 of an MPL(A) course; and
 - (C) observing 5 sessions of instruction in Phase 4 of a MPL(A) course; and
 - (D) observing 5 operator recurrent line oriented flight training sessions; and
 - (E) the content of the MCCI instructor course (AMC FCL 1.417); and
 - (F) the first 5 instructor sessions shall be supervised by a TRI(A) nominated by the Authority for the purpose.

ANTR-FCL 1.335 FI(A) – Pre-Requisite Requirements

(See Appendix 3 to ANTR-FCL 1.240)

(See Appendix 1 to ANTR-FCL 1.470)

Before being permitted to begin an approved course of training for a FI(A) rating an applicant shall have:

- (a) at least a CPL (A) or completed at least 200 hours of flight time of which at least 100 hours shall be as pilot-in-command if holding an ATPL(A) or CPL(A) or 150 hours as pilot-in-command if holding a PPL(A);
- (b) met the knowledge requirements for a CPL(A) as set out in Appendix 1 to ANTR-FCL 1.470;
- (c) completed at least 30 hours on single-engine piston powered aeroplanes of which at least five hours shall have been completed during the six months preceding the pre-entry flight test set out at (f) below;
- (d) received at least 10 hours instrument flight instruction of which not more than five hours may be instrument ground time in a FNPT or a flight simulator;
- (e) completed at least 20 hours of cross-country flight as pilot-in-command, including a flight totalling not less than 540 km (300 nm) in the course of which full stop landings at two different aerodromes shall be made; and
- (f) passed a specific pre-entry flight test with an FI qualified as in ANTR-FCL 1.330(f) based upon the proficiency check as set out in Appendix 3 to ANTR-FCL 1.240 within the six months preceding the start of the course. The flight test will assess the ability of the applicant to undertake the course.

ANTR-FCL 1.340 FI(A) – Course

(See Appendix 1 to ANTR-FCL 1.340)

(See AMC FCL 1.340)

- (a) An applicant for the FI(A) rating shall have completed an approved course of theoretical knowledge instruction and flight training at an approved FTO (see Appendix 1 to ANTR-FCL 1.340 and AMC FCL 1.340).

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- (b) The course is intended to train the applicant to give instruction on single-engine aeroplanes up to PPL(A) standard. The flight instruction shall comprise at least 30 hours of flight training, of which 25 hours shall be dual flight instruction. The remaining five hours may be mutual flying (that is, two applicants flying together to practice flight demonstrations). Of the 25 hours, five hours may be conducted in a flight simulator or FNPT approved for the purpose by the Authority. The skill test is additional to the course training time.

ANTR-FCL 1.345 FI(A) – Skill

(See Appendix 1 and 2 to ANTR-FCL 1.330 & 1.345)

An applicant for a FI(A) rating shall demonstrate to an examiner notified by the Authority for this purpose the ability to instruct a student pilot to the level required for the issue of a PPL(A), including pre-flight, post-flight and theoretical knowledge instruction, in accordance with the requirements of Appendices 1 and 2 to ANTR-FCL 1.330 & 1.345.

ANTR-FCL 1.350 FI(A) – Rating Issue

An applicant for a FI(A) rating

- (a) who has complied with the conditions specified in ANTR-FCL 1.310, 1.315 and 1.335 through 1.345, or
- (b) who has been issued a specific authorisation in accordance with Appendix 1 to ANTR-FCL 1.300, complies with the requirements of ANTR-FCL 1.355 and hold an ANTR-FCL licence shall have fulfilled the requirements for the issue of a FI(A) rating, subject to the initial restrictions set out in ANTR-FCL 1.325.

ANTR-FCL 1.355 FI(A) – Revalidation and Renewal

(See Appendices 1 and 2 to ANTR-FCL 1.330 & 1.345)

(See AMC FCL 1.355(a)(2))

(See IEM FCL 1.355)

- (a) For revalidation of a FI(A) rating the holder shall fulfil two of the following three requirements:
- (1) completed at least 100 hours of flight instruction on aeroplanes as FI, CRI, IRI or as examiner during the period of validity of the rating, including at least 30 hours of flight instruction within the 12 months preceding the expiry date of the FI rating, 10 hours of this 30 hours shall be instruction for an IR if the privileges to instruct for IR are to be revalidated;
 - (2) attended a FI refresher seminar (see AMC FCL 1.355(a)(2)), as approved by the Authority, within the validity period of the FI rating;
 - (3) passed, as a proficiency check, the skill test set out in Appendices 1 and 2 to ANTR-FCL 1.330 and 1.345 within the 12 months preceding the expiry date of the FI rating.
- (b) For at least each alternate revalidation of a FI(A) rating the holder shall pass, as a proficiency check, the skill test set out in Appendices 1 and 2 to ANTR-FCL 1.330 & 1.345 as one of the two requirements to be fulfilled to comply with ANTR-FCL 1.355(a).
- (c) If the rating has lapsed, the applicant shall meet the requirements as set out in (a)(2) and (a)(3) above within the last 12 months before renewal .

ANTR-FCL 1.360 Type Rating Instructor Rating (Multi-Pilot Aeroplane) (TRI(MPA)) –**Privileges**

(See ANTR-FCL 1.261(d))

(See Appendix 1 to ANTR-FCL 1.261(d))

(See Appendix 1 to ANTR-FCL 1.520 & 525)

(See AMC FCL 1.261(d))

- (a) The privileges of the holder of a TRI(MPA) rating are to instruct for;
 - (1) the issue of a MPA type rating;
 - (2) the instruction required for multicrew co-operation (see ANTR-FCL 1.261(d), Appendix 1 to ANTR-FCL 1.261(d) and AMC FCL 1.261(d)); and
 - (3) the instruction required during the basic phase of training of the MPL(A) integrated training course (see Appendix 1 to ANTR-FCL 1.520 & 1.525), provided he holds or has held a FI(A) or an IRI(A) rating and the requirements of ANTR-FCL 1.310(d) are met.
 - (4) the instruction required during intermediate and advanced phases of training of the MPL(A) integrated training course (see Appendix 1 to ANTR-FCL 1.520 & 1.525), provided the requirements of ANTR-FCL 1.310(d) are met.
- (b) If the TRI(A) training is carried out in a flight simulator only, the TRI(A) rating will be restricted to exclude emergency/abnormal procedure training in an aircraft. To remove this restriction the holder of a TRI(A) rating shall perform the training contained in AMC FCL 1.365 Part 2 Paragraph 8 in an aeroplane.

ANTR-FCL 1.365 TRI(MPA) – Requirements

(See Appendix 1 to ANTR-FCL 1.365)

(See AMC FCL 1.365)

- (a) An applicant for the initial issue of a TRI(MPA) rating shall have:
 - (1) successfully completed an approved TRI course at an approved FTO or ATO (see Appendix 1 to ANTR-FCL 1.365 and AMC FCL 1.365);
 - (2) completed at least 1500 hours flight time as a pilot of multi-pilot aeroplanes;
 - (3) completed within the 12 months preceding the application at least 30 route sectors, to include take-offs and landings as pilot-in-command or co-pilot on the applicable aeroplane type, or a similar type as agreed by the Authority, of which not more than 15 sectors may be completed in a flight simulator; and
 - (4) conducted on a complete type rating course at least 3 hours of flight instruction related to the duties of a TRI on the applicable type of aeroplane and/or flight simulator under the supervision and to the satisfaction of a TRI notified by the Authority for this purpose.

The requirements above are fulfilled if the applicant hold an ANTR-FCL licence, have been issued a specific authorisation in accordance with Appendix 1 to ANTR-FCL 1.300 and complies with ANTR-FCL 1.370.

- (b) Before the privileges are extended to further MPA types, the holder shall have:
 - (1) completed, within the 12 months preceding the application, at least 15 route sectors, to include take-offs and landings as pilot-in-command or co-pilot on the applicable aeroplane type, or a similar type as agreed by the Authority, of which not more than 7

sectors may be completed in a flight simulator;

- (2) satisfactorily completed the relevant technical training content of an approved TRI course at an approved FTO or ATO (see AMC FCL 1.365); and
- (3) conducted on a complete type rating course at least 3 hours of flight instruction related to the duties of a TRI(MPA) on the applicable type of aeroplane and/or flight simulator under the supervision and to the satisfaction of a TRI(A) notified by the Authority for this purpose.

ANTR-FCL 1.370 TRI(MPA) – Revalidation and Renewal

(See Appendix 1 to ANTR-FCL 1.365)

(See AMC FCL 1.365)

- (a) For revalidation of a TRI(MPA) rating, the applicant shall within the last 12 months, preceding the expiry date of the rating:
 - (1) conduct one of the following parts of a complete type rating/refresher/recurrent training course:
 - (i) one simulator session of at least 3 hours; or
 - (ii) one air exercise of at least 1 hour comprising a minimum of 2 take offs and landings; or
 - (2) receive TRI(A) refresher training acceptable to the Authority.
- (b) If the rating has lapsed the applicant shall have:
 - (1) completed within the 12 months preceding the application at least 30 route sectors, to include take-offs and landings as pilot-in-command or co-pilot on the applicable aeroplane type, or a similar type as agreed by the Authority, of which not more than 15 sectors may be completed in a flight simulator;
 - (2) successfully completed the relevant parts of an approved TRI(MPA) course, agreed by the Authority (see Appendix 1 to ANTR-FCL 1.365 and AMC FCL 1.365), taking into account the recent experience of the applicant; and
 - (3) conducted on a complete type rating course at least 3 hours of flight instruction related to the duties of a TRI(MPA) on the applicable type of aeroplane and/or flight simulator under the supervision and to the satisfaction of a TRI(A) notified by the Authority for this purpose.

ANTR-FCL 1.375 Class Rating Instructor Rating (Single-Pilot Aeroplane) (CRI(SPA)) – Privileges

(See ANTR-FCL 1.310(a))

The privileges of the holder of a CRI(SPA) rating are to instruct licence holders for the issue of a type or class rating for single-pilot aeroplanes. The holder may instruct on single-engine or multi-engine aeroplanes, subject to being appropriately qualified (see ANTR-FCL 1.310(a)).

ANTR-FCL 1.380 CRI(SPA) – Requirements

(See Appendix 1 to ANTR-FCL 1.330 & 1.345)

(See Appendices 1 and 2 to ANTR-FCL 1.380)

(See AMC FCL 1.380)

- (a) Multi-engine aeroplanes. An applicant for the issue of a CRI(SPA) rating for multiengine aeroplanes shall have:
 - (1) completed at least 500 hours flight time as a pilot of aeroplanes;
 - (2) completed at least 30 hours as PIC on the applicable type or class of aeroplane, prior to commencing the course.
 - (3) completed an approved course at an approved FTO or ATO including at least five hours flight instruction on the aeroplane or a flight simulator given by an instructor approved for this purpose (see Appendix 1 to ANTR-FCL 1.380 and AMC FCL 1.380); and
 - (4) passed a skill test in accordance with Appendix 1 and Sections 1, 2, 3, 5 and 7 of Appendix 2 to ANTR-FCL 1.330 & 1.345.
- (b) Single-engine aeroplanes. An applicant for the issue of a CRI(SPA) rating for single engine aeroplanes shall have:
 - (1) completed at least 300 hours flight time as a pilot of aeroplanes;
 - (2) completed at least 30 hours as PIC on the applicable type or class of aeroplane, prior to commencing the course.
 - (3) completed an approved course at an approved FTO or ATO of at least three hours flight instruction on the aeroplane or a flight simulator given by an instructor approved for this purpose (see Appendix 2 to ANTR-FCL 1.380); and
 - (4) passed a skill test in accordance with Appendix 1 and Sections 1, 2, 3, 4 and 7 of Appendix 2 to ANTR-FCL 1.330 & 1.345.
- (c) Before the privileges of the rating are extended to another type or class of aeroplane, the holder shall within the past 12 months have completed at least 10 hours flight time on aeroplanes of the applicable class or type or similar type as agreed by the Authority. For an extension of a CRI(A) from SE to ME aeroplanes the requirements of (a) above shall be met.

ANTR-FCL 1.385 CRI(SPA) – Revalidation and Renewal

(See Appendix 1 to ANTR– ANTR-FCL 1.330 & 1.345)

- (a) For revalidation of a CRI(SPA) rating the applicant shall within the 12 months preceding the expiry date of the rating:
 - (1) (i) conduct at least 10 hours flight instruction in the role of a CRI(SPA);
and
 - (ii) If the applicant has CRI(SPA) privileges on both SE and ME aeroplanes, conduct at least 5 hours on SE aeroplanes and 5 hours on ME aeroplanes within the 10 hours of flight instruction required in the role, or
 - (2) conduct refresher training to the satisfaction of the Authority; or
 - (3) receive a refresher training as a CRI(A).

- (b) If the rating has lapsed, the applicant shall have within the 12 months preceding the application:
- (1) received refresher training as a CRI(A) to the satisfaction of the Authority; and
 - (2) passed as a proficiency check the relevant part (i.e. ME or SE) of the skill test set out in Appendix 1 and 2 to ANTR-FCL 1.330 & 1.345.

ANTR-FCL 1.390 Instrument Rating Instructor Rating (Aeroplane) (IRI(A)) –Privileges

The privileges of the holder of an IRI(A) rating are limited to conduct flight instruction for :

- (a) the issue of an IR(A) single-engine aeroplanes;
- (b) the issue of an IR(A) multi-engine aeroplanes, provided that the instructor meets the requirements of ANTR-FCL 1.380(a).
- (c) the basic phase of training (see Appendix 1 to ANTR-FCL 1.520 & 1.525) provided that the IRI(A) has an IR(A) ME, IR(A) instructional privileges; and
 - (1) completed at least 1500 hours of flight time in multi-crew operations; or
 - (2) for existing IRI(A) on ATP(A) or CPL(A)/IR integrated course, follow a structured course of training consisting of:
 - (i) MCC qualifications; and
 - (ii) observing 5 sessions of instruction in Phase 3 of a MPL(A) course; and
 - (iii) observing 5 sessions of instruction in Phase 4 of a MPL(A) course; and
 - (iv) observing 5 operator recurrent line oriented flight training sessions; and
 - (v) the content of the MCC instructor course (AMC FCL 1.417); and
 - (vi) the first 5 instructor sessions shall be supervised by a TRI(A) nominated by the Authority for the purpose.

ANTR-FCL 1.395 IRI(A) – Requirements

(See Appendix 1 to ANTR-FCL 1.330 & 1.345)

(See Appendix 1 to ANTR-FCL 1.395)

(See AMC FCL 1.395)

An applicant for an IRI(A) rating shall have:

- (a) completed at least 800 hours flight time under IFR, of which at least 400 hours shall be in aeroplanes;
- (b) successfully completed at an approved FTO an approved course (see Appendix 1 to ANTR-FCL 1.395 and AMC FCL 1.395) comprising theoretical knowledge instruction and at least ten hours of flight instruction on an aeroplane, flight simulator or FNPT II; and
- (c) passed a skill test as set out in Appendices 1 and 2 to ANTR-FCL 1.330 & 1.345.

ANTR-FCL 1.400 IRI(A) – Revalidation and Renewal

- (a) For revalidation of an IRI(A) rating the holder shall meet the requirements set out in ANTR-FCL 1.355(a).
- (b) If the rating has lapsed, the holder shall meet the requirements of ANTR-FCL 1.355(c), and any other requirements determined by the Authority.

ANTR-FCL 1.405 Synthetic Flight Instructor Authorisation (Aeroplane) (SFI(A)) – Privileges

(See ANTR-FCL 1.261(d))

(See Appendix 1 to ANTR-FCL 1.520 & 525)

The privileges of the holder of a SFI(A) authorisation are to carry out synthetic flight instruction, within the relevant aircraft category, for:

- (a) the issue, revalidation and renewal of an IR, provided that he/she holds or has held an IR in the relevant aircraft category and has completed an IRI training course;
- (b) in the case of SFI for multi-pilot aeroplanes:
 - (1) the issue, revalidation and renewal of type ratings;
 - (i) multi-pilot aeroplanes;
 - (ii) single-pilot high performance complex aeroplanes when the applicant seeks privileges to operate in multi-pilot operations;
 - (2) MCC;
 - (3) The MPL course on the basic, intermediate and advanced phases, (see Appendix 1 to ANTR-FCL 1.520 & 1.525), provided that, for the basic phase, he/she holds or has held an FI(A) or an IRI(A) rating and the requirements of ANTR-FCL 1.310(d) are met.
- (c) for multi-crew co-operation (see ANTR-FCL 1.261(d)).

ANTR-FCL 1.410 SFI(A) – Requirements

(See Appendix 1 to ANTR-FCL 1.240)

(See Appendix 1 to ANTR-FCL 1.365)

(See AMC FCL 1.365)

An applicant for a SFI(A) authorisation 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 in an FFS representing the applicable type, within the 12 months preceding the application as set out in Appendix 1 and 2 to ANTR-FCL 1.240 on a flight simulator of the applicable type; and;
- (c) additionally, for an SFI(A) for multi-pilot aeroplanes have:
 - (1) At least 1 500 hours flight time as a pilot on multi-pilot aeroplanes
 - (2) Completed, as a pilot or 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 of at least 2 hours each between 2 different aerodromes, and the associated pre-flight planning and de-briefing;
- (3) have completed an approved TRI(A) course (see Appendix 1 to ANTR-FCL 1.365 and AMC FCL 1.365);

The requirements above are fulfilled if the applicant has been issued a specific authorisation in accordance with Appendix 1 to ANTR-FCL 1.300 and comply with the requirements of ANTR-FCL 1.415.

The privileges of the SFI shall be restricted to the FTD 2/3 or FFS of the aircraft type in which the SFI training course was taken.

The privileges may be extended to other FSTDs representing further types of the same category of aircraft when the holder has:

- (a) Satisfactorily completed the simulator content of the relevant type rating course; and
- (b) Conducted on a complete type rating course at least 3 hours of flight instruction related to the duties of an SFI on the applicable type under the supervision and to the satisfaction of a TRE qualified for this purpose.

ANTR-FCL 1.415 SFI(A) – Revalidation and Renewal

(See Appendix 1 to ANTR-FCL 1.240)

(See Appendix 1 to ANTR-FCL 1.365)

(See AMC FCL 1.365)

- (a) For revalidation of a SFI(A) authorisation the applicant shall within the last 12 months of the validity period of the authorisation, fulfil 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 SFI certificate;
 - (2) Receive instructor refresher training as an SFI at an ATO;
 - (3) Have completed a proficiency check as set out in Appendix 1 and 2 to ANTR-FCL 1.240 on a flight simulator of the appropriate type.
- (b) If the authorisation has lapsed the applicant shall have:
 - (1) completed the simulator content of the applicable type rating course;
 - (2) successfully completed an approved TRI(A) course as agreed by the Authority (see Appendix 1 to ANTR-FCL 1.365 and AMC FCL 1.365)
 - (3) conducted on a complete type rating course at least 3 hours of flight instruction related to the duties of a TRI(A) on the applicable type of aeroplane under the supervision and to the satisfaction of a TRI(A) notified by the Authority for this purpose.
 - (4) have completed a proficiency check as set out in Appendix 1 to ANTR-FCL 1.240 on a flight simulator of the appropriate type.

ANTR-FCL 1.416 Multi Crew Co-operation Course Instructor Authorisation (Aeroplane)**MCCI(A) – Privileges**

(See Appendix 1 to ANTR-FCL 1.520 & 525)

The privileges of the holder of a MCCI(A) are to carry out instruction during:

- (a) The practical part of MCC-courses when not combined with type rating training; and
- (b) The basic phase of the MPL(A) integrated training course (see Appendix 1 to ANTR-FCL 1.520 & 1.525), provided he holds or has held a FI(A) rating and the requirements of ANTR-FCL 1.310(d) are met.

ANTR-FCL 1.417 MCCI(A)-Requirements

(See AMC FCL 1.417)

- (a) An applicant for a MCCI(A) authorisation shall:
 - (1) hold or have held a professional pilot licence issued by an ICAO Contracting State acceptable to the Authority.
 - (2) have at least 1500 hours flying experience as pilot on multi-pilot aeroplanes
 - (3) have completed on a FNPT II or a flight simulator an approved MCCI course (see AMC FCL 1.417).
 - (4) have conducted on a complete MCC course at least 3 hours of flight instruction /MCC- instruction on the relevant FNPT II or flight simulator under the supervision and to the satisfaction of a TRI(A), SFI(A) or MCCI(A) notified by the Authority for this purpose.
- (b) If the privileges are to be extended to another type of FNPT II or flight simulator the holder shall complete (a) (4) above on that type of FNPT II or FS.

ANTR-FCL 1.418 MCCI(A)- Revalidation and Renewal.

- (a) For revalidation of a MCCI(A) authorisation the applicant shall within the last 12 months of the validity period of authorisation have completed the requirement in ANTR-FCL 1.417(a)(4)
- (b) If the authorisation has lapsed the applicant shall:
 - (1) meet any requirement of refresher training at the discretion of the Authority; and
 - (2) have completed the requirement in ANTR-FCL 1.417(a)(4).

ANTR-FCL 1.419 Synthetic Training Instructor Authorisation (Aeroplane) STI(A) – Privileges, Requirements, Revalidation and Renewal

(See Appendix 1 to ANTR-FCL 1.520 & 525)

- (a) Privileges. The privileges of the holder of a STI(A) authorisation are to carry out synthetic flight instruction;
 - (1) for issue of a licence;
 - (2) for issue of an instrument rating and class or type rating for single pilot aeroplanes; and
 - (3) during for the core flying skills training of the MPL(A) integrated training course (see

Appendix 1 to ANTR-FCL 1.520 & 1.525), provided the requirements of ANTR-FCL 1.310(d) are met.

- (b) Requirements. An applicant for a STI(A) authorisation shall:
- (1) hold or have held within the previous 3 years a pilot licence containing an instructional qualification appropriate to the courses on which instruction is intended or an ICAO Contracting State licence acceptable to the Authority;
 - (2)
 - (i) have conducted in a flight simulator or FNPT II at least 3 hours of flight instruction related to the duties of a STI(A) under the supervision and to the satisfaction of an FIE(A) notified by the Authority for this purpose; or
 - (ii) for a STI(A) wishing to instruct on a BITD only, have completed on a BITD at least 3 hours of flight instruction under the supervision and to the satisfaction of an FIE(A) notified by the Authority for this purpose;
 - (3)
 - (i) have completed within a period of 12 months preceding the application a proficiency check in accordance with Appendix 3 to ANTR-FCL 1.240 in an FNPT of the class or type of aeroplane appropriate to the instruction intended; or
 - (ii) for an STI(A) wishing to instruct on BITDs only, have completed within a period of 12 months preceding the application a proficiency check covering only those exercises listed in Appendix 1 to ANTR-FCL 1.125.
- (c) For revalidation of a STI(A) authorisation the applicant shall within the last 12 months of the validity period of the authorisation:
- (1) conducted at least 3 hours of instruction in a flight simulator or FNPT II or BITD where applicable as part of a complete CPL, IR, PPL or class or type rating course, and
 - (2) have completed Section 3B of the proficiency check set out in Appendix 3 to ANTR-FCL 1.240 for the appropriate type or class of aeroplane in a flight simulator or FNPT II on which instruction is routinely conducted; or
 - (3) for an STI(A) instructing on BITDs only, have completed a proficiency check covering only those exercises listed in Appendix 1 to ANTR-FCL 1.125.
- (d) If the authorisation has lapsed the applicant shall have:
- (1)
 - (i) completed at least 3 hours refresher training in a flight simulator or FNPT II; or
 - (ii) for an STI(A) wishing to instruct in BITDs only, completed at least 3 hours refresher training in a BITD;
 - (2) conducted on a complete CPL, IR, PPL or class or type rating course at least 3 hours instruction under the supervision and to the satisfaction of a FIE(A), FI(A), CRI(A), IRI(A), TRI(A) or SFI(A) notified by the Authority for this purpose. At least one hour instruction shall be supervised and to the satisfaction of an FIE(A);
 - (3)
 - (i) completed Section 3B of the proficiency check set out in Appendix 3 to ANTR-FCL 1.240 for the appropriate type or class of aeroplane in a flight simulator or FNPT II on which instruction is routinely conducted; or
 - (ii) for an STI(A) instructing on BITDs only, have completed a proficiency check covering only those exercises listed in Appendix 1 to ANTR-FCL 1.125.

Appendix 1 to ANTR-FCL 1.300**Requirements for a specific authorisation for instructors not holding an ANTR-FCL licence to instruct in an ATO outside of Bahrain or in a FTO partial training outside of Bahrain in accordance with Appendix 1b to ANTR-FCL 1.055**

(See ANTR-FCL 1.300(a)(2)(iii))

- 1 (a) Instructors seeking to instruct for an ANTR-FCL licence including class and instrument ratings shall:
 - (i) hold at least a CPL and ratings issued in accordance with ICAO Annex I required by the that State for the instruction to be given on aircraft registered in that State;
 - (ii) have completed at least 500 hours of flight time as a pilot of aeroplanes of which at least 200 hours shall be as a flight instructor, including experience in the role of instruction to be given, and meet the experience requirements of ANTR-FCL 1.330(a), (b), (c), (d) and/or (e);
 - (iii) have completed in accordance with ANTR-FCL the approved relevant course(s) of theoretical instruction and flight training. The course may be modified, as approved by the Authority, taking into account the previous training and the experience of the applicant, but shall comprise at least 30 hours of ground instruction and 15 hours of dual flight instruction performed by a flight instructor holding an ANTR-FCL licence and rating in accordance with ANTR-FCL 1.330(f);
 - (iv) have passed the skill test set out in ANTR-FCL 1.345;
 - (v) have a validity period of the authorisation is at the discretion of the Authority but not exceeding 3 years;
 - (vi) conduct no instruction for part of MPL training where MCC principles are taught.
 - (vii) revalidate or renew any authorisation issued in accordance with para (i) - (iv) above shall be in accordance with ANTR-FCL 1.355.
- (b) The authorisation will be restricted as follows:
 - (i) no instruction for the issue of any instructor ratings;
 - (ii) no instruction within Bahrain;
 - (iii) instruction to students only who have sufficient knowledge of the language in which the instruction is given;
 - (iv) to those parts of the ATP integrated course where the instructor can demonstrate the experience relevant to the intended training according to paragraph 1(a)(ii);
 - (v) no instruction for MCC training as defined in Appendix 1 to ANTR-FCL 1.261(d) and AMC FCL 1.261(d).
- 2 (a) Instructors seeking to instruct for an ANTR- FCL type rating shall:
 - (i) hold at least the licence and ratings issued in accordance with ICAO Annex I required by the respective State for the instruction to be given on aircraft registered in that State;

- (ii) comply with the experience requirements of ANTR-FCL 1.365(a)(2) and (3) in order to act as TRI (A) or with ANTR-FCL 1.410(a)(3) and (7) in order to act as SFI(A).
 - (iii) have completed as a type rating instructor (TRI(A) or equivalent) at least 100 hours of flight or simulator instruction time;
 - (iv) validity period of the authorisation is at the discretion of the Authority but not exceeding 3 years;
 - (v) have complied with the revalidation requirements of ANTR-FCL 1.370 acting as TRI(A) or ANTR-FCL 1.415 acting as SFI(A).
- (b) The authorisation will be restricted as follows:
- (i) no instruction for the issue of any instructor ratings;
 - (ii) no instruction within Bahrain.
 - (iii) instruction to students only who have sufficient knowledge of the language in which the instruction is given
 - (iv) no instruction for MCC training as defined in Appendix 1 to ANTR-FCL 1.261(d) and AMC FCL 1.261(d).

Appendix 1 to ANTR-FCL 1.310(d)
MPL(A) Instructors Training Course
(See ANTR-FCL 1.310(d))
(See AMC FCL 1.310(d))
(See IEM FCL 1.310(d))

COURSE OBJECTIVE

1. Instructors delivering MPL training shall be able to deliver competency based training, in particular to:
 - a. Demonstrate knowledge of the competency based approach to training
 - b. Prepare resources
 - c. Create a climate conducive to learning
 - d. Present knowledge
 - e. Integrate threat and error management and CRM
 - f. Manage Time to achieve training objectives
 - g. Facilitate learning
 - h. Assess trainee performance
 - i. Monitor and review progress
 - j. Evaluate training sessions
 - k. Report outcome
2. The objective of the MPL(A) Instructors Training course is to train applicants to deliver training in accordance with the features of a competency based approach to training and assessment. An approved MPL(A) Instructors Training course shall comprise not less than 14 hours of training.
3. Approval for a MPL(A) Instructor Training course shall only be given to a FTO of a ANTR-OPS 1 operator or a FTO having a specific approved arrangement with a ANTR-OPS 1 operator. The FTO shall, itself, be approved to conduct MPL(A) training course.

MPL(A) INSTRUCTOR QUALIFICATION CERTIFICATE

4. On completion of the training course, an assessment of instructor competence shall be a practical demonstration of instruction in the appropriate phase of the MPL(A) training course. The course shall be conducted under the supervision and to the satisfaction of a TRI(A) notified by the Authority for this purpose. The FTO shall issue the applicant with a certificate as evidence of successful course completion.

Appendix 1 to ANTR-FCL 1.330 & 1.345**Arrangements for the Flight Instructor Rating (FI(A)) Skill Test, Proficiency Check and Oral Theoretical Knowledge Examination**

(See ANTR-FCL 1.330, 1.345, 1.355, 1.380, 1.385 and 1.395)

- 1 The skill test for a FI(A) rating is set out in Appendix 2 to ANTR-FCL 1.330 & 1.345. The test comprises oral theoretical examinations on the ground, pre-flight and post flight briefings and in-flight FI(A) demonstrations during skill tests in an aeroplane.
- 2 An applicant for the skill test shall have received instruction on the same type or class of aeroplane used for the test. The aeroplane used for the test shall meet the requirements set out in Appendix 1a to ANTR-FCL 1.055, paragraph 25.
- 3 Before taking the skill test an applicant shall have completed the required training. The FTO shall produce the applicant's training records when required by the examiner.
- 4 Section 1, the oral theoretical knowledge examination part of the skill test, is sub-divided into two parts:
 - (a) 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–h of Section 1. The amount of time for preparation of the test lecture shall be agreed beforehand with the examiner. Appropriate literature may be used by the applicant. The test lecture should not exceed 45 minutes.
 - (b) the applicant is tested orally by an examiner for knowledge of items a–i of Section 1 and the 'teaching and learning' content given in the FI(A) courses.
- 5 Section 2, 3 and 7 are for a FI(A) rating for single engine (SE) single pilot aeroplanes (SPAs). These sections comprise exercises to demonstrate the ability to be a FI(A) (i.e. instructor demonstration exercises) chosen by the examiner from the flight syllabus of the FI(A) training courses (see AMC FCL 1.340, 1.380 and 1.395). The applicant will be required to demonstrate FI(A) abilities, including briefing, flight instruction and de-briefing.
- 6 Section 4 is intentionally blank and may be used for the inclusion of other FI(A) demonstration exercises, as decided by the examiner and acknowledged by the applicant before the skill test.
- 7 Section 5 comprises additional instructor demonstration exercises for a FI(A) rating for multi-engine (ME) SPAs. This section, if required, shall use a ME SPA, simulator or FNPT II. If a simulator or FNPT is used, this shall simulate a ME aeroplane. This section shall be completed in addition to Section 2, 3 and 4 (if applicable) and 7.
- 8 Section 6 is intentionally blank. This part will include additional FI(A) rating demonstration exercises, as decided by the examiner and agreed with the applicant before the skill test, for a FI(A) rating for instrument ratings (IR). These exercises will be related to the training requirements for the initial issue of an IR.
- 9 During the skill test the applicant shall occupy the seat normally occupied by the FI(A). The examiner or another FI(A) 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 manoeuvre including typical mistakes of inexperienced students. The applicant is expected to correct mistakes orally and/or, if necessary, by intervening.

- 10 Section 1 and 2 through 7 (as relevant) shall be completed within a period of six months but all Sections should, wherever possible, be completed on the same day. Failure in any exercise within Sections 2, 3 and 4 (if applicable) and 5/6 (if relevant) requires a re-test covering all exercises. Section 1, if failed, may be retaken separately.
- 11 The examiner may terminate the test at any stage if it is considered that the applicant's demonstration of flying or instructional skills require a re-test.
- 12 The examiner shall be the pilot-in-command, except in circumstances agreed by the examiner when another FI(A) is designated as pilot-in-command for the flight. Responsibility for the flight shall be allocated in accordance with Bahraini regulations.
- 13 The skill test contents and sections set out in Appendix 2 to ANTR-FCL 1.330 & 1.345 shall be used for the skill test. The format and application form for the skill test may be determined by the Authority (see IEM FCL 1.330).

Appendix 2 to ANTR-FCL 1.330 & 1.345**Contents of the Flight Instructor Rating (FI(A)) Skill Test, Oral Theoretical Knowledge Examination and Proficiency Check**

(See ANTR-FCL 1.330 and FCL 1.345)

(See IEM FCL 1.330)

SECTION 1 THEORETICAL KNOWLEDGE ORAL	
a	Air law
b	Aircraft General Knowledge
c	Flight Performance and Planning
d	Human Performance and Limitations
e	Meteorology
f	Navigation
g	Operational Procedures
h	Principles of Flight
i	Training Administration

**SECTIONS 2 AND 3
SELECTED MAIN EXERCISE:**

SECTION 2 PRE-FLIGHT BRIEFING	
a	Visual Presentation
b	Technical Accuracy
c	Clarity of Explanation
d	Clarity of Speech
e	Instructional Technique
f	Use of Models and Aids
g	Student Participation
SECTION 3 FLIGHT	
a	Arrangement of Demo
b	Synchronisation of Speech with Demo
c	Correction of Faults
d	Aeroplane Handling
e	Instructional Technique
f	General Airmanship/Safety
g	Positioning, use of Airspace
SECTION 4 OTHER EXERCISES	
a	
b	
c	
d	
e	
f	
g	
SECTION 5 MULTI-ENGINE EXERCISES	
a	¹ Actions following an Engine failure shortly after take-off
b	¹ A single-engine approach and go around
c	¹ A single-engine approach and landing

d	
e	
f	
g	

- 1 These exercises shall be demonstrated at the skill test for the single-pilot multi-engine class rating instructor rating.

SECTION 6 INSTRUMENT EXERCISES	
a	
b	
c	
d	
e	
f	
g	
SECTION 7 POSTFLIGHT DE-BRIEFING	
a	Visual Presentation
b	Technical Accuracy
c	Clarity of Explanation
d	Clarity of Speech
e	Instructional Technique
f	Use of Models and Aids
g	Student Participation

Appendix 1 to ANTR-FCL 1.340
Flight Instructor Rating (Aeroplane) (FI(A)) Course
(See ANTR-FCL 1.340)
(See AMC FCL 1.340)

COURSE OBJECTIVE

- 1 The aim of the FI(A) course is to train aeroplane licence holders to the level of proficiency necessary for the issue of a FI(A) rating and, for that purpose, to
 - a. refresh and bring up to date 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 level.
- 2 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 PPL(A) course syllabus and should already be known by the applicant.
- 3 The FI(A) 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.
- 4 During the course, the applicants shall be made aware of their own attitudes to the importance of flight safety. Improving safety awareness shall 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.
- 5 On successful completion of the course and final test the applicant may be issued with a FI(A) rating.

TEACHING AND LEARNING

- 6 The syllabus is set out in AMC FCL 1.340, Part 1. An approved FI(A) theoretical knowledge course shall comprise not less than 125 hours including progress tests. Pilots holding or having held a FI(H) rating are credited with 75 hours towards the 125 hours of the Teaching and Learning Part 1 of the FI(A) course.

FLYING TRAINING

- 7 The flying training syllabus is set out in AMC FCL 1.340, Part 2. An approved FI(A) course shall comprise not less than 30 hours of flight instruction.

SKILL TEST

- 8 On completion of the course, the applicant shall take the skill test in accordance with Appendices 1 and 2 to ANTR-FCL 1.330 & 1.345.

Appendix 1 to ANTR-FCL 1.365**Course for the Type Rating Instructor Rating for Multi-Pilot Aeroplane (TRI) (MPA)**

(See ANTR-FCL 1.365)

(See AMC FCL 1.365)

COURSE OBJECTIVE

- 1 The aim of the TRI(A) course is to train aeroplane licence holders with more than 1 500 hours as pilots of multi-pilot aeroplanes to the level of proficiency necessary for the issue of a TRI(A) rating. The course shall 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 multi-pilot aeroplane type rating for which the applicant is qualified (see ANTR-FCL 1.365).

TEACHING AND LEARNING

- 2 The syllabus is set out in AMC FCL 1.365. An approved TRI(A) Teaching and Learning course shall comprise not less than 25 hours. Pilots holding or having held one of the following ratings are credited for the TRI(A) Teaching and Learning part of the TRI course:

FI(A), CRI(A), IRI(A), STI (A), MCCI(A)

FI(H), TRI(H), IRI(H), SFI(H)

FLIGHT TRAINING

- 3 The flight training syllabus is set out in AMC FCL 1.365.

Appendix 1 to ANTR-FCL 1.380**Course for the Single-Pilot Multi-Engine Class Rating Instructor Rating (Aeroplane) (CRI(SPA))**

(See ANTR-FCL 1.380)

(See AMC FCL 1.380)

- 1 The aim of this course is to train aeroplane licence holders with at least 500 hours as pilot of aeroplanes to the level of proficiency necessary for the issue of a CRI(A) rating for single-pilot multi-engine aeroplanes. The course shall 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 (see ANTR-FCL 1.380).

TEACHING AND LEARNING

- 2 The syllabus is set out in AMC FCL 1.380. An approved CRI(A) Teaching and Learning course shall comprise not less than 25 hours. Pilots holding or having held one of the following ratings are credited for the CRI(A) Teaching and Learning part of the CRI course:

FI(A), IRI(A), TRI(A), SFI(A), STI(A), MCCI(A)

FI(H), TRI(H), IRI(H), SFI(H)

FLYING TRAINING

- 3 An applicant for the issue of a CRI(SPA) rating for multi-engine aeroplanes shall complete not less than 5 hours of flying training given by an instructor, approved for this purpose. The flight training shall 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 flying training syllabus is set out in AMC FCL 1.380.

SKILL TEST

- 4 On completion of the course, the applicant shall take the skill test in accordance with Appendix 1 and Sections 1, 2, 3, 5 and 7 of Appendix 2 to ANTR-FCL 1.330 & 1.345.

Appendix 2 to ANTR-FCL 1.380**Course for the Single-Pilot Single Engine Class Rating Instructor Rating (Aeroplane) (CRI(SPA))**

(See ANTR-FCL 1.380)

- 1 The aim of this course is to train aeroplane licence holders with more than 300 hours as pilot of aeroplane to the level of proficiency necessary for the issue of a CRI(A) rating for singleengine aeroplanes. The course shall 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 single engine aeroplane class or type rating for which the applicant is qualified (see ANTR-FCL 1.380)

TEACHING AND LEARNING

- 2 An approved CRI(A) Teaching and Learning course shall comprise not less than 25 hours. Pilots holding or having held one of the following ratings credited for the CRI(A) Teaching and Learning part of the CRI course:

FI(A), IRI(A), TRI(A), SFI(A), STI(A), MCCI(A)

FI(H), TRI(H), IRI(H), SFI(H)

FLYING TRAINING

3. An applicant for the issue of a CRI(SPA) rating for single engine aeroplanes shall complete not less than 3 hours of flying training given by an instructor, approved for this purpose. The flight training shall 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 single engine class or type rating.

SKILL TEST

4. On completion of the course, the applicant shall take the skill test in accordance with Appendix 1 and Sections 1, 2, 3, 4 and 7 of Appendix 2 to ANTR-FCL 1.330 & 1.345.

Appendix 1 to ANTR-FCL 1.395**Course for the Instrument Rating Instructor Rating (Aeroplane) (IRI(A))**

(See ANTR-FCL 1.395)

(See AMC FCL 1.395)

- 1 The aim of this course is to train aeroplane licence holders to the level of proficiency necessary for the issue of an IRI(A) rating. The course shall be designed to give the applicant adequate training in ground and flying instructional techniques based upon established teaching methods.

TEACHING AND LEARNING

- 2 Syllabus is set out in AMC FCL 1.395. An approved IRI(A) Teaching and Learning course shall comprise not less than 25 hours. Pilots holding or having held one of the following ratings are credited for the IRI(A) Teaching and Learning part of the IRI course:

FI(A), CRI(A), TRI(A), SFI(A), STI(A), MCCI(A)

FI(H), TRI(H), SFI(H)

Pilots holding a IRI(H) who meet the requirements set out in ANTR-FCL 1.395(a) are credited of the course except for the “Long Briefing 2”, “Air Exercise 2” and Skill Test.

FLIGHT TRAINING

- 3 An approved IRI(A) course shall comprise not less than 10 hours or 5 hours in the case of a FI(A) of flight training on an aeroplane, flight simulator or FPNT II.

SKILL TEST

- 4 On completion of the course, the applicant shall take the skill test in accordance with Appendices 1 and 2 to ANTR-FCL 1.330 & 1.345.

SUBPART I**EXAMINERS (Aeroplane)****ANTR-FCL 1.420 Examiners – Purposes**

Six roles of an examiner are recognised:

- (a) Flight examiner – aeroplane (FE(A)).
- (b) Type rating examiner – aeroplane (TRE(A)).
- (c) Class rating examiner – aeroplane (CRE(A)).
- (d) Instrument rating examiner – aeroplane (IRE(A)).
- (e) Synthetic flight examiner – aeroplane (SFE(A)).
- (f) Flight instructor examiner – aeroplane (FIE(A)).

ANTR-FCL 1.425 Examiners – General

(See AMC FCL 1.425)

(See IEM FCL 1.425)

- (a) *Pre-requisites*
 - (1) Examiners shall 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, unless specified otherwise, the privilege to instruct for this licence or rating.
 - (2) Examiners shall be qualified to act as pilot-in-command of the aircraft during a skill test or proficiency check, unless otherwise specified, and shall meet the applicable experience requirements set out in ANTR-FCL 1.435 through 1.460. Where no qualified examiner is available and, at the discretion of the Authority, examiners/inspectors may be authorised without meeting the relevant instructor/type/class rating requirements as mentioned above.
 - (3) The applicant for an examiner authorisation shall have conducted at least one skill test in the role of an examiner for which authorisation is sought, including briefing, conduct of the skill test, assessment of the applicant to whom the skill test is given, de-briefing and recording/documentation. This ‘Examiner Authorisation Acceptance Test’ will be supervised by an inspector of the Authority.
- (b) *Multiple roles.* Provided that they meet the qualification and experience requirements set out in this Subpart for each role undertaken, examiners are not confined to a single role as FE(A), TRE(A), CRE(A), IRE(A), SFE(A) or FIE(A).
- (c) *Compliance with ANTRs.* Examiners will be authorised in accordance with ANTR-FCL 1.030. The examiner shall comply with appropriate examiners’ standardisation arrangements made or approved by the Authority (see AMC FCL 1.425 and IEM FCL 1.425).

- (d) *Entries in the licence.* In licences where revalidation entries may be made by the examiner, the examiner will:
- (1) complete the following details: ratings, date of check, valid until, authorisation number and signature;
 - (2) submit the original of the skill test/proficiency check form to the issuing Authority and hold one copy of the check form on personal file.

ANTR-FCL 1.430 Examiners – Period of Validity

An examiner's authorisation is valid for not more than three years. Examiners are re-authorised at the discretion of the Authority, and in accordance with Appendix 1 to ANTR-FCL 1.425.

ANTR-FCL 1.435 Flight Examiner (Aeroplane) (FE(A)) – Privileges/Requirements

The privileges of a FE(A) are to conduct:

- (a) skill tests for the issue of the PPL(A) and skill tests and proficiency checks for the associated single-pilot class/type rating provided that the examiner has completed not less than 1000 hours flight time as a pilot of aeroplanes, including not less than 250 hours flight instruction;
- (b) skill tests for the issue of a CPL(A) and skill test and proficiency checks for the associated single-pilot class/type ratings provided that the examiner has completed not less than 2000 hours flight time as a pilot of aeroplanes, including not less than 250 hours flight instruction.

ANTR-FCL 1.440 Type Rating Examiner (Aeroplane) (TRE(A)) – Privileges/Requirements

The privileges of a TRE(A) are to conduct:

- (a) skill tests for the issue of type ratings for multi-pilot aeroplanes;
- (b) proficiency checks for revalidation or renewal of multi-pilot type and instrument ratings;
- (c) skill tests for ATPL(A) issue;
- (d) skill tests for MPL(A) issue, provided that the examiner has complied with the requirements of ANTR-FCL 1.310(d);

provided that the examiner has completed not less than 1 500 hours flight time as a pilot of multi-pilot aeroplanes of which at least 500 hours shall be as pilot-in-command, and holds or has held a TRI(A) rating or authorisation.

ANTR-FCL 1.445 Class Rating Examiner (Aeroplane) (CRE(A)) – Privileges/Requirements

The privileges of a CRE(A) are to conduct:

- (a) skill tests for the issue of class and type ratings for single-pilot aeroplanes;
- (b) proficiency checks for revalidation or renewal of class and type ratings for single-pilot aeroplanes and revalidation of instrument ratings; provided that the examiner holds or has

held a professional pilot licence(A) and holds a PPL(A) and has completed not less than 500 hours as a pilot of aeroplanes.

ANTR-FCL 1.450 Instrument Rating Examiner (Aeroplane) (IRE(A)) – Privileges/ Requirements

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 EIRs or IRs.

- (a) IRE(A). Applicants for an IRE certificate for aeroplanes shall hold an IRI(A) and have completed:
 - (1) 2 000 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.

ANTR-FCL 1.455 Synthetic Flight Examiner (Aeroplane) (SFE (A)) – Privileges/Requirements

- (a) The privileges of an SFE(A) are to conduct in a flight simulator:
 - (1) skill tests and proficiency checks for the issue, revalidation or renewal of type ratings for multi-pilot aeroplanes.
 - (2) proficiency checks for revalidation or renewal of IRs, provided that the SFE complies with ANTR FCL 1.450 for the applicable aircraft category;
 - (3) skill tests for ATPL(A) issue;
 - (4) skill tests for MPL issue, provided that the examiner has complied with the requirements in ANTR FCL 1.310
 - (5) assessments of competence for the issue, revalidation or renewal of an SFI certificate in the relevant aircraft category, provided that the examiner has completed at least 3 years as an SFE.

Applicants for an SFE(A) certificate for aeroplanes shall:

- (1) hold or have held an ATPL(A), a class or type rating and an SFI(A) certificate for the applicable type of aeroplane;
- (2) have at least 1 500 hours of flight time as a pilot on multi-pilot aeroplanes;
- (3) for the initial issue of an SFE certificate, have completed at least 50 hours of synthetic flight instruction as an SFI(A) on the applicable type.

ANTR-FCL 1.460 Flight Instructor Examiner (Aeroplane) (FIE(A)) – Privileges/Requirements

The privileges of an FIE(A) are to conduct skill tests and proficiency checks or renewals for the issue and revalidation of flight instructor ratings, provided that the examiner has completed not less than 2 000 hours as a pilot of aeroplanes, including not less than 100 hours flight time instructing applicants for a FI(A) rating.

Appendix 1 to ANTR-FCL 1.425
Standardisation Arrangements for Examiners
(See ANTR-FCL 1.425 & FCL 1.430)
(See AMC FCL 1.425)

GENERAL

- 1 The Authority will maintain a list of authorised examiners specifying each role and any additional matters for which they have been authorised.
- 2 Examiners shall consistently apply ANTR-FCL standards during a test/check. However, as the circumstances of each test/check conducted by an examiner may vary, it is also important that an examiner's test/check assessment takes into account any adverse condition(s) encountered during the test/check.

EXAMINERS DESIGNATION AND AUTHORISATION

- 3 An examiner will be designated and authorised in accordance with ANTR-FCL and will be:
 - (a) a flight inspector from an Authority; or
 - (b) an instructor from a Registered Facility, FTO, ATO; manufacturer's facility or subcontracted facility; or
 - (c) a pilot holding a specific authorisation from the Authority.
- 4 All Examiners must be suitably trained, qualified and experienced for their role on the relevant type/class of aeroplane. No specific rules on qualification can be made because the particular circumstance of each organisation will differ. It is important, however, that in every instance, the Examiner should, by background and experience, have the professional respect of the aviation community.

EXAMINER RE-AUTHORISATION

- 5 Examiners may be re-authorised in accordance with ANTR-FCL 1.430. To be re-authorised, the examiner shall have conducted at least two skill tests or proficiency checks in every yearly period within the three year authorisation period. One of the skill tests or proficiency checks given by the examiner within the validity period of the authorisation shall have been observed by an inspector of the Authority.

SUBPART J**THEORETICAL KNOWLEDGE REQUIREMENTS AND PROCEDURES FOR THE
CONDUCT OF THEORETICAL KNOWLEDGE EXAMINATIONS FOR PROFESSIONAL
PILOT LICENCES AND INSTRUMENT RATINGS****ANTR-FCL 1.465 Requirements**

An applicant for a professional pilot licence or an instrument rating shall demonstrate a level of knowledge appropriate to the privileges of the licence or rating for which application is made by passing theoretical knowledge examinations in accordance with the procedures set out in ANTR-FCL 1.470 through 1.495.

ANTR-FCL 1.470 Contents of Theoretical Knowledge Examinations

(See Appendix 1 to ANTR-FCL 1.470)

- (a) An applicant for the ATPL(A), or the MPL(A), shall demonstrate a level of knowledge appropriate to the privileges granted in the following subjects: Air Law; Aircraft General Knowledge – Airframe/Systems/Engine; 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.
- (b) An applicant for the CPL(A) shall demonstrate a level of knowledge appropriate to the privileges granted in the following subjects: Air Law; Aircraft General Knowledge; Flight Performance and Planning; Human Performance and Limitations; Meteorology; Navigation; Operational Procedures; Principles of flight; VFR Communications.
- (c) An applicant for an IR(A) shall demonstrate a level of knowledge appropriate to the privileges granted in the following subjects: Air Law; Aircraft General Knowledge; Flight Performance and Planning; Human Performance; Meteorology; Navigation; IFR Communications.
- (d) The breakdown of the subjects into examinations papers, times allowed, and the total number and distribution of questions will be specified in the associated procedures.

ANTR-FCL 1.475 Questions

(See IEM FCL 1.475 (a) and (b))

(See Appendix 1 to ANTR-FCL 1.470)

The Central Question Bank. Questions appropriate to the syllabuses (see Appendix 1 to ANTR-FCL 1.470) will be held in a Central Question Bank (CQB). Questions entered in the CQB will be composed in English, according to a method described in IEM FCL 1.475(a), using abbreviations (see IEM FCL 1.475(b)), and compiled in a computer compatible format. The questions will be in multiple choice format. The Authority may exercise discretion in the presentation of questions in an examination according to ANTR-FCL 1.480.

ANTR-FCL 1.480 Examination Procedure

(See Appendix 1 to ANTR-FCL 1.470)

- (a) *Frequency.* The Authority will provide the opportunity for an applicant to complete the required examinations in accordance with the procedures set out in this Subpart. A complete examination for a licence or instrument rating will comprise an examination in each of the subjects detailed in Appendix 1 to ANTR– ANTR-FCL 1.470.

- (b) *Language.* The examinations will be provided in the English language and/or the language(s) considered appropriate by the Authority. The Authority will inform applicants of the language(s) in which that Authority's examinations will be conducted.
- (c) *Content.* Questions for an examination will be selected by the Authority from the CQB according to a common method which allows coverage of the entire syllabi in each subject. The content of the questions will not be changed other than, where necessary, to facilitate translation into the national language(s). The style of answer to questions requiring numerical computation or graphical interpretation may be varied to other forms considered appropriate by the Authority. The examination in Communications may be provided separately from those in other subjects, as decided by the Authority. An applicant who has previously passed either or both of the examinations in VFR and IFR Communications will not be re-examined in the relevant sections.
- (d) *Oral Examinations.* Oral examinations will not be conducted in lieu of written or computer based examinations.
- (e) *Facilities.* The Authority will determine how to provide suitable charts, maps, data sheets and equipment as required, to answer the questions.
- (f) *Security.* The identity of the applicant will be established before an examination is taken.
- (g) *Confidentiality.* The contents of the examination papers will retain a confidential status.

ANTR-FCL 1.485 Responsibilities of the Applicant

- (a) Unless specifically approved by the Authority, an applicant shall take the entire set of examinations in Bahrain.
- (b) An applicant shall be recommended for an examination by the approved FTO responsible for applicant's training when the applicant has completed the appropriate elements of the course of theoretical knowledge instruction to a satisfactorily standard. An applicant who has failed to complete the examination within the limits imposed by ANTR-FCL 1.490 will in addition be required to produce evidence from an approved Training Organisation of further training.
- (c) If the Authority considers that the applicant is not complying with examination procedures during the examination, this misconduct will be considered with a view to failing the applicant, either in the examination of a single subject or in the examination as a whole.

ANTR-FCL 1.490 Pass Standards

- (a) 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.
- (b) Subject to any other conditions in ANTRs, an applicant will be deemed to have successfully completed the required theoretical knowledge examination for the appropriate pilot licence or rating when awarded a pass in 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.
- (c) An applicant shall re-enter the complete examination as though for an initial attempt if he has failed to pass any single examination paper within four attempts, or has failed to pass all papers within either six sittings or the period mentioned in paragraph (b) above. Before

re-entry to the examinations the applicant shall undertake further training as determined by the Authority.

ANTR-FCL 1.495 Acceptance Period

- (a) A pass in the theoretical knowledge examinations given in accordance with ANTR-FCL 1.490 will be accepted for the grant of the CPL(A) or IR(A) during the 36 months from the date of gaining a Pass in all the required examination papers.
- (b) Provided that an IR(A) is obtained in accordance with (a) above, a pass in the ATPL(A) theoretical knowledge examination will remain valid for a period of 7 years from the last validity date of the IR(A) entered in the CPL(A) for the issuance of an ATPL(A).
- (c) A pass in the ATPL(A) theoretical knowledge examination will remain valid for a period of 7 years from the last validity date of a type rating entered in a F/E licence.

Appendix 1 to ANTR-FCL 1.470**Theoretical Knowledge Examination Subjects / Sections and Length of Examinations – ATPL, CPL and IR**

(See ANTR-FCL 1.470)

1. An applicant shall have received theoretical knowledge bridge instruction on an approved course at an approved flying training organisation (FTO) according to the syllabus subjects and headline topics below (refer to the Theoretical Knowledge Learning Objectives).

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
010 00 00 00	AIR LAW AND ATC PROCEDURES	X	X	X	X	X	X
010 01 00 00	INTERNATIONAL LAW: CONVENTIONS, AGREEMENTS AND ORGANISATIONS						
010 02 00 00	AIRWORTHINESS OF AIRCRAFT						
010 03 00 00	AIRCRAFT NATIONALITY AND REGISTRATION MARKS						
010 04 00 00	PERSONNEL LICENSING						
010 05 00 00	RULES OF THE AIR						
010 06 00 00	PROCEDURES FOR AIR NAVIGATION SERVICES – AIRCRAFT OPERATIONS						
010 07 00 00	AIR TRAFFIC SERVICES AND AIR TRAFFIC MANAGEMENT						
010 08 00 00	AERONAUTICAL INFORMATION SERVICE						
010 09 00 00	AERODROMES/HELIPORTS						
010 10 00 00	FACILITATION						
010 11 00 00	SEARCH AND RESCUE						
010 12 00 00	SECURITY						
010 13 00 00	AIRCRAFT ACCIDENT AND INCIDENT INVESTIGATION						

		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						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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						
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						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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	<i>Intentionally left blank</i>						
062 05 00 00	AREA NAVIGATION SYSTEMS, RNAV/FMS						
062 06 00 00	GLOBAL NAVIGATION SATELLITE SYSTEMS						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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	<i>Intentionally left blank</i>						
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						

		Aeroplane		Helicopter			IR
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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)						

		<i>Aeroplane</i>		<i>Helicopter</i>			<i>IR</i>
		ATPL	CPL	ATPL/ IR	ATPL	CPL	
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						

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SUBPART K**MULTI-CREW PILOT LICENCE (AEROPLANE) – MPL(A)****ANTR-FCL 1.500 Minimum Age**

An applicant for a MPL(A) shall be at least 18 years of age.

ANTR-FCL 1.505 Medical Fitness

An applicant for a MPL(A) shall hold a valid Class 1 medical certificate. In order to exercise the privileges of the MPL(A) a valid Class 1 medical certificate shall be held.

ANTR-FCL 1.510 Privileges and Conditions

(See ANTR-FCL 1.155)

(See ANTR-FCL 1.210)

(See ANTR-FCL 1.275)

- (a) Privileges. Subject to any other conditions specified in ANTRs, the privileges of the holder of a MPL(A) are to:
- (1) exercise all the privileges of the holder of a PPL(A), provided that the requirements for the PPL*(A) specified in Subpart C are met.
 - (2) exercise the privileges of a CPL(A), provided that the requirements for the CPL(A) specified in ANTR-FCL 1.155(d) are met.
 - (3) exercise the privileges of the IR(A) in a single-pilot operation in aeroplanes, provided that the licence holder shall have demonstrated an ability to act as pilot-in-command in a single-pilot operation exercised solely by reference to instruments by completing specific training at the discretion of the Authority and meeting the requirements as set out in ANTR-FCL 1.210. The Authority may be guided as to the credits to be granted on the basis of a recommendation from a FTO;
 - (4) exercise the privileges of the IR(A) in an aeroplane required to be operated with a co-pilot; and
 - (5) act as co-pilot in an aeroplane required to be operated with a co-pilot.
- (b) Conditions. An applicant for a MPL(A) who has complied with the conditions specified in ANTR-FCL 1.500, 1.505, 1.515, 1.530 and if applicable 1.010(a(4)) shall have fulfilled the requirements for the issue of a MPL(A) containing a type rating for the aeroplane type used on the skill test and an IR(A) restricted to aeroplane required to be operated with a co-pilot.

ANTR-FCL 1.515 Experience and Crediting

(See ANTR-FCL 1.120)

(See Appendix 1 to ANTR-FCL 1.520 & 1.525)

- (a) An applicant for a MPL(A) shall have completed in an approved training course not less than 240 hours as pilot flying and pilot not flying of actual and simulated flight.
- (b) Flight experience in actual flight shall include all the experience requirements as set out in ANTR-FCL 1.120 and 1.125(b), upset prevention and recovery training, night flying, flight solely by reference to instruments and to achieve the relevant airmanship.

- (c) Training in asymmetric flight shall be given, either in an aeroplane or a flight simulator, in the appropriate phase.
- (d) In addition to the requirement as mention in (b) above, the applicant shall have gained, in a multi-engine turbine-powered aeroplane certificated for operation with a minimum crew of at least 2 pilots or in a FSTD, the experience necessary to achieve the advanced level of competency defined in Appendix 1 to ANTR-FCL 1.520 & 1.525 paragraph 16.
- (e) The experience required shall be completed before the skill test given in ANTR-FCL 1.530.

ANTR-FCL 1.520 Theoretical Knowledge

(See ANTR-FCL 1.155)

- (a) Course. An applicant for a MPL(A) shall have received theoretical knowledge instruction on an approved course at an approved flying training organisation (FTO).
- (b) Examination. An applicant for a MPL(A) shall have demonstrated a level of knowledge appropriate to the privileges granted to the holder of an ATPL(A) in accordance with the requirements in ANTR-FCL 1 (Aeroplane) Subpart J and multi-pilot type rating course.

ANTR-FCL 1.525 Flight Instruction

(See Appendix 1 to ANTR-FCL 1.520 & 1.525)

- (a) An applicant for a MPL(A) shall have completed a course of approved training covering the experience requirements specified in ANTR-FCL 1.515.
- (b) An applicant shall have received flight instruction in all the competency units stated in Appendix 1 to ANTR-FCL 1.520 & 1.525, to the level required for the issue of the MPL(A).

ANTR-FCL 1.530 Skill

(See Appendices 1 and 2 to ANTR-FCL 1.240 & 1.295)

(See Appendix 1 to ANTR-FCL 1.520 & 1.525)

- (a) An applicant for a MPL(A) shall have demonstrated the skills required for fulfilling all the competency units specified in Appendix 1 to ANTR-FCL 1.520 & 1.525 as pilot flying and pilot not flying, to the level required to perform as a co-pilot of a multi-engine turbine- powered aeroplane certificated for operation with a minimum crew of at least two pilots under VFR and IFR with a degree of competency appropriate to the privileges granted to the holder of a MPL(A). An applicant shall take the skill test as set out in Appendices 1 and 2 to ANTR- FCL 1.240 & 1.295 in the aeroplane type used on the advanced phase of the MPL(A) integrated training course.
- (b) Progress in acquiring the skills specified in (a) above shall be continuously assessed and documented.

ANTR-FCL 1.535 Implementation Monitoring – Multi-Crew Pilot Licence

(See Appendix 1 to ANTR-FCL 1.535)

Training organisations approved to give MPL(A) training courses shall provide regular feedback, in accordance with the approval conditions, to the Authority as set out in Appendix 1 to ANTR-FCL 1.535.

Appendix 1 to ANTR-FCL 1.520 & 1.525**MPL(A) – Integrated Multi-Crew Pilot Licence training course**

(See ANTR-FCL 1.520)

(See ANTR-FCL 1.525)

(See ANTR-FCL 1.535)

(See Appendix 1a to ANTR-FCL 1.055)

(See Appendix 1 to ANTR-FCL 1.240 & 1.295)

(See Appendix 2 to ANTR-FCL 1.240 & 1.295)

(See Appendix 1 to ANTR-FCL 1.261(c)(2))

(See Appendix to ANTR-FCL 1.535)

(See Appendix 1 to ANTR-FCL 1.470)

(See AMC FCL 1.261(a))

(See AMC FCL 1.520 & 1.525)

(See IEM No. 1 to Appendix 1 to ANTR-FCL 1.520 & 1.525)

(See IEM No. 2 to Appendix 1 to ANTR-FCL 1.520 & 1.525)

(See ANTR-OPS 1.945)

- 1 (a) The aim of the MPL(A) integrated course is to train pilots to the level of proficiency necessary to enable them to operate as co-pilot of a multi-engine turbine-powered air transport aeroplane certificated for operation with a minimum crew of at least two pilots under VFR and IFR and to obtain a MPL(A).
 - (b) The level of competency expected from MPL(A) holder is defined in detail in this Subpart. In broad terms, the MPL(A) holder is expected to be able to complete the airline operators conversion course in accordance with ANTR-OPS 1 Subpart N with a high probability of success and within the time frame normally allowed for this phase. It is equivalent to what is currently expected from graduates of the ATP(A) integrated course who have completed type rating training.
 - (c) The general approach is to use the existing ATP(A) integrated training course as a reference and to implement progressively the MPL(A) integrated training course and specifically the transfer from actual flight to simulated flight.
 - (d) This transfer shall 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 shall 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.
- 2 Approval for a MPL(A) training course shall only be given to a FTO of a ANTR-OPS 1 operator or a FTO having a specific approved arrangement with a ANTR-OPS 1 operator. The licence shall be restricted to that specified operator until completion of the airline operator's conversion course in accordance with ANTR-OPS 1 Subpart N.
 - 3 An applicant wishing to undertake a MPL(A) integrated course shall, under the supervision of the Head of Training of an approved flying training organisation (FTO), complete all the instructional stages in one continuous approved course of training as arranged by that FTO. The training shall be competency based and conducted in a multi-crew operational environment.
 - 4 An applicant shall be admitted to training as an ab-initio entrant only. An applicant failing or unable to complete the entire MPL(A) course may apply to the Authority for credit towards the theoretical knowledge examination and skill test for another licence and, if applicable, an instrument rating.

- 5 Any applicant wishing to transfer to another FTO during a course of training shall apply to the Authority for a formal assessment of the further hours of training required at another FTO.
- 6 The FTO shall ensure that before being admitted to the course the applicant has sufficient knowledge to facilitate an understanding of the theoretical knowledge and practical skills content of the course.
- 7 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.
- 8 The successful completion of the theoretical knowledge examination(s) at paragraph 10 below and of the demonstration of skill at paragraphs 18 and 19 below fulfil the theoretical knowledge and skill requirements for the issue of a MPL(A) including a type rating for the aeroplane(s) used in the test(s) and an IR(A) restricted to aeroplanes required to be operated with a co-pilot.

THEORETICAL KNOWLEDGE

- 9 The theoretical knowledge syllabus is set out in Appendix 1 to ANTR-FCL 1.470. An approved ATPL(A) theoretical knowledge course shall comprise at least 750 hours (1 hour = 60 minutes instruction) of instruction which 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 shall 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	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 FTO.

The theoretical knowledge instruction for the type rating shall be in accordance with Appendix 1 to ANTR-FCL 1.261(a).

THEORETICAL KNOWLEDGE EXAMINATION

- 10 An applicant shall demonstrate the level of knowledge appropriate to the privileges of the holder of an ATPL(A), in accordance with the requirements in ANTR-FCL 1 (Aeroplane) Subpart J and multi-pilot type rating course.

FLYING TRAINING

- 11 The flying training shall comprise a total of at least 240 hours 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 high performance multi-engine turbine aeroplane
 - (d) Phase 4 - Advanced.
Type rating training within an airline oriented environment.

MCC requirements shall be incorporated into the relevant phases above. The type rating training shall include the relevant requirements of Appendix 1 and 2 to ANTR-FCL 1.240 & 1.295.

- 12 Each phase of training in the flight instruction syllabus shall be composed of both instruction in the underpinning knowledge and in practical training segments. Training in the underpinning knowledge requirements for the MPL(A) shall therefore be fully integrated with the training of the skill requirements.
- 13 The training course shall include a continuous evaluation process of the training syllabus and a continuous assessment of the students following the syllabus that are acceptable to the Authority. 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.
- 14 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

- 15 The applicant for the MPL(A) in the aeroplane category shall have satisfactorily demonstrated performance in all the 9 competency units specified in paragraph 17 below, at the advanced level of competency defined as the level of competency required to operate and interact as a co-pilot in a turbine- powered aeroplane certificated for operation with a minimum crew of at least two pilots, under visual and instrument conditions. Assessment shall confirm that control of the aeroplane or situation is maintained at all times in such a manner that the successful outcome of a procedure or manoeuvre is assured. The applicant shall consistently demonstrate the knowledge, skills and attitudes required for the safe operation of an applicable aeroplane type as specified in the performance criteria.

COMPETENCY UNITS

- 16 The 9 competency units that an applicant has to demonstrate in accordance with ANTR-FCL 1.515(d) are as follows:
- 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

- 17 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.

A 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 FS which is fully equivalent to level D or level C with an enhanced daylight visual system, including ATC environment simulation.

SKILLS

- 18 Progress in acquiring the skills specified in ANTR-FCL 1.530(a) shall be continuously assessed.
- 19 The applicant shall have demonstrated the skills required for fulfilling all the competency units as specified in paragraph 17 as pilot flying and pilot not flying, to the level required to perform as a co-pilot of turbine-powered aeroplanes certificated for operation with a minimum crew of at least two pilots under VFR and IFR, as set out in Appendices 1 and 2 to ANTR-FCL 1.240 & 1.295.

Appendix to ANTR-FCL 1.535**Exchange of Information**

(See ANTR-FCL 1.535)

1. The prompt, clear and orderly exchange of information regarding MPL(A) training issues between local, national and European levels is vital to the success of the implementation of MPL training.
2. Training organisations applying for or holding an approval to give MPL(A) training courses shall provide relevant information to the Authority. This shall include:
 - (a) a description of the MPL(A) training course
 - (b) details of the course hours for practical and theoretical knowledge training;
 - (b) the aeroplane(s), FSTD and other equipment used;
 - (c) the assessment methods used;
 - (d) summaries of statistics of the results of progress assessments and final tests
 - (e) review procedure for adjusting and improving the course based on the analysis of student performance.

SECTION 2

**ACCEPTABLE MEANS OF COMPLIANCE (AMC)/INTERPRETATIVE
AND EXPLANATORY MATERIAL (IEM)**1 *GENERAL*

- 1.1 This Section contains Acceptable Means of Compliance and Interpretative/Explanatory Material that has been agreed for inclusion in ANTR-FCL 1.
- 1.2 Where a particular ANTR paragraph does not have an Acceptable Means of Compliance or any Interpretative/Explanatory Material, it is considered that no supplementary material is required.

2 *PRESENTATION*

- 2.1 The Acceptable Means of Compliance and Interpretative/Explanatory Material are presented in full page width on loose pages, each page being identified by the date of issue or the Change number under which it is amended or reissued.
- 2.2 A numbering system has been used in which the Acceptable Means of Compliance or Interpretative/Explanatory Material uses the same number as the ANTR paragraph to which it refers. The number is introduced by the letters AMC or IEM to distinguish the material from the ANTR itself.
- 2.3 The acronyms AMC and IEM also indicate the nature of the material and for this purpose the two types of material are defined as follows:

Acceptable Means of Compliance (AMC) illustrate a means, or several alternative means, but not necessarily the only possible means by which a requirement can be met. It should however be noted that where a new AMC is developed, any such AMC (which may be additional to an existing AMC) will be amended into the document following consultation under the NPA procedure.

Interpretative/Explanatory Material (IEM) helps to illustrate the meaning of a requirement.

- 2.4 Explanatory Notes not forming part of the AMC or IEM text appear in a smaller typeface.
- 2.5 New, amended or corrected text is enclosed within heavy brackets.

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AMC/IEM A

GENERAL REQUIREMENTS

IEM FCL 1.001

Abbreviations (Interpretative Material)

A	Aeroplane
A/C	Aircraft
AMC	Acceptable Means of Compliance
AMC	Aeromedical Centre
AME	Authorised Medical Examiner
AMS	Aeromedical Section
ATC	Air Traffic Control
ATO	Approved Training Organisation
ATP	Airline Transport Pilot
ATPL	Airline Transport 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
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
FSTD	Flight Synthetic Training Device
FTO	Flying Training Organisation
H	Helicopter
HPA	High Performance Aeroplane
HT	Head of Training
ICAO	International Civil Aviation Organisation
IEM	Interpretative and Explanatory Material
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
IR	Instrument Rating
IRE	Instrument Rating Examiner
IRI	Instrument Rating Instructor
← 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
MPH	Multi-pilot Helicopter
nm	Nautical Miles
OML	Operational Multicrew Limitation
OSL	Operational Safety Pilot Limitation

OTD	Other Training Devices
PF	Pilot Flying
PIC	Pilot-In-Command
PICUS	Pilot-In-Command Under Supervision
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
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 FCL 1.005 & 1.015**Knowledge requirements for the issue of an ANTR-FCL licence or for the validation of pilot licences of a foreign State****FCL Part 1 (Aeroplane)****FCL SUBPART A – GENERAL REQUIREMENTS**

- 1.010 – Basic authority to act as a flight crew member
- 1.015 – Acceptance of licences, ratings, authorisations, approvals or certificates
- 1.016 – Credit given to a holder of a licence issued by an ICAO Contracting State
- 1.017 – Authorisation/Ratings for special purposes
- 1.020 – Credit for military service
- 1.025 – Validity of licences and ratings
- 1.026 – Recent experience for pilots not operating in accordance with ANTR-OPS 1
- 1.035 – Medical fitness
- 1.040 – Decrease in medical fitness
- 1.050 – Crediting of flight time
- 1.060 – Curtailment of privileges of licence holders aged 60 years or more.
- 1.080 – Recording of flight time
- Appendix 1 to ANTR-FCL 1.005 – Minimum requirements for the issue of a licence/authorisation
- Appendix 1 to ANTR-FCL 1.015 – Minimum requirements for the conversion or validation of CPL & ATPL of an ICAO Contracting State.
- Appendix 2 to ANTR-FCL 1.015 – Minimum requirements for the conversion or validation of private pilot licences of an ICAO Contracting State.

FCL SUBPART C – PRIVATE PILOT LICENCE

- 1.100 – Minimum Age
- 1.105 – Medical fitness
- 1.110 – Privileges and conditions
- 1.120 – Experience and Crediting

FCL SUBPART D – COMMERCIAL PILOT LICENCE

- 1.140 – Minimum Age
- 1.145 – Medical fitness
- 1.150 – Privileges and conditions
- 1.155 – Experience and Crediting

FCL SUBPART E – INSTRUMENT RATING

- 1.174 – Medical fitness
- 1.175 – Circumstances in which an instrument rating is required
- 1.180 – Privileges and conditions
- 1.185 – Validity, revalidation and renewal

FCL Subpart F – TYPE AND CLASS RATINGS

- 1.215 – Division of Class Ratings
- 1.220 – Division of Type Ratings
- 1.221 – High performance single pilot aeroplanes
- 1.225 – Circumstances in which type or class ratings are required

- 1.235 – Privileges, number, variants
- 1.240 – Requirements
- 1.245 – Validity, revalidation and renewal
- 1.250 – Type rating: multi-pilot – Conditions
- 1.251 – Type and class rating for single-pilot high performance aeroplanes – Conditions
- 1.255 – Type rating: single-pilot aeroplane – Conditions
- 1.260 – Class rating – Conditions
- 1.261 – Type and class ratings – Knowledge and flight instruction
- 1.262 – Type and class ratings - Skill
- Appendix 1 to ANTR-FCL 1.240 & 1.295 – Skill test and Proficiency check for Type/Class Ratings and ATPL
- Appendix 2 to ANTR-FCL 1.240 & 1.295 – Contents of the ATPL(A) / type rating / training / skill test and proficiency check on multi-pilot aeroplanes
- Appendix 3 to ANTR-FCL 1.240 – Content of Class/Type rating training & test/proficiency checks on single and multi-engine single-pilot aeroplanes
- Appendix 1 to ANTR-FCL 1.251 – Course of additional theoretical knowledge for a class or type rating for high performance single-pilot aeroplane

FCL SUBPART G – AIRLINE TRANSPORT PILOT LICENCE

- 1.265 – Minimum Age
- 1.270 – Medical fitness
- 1.275 – Privileges and conditions
- 1.280 – Experience

FCL SUBPART H – INSTRUCTOR RATINGS (AEROPLANE)

- 1.300 – Instruction - General
- 1.305 – Instructor ratings and authorisation – Purposes
- 1.310 – Instructor ratings – General
- 1.315 – Instructor ratings and authorisations – Period of validity
- 1.320 – Flight Instructor rating (aeroplane) (FI(A)) – Minimum age
- 1.330 – FI(A) – Privileges and requirements
- 1.335 – FI(A) – Pre-requisite requirements
- 1.340 – FI(A) – Course
- 1.345 – FI(A) – Skill
- 1.350 – FI(A) – Rating issue
- 1.355 – FI(A) – Revalidation and renewal
- 1.360 – Type rating instructor rating (multi-pilot aeroplane) (TRI(MPA)) – Privileges
- 1.365 – TRI(MPA) – Requirements
- 1.370 – TRI(MPA) – Revalidation and renewal
- 1.375 – Class rating instructor rating (single-pilot aeroplane) (CRI(SPA)) – Privileges
- 1.380 – CRI(SPA) – Requirements
- 1.385 – CRI(SPA) – Revalidation and renewal

- 1.390 – Instrument rating instructor rating (aeroplane) (IRI(A)) – Privileges
- 1.395 – IRI(A) – Requirements
- 1.400 – IRI(A) – Revalidation and renewal
- 1.405 – Synthetic flight instructor authorisation (aeroplane) (SFI(A)) – Privileges
- 1.410 – SFI(A) – Requirements
- 1.415 – SFI(A) – Revalidation and renewal
- 1.416 – Multi Crew Co-operation Course Instructor authorisation (aeroplane)
MCCI (A) – Aeroplane
- 1.417 – MCCI (A) – Requirements
- 1.418 – MCCI (A) – Revalidation and renewal
- Appendix 1 to ANTR-FCL 1.300 - Requirements for a specific authorisation for instructors not holding an ANTR-FCL licence to instruct in a FTO or ATO outside of Bahrain
- Appendix 1 to ANTR-FCL 1.330 & 1.345 - Arrangements for the flight instructor rating (FI(A)) skill test, proficiency check and oral theoretical knowledge examination
- Appendix 2 to ANTR-FCL 1.330 & 1.345 - Contents of the flight instructor rating (FI(A)) skill test, oral theoretical knowledge examination and proficiency check
- Appendix 1 to ANTR-FCL 1.340 - Flight instructor rating (aeroplane) (FI(A)) course
- Appendix 1 to ANTR-FCL 1.365 - Course for the type rating instructor rating for multi-pilot aeroplane (TRI) (MPA)
- Appendix 1 to ANTR-FCL 1.380 - Course for the single-pilot multi-engine class rating instructor rating (Aeroplane) (CRI(SPA))
- Appendix 2 to ANTR-FCL 1.380 - Course for the single-pilot single engine class rating instructor rating (aeroplane) (CRI(SPA))
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- 1.630 – General introduction
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- 1.650 – Day VFR operations – Flight and navigational instruments and associated equipment
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- 1.660 – Altitude alerting system
- 1.665 – Ground proximity warning systems
- 1.670 – Airborne weather radar equipment
- 1.675 – Equipment for operation in icing conditions
- 1.680 – Cosmic radiation detection equipment
- 1.690 – Crew member interphone system
- 1.695 – Public address system

- 1.700 – Cockpit voice recorders – 1
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- 1.710 – Cockpit voice recorders – 3
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- 1.945 – Conversion Training and checking
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- 1.975 – Route and Aerodrome Competence Qualification
- 1.978 – Advanced Qualification Programme
- 1.980 – Operation on more than one type or variant
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- Appendix 1 to ANTR-OPS 1.940 – In flight relief of flight crew members
- Appendix 2 to ANTR-OPS 1.940 – Single-pilot operations under IFR or at night
- Appendix 1 to ANTR-OPS 1.965 – Recurrent training and checking – Pilots
- Appendix 1 to ANTR-OPS 1.968 – Pilot qualification to operate in either pilot's seat

ANTR-OPS SUBPART O – CABIN CREW

- 1.990 – Number and Composition of Cabin Crew

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- Appendix 1 to ANTR-OPS 1.1045 – Operations Manual Contents

ANTR-OPS SUBPART Q – FLIGHT AND DUTY TIME LIMITATIONS AND REST REQUIREMENTS

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IEM FCL 1.010**Language Proficiency assessment guide**

(See AMC No. 2 to ANTR-FCL 1.010)

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.
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
4. The three elements mentioned above may be combined and they can be covered by using a wide variety of means/technologies.
5. Where appropriate, some or all of these elements may be achieved through the use of the radiotelephony testing arrangements.
6. When the elements of the testing are assessed separately, the final assessment should be consolidated in the language proficiency endorsement issued by the Authority.
7. 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.

AMC No. 1 to ANTR-FCL 1.010
Language Proficiency Rating Scale
 (See ANTR-FCL 1.010(a)(4))

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.

LEVEL	PRONUNCIATION	STRUCTURE	VOCABULARY	FLUENCY	COMPREHENSION	INTERACTIONS		
Operational I (Level 4)	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	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, but rarely interfere with meaning.	Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete, and work related topics. Can often paraphrase successfully when lacking vocabulary particularly in unusual or unexpected circumstances.	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 this does not prevent effective communication. Can make limited use of discourse markers and connectors. Fillers are not distracting.	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. 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.	Responses are usually immediate, appropriate, and informative. Initiates and maintains exchanges even when dealing with an unexpected turn of events. Deals adequately with apparent misunderstandings by checking, confirming, or clarifying.

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				
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 fillers for 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 ANTR-FCL 1.010**Language Proficiency Assessment**

(See Appendix 1 to ANTR-FCL 1.010)

(See AMC No. 1 to ANTR-FCL 1.010)

(See IEM FCL 1.010)

GENERAL

1. The Authority may use its own resources in developing or conducting the language proficiency assessment, or may delegate this task to language assessment bodies.
2. The assessment should meet the basic requirements stated in paragraphs 7 to 10, and the persons nominated as language proficiency assessors should meet the criteria at paragraphs 11 to 13 of this AMC.
3. The Authority should establish an appeal procedure for applicants.
4. Based on existing assessment methods the Authority may decide that active holders of a ATPL issued in accordance with ANTR-FCL requirements should be graded level 4 as of the 5 March 2008.

LANGUAGE PROFICIENCY RE-EVALUATION

5. The recommended Language Proficiency re-evaluation intervals referred to in Appendix 1 to ANTR-FCL 1.010 paragraph 3 should not exceed:
 - a) 3 years if the Language Proficiency level demonstrated is Operational Level (level 4) of the ICAO Language Proficiency Rating; or
 - b) 6 years if the Language Proficiency level demonstrated is Extended Level (level 5) of the ICAO Language Proficiency Rating. It is recommended that the holder of the licence receives a statement containing the level and validity of the language endorsements
6. Formal re-evaluation is not required for applicants who demonstrate expert (level 6) language proficiency, e.g. native and very proficient non-native speakers with a dialect or accent intelligible to the international aeronautical community.

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.
8.
 - a) 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.
 - b) The assessment should include:
 - voice-only and/or face-to face situations
 - common, concrete and work-related topics for pilots.
 - c) The applicants should demonstrate their linguistic ability in dealing with an unexpected turn of events, and in solving apparent misunderstandings.
 - d) The assessment should determine the applicant's speaking and listening abilities. Indirect assessments, of grammatical knowledge, reading and writing, are not appropriate. For further guidance see IEM FCL 1.010.
9. 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 in the AMC No. 1 to ANTR-FCL 1.010.

10. 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

11. 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 (see ICAO Doc 9835 paragraph 6.5.5).
12. The assessors should be trained on the specific requirements of the assessment.
13. Assessors should not test applicants to whom they have given language training.

CRITERIA FOR THE ACCEPTABILITY OF LANGUAGE ASSESSMENT BODIES

14. A language assessment body offering services on behalf of the Authority (see Appendix 1 to ANTR-FCL 1.010 paragraph 5) should meet the specifications at paragraphs 14 to 18.
15. In order to ensure an impartial assessment process, the language assessment should be independent of the language training.
16. 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.
17. 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 / ANTR-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
18. 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.
19. 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 in the AMC No. 1 to ANTR-FCL 1.010)
 - 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.

IEM FCL 1.035**Carriage of safety pilots**

See ANTR-FCL 1.035

INTRODUCTION

- 1 A safety pilot is a pilot who is qualified to act as PIC on the class/type of aeroplane and carried on board the aeroplane for the purpose of taking over control should the person acting as a PIC holding a specific medical certificate restriction become incapacitated.
- 2 The following information should be provided to assist persons acting as safety pilots:
 - a. the background for establishing the role of a safety pilot;
 - b. the logging of flight time whilst acting as a safety pilot;
 - c. the types of medical condition which restrict a particular pilot from flying solo;
 - d. the safety pilot's role and responsibilities; and
 - e. guidance material to assist the safety pilot in the conduct of this role.
- 3 Whenever a pilot licence holder with a safety pilot restriction renews or is issued with the related medical certificate, the holder should receive from the Authority an information sheet. This sheet will give advice to pilots utilised by the licence holder in the capacity of safety pilot. An example of this information sheet is shown below.

INFORMATION SHEET**General considerations**

- 4 The following are a few notes to help you in your role as a safety pilot. Your pilot has been assessed by the Medical Section of the Authority as unfit for solo private flying, but fit to fly with a safety pilot. Although this may sound medically rather alarming, the standards for such pilots are still high, and he/she would undoubtedly be passed fit to lead a 'normal life' on the ground. The chances of any problem occurring during the flight are therefore remote. Nevertheless, as with any aspect of flight safety, remote possibilities should be assessed and, as far as possible, eliminated. This is the purpose of the safety pilot limitation.
- 5 Unless you have to take over the controls you are supernumerary and cannot log any flying time. You should be checked out and current on the aircraft. It must have dual controls and you must be licensed to fly in the proposed airspace and conditions.
- 6 You should have some idea of your pilot's medical condition and the problems that might occur during the flight. These could be due to a sudden or subtle incapacitation in a pilot who is otherwise functioning perfectly normally. Alternatively, there may be some fixed problem that is always present (such as poor vision in one eye or an amputated leg) which might cause difficulties in special circumstances.
- 7 When flying with a pilot who might suffer some form of incapacitation, you should particularly monitor the critical stages of the flight (such as take-off and approach). It may be useful to use some form of question and answer routine as is done during commercial flights. If your pilot does become incapacitated, the two priorities are to fly the aeroplane and try to prevent him/her from compromising the controls. The greatest help in the latter situation is the continuous wearing of a fixed seat belt and shoulder harness (not an inertia reel). With a fixed disability it should be possible to anticipate when help may be needed (maximum braking for example) and to take appropriate action. Further points of consideration are as follows:
 - a. You should check the medical certificate of your intended PIC to see if the medical restriction is tied to an aeroplane with specially adapted controls, or to a specific type of aeroplane. If so, ensure your PIC is in compliance in this respect.
 - b. Before the flight, discuss with your PIC the circumstances under which you should intercede and take control of the aeroplane. During this discussion, also establish whether the PIC wishes you to conduct any flight crew ancillary tasks. If so, these should be clearly specified to avoid confusion between the PIC and you during the flight. This is particularly important when events are moving quickly and the aeroplane is near the surface, for example, during take-off or final approach to landing.
 - c. Bear in mind that you are not just a passenger but may, at any time during the flight, be called upon to take over control. Therefore, you will need to remain alert to this possible situation at all times.

- d. You should also keep in mind that accidents have occurred with two qualified pilots on board when both pilots thought the other was in control. A means of communication must be established between you and the PIC in order that both of you know who is in control of the aeroplane at any given time. The spoken words 'I have control' from one pilot and the response words 'you have control' from the other pilot is simple and appropriate for this purpose.
- e. In order to avoid distraction or confusion to the PIC during the flight, you should keep your hands and feet away from the controls unless safety circumstances arise which require you to take over control of the aeroplane.

AMC FCL 1.055**Quality system for FTOs/ATOs**

(See Appendix 1a and 2 to ANTR-FCL 1.055)

(See IEM No. 1 to ANTR-FCL 1.055)

- 1 In accordance with Appendix 1a and 2 to ANTR-FCL 1.055, a FTO and an ATO shall, as a condition for approval, establish and maintain a quality system. This AMC establishes the objectives of such a system, and offers a means of compliance as to which elements should be included and how the system can be integrated in the organisations.
- 2 The rationale for the requirements of quality systems is the need to establish a distinct assignment of roles between Authority and training organisations by creating an evident division between the regulatory and surveillance responsibility on the one hand, and responsibility of the training activities in itself on the other. Therefore the training organisations must establish a system whereby they can monitor their activities, be able to detect deviations from set rules and standards, take the necessary corrective actions and thus ensure compliance with Authority regulations and own requirements. A well established and functioning quality system will make it possible for the supervising Authority to perform inspections and surveillance efficiently and with a reasonable amount of resources.
- 3 It is obvious and well recognised that the scope and complexity of a quality system should reflect the size and complexity of the training organisation and its training activities. The objectives and the same principles apply, however, to any training organisation, irrespective of size and complexity. Thus, in small and relatively small training organisations, the quality system may be quite simple and integrated in the basic organisation, whereas larger organisations with more complex training activities will need to establish separate and independent quality organisations within the overall organisational set-up.
- 4 In determining size and complexity in this context the following guidelines apply:
training organisations with 5 or less instructors employed are considered very small;
training organisations employing between 6 and 20 instructors are considered small.
In determining complexity, factors such as number of aircraft types used for training, range of training courses offered, geographical spread of training activities (e.g. the use of satellites), range of training arrangements with other training organisations, etc. will be considered.
- 5 In a quality system of any FTO or ATO the following five elements should be clearly identifiable:
 - a. determination of the organisation's training policy and training and flight safety standards;
 - b. determination and establishment of assignment of responsibility, resources, organisation and operational processes, which will make allowance for policy and training and flight safety standards;
 - c. follow up system to ensure that policy, training and flight safety standards are complied with;
 - d. registration and documentation of deviations from policy, training and flight safety standards together with necessary analysis, evaluations and correction of such deviations;
 - e. evaluation of experiences and trends concerning policy, training and flight safety standards.
- 6 IEM No. 1 to ANTR-FCL 1.055 describes in more detail objectives, the different elements of a quality system and offers guidance as to the set-up of quality systems in larger and/or more complex training organisations. For very small and small organisations paragraph 23 of IEM No. 1 to ANTR-FCL 1.055 applies.
- 7 The Quality System required in ANTR-FCL and in other ANTRs may be integrated.

AMC FCL 1.055(a)**Approval of Modular Theoretical Knowledge Distance Learning Courses**

(See ANTR-FCL 1.055(a))

(See Appendix 3 to ANTR-FCL 1.055)

(See Appendix 1 to ANTR-FCL 1.130 & 1.135)

(See Appendix 1 to ANTR-FCL 1.160 & 1.165(a)(4))

(See Appendix 1 to ANTR-FCL 1.205)

(See Appendix 1 to ANTR-FCL 1.251)

(See Appendix 1 to ANTR-FCL 1.285)

GENERAL

1. Modular theoretical knowledge training may be conducted to meet licensing requirements for the issue of a PPL, CPL, IR and ATPL, or first single pilot high performance aeroplane class/type rating. Approved distance learning courses may be offered as part of modular theoretical knowledge training at the discretion of the Authority.

TRAINING ORGANISATION

2. A variety of methods are open to FTOs to present course material. It is, however, necessary for FTOs to maintain comprehensive records in order to ensure that students make satisfactory academic progress and meet the time constraints laid down in ANTR-FCL for the completion of modular courses.
3. The following are given as planning guidelines for FTOs developing the distance learning element of modular courses:
 - a. An assumption that a student will study for at least 15 hours per week.
 - b. An indication throughout the course material of what constitutes a week's study.
 - c. A recommended course structure and order of teaching acceptable to the Authority.
 - d. One progress test for each subject for every 15 hours of study, which should be submitted to the FTO for assessment. Additional self-assessed progress tests should be completed at intervals of 5 to 10 study hours.
 - e. Appropriate contact times throughout the course when a student can have access to an instructor by telephone, fax, e-mail or Internet.
 - f. Measurement criteria to determine whether a student has satisfactorily completed the appropriate elements of the course to a standard that, in the judgement of the Head of Training, or CGI, will enable them to be entered for the ANTR-FCL theoretical examinations with a good prospect of success.
 - g. If the FTO provides the distance learning by help of I.T. solutions, for example the Internet, instructors should monitor student's progress by appropriate means.

IEM No. 1 to ANTR-FCL 1.055**Quality system for FTOs/ATOs**

(See AMC FCL 1.055)

INTRODUCTION

A basis for quality should be established by every FTO/ATO and problem-solving techniques to run processes should be applied. Knowledge in how to measure, establish and ultimately achieve quality in training and education is considered to be essential.

The purpose of this IEM is to provide information and guidance to the training organisations on how to establish a Quality System that enables compliance with Appendix 1a to ANTR-FCL 1.055, item 3 and Appendix 2 to ANTR-FCL 1.055, item 3 (Quality Systems).

In order to show compliance with Appendix 1a to ANTR-FCL 1.055, item 3 and Appendix 2 to ANTR-FCL 1.055, item 3, an FTO/ATO should establish its Quality System in accordance with the instructions and information contained in the succeeding paragraphs.

THE QUALITY SYSTEM OF THE FTO/ATO**1 Terminology***Accountable Manager*

A person acceptable to the Authority who has authority for ensuring that all training activities can be financed and carried out to the standards required by the Authority, and additional requirements defined by the FTO/ATO.

Quality

The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs.

Quality Assurance

All those planned and systematic actions necessary to provide adequate confidence that all training activities satisfy given requirements, including the ones specified by the FTO/ATO in relevant manuals.

Quality Manager

The manager, acceptable to the Authority, responsible for the management of the Quality System, monitoring function and requesting corrective actions.

Quality Manual

The document containing the relevant information pertaining to the operator's quality system and quality assurance programme.

Quality Audit

A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives.

2 Quality Policy and Strategy

It is of vital importance that the FTO/ATO describes how the organisation formulates, deploys, reviews its policy and strategy and turns it into plans and actions. A formal written Quality Policy Statement should be established that is a commitment by the Head of Training as to what the Quality System is intended to achieve. The Quality Policy should reflect the achievement and continued compliance with relevant parts of ANTR-FCL together with any additional standards specified by the FTO/ATO.

The Accountable Manager will have overall responsibility for the Quality System including the frequency, format and structure of the internal management evaluation activities.

3 Purpose of a Quality System

The implementation and employment of a Quality System will enable the FTO/ATO to monitor compliance with relevant parts of FCL, the Operations Manual, the Training Manual, and any other standards as established by that FTO/ATO, or the Authority, to ensure safe and efficient training.

4 **Quality Manager**

- 4.1 The primary role of the Quality Manager is to verify, by monitoring activities in the field of training, that the standards required by the Authority, and any additional requirements as established by the FTO/ATO, are being carried out properly under the supervision of the Head of Training, the Chief Flying Instructor and the Chief Ground Instructor.
- 4.2 The Quality Manager should be responsible for ensuring that the Quality Assurance Programme is properly implemented, maintained and continuously reviewed and improved. The Quality Manager should:
- have direct access to the Head of Training;
 - have access to all parts of the FTO/ATO's organisation.
- 4.3 In the case of small or very small FTO/ATOs, the posts of the Head of Training and the Quality Manager may be combined. However, in this event, quality audits should be conducted by independent personnel. In the case of a training organisation offering integrated training the Quality Manager should not hold the position of Head of Training, Chief Flying Instructor and Chief Ground Instructor.

5 **Quality System**

- 5.1 The Quality System of the FTO/ATO should ensure compliance with and adequacy of training activities requirements, standards and procedures.
- 5.2 The FTO/ATO should specify the basic structure of the Quality System applicable to all training activities conducted.
- 5.3 The Quality System should be structured according to the size of the FTO/ATO and the complexity of the training to be monitored.

6 **Scope**

A Quality System should address the following:

- 6.1 Leadership
- 6.2 Policy and Strategy
- 6.3 Processes
- 6.4 The provisions of FCL
- 6.5 Additional standards and training procedures as stated by the FTO/ATO
- 6.6 The organisational structure of the FTO/ATO
- 6.7 Responsibility for the development, establishment and management of the Quality System
- 6.8 Documentation, including manuals, reports and records
- 6.9 Quality Assurance Programme
- 6.10 The required financial, material, and human resources
- 6.11 Training requirements
- 6.12 Customer satisfaction

7 **Feedback System**

The quality system should include a feedback system to ensure that corrective actions are both identified and promptly addressed. The feedback system should also specify who is required to rectify discrepancies and non-compliance in each particular case, and the procedure to be followed if corrective action is not completed within an appropriate timescale.

8 **Documentation**

Relevant documentation includes the relevant part(s) of the Training and Operations Manual, which may be included in a separate Quality Manual.

- 8.1 In addition relevant documentation should also include the following:

Quality Policy;
Terminology;

Specified training standards;
 A description of the organisation;
 The allocation of duties and responsibilities;
 Training procedures to ensure regulatory compliance.

8.2 The Quality Assurance Programme, reflecting:

Schedule of the monitoring process;
 Audit procedures;
 Reporting procedures;
 Follow-up and corrective action procedures;
 Recording system;
 The training syllabus; and
 Document control.

9 **Quality Assurance Programme**

The Quality Assurance Programme should include all planned and systematic actions necessary to provide confidence that all training are conducted in accordance with all applicable requirements, standards and procedures.

10 **Quality Inspection**

The primary purpose of a quality inspection is to observe a particular event/action/document etc., in order to verify whether established training procedures and requirements are followed during the accomplishment of that event and whether the required standard is achieved.

Typical subject areas for quality inspections are:

Actual flight and ground training;
 Maintenance;
 Technical Standards; and
 Training Standards.

11 **Audit**

An audit is a systematic, and independent comparison of the way in which a training is being conducted against the way in which the published training procedures say it should be conducted. Audits should include at least the following quality procedures and processes:

An explanation of the scope of the audit;
 Planning and preparation;
 Gathering and recording evidence; and
 Analysis of the evidence.

The various techniques that make up an effective audit are:

Interviews or discussions with personnel;
 A review of published documents;
 The examination of an adequate sample of records;
 The witnessing of the activities which make up the training; and
 The preservation of documents and the recording of observations.

12 **Auditors**

The FTO/ATO should decide, depending on the complexity of the training, whether to make use of a dedicated audit team or a single auditor. In any event, the auditor or audit team should have relevant training and/or operational experience.

The responsibilities of the auditors should be clearly defined in the relevant documentation.

13 **Auditor's Independence**

Auditors should not have any day-to-day involvement in the area of the operation or maintenance activity which is to be audited. An FTO/ATO may, in addition to using the services of full-time dedicated personnel belonging to a separate quality department, undertake the monitoring of specific areas or activities by the use of part-time auditors.

An FTO/ATO whose structure and size does not justify the establishment of full-time auditors, may undertake the audit function by the use of part-time personnel from within his own organisation or from an external source under the terms of an agreement acceptable to the Authority.

In all cases the FTO/ATO should develop suitable procedures to ensure that persons directly responsible for the activities to be audited are not selected as part of the auditing team. Where external auditors are used, it is essential that any external specialist is familiar with the type of training conducted by the FTO/ATO.

The Quality Assurance Programme of the FTO/ATO should identify the persons within the company who have the experience, responsibility and authority to:

- Perform quality inspections and audits as part of ongoing Quality Assurance;
- Identify and record any concerns or findings, and the evidence necessary to substantiate such concerns or findings;
- Initiate or recommend solutions to concerns or findings through designated reporting channels;
- Verify the implementation of solutions within specific timescales;
- Report directly to the Quality Manager.

14 **Audit Scope**

FTO/ATOs are required to monitor compliance with the training and Operations Manuals they have designed to ensure safe and efficient training. In doing so they should as a minimum, and where appropriate, monitor:

- (a) Organisation;
- (b) Plans and objectives;
- (c) Training Procedures;
- (d) Flight Safety;
- (e) Manuals, Logs, and Records;
- (f) Flight and Duty Time Limitations,
- (g) Rest Requirements, and Scheduling;
- (h) Aircraft Maintenance/Operations interface;
- (i) Maintenance Programmes and Continued Airworthiness;
- (j) Airworthiness Directives management;
- (k) Maintenance Accomplishment.

15 **Audit Scheduling**

A Quality Assurance Programme should include a defined audit schedule and a periodic review cycle. The schedule should be flexible, and allow unscheduled audits when trends are identified. Follow-up audits should be scheduled when necessary to verify that corrective action was carried out and that it was effective.

An FTO/ATO should establish a schedule of audits to be completed during a specific calendar period. All aspects of the training should be reviewed within a period of 12 months in accordance with the programme unless an extension to the audit period is accepted as explained below.

An FTO/ATO may increase the frequency of their audits at their discretion but should not decrease the frequency without the acceptance of the Authority. It is considered unlikely that a period of greater than 24 months would be acceptable for any audit topic.

When an FTO/ATO defines the audit schedule, significant changes to the management, organisation, training, or technologies should be considered, as well as changes to the regulatory requirements.

16 **Monitoring and Corrective Action**

The aim of monitoring within the Quality System is primarily to investigate and judge its effectiveness and thereby to ensure that defined policy, training standards are continuously complied with. Monitoring activity is based upon quality inspections, audits, corrective action and follow-up. The FTO/ATO should establish and publish a quality procedure to monitor regulatory compliance on a continuing basis. This monitoring activity should be aimed at eliminating the causes of unsatisfactory performance.

Any non-compliance identified should be communicated to the manager responsible for taking corrective action or, if appropriate, the Accountable Manager. Such non-compliance should be

recorded, for the purpose of further investigation, in order to determine the cause and to enable the recommendation of appropriate corrective action.

The Quality Assurance Programme should include procedures to ensure that corrective actions are developed in response to findings. These quality procedures should monitor such actions to verify their effectiveness and that they have been completed. Organisational responsibility and accountability for the implementation of corrective action resides with the department cited in the report identifying the finding. The Accountable Manager will have the ultimate responsibility for ensuring, through the Quality Manager(s), that corrective action has re-established compliance with the standard required by the Authority and any additional requirements established by the FTO/ATO.

17 Corrective action

Subsequent to the quality inspection/audit, the FTO/ATO should establish:

- (a) The seriousness of any findings and any need for immediate corrective action;
- (b) The origin of the finding;
- (c) What corrective actions are required to ensure that the non-compliance does not recur;
- (d) A schedule for corrective action;
- (e) The identification of individuals or departments responsible for implementing corrective action;
- (f) Allocation of resources by the Accountable Manager where appropriate.

17.1 The Quality Manager should:

- 17.1.1 Verify that corrective action is taken by the manager responsible in response to any finding of non-compliance;
- 17.1.2 Verify that corrective action includes the elements outlined in paragraph 16 above;
- 17.1.3 Monitor the implementation and completion of corrective action;
- 17.1.4 Provide management with an independent assessment of corrective action, implementation and completion;
- 17.1.5 Evaluate the effectiveness of corrective action through the follow-up process.

18 Management Evaluation

A management evaluation is a comprehensive, systematic documented review by the management of the quality system, training policies, and procedures, and should consider:

The results of quality inspections, audits and any other indicators; as well as the overall effectiveness of the management organisation in achieving stated objectives. A management evaluation should identify and correct trends, and prevent, where possible, future non-conformities. Conclusions and recommendations made as a result of an evaluation should be submitted in writing to the responsible manager for action. The responsible manager should be an individual who has the authority to resolve issues and take action. The Accountable Manager should decide upon the frequency, format, and structure of internal management evaluation activities.

19 Recording

Accurate, complete, and readily accessible records documenting the results of the Quality Assurance Programme should be maintained by the FTO/ATO. Records are essential data to enable an FTO/ATO to analyse and determine the root causes of non-conformity, so that areas of non-compliance can be identified and subsequently addressed.

The following records should be retained for a period of 5 years:

- Audit Schedules;
- Quality inspection and Audit reports;
- Responses to findings;
- Corrective action reports;
- Follow-up and closure reports;
- Management Evaluation reports.

20 Quality Assurance Responsibility for Sub-Contractors

An FTO/ATO may decide to sub-contract out certain activities to external organisations subject to the approval of the Authority.

The ultimate responsibility for the training provided by the subcontractor always remains with the FTO/ATO. A written agreement should exist between the FTO/ATO and the sub-contractor clearly defining the safety related services and quality to be provided. The sub-contractor's safety related activities relevant to the agreement should be included in the FTO/ATO's Quality Assurance Programme.

The FTO/ATO should ensure that the sub-contractor has the necessary authorisation/approval when required, and commands the resources and competence to undertake the task. If the FTO/ATO requires the sub-contractor to conduct activity which exceeds the sub-contractor's authorisation/approval, the FTO/ATO is responsible for ensuring that the sub-contractor's quality assurance takes account of such additional requirements.

21 **Quality System Training**

Correct and thorough training is essential to optimise quality in every organisation. In order to achieve significant outcomes of such training the FTO/ATO should ensure that all staff understand the objectives as laid down in the Quality Manual.

Those responsible for managing the Quality System should receive training covering:

- An introduction to the concept of Quality System;
- Quality management;
- Concept of Quality Assurance;
- Quality manuals;
- Audit techniques;
- Reporting and recording; and
- The way in which the Quality System will function in the FTO/ATO.

Time should be provided to train every individual involved in quality management and for briefing the remainder of the employees. The allocation of time and resources should be governed by the size and complexity of the operation concerned.

22 **Sources of Training**

Quality management courses are available from the various National or International Standards Institutions, and an FTO/ATO should consider whether to offer such courses to those likely to be involved in the management of Quality Systems. Organisations with sufficient appropriately qualified staff should consider whether to carry out in-house training.

23 **Quality Systems for small/very small Organisations**

The requirement to establish and document a Quality System, and to employ a Quality Manager applies to all FTO/ATOs.

Complex quality systems could be inappropriate for small or very small FTO/ATOs and the clerical effort required to draw up manuals and quality procedures for a complex system may stretch their resources. It is therefore accepted that such FTO/ATOs should tailor their quality systems to suit the size and complexity of their training and allocate resources accordingly.

For small and very small FTO/ATOs it may be appropriate to develop a Quality Assurance Programme that employs a checklist. The checklist should have a supporting schedule that requires completion of all checklist items within a specified timescale, together with a statement acknowledging completion of a periodic review by top management. An occasional independent overview of the checklist content and achievement of the Quality Assurance should be undertaken.

The small FTO/ATO may decide to use internal or external auditors or a combination of the two. In these circumstances it would be acceptable for external specialists and or qualified organisations to perform the quality audits on behalf of the Quality Manager.

If the independent quality audit function is being conducted by external auditors, the audit schedule should be shown in the relevant documentation.

Whatever arrangements are made, the FTO/ATO retains the ultimate responsibility for the quality system and especially the completion and follow-up of corrective actions.

IEM No. 27 to ANTR-FCL 1.055**Financial Evaluation of Flying Training Organisations (FTOs)/Approved Training Organisations(ATOs)**

(See Appendix 1a and 2 to ANTR-FCL 1.055)

OBJECTIVE

1. The objective of this IEM is to set out the means of compliance for the Authority to be satisfied that FTOs/ATOs have sufficient funding available to conduct training to the approved standards of FCL. Paragraph 9 of Appendix 1a to ANTR-FCL 1.055 and paragraph 8 of Appendix 2 to ANTR-FCL 1.055 address the maintenance of acceptable flying training standards throughout the duration of a course. It is not intended to be a consumer protection provision. The grant and revalidation of an approval cannot therefore be construed as a guarantee of the underlying financial soundness of the organisation. It is an indication, on the basis of financial information provided, that the approved organisation can provide sufficient facilities and qualified staff such that flying training can be, or can continue to be, provided in accordance with relevant ANTR-FCL training requirements and standards.

APPLICATION FOR APPROVAL OR REVALIDATION

2. Any application for initial approval or revalidation is to be supported by a plan, covering the period of approval requested, which includes at least the following information:
 - (a) Training facilities and number of students
Details, as appropriate, of:
 - the number and types of training aircraft that will be used;
 - the number of flight and ground instructors that will be employed;
 - the number of classrooms and other types of training facilities (synthetic training devices, etc.) intended for use;
 - the supporting infrastructure (staff offices, operations room, briefing rooms, rest rooms, hangars, etc.)
 - planned number of students (by month and course)
 - (b) Financial Details
 - capital expenditure necessary to provide the planned facilities;
 - costs associated with running each of the courses for which approval is sought;
 - income forecasts for the period of approval;
 - a forecast financial operating statement for the business for which approval is sought;
 - details of any other financial trading arrangement on which the viability of the approved organisation may be dependent.
3. The plan submitted in support of an application for initial approval or revalidation is to be accompanied by a Financial Statement from the applicant's bankers or auditors, which certifies that the applicant has, or has recourse to, sufficient financial resources to meet the applicant's proposals as described in the plan to conduct ANTR-FCL approved courses. An appropriately revised Financial Statement will be required whenever the applicants wish to expand their activities in addition to those described in the plan, in order to satisfy the requirements of FCL.

ONGOING FINANCIAL MONITORING

4. After approval has been granted, if the Authority has reason to believe that the necessary standards of compliance with ANTR-FCL are not being met or may not be met due to a lack or apparent lack of financial resources, the Authority may require the organisation to demonstrate in a written submission that sufficient funds can and will be made available to continue to meet the terms of approval, or such modifications to it as may have been agreed with the Authority. Any such submission is to be accompanied by a further Financial Statement signed by the approved organisation's bankers or auditors.
5. The Authority may also require a Financial Statement if it appears to the Authority that operation of the approved course(s) is significantly at variance with the proposals contained in the business plan.

IEM No. 3 to ANTR-FCL 1.055**Training and Operations Manual for FTOs and ATOs (if applicable)**

(See Appendix 1a and 2 to ANTR-FCL 1.055)

TRAINING MANUAL

Training Manuals for use at an FTO or ATO conducting approved integrated or modular flying training courses should include the following:

Part 1 – The Training Plan

The aim of the course (ATP(A),CPL/IR(A), CPL(A) as applicable)	A statement of what the student is expected to do as a result of the training, the level of performance, and the training constraints to be observed.
Pre-entry requirements	Minimum age, educational requirements (including language), medical requirements. Any individual State requirements.
Credits for previous experience	To be obtained from the Authority before training begins.
Training Syllabi	The flying syllabus (single-engine), the flying syllabus (multi-engine), the synthetic flight training syllabus and the theoretical knowledge training syllabus.
The time scale and scale, in weeks, for each syllabus	Arrangements of the course and the integration of syllabi time.
Training programme	The general arrangements of daily and weekly programmes for flying, ground and synthetic flight training. Bad weather constraints. Programme constraints in terms of maximum student training times, (flying, theoretical knowledge, synthetic) e.g. per day/week/month. Restrictions in respect of duty periods for students. Duration of dual and solo flights at various stages. Maximum flying hours in any day/night; maximum number of training flights in any day/night. Minimum rest period between duty periods.
Training records	Rules for security of records and documents. Attendance records. The form of training records to be kept. Persons responsible for checking records and students' log books. The nature and frequency of record checks. Standardisation of entries in training records. Rules concerning log book entries.
Safety training	Individual responsibilities. Essential exercises. Emergency drills (frequency). Dual checks (frequency at various stages).

	Requirement before first solo day/night/navigation etc.
Tests and examinations	<p>Flying</p> <p>(a) Progress checks</p> <p>(b) Skill tests</p> <p>Theoretical Knowledge</p> <p>(a) Progress tests</p> <p>(b) Theoretical knowledge examinations</p> <p>Authorisation for test.</p> <p>Rules concerning refresher training before retest.</p> <p>Test reports and records.</p> <p>Procedures for examination paper preparation, type of question and assessment, standard required for 'Pass'.</p> <p>Procedure for question analysis and review and for raising replacement papers.</p> <p>Examination resit procedures.</p>
Training effectiveness	<p>Individual responsibilities.</p> <p>General assessment.</p> <p>Liaison between departments.</p> <p>Identification of unsatisfactory progress (individual students).</p> <p>Actions to correct unsatisfactory progress.</p> <p>Procedure for changing instructors.</p> <p>Maximum number of instructor changes per student.</p> <p>Internal feedback system for detecting training deficiencies.</p> <p>Procedure for suspending a student from training.</p> <p>Discipline.</p> <p>Reporting and documentation.</p>
Standards and Level of performance at various stages	<p>Individual responsibilities.</p> <p>Standardisation.</p> <p>Standardisation requirements and procedures.</p> <p>Application of test criteria.</p>

Part 2 – Briefing and Air Exercises

Air Exercise	A detailed statement of the content specification of all the air exercises to be taught, arranged in the sequence to be flown with main and sub-titles. This should normally be the same as the air exercise specification for the flight instructor rating course.
Air exercise reference list	An abbreviated list of the above exercises giving only main and sub-titles for quick reference, and preferably in flip-card form to facilitate daily use by flight instructors.
Course structure – Phase of training	A statement of how the course will be divided into phases, indication of how the above air exercises will be divided between the phases and how they will be arranged to ensure that they are completed in the most suitable learning sequence and that essential (emergency) exercises are repeated at the

<p>Course structure integration of syllabi</p>	<p>correct frequency. Also, the syllabus hours for each phase and for groups of exercises within each phase shall be stated and when progress tests are to be conducted, etc.</p> <p>The manner in which theoretical knowledge, synthetic flight training and flying training will be integrated so that as the flying training exercises are carried out students will be able to apply the knowledge gained from the associated theoretical knowledge instruction and synthetic flight training.</p>
<p>Student progress</p>	<p>The requirement for student progress and include a brief but specific statement of what a student is expected to be able to do and the standard of proficiency he must achieve before progressing from one phase of air exercise training to the next. Include minimum experience requirements in terms of hours, satisfactory exercise completion, etc. as necessary before significant exercises, e.g. night flying.</p>
<p>Instructional methods</p>	<p>The FTO requirements, particularly in respect of pre- and post-flying briefing, adherence to syllabi and training specifications, authorisation of solo flights, etc.</p>
<p>Progress tests</p>	<p>The instructions given to examining staff in respect of the conduct and documentation of all progress tests.</p>
<p>Glossary of terms</p>	<p>Definition of significant terms as necessary.</p>
<p>Appendices</p>	<p>Progress test report forms.</p> <p>Skill test report forms.</p> <p>FTO certificates of experience, competence, etc. as required.</p>

Part 3 – Synthetic Flight Training

Structure generally as for Part 2.

Part 4 – Theoretical knowledge instruction

Structure of the theoretical knowledge course	A statement of the structure of the course, including the general sequence of the topics to be taught in each subject, the time allocated to each topic, the breakdown per subject and an example of a course schedule. Distance Learning courses should include instructions of the material to be studied for individual elements of the course.
Lesson Plans	A description of each lesson or group of lessons including teaching materials, training aids, progress test organisation and inter-connection of topics with other subjects.
Teaching materials	Specification of the training aids to be used (e.g. study materials, course manual references, exercises, self-study materials, demonstration equipment).
Student progress	The requirement for student progress, including a brief but specific statement of the standard that must be achieved and the mechanism for achieving this, before application for theoretical knowledge examinations.
Progress testing	The organisation of progress testing in each subject, including topics covered, evaluation methods and documentation.
Review procedure	The procedure to be followed if the standard required at any stage of the course is not achieved, including an agreed action plan with remedial training if required.

OPERATIONS MANUAL

Operations Manual for use at an FTO or ATO conducting approved integrated or modular flying training courses include the following:

- (a) General

- A list and description of all volumes in the Operations Manual
 - Administration (function and management)
 - Responsibilities (all management and administrative staff)
 - Student discipline and disciplinary action
 - Approval/authorisation of flights
 - Preparation of flying programme (restriction of numbers of aeroplanes in poor weather)
 - Command of aeroplane
 - Responsibilities of pilot-in-command
 - Carriage of passengers
 - Aeroplane documentation
 - Retention of documents
 - Flight crew qualification records (licences and ratings)
 - Revalidation (medical certificates and ratings)
 - Flying duty period and flight time limitations (flying instructors)
 - Flying duty period and flight time limitations (students)
 - Rest periods (flying instructors)
 - Rest periods (students)
 - Pilots' log books
 - Flight planning (general)
 - Safety (general) – equipment, radio listening watch, hazards, accidents and incidents (including reports), safety pilots etc.
- (b) Technical
- Aeroplane descriptive notes
 - Aeroplane handling (including checklists, limitations, aeroplane maintenance and technical logs, in accordance with relevant ANTRs, etc.)
 - Emergency procedures
 - Radio and radio navigation aids
 - Allowable deficiencies (based on MMEL, if available)
- (c) Route
- Performance (legislation, take-off, route, landing etc.)
 - Flight planning (fuel, oil, minimum safe altitude, navigation equipment etc.)
 - Loading (loadsheets, mass, balance, limitations)
 - Weather minima (flying instructors)
 - Weather minima (students – at various stages of training)
 - Training routes/areas
- (d) Staff Training
- Appointments of persons responsible for standards/competence of flying staff
 - Initial training
 - Refresher training
 - Standardisation training
 - Proficiency checks
 - Upgrading training
 - FTO staff standards evaluation

IEM FCL 1.080 Recording of flight time

SAMPLE LOG BOOK

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	
TOTAL THIS PAGE																I certify that the entries in this log are true. _____ PILOT'S SIGNATURE
TOTAL FROM PREVIOUS PAGES																
TOTAL TIME																

INSTRUCTIONS FOR USE

1. ANTR-FCL 1.080 and ANTR-FCL 2.080 require holders of a flight crew licence to record details of all flights flown in a format acceptable to the Authority responsible for licence or rating issue. 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 shall 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 from the time the aircraft first moves under its own power for the purpose of taking off until the time the aircraft finally comes to rest after landing (see ANTR-FCL 1.001).
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 'commander', in accordance with ANTR-OPS, who may delegate the conduct of the flight to another suitable qualified pilot. All flying carried out as 'commander' shall be entered in the log book as 'pilot-in-command'. A pilot flying as 'pilot-in-command under supervision' or 'student pilot-in-command' shall enter flying times as 'pilot-in-command' but all such entries shall be certified by the commander 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.

1 DATE (dd/mm/yy)	2 DEPARTURE		3 ARRIVAL		4 AIRCRAFT		5 SINGLE PILOT TIME		MULTI-PILOT TIME	6 TOTAL TIME OF FLIGHT		7 NAME PIC	8 LANDINGS		
	PLACE	TIME	PLACE	TIME	MAKE, MODEL, VARIANT	REGISTRATION	SE	ME		TOTAL TIME OF FLIGHT	NAME PIC		DAY	NIGHT	
									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

Notes (continued):

- 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 must be countersigned by the aircraft commander/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, must 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.

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				
												20/11/98	B747-400 (Q1234)	4	10
8	10	9	40	9	40										

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AMC/IEM C**PRIVATE PILOT LICENCE****AMC FCL 1.125****Syllabus of theoretical knowledge and flight instruction for the private pilot licence (aeroplane) – PPL(A)**

(See ANTR-FCL 1.125)

(See Appendix 1 to ANTR-FCL 1.125)

SYLLABUS OF THEORETICAL KNOWLEDGE FOR THE PRIVATE PILOT LICENCE (AEROPLANE)**AIR LAW****Legislation**

- 1 The Convention on International Civil Aviation
- 2 The International Civil Aviation Organisation
- 3 Articles of the Convention
 - 1 Sovereignty
 - 2 Territory
 - 5 Flight over territory of Contracting States
 - 10 Landing at customs airports
 - 11 Applicability of air regulations
 - 12 Rules of the air
 - 13 Entry and clearance regulations of Contracting States
 - 16 Search of aircraft
 - 22 Facilitation of formalities
 - 23 Customs and immigration procedures
 - 24 Customs duty
 - 29 Documents to be carried in aircraft
 - 30 Use of aircraft radio equipment
 - 31 Certificate of airworthiness
 - 32 Licences of personnel
 - 33 Recognition of certificates and licences
 - 34 Journey log books
 - 35 Cargo restrictions
 - 36 Restrictions on use of photographic equipment
 - 37 Adoption of international standards and procedures
 - 39 Endorsement of certificates and licences
 - 40 Validity of endorsed certificates and licences
- 4 Annexes to the Convention ('ICAO Annexes')
 - Annex 7 Aircraft nationality and registration marks
 - definitions
 - aircraft registration marks
 - certificate of registration
 - identification plate
 - Annex 8 Airworthiness of aircraft
 - definitions
 - certificate of airworthiness
 - continuing airworthiness
 - validity of certificate of airworthiness
 - instruments and equipment
 - aircraft limitations and information

Rules of the air

- Annex 2 Rules of the air
 - definitions
 - applicability

- general rules
- visual flight rules
- signals (Appendix 1)
- interception of civil aircraft (Appendix 2)

Air traffic regulations and air traffic services

Annex 11 Air traffic regulations and air traffic services

- definitions
- objectives of air traffic services
- classification of airspace
- flight information regions, control areas and control zones
- air traffic control services
- flight information services
- alerting service
- visual meteorological conditions
- instrument meteorological conditions
- in-flight contingencies

Annex 14 Aerodrome data

- definitions
- conditions of the movement area and related facilities
- Visual aids for navigation
 - indicators and signalling devices
 - markings
 - lights
 - signs
 - markers
 - signal area
- Visual aids for denoting obstacles
 - marking of objects
 - lighting of objects
- Visual aids for denoting restricted use of areas
- Emergency and other services
 - fire and rescue service
 - apron management service
- Aerodrome ground lights and surface marking colours
 - colours for aeronautical ground lights
 - colours for surface markings

5 ICAO Document 4444 – Rules of the air and air traffic services

General provisions

- definitions
- ATS operating practices
- flight plan clearance and information
- control of air traffic flow
- altimeter setting procedures
- wake turbulence information
- meteorological information
- air reports (AIREP)
- Area control service
- separation of controlled traffic in the various classes of airspace
- pilots, responsibility to maintain separation in VMC
- emergency and communications failure procedures by the pilot
- interception of civil aircraft

Approach control service

- departing and arriving aircraft procedures in VMC

Aerodrome control service

- function of aerodrome control towers
- VFR operations
- traffic and circuit procedures
- information to aircraft
- control of aerodrome traffic

Flight information and alerting service

- air traffic advisory service
- objectives and basic principles

Bahraini regulations

6 Civil Aviation Regulations

FCL Subpart A – General requirements

- 1.025 – Validity of licences and ratings
- 1.035 – Medical fitness
- 1.040 – Decrease in medical fitness
- 1.050 – Crediting of flight time
- 1.065 – State of Licence issue

FCL Subpart B – Student pilot

- 1.085 – Requirements
- 1.090 – Minimum Age
- 1.095 – Medical fitness

FCL Subpart C – Private pilot licence

- 1.100 – Minimum Age
- 1.105 – Medical fitness
- 1.110 – Privileges and conditions
- 1.115 – Ratings for special purposes
- 1.120 – Experience and Crediting
- 1.125 – Training course
- 1.130 – Theoretical knowledge examination
- 1.135 – Skill test

FCL Subpart E – Instrument rating

- 1.175 – Circumstances in which an instrument rating is required

FCL Subpart F – Type and Class Ratings

- 1.215 – Division of Class Ratings
- 1.225 – Circumstances in which type or class ratings are required
- 1.245 – Validity, revalidation and renewal

FCL Subpart H – Instructor ratings

- 1.300 – Instruction – general

AIRCRAFT GENERAL KNOWLEDGE

Airframe

7 Airframe structure

- components
- fuselage, wings, tailplane, fin
- primary flying controls
- trim and flap/slat systems
- landing gear
 - nose wheel, including steering
 - tyres, condition
 - braking systems and precautions in use
 - retraction systems

8 Airframe loads

- static strength
 - safety factor
 - control locks and use
 - ground/flight precautions

Engine

9 Engines – general

- principles of the four stroke internal combustion engine

- basic construction
 - causes of pre-ignition and detonation
 - power output as a function of RPM
- 10 Engine cooling
- air cooling
 - cowling design and cylinder baffles
 - design and use of cowl flaps
 - cylinder head temperature gauge
- 11 Engine lubrication
- function and methods of lubrication
 - lubrication systems
 - methods of oil circulation
 - oil pump and filter requirements
 - qualities and grades of oil
 - oil temperature and pressure control
 - oil cooling methods
 - recognition of oil system malfunctions
- 12 Ignition systems
- principles of magneto ignition
 - construction and function
 - purpose and principle of impulse coupling
 - serviceability checks, recognition of malfunctions
 - operational procedures to avoid spark plug fouling
- 13 Carburetion
- principles of float type carburettor
 - construction and function
 - methods to maintain correct mixture ratio
 - operation of metering jets and accelerator pump
 - effect of altitude
 - manual mixture control
 - maintenance of correct mixture ratio
 - limitation on use at high power
 - avoidance of detonation
 - idle cut-off valve
 - operation and use of primary controls
 - air induction system
 - alternate induction systems
 - carburettor icing, use of hot air
 - injection systems, principles and operation
- 14 Aero engine fuel
- classification of fuels
 - grades and identification by colour
 - quality requirements
 - inspection for contamination
 - use of fuel strainers and drains
- 15 Fuel systems
- fuel tanks and supply lines
 - venting system
 - mechanical and electrical pumps
 - gravity feed
 - tank selection
 - system management
- 16 Propellers
- propeller nomenclature
 - conversion of engine power to thrust
 - design and construction of fixed pitch propeller
 - forces acting on propeller blade
 - variation of RPM with change of airspeed

- thrust efficiency with change of speed
 - design and construction of variable pitch propeller
 - constant speed unit operation
 - effect of blade pitch changes
 - windmilling effect
- 17 Engine handling
- starting procedures and precautions
 - recognition of malfunctions
 - warming up, power and system checks
 - oil temperature and pressure limitations
 - cylinder head temperature limitations
 - ignition and other system checks
 - power limitations
 - avoidance of rapid power changes
 - use of mixture control

Systems

- 18 Electrical system
- installation and operation of alternators/generators
 - direct current supply
 - batteries, capacity and charging
 - voltmeters and ammeters
 - circuit breakers and fuses
 - electrically operated services and instruments
 - recognition of malfunctions
 - procedure in the event of malfunctions
- 19 Vacuum system
- components
 - pumps
 - regulator and gauge
 - filter system
 - recognition of malfunction
 - procedures in the event of malfunctions

Instruments

- 20 Pitot/static system
- pitot tube, function
 - pitot tube, principles and construction
 - static source
 - alternate static source
 - position error
 - system drains
 - heating element
 - errors caused by blockage or leakage
- 21 Airspeed indicator
- principles of operation and construction
 - relationship between pitot and static pressure
 - definitions of indicated, calibrated and true airspeed
 - instrument errors
 - airspeed indications, colour coding
 - pilot's serviceability checks
- 22 Altimeter
- principles of operation and construction
 - function of the sub-scale
 - effects of atmospheric density
 - pressure altitude
 - true altitude
 - international standard atmosphere
 - flight level

- presentation (three needle)
 - instrument errors
 - pilot's service ability checks
- 23 Vertical speed indicator
- principles of operation and construction
 - function
 - inherent lag
 - instantaneous VSI
 - presentation
 - pilot's serviceability checks
- 24 Gyroscopes
- principles
 - rigidity
 - precession
- 25 Turn indicator
- rate gyro
 - purpose and function
 - effect of speed
 - presentation
 - turn co-ordinator
 - limited rate of turn indications
 - power source
 - balance indicator
 - principle
 - presentation
 - pilot's serviceability checks
- 26 Attitude indicator
- earth gyro
 - purpose and function
 - presentations
 - interpretation
 - operating limitations
 - power source
 - pilot's serviceability checks
- 27 Heading indicator
- directional gyro
 - purpose and function
 - presentation
 - use with magnetic compass
 - setting mechanism
 - apparent drift
 - operating limitations
 - power source
 - pilot's serviceability checks
- 28 Magnetic compass
- construction and function
 - earth's magnetic field
 - variation and deviation
 - turning, acceleration errors
 - precautions when carrying magnetic items
 - pilot's service ability checks
- 29 Engine instruments
- principles, presentation and operational use of:
 - oil temperature gauge
 - oil pressure gauge
 - cylinder head temperature gauge
 - exhaust gas meter
 - manifold pressure gauge

- fuel pressure gauge
 - fuel flow gauge
 - fuel quantity gauge(s)
 - tachometer
- 30 Other instruments
- principles, presentation and operational use of:
 - vacuum gauge
 - voltmeter and ammeter
 - warning indicators
 - others relevant to aeroplane type

Airworthiness

- 31 Airworthiness
- certificate to be in force
 - compliance with requirements
 - periodic maintenance inspections
 - compliance with flight manual (or equivalent), instructions, limitations, placards
 - flight manual supplements
 - provision and maintenance of documents
 - aeroplane, engine and propeller log books
 - recording of defects
 - permitted maintenance by pilots

FLIGHT PERFORMANCE AND PLANNING

Mass and balance

- 32 Mass and balance
- limitations on maximum mass
 - forward and aft limitations of centre of gravity, normal and utility operation
 - mass and centre of gravity calculations – aeroplane manual and balance sheet

Performance

- 33 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
 - use of flaps
- 34 Landing
- effects of mass, wind, density altitude and approach speed
 - use of flaps
 - ground surface and gradient
- 35 In flight
- relationship between power required and power available
 - performance diagram
 - maximum rate and maximum angle of climb
 - range and endurance
 - effects of configuration, mass, temperature and altitude
 - reduction of performance during climbing turns
 - gliding
 - adverse effects
 - icing, rain
 - condition of the airframe
 - effect of flap

HUMAN PERFORMANCE AND LIMITATIONS**Basic physiology**

- 36 Concepts
 - composition of the atmosphere
 - the gas laws
 - respiration and blood circulation

- 37 Effects of partial pressure
 - effect of increasing altitude
 - gas transfer
 - hypoxia
 - symptoms
 - prevention
 - cabin pressurisation
 - effects of rapid decompression
 - time of useful consciousness
 - the use of oxygen masks and rapid descent
 - hyperventilation
 - symptoms
 - avoidance
 - effects of accelerations

- 38 Vision
 - physiology of vision
 - limitations of the visual system
 - vision defects
 - optical illusions
 - spatial disorientation
 - avoidance of disorientation

- 39 Hearing
 - physiology of hearing
 - inner ear sensations
 - effects of altitude change
 - noise and hearing loss
 - protection of hearing
 - spatial disorientation
 - conflicts between ears and eyes
 - prevention of disorientation

- 40 Motion sickness
 - causes
 - symptoms
 - prevention

- 41 Flying and health
 - medical requirements
 - effect of common ailments and cures
 - colds
 - stomach upsets
 - drugs, medicines, and side effects
 - alcohol
 - fatigue
 - personal fitness
 - passenger care
 - scuba diving – precautions before flying

- 42 Toxic hazards
 - dangerous goods
 - carbon monoxide from heaters

Basic psychology

- 43 The information process
 - concepts of sensation
 - cognitive perception
 - expectancy
 - anticipation
 - habits

- 44 The central decision channel
 - mental workload, limitations
 - information sources
 - stimuli and attention
 - verbal communication
 - memory and its limitations
 - causes of misinterpretation

- 45 Stress
 - causes and effects
 - concepts of arousal
 - effects on performance
 - identifying and reducing stress

- 46 Judgement and decision making
 - concepts of pilots' judgement
 - psychological attitudes
 - behavioural aspects
 - risk assessment
 - development of situational awareness

METEOROLOGY

- 47 The atmosphere
 - composition and structure
 - vertical divisions
- 48 Pressure, density and temperature
 - barometric pressure, isobars
 - changes of pressure, density and temperature with altitude
 - altimetry terminology
 - solar and terrestrial energy radiation, temperature
 - diurnal variation of temperature
 - adiabatic process
 - temperature lapse rate
 - stability and instability
 - effects of radiation, advection subsidence and convergence

- 49 Humidity and precipitation
 - water vapour in the atmosphere
 - vapour pressure
 - dew point and relative humidity
 - condensation and vaporisation
 - precipitation

- 50 Pressure and wind
 - high and low pressure areas
 - motion of the atmosphere, pressure gradient
 - vertical and horizontal motion, convergence, divergence
 - surface and geostrophic wind
 - effect of wind gradient and windshear on take-off and landing
 - relationship between isobars and wind, Buys Ballot's law
 - turbulence and gustiness
 - local winds, föhn, land and sea breezes

- 51 Cloud formation
 - cooling by advection, radiation and adiabatic expansion

- cloud types
 - convection clouds
 - orographic clouds
 - stratiform and cumulus clouds
- flying conditions in each cloud type

- 52 Fog, mist and haze
 - radiation, advection, frontal, freezing fog
 - formation and dispersal
 - reduction of visibility due to mist, snow, smoke, dust and sand
 - assessment of probability of reduced visibility
 - hazards in flight due to low visibility, horizontal and vertical

- 53 Airmasses
 - description of and factors affecting the properties of airmasses
 - classification of airmasses, region of origin
 - modification of airmasses during their movement
 - development of low and high pressure systems
 - weather associated with pressure systems

- 54 Frontology
 - formation of cold and warm fronts
 - boundaries between airmasses
 - development of a warm front
 - associated clouds and weather
 - weather in the warm sector
 - development of a cold front
 - associated clouds and weather
 - occlusions
 - associated clouds and weather
 - stationary fronts
 - associated clouds and weather

- 55 Ice accretion
 - conditions conducive to ice formation
 - effects of hoar frost, rime ice, clear ice
 - effects of icing on aeroplane performance
 - precautions and avoidance of icing conditions
 - engine icing
 - precautions, prevention and clearance of induction and carburettor icing

- 56 Thunderstorms
 - formation – airmass, frontal, orographic
 - conditions required
 - development process
 - recognition of favourable conditions for formation
 - hazards for aeroplanes
 - effects of lightning and severe turbulence
 - avoidance of flight in the vicinity of thunderstorms

- 57 Flight over mountainous areas
 - hazards
 - influence of terrain on atmospheric processes
 - mountain waves, windshear, turbulence, vertical movement, rotor effects, valley winds

- 58 Climatology
 - general seasonal circulation in the troposphere over Europe
 - local seasonal weather and winds

- 59 Altimetry
 - operational aspects of pressure settings
 - pressure altitude, density altitude
 - height, altitude, flight level
 - ICAO standard atmosphere
 - QNH, QFE, standard setting

- transition altitude, layer and level
- 60 The meteorological organisation
 - aerodrome meteorological offices
 - aeronautical meteorological stations
 - forecasting service
 - meteorological services at aerodromes
 - availability of periodic weather forecasts
- 61 Weather analysis and forecasting
 - weather charts, symbols, signs
 - significant weather charts
 - prognostic charts for general aviation
- 62 Weather information for flight planning
 - reports and forecasts for departure, en-route, destination and alternate(s)
 - interpretation of coded information METAR, TAF, GAFOR
 - availability of ground reports for surface wind, windshear, visibility
- 63 Meteorological broadcasts for aviation
 - VOLMET, ATIS, SIGMET

NAVIGATION

- 64 Form of the earth
 - axis, poles
 - meridians of longitude
 - parallels of latitude
 - great circles, small circles, rhumb lines
 - hemispheres, north/south, east/west
- 65 Mapping
 - aeronautical maps and charts (topographical)
 - projections and their properties
 - conformality
 - equivalence
 - scale
 - great circles and rhumb lines
- 66 Conformal orthomorphic projection (ICAO 1.500,000 chart)
 - main properties
 - construction
 - convergence of meridians
 - presentation of meridians, parallels, great circles and rhumb lines
 - scale, standard parallels
 - depiction of height
- 67 Direction
 - true north
 - earth's magnetic field, variation – annual change
 - magnetic north
 - vertical and horizontal components
 - isogonals, agonic lines
- 68 Aeroplane magnetism
 - magnetic influences within the aeroplane
 - compass deviation
 - turning, acceleration errors
 - avoiding magnetic interference with the compass
- 69 Distances
 - units
 - measurement of distance in relation to map projection
- 70 Charts in practical navigation

- plotting positions
 - latitude and longitude
 - bearing and distance
 - use of navigation protractor
 - measurement of tracks and distances
- 71 Chart reference material/map reading
- map analysis
 - topography
 - relief
 - cultural features
 - permanent features (e.g. line features, spot features, unique or special features)
 - features subject to change (e.g. water)
 - preparation
 - folding the map for use
 - methods of map reading
 - map orientation
 - checkpoint features
 - anticipation of checkpoints
 - with continuous visual contact
 - without continuous visual contact
 - when uncertain of position
 - aeronautical symbols
 - aeronautical information
 - conversion of units
- 72 Principles of navigation
- IAS, CAS and TAS
 - track, true and magnetic
 - wind velocity, heading and groundspeed
 - triangle of velocities
 - calculation of heading and groundspeed
 - drift, wind correction angle
 - ETA
 - dead reckoning, position, fix
- 73 The navigation computer
- use of the circular slide rule to determine
 - TAS, time and distance
 - conversion of units
 - fuel required
 - pressure, density and true altitude
 - time en-route and ETA
 - use of the computer to solve triangle of velocities
 - application of TAS and wind velocity to track
 - determination of heading and ground speed
 - drift and wind correction angle
- 74 Time
- relationship between universal co-ordinated (standard) (UTC) time and local mean time (LMT)
 - definition of sunrise and sunset times
- 75 Flight planning
- selection of charts
 - route and aerodrome weather forecasts and reports
 - assessing the weather situation
 - plotting the route
 - considerations of controlled/regulated airspace, airspace restrictions, danger areas, etc.
 - use of AIP and NOTAMS
 - ATC liaison procedures in controlled/regulated airspace
 - fuel considerations
 - en-route safety altitude(s)
 - alternate aerodromes
 - communications and radio/navaid frequencies
 - compilation of flight log

- compilation of ATC flight plan
 - selection of check points, time and distance marks
 - mass and balance calculations
 - mass and performance calculations
- 76 Practical navigation
- compass headings, use of deviation card
 - organisation of in-flight workload
 - departure procedure, log entries, altimeter setting and establishing IAS
 - maintenance of heading and altitude
 - use of visual observations
 - establishing position, checkpoints
 - revisions to heading and ETA
 - arrival procedures, ATC liaison
 - completion of flight log and aeroplane log entries

Radio navigation

- 77 Ground D/F
- application
 - principles
 - presentation and interpretation
 - coverage
 - errors and accuracy
 - factors affecting range and accuracy
- 78 ADF, including associated beacons (NDBs) and use of the RMI
- application
 - principles
 - presentation and interpretation
 - coverage
 - errors and accuracy
 - factors affecting range and accuracy
- 79 VOR/DME
- application
 - principles
 - presentation and interpretation
 - coverage
 - errors and accuracy
 - factors affecting range and accuracy
- 80 GPS
- application
 - principles
 - presentation and interpretation
 - coverage
 - errors and accuracy
 - factors affecting reliability and accuracy
- 81 Ground radar
- application
 - principles
 - presentation and interpretation
 - coverage
 - errors and accuracy
 - factors affecting reliability and accuracy
- 82 Secondary surveillance radar
- principles (transponders)
 - application
 - presentation and interpretation
 - modes and codes

OPERATIONAL PROCEDURES

- 83 ICAO Annex 6, Part II – Operation of aircraft
 - foreword
 - definitions
 - general statement
 - flight preparation and in-flight procedures
 - performance and operating limitations
 - instruments and equipment
 - communications and navigation equipment
 - maintenance
 - flight crew
 - lights to be displayed
- 84 ICAO Annex 12 – Search and rescue
 - definitions
 - alerting phases
 - procedures for pilot-in-command (para 5.8 and 5.9)
 - search and rescue signals (para 5.9 and Appendix A)
- 85 ICAO Annex 13 – Aircraft accident investigation
 - definitions
 - national procedures
- 86 Noise abatement
 - general procedures
 - application to take-off and landing
- 87 Contravention of aviation regulations
 - offences
 - penalties

PRINCIPLES OF FLIGHT

- 88 The atmosphere
 - composition and structure
 - ICAO standard atmosphere
 - atmospheric pressure
- 89 Airflow around a body, sub-sonic
 - air resistance and air density
 - boundary layer
 - friction forces
 - laminar and turbulent flow
 - Bernoulli's principle – venturi effect
- 90 Airflow about a two dimensional aerofoil
 - airflow around a flat plate
 - airflow around a curved plate (aerofoil)
 - description of aerofoil cross section
 - lift and drag
 - C_l and C_d and their relationship to angle of attack
- 91 Three dimensional flow about an aerofoil
 - aerofoil shapes and wing planforms
 - induced drag
 - downwash angle, vortex drag, ground effect
 - aspect ratio
 - parasite (profile) drag
 - form, skin friction and interference drag
 - lift/drag ratio
- 92 Distribution of the four forces
 - balance and couples
 - lift and mass
 - thrust and drag

- methods of achieving balance
- 93 Flying controls
 - the three planes
 - pitching about the lateral axis
 - rolling about the longitudinal axis
 - yawing about the normal axis
 - effects of the elevators (stabilators), ailerons and rudder
 - control in pitch, roll and yaw
 - cross coupling, roll and yaw
 - mass and aerodynamic balance of control surfaces
- 94 Trimming controls
 - basic trim tab, balance tab and anti-balance tab
 - purpose and function
 - method of operation
- 95 Flaps and slats
 - simple, split, slotted and Fowler flaps
 - purpose and function
 - operational use
 - slats, leading edge
 - purpose and function
 - normal/automatic operation
- 96 The stall
 - stalling angle of attack
 - disruption of smooth airflow
 - reduction of lift, increase of drag
 - movement of centre of pressure
 - symptoms of development
 - aeroplane characteristics at the stall
 - factors affecting stall speed and aeroplane behaviour at the stall
 - stalling from level, climbing, descending and turning flight
 - inherent and artificial stall warnings
 - recovery from the stall
- 97 Avoidance of spins
 - wing tip stall
 - the development of roll
 - recognition at the incipient stage
 - immediate and positive stall recovery
- 98 Stability
 - definitions of static and dynamic stability
 - longitudinal stability
 - centre of gravity effect on control in pitch
 - lateral and directional stability
 - interrelationship, lateral and directional stability
- 99 Load factor and manoeuvres
 - structural considerations
 - manoeuvring and gust envelope
 - limiting load factors, with and without flaps
 - changes in load factor in turns and pull-ups
 - manoeuvring speed limitations
 - in-flight precautions
- 100 Stress loads on the ground
 - side loads on the landing gear
 - landing
 - Taxiing, precautions during turns

COMMUNICATIONS

- 101 Radio telephony and communications
 - use of AIP and frequency selection
 - microphone technique
 - phonetic alphabet
 - station/aeroplane callsigns/abbreviations
 - transmission technique
 - use of standard words and phrases
 - listening out
 - required 'readback' instructions

- 102 Departure procedures
 - radio checks
 - taxi instructions
 - holding on ground
 - departure clearance

- 103 En-route procedures
 - frequency changing
 - position, altitude/flight level reporting
 - flight information service
 - weather information
 - weather reporting
 - procedures to obtain bearings, headings, position
 - procedural phraseology
 - height/range coverage
 - vertical situational awareness (avoidance of controlled flight into terrain)

- 104 Arrival and traffic pattern procedures
 - arrival clearance
 - calls and ATC instructions during the:
 - circuit
 - approach and landing
 - vacating runway

- 105 Communications failure
 - Action to be taken
 - alternate frequency
 - serviceability check, including microphone and headphones
 - in-flight procedures according to type of airspace

- 106 Distress and urgency procedures
 - distress (Mayday), definition and when to use
 - frequencies to use
 - contents of Mayday message
 - urgency (Pan), definition and when to use
 - frequencies to use
 - relay of messages
 - maintenance of silence when distress/urgency calls heard
 - cancellation of distress/urgency

General flight safety

- 107 Aeroplane
 - seat adjustment and security
 - harnesses and seat belts
 - emergency equipment and its use
 - fire extinguisher
 - engine/cabin fires
 - de-icing systems
 - survival equipment, life jackets, life rafts
 - carbon monoxide poisoning
 - refuelling precautions
 - flammable goods/pressurised containers

108 Operational

- wake turbulence
- aquaplaning
- windshear, take-off, approach and landing
- clearance to cross or enter runway (avoidance of runway incursions)
- passenger briefings
- emergency exits
- evacuation from the aeroplane
 - forced landings
 - gear-up landing
 - ditching

SYLLABUS OF FLIGHT INSTRUCTION FOR THE PRIVATE PILOT LICENCE (AEROPLANE)

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 (or 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
- slipping turns (or 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 100 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 shall 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 nosewheel 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 nav aids
- 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

ENTRY TO TRAINING

Before being accepted for training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

IEM FCL 1.135
PPL(A) skill test form
 (See ANTR-FCL 1.135)

APPLICATION AND REPORT FORM for the PPL(A) skill test			
Applicant's last name:		First name:	
1	Details of the flight		
Type of aeroplane:		Departure aerodrome:	
Registration:		Destination aerodrome:	
Block time off:		Block time on:	
Total block time:		Take-off time:	
Landing 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:	

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AMC/IEM D**COMMERCIAL PILOT LICENCE****AMC FCL 1.160 & 1.165(a)(1)****ATP(A) integrated course**

(See ANTR-FCL 1.160 & 165)

(See Appendix 1 to ANTR-FCL 1.470)

(See IEM FCL 1.170)

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 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 5 hours of dual instruction and at least 40 hours as pilot-in-command.
- 4 The dual instruction and testing up to the VFR navigation progress test shall 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

- 5 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 shall 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 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 shall be at a safe altitude unless carried out in a synthetic training device).

Phase 5

- 6 Instruction and testing in multi-crew co-operation (MCC) comprise the relevant training requirements set out in Appendix 1 to ANTR-FCL 1.261(d) and AMC FCL 1.261(d).
- 7 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 as set out in Appendix 1 to AMC FCL 1.261(d).

AMC FCL 1.160 & 1.165(a)(2)**CPL(A)/IR integrated course**

(See ANTR-FCL 1.160 & 1.165)

(See Appendix 1 to ANTR-FCL 1.470)

(See IEM FCL 1.170)

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 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 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 shall 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 shall 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 at a safe altitude unless carried out in a synthetic training device).

**AMC FCL 1.160 & 1.165(a)(3)
CPL(A) integrated course**

(See ANTR-FCL 1.160 & 1.165)
(See IEM-FCL 1.170)

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 shall be conducted by a flight instructor and/or an authorised synthetic flight instructor.
 - b. repetition of exercises of Phases 1 and 2, which shall 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).

AMC FCL 1.160 & 1.165(a)(4)**CPL(A) modular course**

(See ANTR FCL 1.160 & 1.165)

(See IEM-FCL 1.170)

Flight 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.	1.00
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 FCL 1.205. 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:	
<ul style="list-style-type: none"> - the training shall 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) shall conduct the instruction. 	
9 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

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 shut down and restart. Before commencing training, the applicant shall have complied with ANTR-FCL 1.235 and 1.240 as appropriate to the aeroplane used for the test.

IEM FCL 1.170
CPL(A) skill test form

(See ANTR-FCL 1.170)

APPLICATION AND REPORT FORM FOR THE CPL(A) SKILL TEST			
Applicant's last name:		First name:	
Licence held:		Number:	
1	Details of the flight		
Class/Type of aeroplane:		Departure aerodrome:	
Registration:		Destination aerodrome:	
Block time off:		Block time on:	
Total block time:		Take-off time:	
Landing 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:	

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AMC/IEM E**INSTRUMENT RATING****AMC FCL 1.205****IR(A) - Modular flying training course**

(See ANTR-FCL 1.205)

(See Appendix 1 to ANTR-FCL 1.205)

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 attitudes.

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 shall 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) shall conduct the instruction.

- | | | |
|---|---|------|
| 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: <ul style="list-style-type: none"> 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; | 0:45 |

	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

Appendix 1 to AMC FCL 1.205
Certificate of Completion of Basic instrument Flight Module
 (See ANTR-FCL 1.205)

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:	

IEM FCL 1.210**IR(A) skill test and proficiency check form**

(ANTR-FCL 1.185 & FCL 1.210)

APPLICATION AND REPORT FORM FOR THE IR(A) SKILL TEST			
Applicant's last name:		First name:	
Licence held:		Number:	
1	Details of the flight		
Class/Type of aeroplane:		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/IEM F

CLASS AND TYPE RATING

IEM FCL 1.240(b)(1)

ATPL/type rating/training/skill test and proficiency check form on multi-engine multi-pilot aeroplanes
(See ANTR-FCL 1.240)

APPLICATION AND REPORT FORM			
Applicant's last name:		First names:	
Type of licence:		Number:	
State:	Type rating as pilot-in-command/co-pilot*	Signature of applicant:	
Multi-engine aeroplane:		Proficiency check:	
Training record:		Type rating:	
Skill test:		ATPL(A):	

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	Simulator (aeroplane type):	Three or more axes:	YES	NO
Simulator manufacturer:		motion / system:		
Simulator operator:		Visual aid:	YES*	NO*
Total training time at the controls:				
Instrument approaches at aerodromes:				
to a decision altitude/height of:				
Location/date/time:		Signature of type rating instructor/examiner*:		
Type and No of licence:		Name in capital letters:		
3	Flight training:			
Type of aeroplane:	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 shall indicate the reasons why	Passed	Failed	SIM/Aircraft Reg:
Location and date		Type and number of licence		
Signature of authorised examiner*		Name in capital letters		

* delete as necessary

IEM FCL 1.240(b)(2)**Class/type rating/training/skill test and proficiency check form on single-engine and multi-engine single-pilot aeroplanes**

(See ANTR-FCL 1.240)

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 shall indicate the reasons why	<i>Passed</i>	<i>Failed</i>	SIM/Aircraft Reg:
Location and date:		Type and number of licence:	
Signature of authorised examiner*:		Name in capital letters:	

* delete as necessary

AMC FCL 1.245(f)(1)**Type and class ratings - Validity, revalidation and renewal**

RENEWAL OF CLASS AND TYPE RATINGS: REFRESHER TRAINING

- a) Paragraph (f)(1) of ANTR FCL 1.245 determines that if a class or type rating has lapsed, the applicant shall take a refresher training at an ATO. The objective of the training is 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 ATO, taking into account the following factors:
- (1) the experience of the applicant. To determine this, the ATO should evaluate the pilot's log book, and, if necessary, conduct a test in an FSTD;
 - (2) the complexity of the aircraft;
 - (3) the amount of time elapsed 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 elapsed is very limited (less than 3 months), the ATO may even determine that no further refresher training is necessary. When determining the needs of the pilot, the following items can be taken into consideration:
 - (i) expiry shorter than 3 months: no supplementary requirements;
 - (ii) expiry longer than 3 months but shorter than 1 year: a minimum of two training sessions;
 - (iii) expiry longer than 1 year but shorter than 3 years: a minimum of three training sessions in which the most important malfunctions in the available systems are covered;
 - (iv) expiry longer than 3 years: the applicant should again undergo the training required for the initial issue of the rating or, in case of helicopter, the training required for the 'additional type issue', according to other valid ratings held.
- (b) Once the ATO 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.
- (c) After successful completion of the training, the ATO should give a certificate, or other documental evidence that the training has been successfully achieved to the applicant, to be submitted to the Authority when applying for the renewal. The certificate or documental evidence needs to contain a description of the training programme.

AMC FCL 1.251**Additional theoretical knowledge for a class or type rating for high performance single-pilot aeroplanes**

(See Appendix 1 to ANTR-FCL 1.251)

- 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 FTO or ATO course covering the syllabus shown in Appendix 1 to ANTR-FCL 1.251. An applicant for the class or type rating who is the holder of an ICAO ATPL(A) or has demonstrated theoretical knowledge by passing all the required examinations at ATPL(A) level for an ANTR-FCL licence issue is credited with the requirement of Appendix 1 to ANTR-FCL 1.251.
- 2 The course will utilise the learning objectives for theoretical knowledge instruction contained in the JAA Administration and Guidance Material Part 5.
- 3 Demonstration of acquisition of this knowledge will be undertaken by passing an examination(s) set by the training provider and acceptable to the Authority. Successfully passing this examination will result in the issue of a certificate indicating that the course and examination have been completed.
- 4 The certificate will represent a 'once only' qualification and will satisfy the requirement for the addition of all future high performance aeroplanes to the holder's licence. The certificate will be valid indefinitely and must be submitted with the application of the first HPA type or class rating.

AMC FCL 1.261(a)**Syllabus of theoretical knowledge instruction for class/type ratings for single-engine and multi-engine aeroplanes**

(See ANTR-FCL 1.261(a))

(See Appendix 1 to ANTR-FCL 1.261(a))

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
 - trim 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

AMC FCL 1.261(c)(2)**Guidelines for Approval of an Aeroplane Type Rating Course**

(See ANTR-FCL 1.261(c)(2))

(See Appendix 1 and 2 to ANTR-FCL 1.055)

(See Appendix 2 to ANTR-FCL 1.240)

TRAINING PROGRAMME

1 Type ratings

1.1 To obtain approval a type rating course should, as far as possible, provide for a continuous process of ground, FSTD and flight training to enable the student to assimilate the knowledge and skills required to operate a specific aircraft type safely and efficiently. The student's ability to do this will be determined by the demonstration of a satisfactory level of theoretical knowledge of the aircraft determined by progressive checking of knowledge and examination, progressive assessment by the FTO or ATO during flying training and the successful completion of a practical skill test with an authorised examiner. There should be no difference in the level of knowledge or competency required of the student, irrespective of the intended role of the student as pilot-in-command, co-pilot or flight engineer member of the flight crew.

1.2 A type rating course should normally be conducted as a single, full-time course of study and training. However, in the situation where the course is intended to enable a pilot to fly a further aircraft type while continuing to fly a current type, such as to enable mixed fleet flying with the same operator acceptable under ANTR-OPS, some elements of the theoretical knowledge course conducted by self-study may be undertaken while the student continues to fly the current type. Any such arrangement should be acceptable to the approving Authority but combining flight training for a new type with continuing operation of another type will not normally be acceptable.

2 Variants

2.1 Familiarisation training: Where an aeroplane type rating also includes variants of the same aircraft type requiring Familiarisation training, the additional Familiarisation training may be included in the theoretical knowledge training of the initial type rating course. Flight training should be conducted on a single variant within the type.

2.2 Differences training: Where an aeroplane type rating also includes variants of the same aircraft type for which difference training is required, the initial training course should be directed towards a single variant. Additional training to operate other variants within the same type rating should be completed after successful completion of the initial type rating course, although elements of this differences training may be undertaken at appropriate stages of the initial course, with the agreement of the approving Authority. Differences training to operate variants within the same type rating will be subject to approval, either as a separate course or as part of the basic type rating training course.

3. Programme of Theoretical Knowledge and Flight Training

3.1 The training programme should specify the time allocated to theoretical knowledge training, FSTD training and if not approved for Zero Flight Time Training in accordance with Appendix 1 to ANTR-FCL 1.261(c)(2), the aeroplane. The training programme will be assessed and, for approval to be given, deemed to be adequate by the approving Authority. The initial type rating course should be programmed on the basis that the student has the minimum licensing and experience requirements for entry to the course, as required by ANTR-FCL 1.250 and 1.255. For a first type rating on a multi-pilot aeroplane, the course should also provide for consolidation and type-specific training in those elements of basic MCC training relevant to the type or variant.

3.2 If an ATO wishes to provide a training course that includes credit for previous experience on similar types of aircraft, such as those with common systems or operating procedures with the new type, the entry requirements to such courses should be specified by the ATO and must define the minimum level of experience and qualification required of the flight crew member. The approving Authority will need to agree the proposed entry level and reduced training requirements of these courses.

3.3 An ATO is permitted to sub-contract elements of training to a third party training provider. In such cases the sub-contracted organisation should normally be approved to conduct such training by the Authority. When the sub-contracted organisation is not approved, the approving Authority of the ATO should include the sub contracted organisation in the approval process and be satisfied that the standard of training intended to be given meets the equivalent requirements of a Bahraini approved organisation. The other obligations of the

ATO, such as student progress monitoring and an adequate form of quality system management, can be exercised by the ATO seeking approval, and which retains responsibility for the whole course.

GROUND TRAINING

4. Syllabus

4.1 The ground training syllabus should provide for the student to gain a thorough understanding of the operation, the function and, if appropriate, the abnormal and emergency operation of all aircraft systems. This training should also include those systems essential to the operation of the aircraft, such as 'fly by wire' flight control systems, even if the flight crew have little or no control of their normal or abnormal operation.

5. Theoretical Knowledge Instruction

5.1 The theoretical knowledge instruction training should meet the general objectives of (but is not limited to):

- a. giving the student a thorough knowledge of the aircraft structure, power plant and systems, and their associated limitations, including mass and balance, aircraft performance and flight planning considerations;
- b. giving the student a knowledge of the positioning and operation of the flight deck controls and indicators for the aircraft and its systems;
- c. giving the student an understanding of system malfunctions, their effect on aircraft operations and interaction with other systems;
- d. giving the student the understanding of normal, abnormal and emergency procedures

6. Facilities and Training Aids

6.1 The ATO should provide adequate facilities for classroom instruction and have available appropriately qualified and experienced instructors. Training aids should enable students to gain practical experience of the operation of systems covered by the theoretical knowledge syllabus and, in the case of multi-pilot aeroplanes, enable such practical application of the knowledge to be carried out in a multi-crew environment. Facilities should be made available for student self study outside the formal training programme.

7. Computer Based Training (CBT)

7.1 CBT provides a valuable source of theoretical instruction, enabling the student to progress at his own pace within specified time limits. Many such systems ensure that syllabus subjects are fully covered and progress can be denied until a satisfactory assimilation of knowledge has been demonstrated. Such systems may allow self study or distance learning, if they incorporate adequate knowledge testing procedures. When CBT is used as part of the theoretical knowledge instruction phase, the student should also have access to a suitably qualified instructor able to assist with areas of difficulty for the student.

8. Self Study and Distance Learning

8.1 Elements of the theoretical knowledge syllabus may be adequately addressed by distance learning, if approved see paragraph 1.2, or self study, particularly when utilising CBT. Progress testing, either by self-assessed or instructor-evaluated means must be included in any self study programme. If self-study or distance learning is included in the theoretical knowledge training, the course should also provide for an adequate period of supervised consolidation and knowledge testing prior to the commencement of flight training.

9. Progress Tests and Final Theoretical Knowledge Examination

9.1 The theoretical knowledge training programme should provide for progressive testing of the assimilation of the required knowledge. This testing process should also provide for retesting of syllabus items so that a thorough understanding of the required knowledge is assured. This should be achieved by intervention by a qualified instructor or, if using CBT with a self testing facility, and by further testing during the supervised consolidation phase of the ground course.

9.2 The final theoretical knowledge examination should cover all areas of the theoretical knowledge syllabus. The final examination should be conducted as a supervised written knowledge test without reference to course material. The pass mark of 75% assumes the achievement of satisfactory levels of knowledge during

the progressive phase tests of the course. The student should be advised of any areas of lack of knowledge displayed during the examination and, if necessary, given remedial instruction.

- 9.3 A successful pass of the theoretical knowledge course and final examination should be a prerequisite for progression to the flight training phase of the type rating course.

FLIGHT TRAINING

10. Flight Synthetic Training Devices (FSTD)

- 10.1 FSTDs provide the most effective flight training, enabling realistic practice of all abnormal and emergency procedures in a safe and easily-controlled environment for both the student and instructor. For multi-pilot aeroplanes they also enable CRM and MCC concepts to be incorporated at all stages of training. Only in exceptional circumstances should an Authority approve a type rating course for a multi-pilot aeroplane which does not include FSTD training,

- 10.2 The amount of training required when using FSTDs will depend on the complexity of the aeroplane concerned, and to some extent on the previous experience of the pilot. Except for those courses giving credit for previous experience (para 3.2) a minimum of 32 hours FSTD training should be programmed for a crew of a multi-pilot aeroplane, of which at least 16 hours should be in a Flight Simulator operating as a crew. Flight simulator time may be reduced at the discretion of the approving Authority if other qualified FSTDs used during the flight training programme accurately replicate the flight deck environment, operation and aeroplane response. Such FSTDs may typically include FMC training devices using hardware and computer programmes identical to those of the aeroplane, or type specific FNPT IIs.

11. Aeroplane Training with Flight Simulator

- 11.1 With the exception of courses approved for Zero Flight Time Training, certain training exercises normally involving take-off and landing in various configurations will need to be completed in the aeroplane rather than an approved Flight Simulator. For multi-pilot aeroplanes where the student pilot has more than 500 hours MPA experience in aeroplanes of similar size and performance, these should include at least 4 landings of which at least one should be a full stop landing. In all other cases the student should complete at least 6 landings. With the agreement of the approving Authority, this aeroplane training, provided it does not exceed 2 hours of the flight training course, may be completed after the student pilot has completed the FSTD training and has successfully undertaken the type rating skill test.

11.2 For courses approved for Zero Flight Time Training,

- a. During the specific simulator session before Line Flying Under Supervision (LIFUS), consideration should be given to varying conditions, for example :
- runway surface conditions;
 - runway length;
 - flap setting;
 - power setting;
 - crosswind and turbulence conditions;
 - MTOW and MLW.

The landings should be conducted as full-stop landings. The session should be flown in normal operation. Special attention should be given to the taxiing technique.

- b. A training methodology should be agreed with the Authority that ensures the trainee is fully competent with the exterior inspection of the aeroplane before conducting such an inspection unsupervised.
- c. The LIFUS should be performed as soon as possible after the specific simulator session.
- d. The licence endorsement should be entered on the licence after the skill test, but before the first 4 take-offs and landings in the aeroplane. At the discretion of the Authority, provisional or temporary endorsement and any restriction should be entered on the licence.
- e. Where a specific arrangement exists between the Training Organisation and the ANTR-OPS 1 operator, the Operator Proficiency Check (OPC) and the ZFTT specific details should be conducted using the operator's standard operational procedures (SOPs).

12. Aeroplane without Flight Simulator
 - 12.1 Flight training conducted solely in an aeroplane without the use of FSTDs cannot cover the CRM and MCC aspects of MPA flight training, and for safety reasons cannot cover all emergency and abnormal aircraft operation required for the training and skill test. In such cases, the FTO or ATO will need to satisfy the approving Authority that adequate training in these aspects can be achieved by other means. For training conducted solely on a multi-pilot aeroplane where two pilots are trained together without the use of a flight simulator, a minimum of 8 hours flight training as PF for each pilot should normally be required. For training on a single pilot aeroplane, 10 hours flight training should normally be required. It is accepted that for some relatively simple single or multi-engine aircraft without systems such as pressurisation, FMS or electronic flight deck displays, this minimum may be reduced at the discretion of the approving Authority. In the case of multi-engine aeroplane the minimum training required by ANTR-FCL 1.261(b)(2) shall be included.
 - 12.2 It is widely accepted that aeroplane training normally involves inherent delay in achieving an acceptable flight situation and configuration for training to be carried out in accordance with the agreed syllabus. These could include ATC or other traffic delay on the ground prior to take off, the necessity to climb to height or transit to suitable training areas and the unavoidable need to physically reposition the aircraft for subsequent or repeat manoeuvres or instrument approaches. In such cases the approving Authority will need to ensure that the training syllabus provides adequate flexibility to enable the minimum amount of required flight training to be carried out.

SKILL TEST

13. Upon completion of the flight training the pilot will be required to undergo a skill test with an authorised examiner to demonstrate adequate competency of aircraft operation for issue of the type rating. The skill test is separate from the flight training syllabus, and provision for it cannot be included in the minimum requirements or training hours of the agreed flight training programme. The skill test may be conducted in a flight simulator, the aeroplane or, in exceptional circumstances, a combination of both.

COURSE COMPLETION CERTIFICATE

14. The Head of Training, or a nominated representative, is required to certify that all training has been carried out before an applicant undertakes a skill test for the type rating to be included in the pilot's licence. It is not uncommon for an approved ATO to be unable to provide, or have direct supervision over any training that is required to be carried out on an aeroplane conducted by a third party such as the operator. In such cases, and with the agreement of the approving Authority, an ATO Course Completion Certificate may be issued confirming completion of ground and FSTD flight training. Confirmation of the completion of aeroplane training should then be provided by the organisation undertaking this training, as a requirement for issue of the type rating. The period of time between any two phases of training should not exceed 60 days otherwise refresher training at the discretion of the Authority will be required.

AMC FCL 1.261(d)**Multi-crew co-operation course (aeroplane)**

(See ANTR-FCL 1.261(d))

(See Appendix 1 to ANTR-FCL 1.261(d))

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 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.
- 8 The contents of paragraphs 3 and 4 can best be practised by performing the exercises in IEM FCL 1.261(d) 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 engine 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 V1;
 - 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, nonprecision 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 multipilot type ratings.

Appendix 1 to AMC FCL 1.261(d)

Multi-crew co-operation course (aeroplane) – Certificate of completion of MCC training

(See ANTR-FCL 1.261(d))

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:	FTO /ATO / operator*
Location and date:		Signature of Head of ATO/FTO or authorised instructor*:	
Type and number of licence and State of issue:		Name in capital letters of authorised instructor:	

** Delete as appropriate*

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AMC/IEM H
INSTRUCTOR RATINGS

AMC FCL 1.310(d)**Structure of the MPL(A) Instructor Training course**

(See ANTR-FCL 1.310(d))

(See Appendix 1 to ANTR-FCL 1.310(d))

AMPLIFICATION OF THE REQUIREMENTS FOR THE MPL(A) INSTRUCTORS TRAINING COURSE

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 in the multi-crew environment
2. The course is intended to adapt instructors qualified as FI(A); STI(A); MCCI(A); SFI(A); TRI(A) to conduct competency-based MPL (A) training. It should cover the items specified below:

THEORETICAL KNOWLEDGE

3. Integration of operators and organisations providing MPL (A) training
 - Reasons for development of the MPL (A)
 - MPL (A) training course objective
 - Adoption of harmonised training and procedures
 - Feedback process
4. The philosophy of a competency-based approach to training
 - Principles of competency-based training
5. Regulatory framework, instructor qualifications and competencies
 - Source Documentation
 - Instructor Qualifications
 - Syllabus Structure
6. Introduction to Instructional Systems Design methodologies (See ICAO PANS-TRG Doc)
 - Analysis
 - Design and Production
 - Evaluation and Revision
7. Introduction to the MPL Training Scheme
 - Training phases and content
 - Training media
 - Competency Units, elements and performance criteria
8. 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
9. 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
10. 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

11. 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

ASSESSMENT

12. The final assessment of instructor competence in delivering MPL (A) training should be made against the following:

Competence	Performance	Knowledge
Prepare resources	<ul style="list-style-type: none"> ▪ Ensure adequate facilities ▪ Prepares briefing material ▪ Manage available tools 	<ul style="list-style-type: none"> ▪ Understand objectives ▪ Available tools ▪ Competency based training methods
Create a climate conducive to learning	<ul style="list-style-type: none"> ▪ Establishes credentials, role models appropriate behaviour ▪ Clarifies roles ▪ States objectives ▪ Ascertains and supports trainees needs 	<ul style="list-style-type: none"> ▪ Barriers to learning ▪ Learning styles
Present knowledge	<ul style="list-style-type: none"> ▪ Communicates clearly ▪ Creates and sustains realism ▪ Looks for training opportunities 	<ul style="list-style-type: none"> ▪ Teaching methods
Relate Human Factors knowledge to address to technical training issues	<ul style="list-style-type: none"> ▪ Uses human factors technical training 	<ul style="list-style-type: none"> ▪ Human performance limitations, including the principle of threat and error management and CRM.
Manage Time to achieve training objectives	<ul style="list-style-type: none"> ▪ Allocate time appropriate to achieving competency objective 	<ul style="list-style-type: none"> ▪ Syllabus time allocation
Facilitate learning	<ul style="list-style-type: none"> ▪ Encourage trainee participation ▪ Motivating, patient, confident, assertive manner ▪ Conducts one-to-one coaching ▪ Encourages mutual support 	<ul style="list-style-type: none"> ▪ Facilitation ▪ How to give constructive feedback ▪ How to encourage trainees to ask questions and seek advice

Competence	Performance	Knowledge
Assesses trainee performance	<ul style="list-style-type: none"> ▪ Assess and encourage trainee self assessment of performance against competency standards ▪ Makes assessment decision and provide clear feedback ▪ Observes CRM behaviour 	<ul style="list-style-type: none"> ▪ Observation techniques ▪ Methods for recording observations
Monitor and review progress	<ul style="list-style-type: none"> ▪ Compare individual outcomes to defined objectives ▪ Identify individual differences in learning rates ▪ Apply appropriate corrective action 	<ul style="list-style-type: none"> ▪ Learning styles ▪ Strategies for training adaptation to meet individual needs
Evaluate training sessions	<ul style="list-style-type: none"> ▪ Elicits feedback from trainees. ▪ Tracks training session processes against competence criteria ▪ Keeps appropriate records 	<ul style="list-style-type: none"> ▪ Competency unit and associated elements ▪ Performance criteria
Report outcome	<ul style="list-style-type: none"> ▪ Report accurately using only observed actions and events 	<ul style="list-style-type: none"> ▪ Phase training objectives ▪ Individual versus systemic weaknesses

IEM FCL 1.310(d)**Summary of Instructors Qualifications for each phase of the MPL(A) integrated training course**

The following table summarises the instructor qualifications for each phase of MPL(A) integrated training course:

Phase of training	Qualification
Line Flying Under Supervision in accordance ANTR-OPS 1	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	<ul style="list-style-type: none"> - FI(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	<ul style="list-style-type: none"> - 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.

IEM FCL 1.330**Flight instructor rating (FI(A)) skill test and proficiency check form**

(See ANTR-FCL 1.330 and FCL 1.345)

APPLICATION AND REPORT FORM FOR THE FI(A) 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 (See ANTR-FCL 1.335)			
TOTAL FLYING HOURS	PIC hours	SINGLE-ENGINE (PISTON) preceding 6 months	INSTRUMENT FLIGHT INSTRUCTION	CROSS-COUNTRY hours

CPL THEORETICAL EXAMINATION PASSED (date) (For PPL holders only)

(Copy of pass shall be submitted with this form)

4	Pre-entry flight test (See ANTR-FCL 1.335(f))		
<i>I recommend..... for the Flight Instructor Course.</i>			
Name of FTO:		Date of flight test:	
Name of FI conducting the test (Block capitals):			
Licence number:			
Signature:			

5	Declaration by the applicant		
<i>I have received a course of training in accordance with the syllabus approved by the Authority for the: (Tick as applicable)</i>			
Flight Instructor Rating FI(A)		Instrument Rating Instructor Rating (IRI(A))	Class Rating Instructor Rating for multi- engine SPA – (CRI(A) ME SPA)
Applicant's name: (Block Letters)		Signature:	

6	Declaration by the chief flight instructor		
<i>I certify that..... has satisfactorily completed an approved course of training for the</i>			
Flight Instructor Rating FI(A)		Instrument Rating Instructor Rating (IRI(A))	Class Rating Instructor Rating for multi- engine SPA – (CRI(A) ME SPA)
<i>in accordance with the relevant syllabus approved by the Authority.</i>			
Flying hours during the course:			
Aeroplane/s, simulator/s or flight and navigation procedure trainers used :			
Name of CFI:			
Signature:			
Name of FTO:			

7	Flight instructor examiner's certificate		
<i>I have tested the applicant according to the examination report</i>			
A – FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT in case of partial pass:			
Theoretical oral examination:		Skill test:	
<i>Passed</i>	<i>Failed</i>	<i>Passed</i>	<i>Failed</i>
	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		
	<i>Tick as applicable</i>		
B – FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT:			
	Flight Instructor rating		
	Instrument Instructor rating		
	Class Rating Instructor Rating for multi-engine SPA		
	<i>Tick as applicable</i>		
FIE's name (block letters):			
Signature:			
Licence number:		Date:	

AMC FCL 1.340**Flight instructor rating (aeroplane) (FI(A)) course**

(See ANTR-FCL 1.340)

(See Appendix 1 to ANTR-FCL 1.340)

COURSE OBJECTIVE

The aim of this course is to give adequate training to the applicant in theoretical knowledge instruction and flight instruction in order to instruct for a PPL(A), a CPL(A), a single-engine class or type rating and, if applicable, a night qualification.

PART 1**TEACHING AND LEARNING**

Item No.

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 inflight 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 HAZARDS INVOLVED IN SIMULATING SYSTEMS FAILURES AND MALFUNCTIONS IN THE AEROPLANE DURING FLIGHT

Selection of a safe altitude
Importance of 'touch drills'
Situational awareness
Adherence to correct procedures

9 NIGHT FLYING INSTRUCTION

Objectives
Legislation requirements
Aeroplane equipment
Aeroplane lights
Flight crew licences
Aerodrome licences (if applicable)
Night familiarisation
Preparation for flight
Equipment required for flight
Night vision accommodation
Personal safety precautions in the parking areas
External/internal checks – night considerations
Aeroplane lights – operation

10 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

SUGGESTED APPROXIMATE BREAKDOWN OF HOURS FOR THE THEORETICAL
KNOWLEDGE INSTRUCTION SECTION OF THE FLIGHT INSTRUCTOR (AEROPLANE)
COURSE.

(The item numbers shown below relate to the item numbers of 'Teaching and learning' above.)

Item No	Tuition hours	Practice hrs in class	Comment	Progress tests
1	2.00	–	Allow for questions and short discussion periods.	0.30
2	4.00	–	The tuition time should allow for questions and short discussion periods.	1.00
3	2.00	–	The PPL training syllabus should be used as reference material.	0.30
4.a.	5.00	32	The time spent in practice under this item will involve the applicants refreshing their technical knowledge, and developing their classroom instruction techniques. It will also include discussion between applicants and advice on teaching from the supervising instructor.	
4.b.	4.00	32	The time spent in practice will be mainly directed to the giving of pre-flight briefings. It will allow the applicants to develop their ability to give a practical and short briefing (10–15 minutes) to a student pilot. The briefing will outline in a logical sequence the flight lesson to be undertaken.	
5.a.	2.00	–	Emphasis should be placed on the validity of questions used in progress tests.	1.00
5.b.	2.00	–	Emphasis should be placed on the need to give encouragement to the student.	1.00
6	5.00	14	The time spent in practice will be directed towards the planning of classroom lesson periods and the development of the applicants' ability to construct lesson plans.	
7	5.00	–	Scenarios relevant to good judgement and decision making should be set and analysed.	1.00
8	2.00	–	Examples of hazards should cover a broad range of light aircraft and types of operation and not to be confined to the aircraft used on the course.	1.00
9	5.00	–	Long briefings to teach an applicant to give instruction in night flying	
10	2.00	–	General revision of relevant documents.	1.00
TOTAL:	40.00	78.00		7.00
COURSE TOTAL:	125 HOURS (including progress tests)			

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 shall occupy 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) rating 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 rating 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
 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 (V_x)
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)
Side slipping (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 must also be made in relation to Mass and Balance limitations. These factors must also be 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 must be made 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 Nav aids
 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 Nav aids
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

AMC FCL 1.355(a)(2)**Flight Instructor (FI)/Instrument Rating Instructor (IRI) refresher seminar**

(See ANTR-FCL 1.355)

- 1 FI/IRI refresher seminars made available in Bahrain should have due regard to geographical location, numbers attending and periodicity.
- 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 ratings 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 (see IEM FCL 1.355) 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 ANTR-FCL and ANTR-OPS requirements;
 - b. teaching and learning;
 - c. instructional techniques;
 - d. the role of the instructor;
 - e. Other 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.

IEM FCL 1.355**Flight instructor rating (FI(A)) – Revalidation and renewal form**

(See ANTR-FCL 1.355)

INSTRUCTIONAL FLYING EXPERIENCE (See ANTR-FCL 1.355(a)(1))				
<i>Instructors applying for revalidation of the Flight Instructor Rating should enter the instructional hours flown during the preceding 36 months.</i>				
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 (See ANTR-FCL 1.355(a)(2))				
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(A) rating:	
3	Seminar particulars:			
Date/s of seminar:			Place:	
4	Declaration by the responsible organiser:			
<i>I certify that the above data are correct and that the Flight Instructor Seminar was carried out as approved by the Authority.</i>				
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 <i>(See ANTR-FCL 1.355(a)(3))</i>	
<i>.....(Name of applicant) has given proof of flying instructional ability during a proficiency check flight. This was done to my satisfaction.</i>	
Flying time:	Aeroplane/Sim. used:
Main exercise:	
Name of FIE:	Licence number:
Date and place:	Signature:

AMC FCL 1.365**Course for the type rating instructor rating for multi-pilot (aeroplane) (TRI)(MPA))**

(See ANTR-FCL 1.365)

(See Appendix 1 to ANTR-FCL 1.365)

COURSE OBJECTIVE

- 1 The 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 multi-pilot aeroplane type rating for which the applicant is qualified (see ANTR-FCL 1.365).

PART 1

TEACHING AND LEARNING

Item No.

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 inflight 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 HAZARDS INVOLVED IN SIMULATING SYSTEMS FAILURES AND MALFUNCTIONS IN THE AEROPLANE DURING FLIGHT

- Selection of a safe altitude
- 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

TECHNICAL TRAINING

- 1 The course should be related to the type of aeroplane 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 aeroplane type.
- 4 The TRI rating applicant should be taught and made familiar with giving instruction from the seat normally occupied by the co-pilot.

Training Exercises

5 Flight Simulator

Items with an * should be performed in an aeroplane in case a flight simulator is not available.

- a. use of checklist, setting of radios/navigation aids;
- b. starting engines;
- c.* take-off checks;
- d.* instrument take-off, transition to instruments after lift off;
- e. crosswind take-off;
- f. engine failure during take-off between V_1 and V_2 ;
- g. aborted take-off prior to reaching V_1 ;
- h. high mach buffeting, specific flight characteristics (if necessary);
- i.* steep turns;
- j.* recovery from approach to stall/take-off, clean, landing configuration;
- k. instrument approach to required minimum decision height or minimum descent height/altitude, manual one engine simulated inoperative during approach and landing or go around;
- l. rejected landing and go around; and
- m. crosswind landing.

Category II and III operations, if applicable

- 6
 - a. precision approaches, automatic with auto-throttle and flight director go-around caused by aircraft or ground equipment deficiencies;
 - b. go around caused by weather conditions;
 - c. go around at DH caused by offset position from centreline; and
 - d. one of the CAT II/CAT III approaches must lead to a landing.

Aeroplane (not applicable for applicants for SFI(A) authorisation or zero flight time training by a TRI(A))

- 7
 - a. familiarisation with controls during outside checks;
 - b. use of checklist, setting of radios and navigation aids, starting engines;
 - c. taxiing;
 - d. take-off;
 - e. engine failure during take-off shortly after V_2 , after reaching climb out attitude;
 - f. other emergency procedures (if necessary);
 - g. one engine simulated inoperative go around from required minimum DH; and
 - h. one engine (critical) simulated inoperative landing.
- 8 Flight simulator qualified and approved for ZFTT (for restricted TRI(A))
 - a. familiarisation with controls during outside checks;

- b. use of checklist, setting of radios and navigation aids, starting engines;
- c. taxiing;
- d. take-off;
- e. simulated engine failure during take-off shortly after V_2 , after reaching climb out attitude;
- f. other emergency procedures (if necessary);
- g. one engine inoperative go around from requirement minimum DH; and
- h. one engine (critical) inoperative landing.

AMC FCL 1.380**Course for the single-pilot multi-engine class rating instructor rating (aeroplane) (CRI(SPA))**

(See ANTR-FCL 1.380)

(See Appendix 1 to ANTR-FCL 1.380)

COURSE OBJECTIVE:

- 1 The aim of this course is to give adequate training to the applicant in theoretical knowledge and flight instruction in order to instruct for a single-pilot multi-engine class rating.

GROUND TRAINING

- 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 (AMC FCL 1.340). 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.

PART 1**TEACHING AND LEARNING**

Item No.

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 inflight 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 HAZARDS INVOLVED IN SIMULATING SYSTEMS FAILURES AND MALFUNCTIONS IN THE AEROPLANE DURING FLIGHT

Selection of a safe altitude
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

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.
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 $V_{mc a} + 10$ 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 V_{mca} . 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 V_{mca} .

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 5° 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 5° 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 offlaps 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 bailed 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 CS 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 5° of bank at V_{mc}

- close the throttle of one engine
- increase to full power on the operating engine
- using 5° of bank towards the operating engine reduce speed to the V_{mc}
- note lower V_{mc} when 5° 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 FCL 1.395**Course for the instrument rating instructor rating (aeroplane) (IRI(A))**

(See ANTR-FCL 1.395)

(See Appendix 1 to ANTR-FCL 1.395)

COURSE OBJECTIVE

- 1 The IRI(A) 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 (Appendix 1 to ANTR-FCL 1.210);
 - 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 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.

PART 1

TEACHING AND LEARNING

Item No.

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 inflight 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 HAZARDS INVOLVED IN SIMULATING SYSTEMS FAILURES AND MALFUNCTIONS IN THE AEROPLANE DURING FLIGHT

Selection of a safe altitude
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

NOTE: A suggested breakdown of hours for this part is found in the Flight Instructor Course, AMC FCL 1.340.

PART 2

THEORETICAL KNOWLEDGE INSTRUCTION SYLLABUS

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(A).

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

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
30° Level Turns
Unusual Attitudes – Recoveries
Transference to Instruments after Take-off
Limited Panel
Basic Flight Manoeuvres
Unusual Attitudes – Recoveries

AIR EXERCISE 2

Full Panel
30° 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 Nav aids 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
 Nav aid 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
 Nav aid 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)

AMC FCL 1.417**Course for the Multi Crew Co-operation Course Instructor (MCCI(A)) authorisation**

(See ANTR-FCL 1.417)

(See AMC FCL 1.261(d))

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.

PART 1

TEACHING AND LEARNING

Item No.

- 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 inflight 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 HAZARDS INVOLVED IN SIMULATING SYSTEMS FAILURES AND MALFUNCTIONS IN THE AEROPLANE DURING FLIGHT

Selection of a safe altitude

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

PART 2

TECHNICAL TRAINING

- 1 The course should be related to the type of FSTD 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 engine 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.

AMC/IEM I**EXAMINERS****AMC FCL 1.425****Standardisation arrangements for examiners**

(See ANTR-FCL 1.425 & FCL 1.430)

(See Appendix 1 to ANTR-FCL 1.425)

GENERAL

- 1 The standards of competence of pilots depends to a great extent on the competence of examiners. Examiners will be briefed by the authority on the ANTR-FCL requirements, the conduct of skill tests and proficiency checks, and their documentation and reporting. Examiners should also be briefed on the protection requirements for personal data, liability, accident insurance and fees, as applicable.

EXAMINER AUTHORISATION

- 2 Any dispensation from the qualification requirements of ANTR-FCL 1.425(a) through (c) should be limited to circumstances in which a fully qualified examiner cannot be made available. Such circumstances may, for example, include skill tests on a new or rare type or class, for which the examiner should at least hold an instructor rating on an aeroplane having the same kind and number of engines and of the same order of mass.
- 3 Inspectors of the Authority supervising examiners will ideally meet the same requirements as the examiners being supervised. However, it is unlikely that they could be so qualified on the large variety of types and tasks for which they have a responsibility and, since they normally only observe training and testing, it is acceptable if they are qualified for the role of an inspector.
- 4 The standardisation arrangements should include, as appropriate to the role of the examiner, at least the following instruction:
 - i those requirements relevant to their examination duties;
 - ii fundamentals of human performance and limitations relevant to flight examination;
 - iii fundamentals of evaluation relevant to examinee's performance;
 - iv FCL, related ANTRs and Joint Implementation Procedures (JIP);
 - v Quality System as related to FCL; and
 - vi Multi-crew co-operation (MCC), Human Performance and Limitations, if applicable.

The Authority will employ, or have available, a sufficient number of inspectors to conduct, supervise and/or inspect the standardisation arrangements according to ANTR-FCL 1.425(c).

LIMITATIONS

- 5 An examiner should plan per working day not more than three test checks relating to PPL, CPL, IR or class rating, or more than two tests/checks related to FI, CPL/IR and ATPL or more than four tests/checks relating to type/rating.
- 6 An examiner should plan at least three hours for a PPL, CPL, IR or class rating test/checks, and at least four hours for FI, CPL/IR, 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.
- 7 An examiner should allow an applicant adequate time to prepare for a test/check, normally not more than one hour.
- 8 An examiner should plan a test/check flight so that the flight time in an aeroplane or ground time in an approved synthetic training device is not less than:
 - a. 90 minutes for PPL and CPL, including navigation section;
 - b. 60 minutes for IR, FI and single pilot type/class rating; and
 - c. 120 minutes for CPL/IR and ATPL.

PURPOSE OF A TEST/CHECK

- 9 Determine through practical demonstration during a test/check that an applicant has acquired or maintained the required level of knowledge and skill/proficiency;
- 10 Improve training and flight instruction in registered facilities, FTOs and ATOs by feedback of information from examiners concerning items/sections of tests/checks that are most frequently failed;
- 11 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

- 12 An examiner will ensure that an applicant completes a test/check in accordance with ANTR-FCL requirements and is assessed against the required test/check standards.
- 13 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.
- 14 Marginal or questionable performance of a test/check item should not influence an examiner's assessment of any subsequent items.
- 15 An examiner should verify the requirements and limitations of a test/check with an applicant during the pre-flight briefing.
- 16 When a test/check is completed or discontinued, an examiner should de-brief 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.
- 17 Any comment on, or disagreement with, an examiner's test/check evaluation/assessment made during a debrief 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

- 18 An examiner should supervise all aspects of the test/check flight preparation, including, where necessary, obtaining or assuring an ATC 'slot' time.
- 19 An examiner will plan a test/check in accordance with ANTR-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

- 20 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 de-briefing.

ASSESSMENT SYSTEM

- 21 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 unsafe 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 FCL.

METHOD AND CONTENTS OF THE TEST/CHECK

- 22 Before undertaking a test/check an examiner will verify that the aeroplane or synthetic training device intended to be used, is suitable and appropriately equipped for the test/check. Only aircraft or synthetic training devices approved by the Authority for skill testing/proficiency checking may be used.
- 23 A test/check flight will be conducted in accordance with the aircraft flight manual (AFM) and, if applicable, the aircraft operators manual (AOM).
- 24 A test/check flight will be conducted within the limitations contained in the operations manual of a FTO/ATO and, where applicable, the operations manual of a registered facility.
- 25 Contents
 - a. A test/check is comprised of:
 - oral examination on the ground (where applicable);
 - pre-flight briefing;
 - in-flight exercises; and
 - post-flight de-briefing
 - 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; and
 - safety considerations
 - d. In-flight exercises will include:
 - each relevant item/section of the test/check
 - e. Post-flight de-briefing should include:
 - assessment/evaluation of the applicant
 - documentation of the test/check with the applicants FI present, if possible.
- 26. 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.
- 27 An examiner should maintain a flight log and assessment record during the test/check for reference during the post/flight de-brief.

- 28 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.
- 29 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.
- 30 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.
- 31 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.

IEM FCL 1.425**Notes for guidance and training of type rating examiners (TREs)**

(See ANTR-FCL 1.425(c))

- 1 The following guidance material is intended for applicants seeking authorisation to act as a TRE. The related 'Skill test and training record' should also be referred to and consideration given to single - pilot/multi-pilot flight.
- 2 An inspector of the Authority, will observe all TRE applicants conducting a test on a 'candidate' in an aeroplane for which TRE authorisation is sought. Items from the 'Syllabi for training and skill tests/proficiency checks for class/type rating' at Appendix 2 to ANTR-FCL 1.240 will be selected by the inspector for examination of the 'candidate' by the TRE applicant. Having agreed with the inspector the content of the test, the TRE 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 TRE applicant before the 'candidate' is debriefed and informed of the result.
- 3 It is intended that all applicants for a TRE authorisation should have received some formal training for this purpose before undertaking a test flight with an inspector. The training should be acceptable to the inspector observing the applicant.

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) in flight
- 5 The TRE applicant should maintain the necessary level of communication with the 'candidate'. The following check details should be followed by the 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 TRE applicant should refer to the flight test tolerances given in Appendix 1 to ANTR-FCL 1.210, 'Instrument rating (aeroplane) – Skill test'. 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 TRE 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 how to avoid or correct mistakes
 - b. mention any other points of criticism noted
 - c. give any advice considered helpful

AMC/IEM J

THEORETICAL KNOWLEDGE REQUIREMENTS

IEM FCL 1.475(a)**Construction of computer compatible questions**

(See ANTR-FCL 1.475)

- 1 The following principles should be observed when developing questions for the central question bank(CQB).

General

- 2 The examination should measure clearly formulated goals. Therefore the field and depth of knowledge to be measured by each question must be fully identified.
- 3 The more important the field of knowledge, the more questions should be included in the examination, or the more points the answer should be given.
- 4 Most of the questions should be of the multiple choice type with four alternative answers.
- 5 Questions should relate to the essentials of the fields of knowledge and not to minor related detail. Numerical questions which differ only in the numbers used and not the method of calculation test the same knowledge; nevertheless, a variety of examples of the same calculation should be available in the CQB to help to minimise cheating.
- 6 Purely academic questions which have no practical use should be avoided, unless they relate to fundamental concepts. Examples of academic questions which are acceptable are the role of dihedral and camber in aerodynamics, and the definition of dew point in meteorology.
- 7 Questions which require specialised knowledge of specific aircraft types, should not be asked in a licence examination.
- 8 Use abbreviations and acronyms only in forms internationally recognised. In case of doubt use the full form, eg angle of attack = 12 degrees instead of $= 12^\circ$. A list of recommended abbreviations for examination purposes is in IEM FCL 1.475(b).
- 9 Formulate the questions and answers as simply as possible: the examination is not a test of language. Avoid complex sentences, unusual grammar and double negatives.
- 10 A question should comprise one positive complete proposition. No more than 8 different statements should appear among the suggested responses otherwise the candidate may be able to deduce the correct answer by eliminating the unlikely combinations of statements.
- 11 Questions should have only one true answer.
- 12 The correct answer should be absolutely correct and complete or, without doubt, the most preferable. Avoid responses that are so essentially similar that the choice is a matter of opinion rather than a matter of fact. The main interest in MCQs is that they can be quickly performed: this is not achieved if doubt exists about the correct answer.
- 13 The incorrect alternatives must seem plausible to anyone ignorant of the subject. All of the alternatives should be clearly related to the question and of similar vocabulary, grammatical construction and length. In numerical questions, the incorrect answers should correspond to procedural errors such as corrections applied in the wrong sense or incorrect unit conversions: they must not be mere random numbers.
- 14 Questions must be referred to the examination syllabus/learning objectives. The level, eg ATPL, CPL, should be indicated.
- 15 An examination sitting should normally last for between 2 and 3 hours. Exceeding 3 hours may result in wrong answers because the candidate makes errors through fatigue and not because the answer is not known.
- 16 The author must estimate a reasonable time for answering: about 1–2 minutes, but could vary from 1 to 10 minutes. Consequently, the number of questions for a specific examination may vary.
- 17 Any documentation required to answer the question (eg tables, graphs) must be provided with the question. Such documentation must be of the same typographical and accuracy standards as normal

aeronautical publications. Tables and graphs must include a typical example of their usage. All other documentation is forbidden.

- 18 Question producers may assume that a simple pocket calculator is available to the candidate.

IEM FCL 1.475(b)**Common abbreviations to be used for the CQB**

(See ANTR-FCL 1.475)

ICAO = Doc8400/4, SI = international standard, JEP = Jeppesen,

Abbreviations	Meaning
A	ampère
ABM	abeam
ABN	aerodrome beacon
AC	alternating current
AC	alto cumulus
ACFT	aircraft
ACT	active
AD	aerodrome
ADC	air data computer
ADDN	additional
ADF	automatic direction finding
ADI	attitude director indicator
AEO	all engines operating
AFIS	aerodrome flight information service
AFM	aircraft flight manual
AGL	above ground level
AIP	Aeronautical Information Publication
ALT	altitude
ALTN	alternate
APCH	approach
APT	airport
APU	auxiliary power unit
ARR	arrival
AS	alto stratus
ASDA	accelerate stop distance available
AMSL	above mean sea level
ATA	actual time of arrival
ATC	air traffic control
ATIS	automatic terminal information service
ATO	actual time overhead
ATS	air traffic services
AUX	auxiliary
AVG	average
AWY	airway
AZM	azimuth
BKN	broken
BRG	Bearing
°C	degrees celsius
CAS	calibrated air speed
CAT	clear air turbulence
CB	cumulonimbus
CC	cirrocumulus
CD	drag coefficient
CDI	course duration indicator
CDU	control display unit
Cg	centre of gravity
CI	cirrus
CL	lift coefficient
Cm	centimetre
CO	communications
CP	critical point
CRM	crew resource management

Abbreviations	Meaning
CS CTR CU CWY DA DC DEG DEP DES DEST DEV D/F DG DH DIST DME DP DR DVOR	cirrostratus control zone cumulus Clearway decision altitude direct current degrees departure descent destination deviation direction finding directional gyroscope decision height distance distance measuring equipment dewpoint dead reckoning doppler VOR
E EAS EAT ECAM EFIS EGT EICAS EPR EST ETA ETO °F FAF FCST FD FIS FL FLT FMS FT FT/MIN G GAL GND GP GPWS GS	east equivalent airspeed expected approach time engine condition aircraft monitoring electrical flight instrument system exhaust gas temperature engine indicator and crew alerting system engine pressure ratio estimated estimated time of arrival estimated time overhead degrees fahrenheit final approach fix forecast flight director flight indicator system flight level flight flight management system feet feet per minute gramme gallons ground glide path ground proximity warning system ground speed
HDG HF hPa HR HIS HT Hz IAS	heading high frequency hectopascal hours horizontal situation indicator height hertz (cycles per second) indicated airspeed

Abbreviations	Meaning
ILS IMC IMP GAL INS INT ISA ISOL ITCZ IVSI	instrument landing system instrument meteorological conditions imperial gallons inertial navigation system intersection international standard atmosphere isolated inter tropical convergence zone integrated vertical speed indicator
J	joule
Kg kHz Km Kt kW	kilogramme kilohertz kilometer knot kilowatt
LAT LB LDG LDP LEN LLZ LMC LMT LONG LT LTD LVL LYR	latitude pounds landing landing decision point length localizer last minute change local mean time longitude local time limited level Layer
M M M MAC MAP MAPt Max MDH MDH/A MEA MET MIN MLS MM MNM	metre mass Mach number mean aerodynamic chord manifold pressure missed approach point maximum minimum descent height minimum descent height/altitude minimum enroute altitude meteorological minutes microwave landing systems middle marker minimum
MNPS MOCA MORA MPH MPS, m/sec MSA MSL MSU N NGT N NAT	minimum navigation performance specifications minimum obstruction clearance altitude minimum off route altitude statute miles per hour metres per second minimum sector altitude mean sea level mode selector unit newton night north north atlantic track

Abbreviations	Meaning
NAV NDB NM NOTAMS NS	navigation non directional beacon nautical miles notices to airmen nimbo stratus
OAT OBS OCA(H) OCL OEI OM OM OPS O/R OVC	outside air temperature omni bearing selector obstacle clearance altitude (height) obstacle clearance limit one engine inoperative operating mass outer marker operations on request Overcast
P PAX PET PIC PLN PNR POS PSI PTS PWR	pressure passenger point of equal time pilot in command flight plan point of no return position pounds per square inch polar track structure power
R RAC RAS REP RMI RMK RNAV ROC ROD RPM RVR RWY	radius rules of the air and air traffic services rectified airspeed reporting point radio magnetic indicator remark area navigation rate of climb rate of descent revolution per minute runway visual range runway
S SAR	south search and rescue
SC SCT SDBY SEC SEV SFC SID SIM SKC SR SS SSR ST STAR STD STN STNR	stratocumulus scattered stand by seconds severe surface standard instrument departure simulator sky clear sunrise sunset secondary surveillance radar stratus standard arrival route standard station stationary

Abbreviations	Meaning
STS SWY	status stopway
T TA TAS TAT TC TDP THR TL	temperature transition altitude true airspeed total air temperature tropical cyclone take off decision point threshold transition level
T/O TOC TORA TS TWY	take off top of climb take off run available thunderstorm taxiway
U/S US-GAL UTC	unserviceable US gallons universal time coordinated
V VAR VDF VG VHF VIS VLF VMC VOLMET VOR Vrb VSI VV V V _A V _B V _c /M _c	volt magnetic variation VHF direction finding station vertical gyro very high frequency visibility very low frequency visual meteorological conditions meteorological information for aircraft flight VHF omnidirectional range variable vertical speed indicator vertical visibility speeds design manoeuvring speed design speed for max gust intensity design cruise speed/ mach number
V _D V _F V _{FE} V _{FO} V _{LE} V _{LO} V _{LOF} V _{Max Tyre} V _{MBE} V _{MC} V _{MCA} V _{MCG} V _{MO} /M _{MO} V _{MU} V _{NE} V _{NO} V _R V _{REF} V _S V _{SO}	design dive speed design flap speed flap extended speed flap operating speed landing gear extended speed maximum landing gear operating speed lift off speed max tyre speed max break energy speed minimum control speed air minimum control speed ground minimum control speed max operating limit speed/ mach number minimum unstick speed never exceed speed normal operating speed rotating speed landing reference speed stalling speed or minimum steady flight speed at which the aeroplane is controllable stalling speed or minimum steady flight speed

Abbreviations	Meaning
Vs1	in landing configuration stalling speed or minimum steady flight speed obtained in a specific configuration
Vx	speed for best angle of climb
VY	speed for best rate of climb
V1	critical engine failure speed
V2	take-off safety speed for piston engine aircraft, take-off climb speed or speed at 35 ft for jet aircraft
W	watt
W	west
WC	Wind component
WCA	wind correction angle
W/V	wind direction and speed
WPT	waypoint
WS	windshear
WX	weather
X	cross
XTK	cross track distance
XX	heavy
YD	yard

IEM FCL 1.490**Terminology used in Subpart J for procedures for the conduct of theoretical knowledge examinations.**

The meaning of terms used in Subpart J is given below.

1. Complete Examination: An examination in all subjects required by the licence level.
2. Examination: The demonstration of knowledge in 1 or more examination papers.
3. Examination Paper: A set of questions to be answered by a candidate for examination.
4. Attempt: A try to pass a specific paper.
5. Sitting: A period of time determined by the Authority for a candidate to undertake an examination. This period should not exceed 10 consecutive working days.
6. Re-sit or Re-examination: A second or subsequent attempt to pass a failed paper.

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AMC/IEM K


MULTI-CREW PILOT LICENCE (AEROPLANE) – MPL(A)

AMC FCL 1.520 & 1.525

MPL(A) – Training Scheme

(See ANTR-FCL 1.525)

(See Appendix 1 to ANTR-FCL 1.520 & 1.525)

MPL Training Scheme					
Minimum 240 hours of training, including "Pilot Flying" (PF) and "Pilot Non Flying" (PNF)					
Phase of training	Training Items	Rights and simulated flight training media - Minimum level requirement -		Ground training media	
 Integrated TEM Principles	Phase 4 - Advanced Type rating training with an airline oriented simulator	<ul style="list-style-type: none"> • CRM • Landing training • All weather • LOFT • Abnormal procedures • Normal procedures 	Aeroplane : Triple Multi-engine Multi-crew certified <hr/> FSTD: FS Level D or C + ATC simulation	12 take-offs and Landings as PF <hr/> PF / PNF	<ul style="list-style-type: none"> • CBT • E-learning • Part task Trainer • Class room
	Phase 3 - Intermediate Application of multi-crew operations in a high performance multi-engine turbine aeroplane	<ul style="list-style-type: none"> • CRM • LOFT • Abnormal procedures • Normal procedures • Multi-crew • Instrument flight 	FSTD: representing a ME turbine powered aeroplane to be operated with a co-pilot and qualified to an Equivalents standard to Level B – ATC simulation	PF/PNF	
	Phase 2 - Basic Introduction of multi-crew operations and instrument flight	<ul style="list-style-type: none"> • CRM • PF / PNF complement • IFR Cross-country • Instrument flight 	Aeroplane : Single or multi-engine <hr/> FSTD: FNPT II + MCC	PF/PNF	
	Phase 1 - Core Flying Skills Specific basic single pilot Training	<ul style="list-style-type: none"> • CRM • VFR Cross-country • Solo flight • Basic instrument flight • Principles of flight • Cockpit procedures • Upset recovery • Night flight 	Aeroplane : Single or multi-engine <hr/> FSTD: FNPT I / BITD	PF	

IEM FCL No. 1 to Appendix 1 to ANTR-FCL 1.520 & 1.525
MPL(A) - Competency Units, Competency Elements and Performance Criteria
 (See Appendix 1 to ANTR-FCL 1.520 & 1.525)

This IEM contains a description of the MPL(A) Competency Units as 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	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	
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	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 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	

	Duty	Observation and assessment
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
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 recognizing and managing potential threats and errors	
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
3.4.5	completes relevant checklists	PF/PNF

	Duty	Observation and assessment
3.5	Perform rejected take-off	
3.5.1	recognizes 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		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 recognizing and managing potential threats and errors	
4.1	Perform standard instrument departure/ enroute 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
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

	Duty	Observation and assessment
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	
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
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/PNF
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	
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

	Duty	Observation and assessment
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
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
6.6	Manage abnormal and emergency situations	satisfactory/unsatisfactory
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	
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 stabilized approach criteria	PF
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

	Duty	Observation and assessment
7.2		satisfactory /unsatisfactory
7.2.1	PF	
7.2.2	PF	
7.3		satisfactory /unsatisfactory
7.3.1	PF	
7.3.2	PF	
7.3.3	PF	
7.3.4	PF	satisfactory /unsatisfactory
7.3.5	PF	
7.3.6	PF	
7.4		satisfactory /unsatisfactory
7.4.1	PF	
7.4.2	PF	
7.5		satisfactory/unsatisfactory
7.5.1	PF/PNF	
7.5.2	PNF	
7.5.3	PF/PNF	
7.6		satisfactory/unsatisfactory
7.6.1	PF	
7.6.2	PF	
7.7		satisfactory/unsatisfactory
7.7.1	PF/PNF	
7.7.2	PF/PNF	
7.7.3	PF/PNF	
7.8		satisfactory/unsatisfactory
7.8.1	PF	
7.8.2	PF	
7.8.3	PF/PNF	
7.8.4	PF	
7.8.5	PNF	
7.9		satisfactory/unsatisfactory
7.9.1	PF	
7.9.2	PF/PNF	
7.9.3	PF	
8.		
		Perform Landing
		Competency elements and performance criteria
8.0		Demonstrate attitudes and behaviours appropriate to the safe conduct of flight, including recognizing and managing potential threats and errors
8.1		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 / windshear 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	

	Duty	Observation and assessment
8.2		satisfactory/unsatisfactory
8.2.1	PF	
8.2.2	PF	
8.3		satisfactory/unsatisfactory
8.3.1	PF/PNF	
8.3.2	PF/PNF	
8.3.3	PF/PNF	
9.		
		Competency elements and performance criteria
9.0		Demonstrate attitudes and behaviours appropriate to the safe conduct of flight, including recognizing and managing potential threats and errors
9.1		satisfactory/unsatisfactory
9.1.1	PNF	
9.1.2	PF	
9.1.3	PF/PNF	
9.1.4	PF	
9.1.5	PF	
9.1.6	PF/PNF	
9.1.7	PF/PNF	
9.1.8	PF	
9.1.9	PF/PNF	
9.2		satisfactory/unsatisfactory
9.2.1	PF	
9.2.2	PF/PNF	
9.2.3	PF	
9.2.4	PF	
9.3		satisfactory/unsatisfactory
9.3.1	PF/PNF	
9.3.2	PF/PNF	
9.4		satisfactory/unsatisfactory
9.4.1	PF/PNF	
9.4.2	PF/PNF	
9.4.3	PF/PNF	
9.5		satisfactory/unsatisfactory
		Communicate with cabin crew, passengers and Company
9.5.1	PF	
9.5.2	PF/PNF	
9.5.3	PF	

IEM FCL No. 2 to Appendix 1 to ANTR-FCL 1.520 & 1.525
MPL(A) – Description of the Principles of Threat and Error Management
(See Appendix 1 to ANTR-FCL 1.520 & 1.525)

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 oftentimes 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 defence 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. Organisational threats, on the other hand, can be controlled (i.e., removed or, at least, minimised) at source by aviation organisations. Organisational 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 organisations themselves.

Environmental Threats	Organizational Threats
<ul style="list-style-type: none"> ▪ 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. 	<ul style="list-style-type: none"> ▪ 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 organisational 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 "primaryinteraction" 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	<ul style="list-style-type: none"> ▪ Manual handling/flight controls: vertical/lateral and/or speed deviations, incorrect flaps/speedbrakes, thrust reverser or power settings. ▪ Automation: incorrect altitude, speed, heading, autothrottle 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ Proceeding towards wrong taxiway/runway. ▪ Wrong taxiway, ramp, gate or hold spot.
Incorrect aircraft configurations	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> - Concise, not rushed, and met SOP requirements - Bottom lines were established
PLANS STATED	Operational plans and decisions were communicated and acknowledged	<ul style="list-style-type: none"> - Shared understanding about plans – “Everybody on the same page”
WORKLOAD ASSIGNMENT	Roles and responsibilities were defined for normal and non-normal situations	<ul style="list-style-type: none"> - Workload assignments were communicated and acknowledged
CONTINGENCY MANAGEMENT	Crew members developed effective strategies to manage threats to safety	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Aircraft position, settings, and crew actions were verified
WORKLOAD MANAGEMENT	Operational tasks were prioritized and properly managed to handle primary flight duties	<ul style="list-style-type: none"> - Avoided task fixation - Did not allow work overload
AUTOMATION MANAGEMENT	Automation was properly managed to balance situational and/or workload requirements	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Crew members spoke up without hesitation

Table 4. Examples of individual and team countermeasures

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