



# Notice of Proposed Amendment 2014-29 (B)

## Amendments to the Acceptable Means of Compliance & Guidance Material to Annex I (Part-FCL) to Commission Regulation (EU) No 1178/2011

RMT.0188 (FCL.002(a)) & RMT.0189 (FCL.002(b)) — 17.12.2014

### EXECUTIVE SUMMARY

This Notice of Proposed Amendment (NPA) addresses a safety and regulatory coordination issue related to flight crew licensing.

The main objective of this NPA is to introduce the long syllabus and Learning Objectives (LOs) for professional licences and instrument ratings in the EASA regulatory system.

The NPA also aims to resolve any inconsistencies identified after the adoption of the FCL Implementing Rules. This is necessary to ensure that the EASA regulatory system reflects the state of the art, and specifically the best practices developed in the Member States, in the field of pilot training.

The following Safety Recommendations were taken into consideration for the development of this NPA: SR AUST-2012-006, SR BELG-2010-010, SR UNKG-2006-130, SR SWED-2010-008, SR SWED-2012-006, SR FRAN-2013-033, SR FRAN-2013-035 and SR FRAN-2013-017.

The specific objective of this NPA is to maintain a high level of safety for flight crews, to ensure harmonised implementation of the Aircrew Regulation, and to consider at all levels the importance of General Aviation issues.

— **NPA 2014-29 (A)** contains the Explanatory Note and the changes to the rule text of ‘Annex I — Part-FCL’, ‘Annex II — Conditions for the conversion of existing national licences and ratings for aeroplanes and helicopters’, and ‘Annex III — Conditions for the acceptance of licences issued by or on behalf of third countries’.

Due to the number of the proposed changes and the complexity of the text that was amended twice after its initial publication, the decision was taken to base the NPA on the amended text and to publish the changes to Annexes I, II and III in a consolidated version.

— **NPA 2014-29 (B)** contains the changes to the existing AMC and GM text.

— **NPAs 2014-29 (C)(1), (C)(2) and (C)(3)** contain the new AMC with the Flight Examiner Manual (FEM).

— **NPAs 2014-29 (D)(1) and (D)(2)** contain the new AMC with the Learning Objectives (LOs).

The proposed changes are expected to increase safety, reduce regulatory burden on Member States, improve harmonisation, ensure compliance with ICAO, and improve proportionality of the rules for General Aviation by applying the principles of the ‘General Aviation Road Map’.

As indicated above, NPA 2014-29 (B) contains only the amendments to existing Acceptable Means of Compliance and Guidance Material to Part-FCL. For the Explanatory Note, please refer to NPA 2014-29 (A).

	Applicability	Process map	
Affected regulations and decisions:	Commission Regulation (EU) No 1178/2011, as amended; ED Decision 2011/016/R, as amended.	Concept Paper:	No
Affected stakeholders:	Pilots; training organisations; instructors; examiners; national competent authorities.	Terms of Reference:	21.7.2011
Driver/origin:	Safety; level playing field; proportionality; RMT FCL.001.	Rulemaking group:	Yes
Reference:	EASA NPA 2008-17 ‘Implementing Rules for Pilot Licensing’.	RIA type:	None
		Technical consultation during NPA drafting:	Yes
		Duration of NPA consultation:	3 months
		Review group:	TBD
		Focussed consultation:	No
		Publication date of the Opinion:	2015/Q4
		Publication date of the Decision:	2015/Q4



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## 1. Procedural information

### 1.1. The rule development procedure

*Please refer to NPA 2014-29 (A).*

### 1.2. The structure of this NPA and related documents

*Please refer to NPA 2014-29 (A).*

### 1.3. How to comment on this NPA

Please submit your comments using the automated **Comment-Response Tool (CRT)** available at <http://hub.easa.europa.eu/crt/><sup>1</sup>.

The deadline for the submission of comments is **17 March 2015**.

### 1.4. The next steps in the procedure

*Please refer to NPA 2014-29 (A).*

## 2. Explanatory Note

*Please refer to NPA 2014-29 (A).*

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<sup>1</sup> In case of technical problems, please contact the CRT webmaster ([crt@easa.europa.eu](mailto:crt@easa.europa.eu)).



### 3. Proposed amendments

The text of the amendment is arranged to show deleted text, new or amended text as shown below:

- (a) deleted text is marked with ~~strike through~~;
- (b) new or amended text is highlighted in grey.

#### 3.1. Draft Acceptable Means of Compliance and Guidance Material (Draft EASA Decision)

##### 3.1.1. Amendments to AMC and GM to Annex I (Part-FCL) to Regulation (EU) No 1178/2011

###### SUBPART A – GENERAL REQUIREMENTS

In **GM1 FCL.005 Scope**, paragraph (c) is amended as follows:

- (c) Whenever ~~‘or’ is used as an inclusive or exclusive ‘or’ is used~~, it should be understood ~~in the sense of ‘and/or’~~ within the context of the whole meaning of the article in which it is used.’

In **GM1 FCL.010 Definitions**, the following definitions are amended, deleted or added:

‘AOH	Aircraft Operating Handbook
CDFA	Constant Descent Final Approach
CFI	Chief <del>Flying</del> Flight Instructor’
CGI	<del>Chief Ground Instructor</del>
DVE	Degraded Visual Environment
ERPM	Engine Revolutions Per Minute
POM	Pilot Operating Manual
QDM	Magnetic heading (aircraft to station)
QDR	Magnetic heading (station to aircraft)
RAIM	Receiver Autonomous Integrity Monitoring
RPM	Rotor Revolutions Per Minute
RRPM	Rotor Revolutions Per Minute
VOLMET	Volume meteorological’

A new **GM2 FCL.010 Definitions** is introduced:

###### **GM2 FCL.010 Definitions**

###### AVAILABILITY OF AN FSTD

To determine the availability of an FSTD, the following additional criteria should be taken into account.

The FSTD should be:

- (a) certified by a competent authority within the scope of Regulation (EC) No 216/2008;
- (b) approved by the competent authority within the scope of Regulation (EC) No 216/2008;



- (c) representative of the operator's or the applicant's aircraft class or type, and should be serviceable;
- (d) representative of the configuration of the operator's or the applicant's aircraft;
- (e) accessible for use by the instructor or the examiner;
- (f) accessible for use within the scale and scope of the operator's training and checking activities; and
- (g) accessible to allow normal programming, avoiding excessive scheduling disruptions, within the operator's crew roster patterns.

When the competent authority determines that, based on the criteria above, an FSTD is not available, the competent authority should establish mitigating measures to ensure that the level of safety is maintained when conducting the test or check on the applicant in an aircraft.

In **AMC1 FCL.050 Recording of flight time**, the following changes apply to (c):

- (2) for other types of flights on the aeroplane, helicopter and powered-lift category, the pilot should record the details of the flights flown in the following logbook format, or when a computerised format is used, all data set out in (a) should be included.
- (3) For sailplanes ~~and~~, balloons and airships, a suitable format should be used that contains the relevant items mentioned in (a) and additional information specific to the type of operation.

#### **SUBPART B — LIGHT AIRCRAFT PILOT LICENCE — LAPL**

In **AMC1 FCL.115;FCL.120**, the following change is made:

- (b) The following tables contain the syllabi for the courses of theoretical knowledge, as well as for the theoretical knowledge examinations for the LAPL(B) and LAPL(S). The syllabi for the theoretical knowledge instruction and examination for the PPL(A) and PPL(H) in AMC1 FCL.210 ~~and~~ FCL.215 should be used for the LAPL(A) and the LAPL(H), respectively.'

In **AMC1 FCL.125 LAPL — Skill test**, the following change is made to the heading of the content of the skill test:

'CONTENT OF THE SKILL TEST/**PROFICIENCY CHECK**'

In **AMC2 FCL.125 LAPL — Skill test**, the following change is made to the heading of the content of the skill test:

'CONTENT OF THE SKILL TEST/**PROFICIENCY CHECK**'

In **AMC1 FCL.125;FCL.235 Skill test**, the following change is made to the heading of the content of the skill test:

'CONTENT OF THE SKILL TEST/**PROFICIENCY CHECK**'

In **AMC1 FCL.125;FCL.235 Skill test**, the following change is made to the heading of the content of the skill test:

'CONTENT OF THE SKILL TEST/**PROFICIENCY CHECK**'



A new **AMC** is added after **GM1 FCL.135.A;FCL.135.H**:

**'AMC1 FCL.140.A Recency requirements; FCL.740.A(b)(1)(ii) Revalidation of class and type ratings — aeroplanes**

All hours flown on any aircraft registered in an ICAO Contracting State shall count in full towards fulfilling the hourly requirements of this Part as long as the aircraft matches the definition and criteria of the respective Part-FCL aircraft category as well as its class and type ratings.'

A new **AMC** is added for the recency requirements for the LAPLs:

**'AMC2 FCL.140.A; FCL.140.H; FCL.140.S; FCL.140.B Recency requirements**

Training flight items should be based on the exercise items of the proficiency check as deemed relevant by the instructor and depending on the experience of the candidate. The briefing should include for aeroplanes and helicopters a discussion on threat-and-error management with special emphasis on decision-making when encountering adverse meteorological conditions, unintentional Instrument Meteorological Conditions (IMCs) and navigation flight capabilities, and for sailplanes and balloons a discussion with special emphasis on principal occurrence categories of the activity covered by the licence.'

In **AMC1 FCL.110.H**, the changes apply to (c)(2):

'(xxxi) Exercise 22b: Navigation problems at low heights and in reduced visibility:

- (A) actions before descending;
- (B) hazards (for example obstacles and other aircraft);
- (C) difficulties of in map reading;
- (D) effects of wind and turbulence;
- (E) avoidance of noise-sensitive areas;
- (F) actions in the event of encountering DVE;
- (G) decision to divert or conduct precautionary landing;
- (H) bad-weather circuit and landing;
- (I) appropriate procedures and choice of landing area;
- (J) precautionary landing.

~~joining the circuit;~~

~~(G) — bad weather circuit and landing;~~

~~(H) — appropriate procedures and choice of landing area for precautionary landings.'~~

**SUBPART C — PRIVATE PILOT LICENCE (PPL), SAILPLANE PILOT LICENCE (SPL) AND BALLOON PILOT LICENCE (BPL)**

In **AMC1 FCL.210;FCL.215**, the following changes are made:

In fatigue and stress management, (e) is changed to 'health and fitness programmes'.



In AMC1 FCL.210;FCL.215, the following table is added to subject '3. METEOROLOGY':

<b>General global circulation</b>				
General circulation around the globe	X		X	
<b>Local winds</b>				
Anabatic and katabatic winds, mountain and valley winds, Venturi effects, land and sea breezes	X		X	
<b>Mountain waves (standing waves, lee waves)</b>				
Origin and characteristics	X		X	
<b>Turbulence</b>				
Description and types of turbulence	X		X	
Formation and location of turbulence	X		X	
<b>THERMODYNAMICS</b>				
<b>Humidity</b>				
Water vapour in the atmosphere	X		X	
Mixing ratio	X		X	
Temperature/dew point, relative humidity	X		X	
<b>Change of state of aggregation</b>				
Condensation, evaporation, sublimation, freezing and melting, latent heat	X		X	
<b>Adiabatic processes</b>				
Adiabatic processes, stability of the atmosphere	X		X	
<b>CLOUDS AND FOG</b>				
<b>Cloud formation and description</b>				
Cooling by adiabatic expansion and by advection	X		X	
Cloud types and cloud classification	X		X	
Influence of inversions on cloud development	X		X	
<b>Fog, mist, haze</b>				
General aspects	X		X	
Radiation fog	X		X	
Advection fog	X		X	
Steaming fog	X		X	
Frontal fog	X		X	
Orographic fog (hill fog)	X		X	
<b>PRECIPITATION</b>				
<b>Development of precipitation</b>				
Processes of development of precipitation	X		X	



<b>Types of precipitation</b>				
Types of precipitation, relationship with cloud types	X		X	
<b>AIR MASSES AND FRONTS</b>				
<b>Air masses</b>				
Description, classification and source regions of air masses	X		X	
Modifications of air masses	X		X	
<b>Fronts</b>				
General aspects	X		X	
Warm front, associated clouds and weather	X		X	
Cold front, associated clouds and weather	X		X	
Warm sector, associated clouds and weather	X		X	
Weather behind the cold front	X		X	
Occlusions, associated clouds and weather	X		X	
Stationary front, associated clouds and weather	X		X	
Movement of fronts and pressure systems, life cycle	X		X	
Changes of meteorological elements at a frontal wave	X		X	
<b>PRESSURE SYSTEMS</b>				
<b>Anticyclone</b>				
Anticyclones, types, general properties, cold and warm anticyclones, ridges and wedges, subsidence	X		X	
<b>Non-frontal depressions</b>				
Thermal, orographic and polar depressions, troughs	X		X	
<b>CLIMATOLOGY</b>				
<b>Climatic zones</b>				
General seasonal circulation in the troposphere	X		X	
<b>Typical weather situations in the mid-latitudes</b>				
Westerly situation	X		X	
High-pressure area	X		X	
Flat-pressure pattern	X		X	
<b>Local winds and associated weather</b>				
e.g. Foehn	X		X	
<b>FLIGHT HAZARDS</b>				
<b>Icing</b>				
Conditions for ice accretion	X		X	
Types of ice accretion	X		X	
Hazards of ice accretion, avoidance	X		X	
<b>Turbulence</b>				





Effects on flight, avoidance	X		X	
<b>Wind shear</b>				
Definition of wind shear	X		X	
Weather conditions for wind shear	X		X	
Effects on flight, avoidance	X		X	
<b>Thunderstorms</b>				
Conditions for and process of development, forecast, location, type specification	X		X	
Structure of thunderstorms, life history, squall lines, electricity in the atmosphere, static charges	X		X	
Electrical discharges	X		X	
Development and effects of downbursts	X		X	
Thunderstorm avoidance	X		X	
<b>Inversions</b>				
Influence on aircraft performance	X		X	
<b>Hazards in mountainous areas</b>				
Influence of terrain on clouds and precipitation, frontal passage	X		X	
Vertical movements, mountain waves, wind shear, turbulence, ice accretion	X		X	
Development and effect of valley inversions	X		X	
<b>Visibility-reducing phenomena</b>				
Reduction of visibility caused by precipitation and obscuration	X		X	
Reduction of visibility caused by other phenomena	X		X	
<b>METEOROLOGICAL INFORMATION</b>				
<b>Observation</b>				
Surface observations	X		X	
Radiosonde observations	X		X	
Satellite observations	X		X	
Weather-radar observations	X		X	
Aircraft observations and reporting	X		X	
<b>Weather charts</b>				
Significant weather charts	X		X	
Surface charts	X		X	
<b>Information for flight planning</b>				
Aviation-weather messages	X		X	
Meteorological broadcasts for aviation	X		X	
Use of meteorological documents	X		X	
Meteorological warnings	X		X	
<b>Meteorological services</b>				



	World area forecast system and meteorological offices	X		X	
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In **AMC1 FCL.210;FCL.215**, the format of the table of subject ‘7. FLIGHT PERFORMANCE AND PLANNING’ is amended as follows:

		Aeroplane		Helicopter	
		PPL	Bridge course	PPL	Bridge course
<b>7.</b>	<b>FLIGHT PERFORMANCE AND PLANNING</b>				

In **AMC1 FCL.210;FCL.215**, in subject ‘9. NAVIGATION’, the subjects ‘Use of visual observations and application to in-flight navigation’ and ‘Flight log’ change in format from bold to roman (non-bold).

The title of **AMC1 FCL.210.A** is amended as follows:

‘AMC1 FCL.210.A PPL(A) — ~~Experience requirements and crediting~~ **Training course**’

In **AMC1 FCL.210 PPL(A) Training course**, the following text is inserted in (c)(2)(xxiv):

‘(d) hazards of over-reliance on the use of GNSS in the continuation of flight in DVE.’

The title of **AMC2 FCL.210.H** is amended as follows:

‘AMC1 FCL.210.H PPL(H) — ~~Experience requirements and crediting~~ **Training course**’

In **AMC2 FCL.210 PPL(H) Training course**, exercises 31a and 31b are deleted:

‘(xxxviii) Exercise 31a: Night flying (if night rating required):

- (A) — ~~pre-flight inspection using torch, pan lights, etc.;~~
- (B) — ~~take-off (no sideways or backwards manoeuvring);~~
- (C) — ~~hover taxi (higher and slower than by day);~~
- (D) — ~~transition to climb;~~
- (E) — ~~level flight;~~
- (F) — ~~approach and transition to hover;~~
- (G) — ~~landing;~~
- (H) — ~~autorotation;~~
- (I) — ~~practice forced landing (with flares if appropriate: simulated);~~
- (J) — ~~night emergencies (for example failure of lights, etc.).~~

(xxxix) Exercise 31b: Night cross-country (if night rating required):

- (A) — ~~navigation principles as for day cross-country;~~
- (B) — ~~map marking (highlighting built-up areas with thicker lines, etc.).~~



In **AMC1 FCL.225.B**, paragraph (e) is amended as follows:

- (e) The ATO should issue a certificate of satisfactory completion of the instruction required by **FCL.225.B(a)** for licence endorsement.'

#### **SUBPART F — AIRLINE TRANSPORT PILOT LICENCE — ATPL**

**AMC1 FCL.510.A(b)(1)** is deleted:

~~'AMC1 FCL.510.A (b)(1) ATPL(A) — Prerequisites, experience and crediting~~

~~Equivalent requirements for CS-25 and CS-23 commuter category are the JAR/FAR-25 transport category, JAR/FAR-23 commuter category, or BCAR or AIR 2051.'~~

#### **SUBPART G — INSTRUMENT RATING — IR**

In **AMC1 FCL.625(c)**, paragraph (a) is amended as follows:

- (a) Paragraph ~~(b)(1)~~ of **FCL.740625(c)** determines that if the instrument rating has lapsed, the applicant shall ~~go through~~ undergo refresher training at an ATO, to reach the level of proficiency needed to pass the instrument element of the skill test prescribed in Appendix 9 to Part-FCL. The amount of refresher training needed should be determined on a case-by-case basis by the ATO, taking into account the following factors:'

#### **SUBPART H — CLASS AND TYPE RATINGS**

In **AMC1 FCL.740(b)(1)**, paragraph (a) is amended as follows:

- (a) ~~Paragraph (b)(1) of FCL.740 determines that if a class or type rating has lapsed, the applicant shall take 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:'

A new AMC is added as follows:

#### **AMC1 FCL.740.A(b)(1)(ii) Revalidation of class and type ratings**

Training flight items should be based on the exercise items of the proficiency check as deemed relevant by the instructor and depending on the experience of the candidate. The briefing should include a discussion on threat-and-error management with special emphasis on decision-making when encountering adverse meteorological conditions, unintentional Instrument Meteorological Conditions (IMCs) and navigation flight capabilities.

#### **SUBPART I — ADDITIONAL RATINGS**

In **AMC1 FCL.800 Aerobatic rating**, (c)(3)(i) is amended as follows:

- (i) air speed limitations (aeroplane, ~~helicopter~~, TMG and sailplane, as applicable);'

In **AMC1 FCL.810(b) Night rating**, a syllabus for the aeroplane category is added:

**PPL(A) NIGHT RATING COURSE**

- (a) The aim of the course is to qualify PPL(A) holders to exercise the privileges of the licence at night.
- (b) The ATO should issue a certificate of satisfactory completion of the instruction that can be used for licence endorsement.



(c) Theoretical knowledge

The theoretical-knowledge syllabus should cover the revision or explanation of:

- (1) night VMC minima;
- (2) rules about airspace control at night and facilities available;
- (3) rules about aerodrome ground, runway and obstruction lighting;
- (4) aircraft navigation lights and collision-avoidance rules;
- (5) physiological aspects of night vision and orientation;
- (6) dangers of disorientation at night;
- (7) dangers of weather deterioration at night;
- (8) instrument systems or functions and errors;
- (9) instrument lighting and emergency cockpit lighting systems;
- (10) map-marking for use under cockpit lighting;
- (11) practical navigation principles;
- (12) radio navigation principles;
- (13) planning and use of safety altitude;
- (14) danger from icing conditions, avoidance and escape manoeuvres.

(d) Flying training

The exercises of the night rating flight syllabus should be repeated as necessary until the student achieves a safe and competent standard:

- (1) In all cases, exercises 4 to 6 of the night rating flight syllabus should be completed in the aeroplane.
- (2) For exercises 1 to 3, up to 50 % of the required flight training may be completed in an FSTD(A). However, all items within each exercise should be conducted in an aeroplane in flight.
- (3) Starred items (\*) should be completed in simulated IMC and may be completed in daylight.
- (4) The flying exercises should comprise:
  - (i) Exercise 1:
    - (A) revise basic manoeuvres when flying by sole reference to instruments\*;
    - (B) explain and demonstrate transition from visual flight to instrument flight\*;
    - (C) explain and revise recovery from unusual attitudes by sole reference to instruments\*.
  - (ii) Exercise 2:

explain and demonstrate the use of radio navigation aids when flying by sole reference to instruments, to include position finding and tracking\*.
  - (iii) Exercise 3:

explain and demonstrate the use of radar assistance\*.
  - (iv) Exercise 4:



- (A) explain and demonstrate night take-off techniques;
- (B) explain and demonstrate night circuit technique;
- (C) explain and demonstrate night approaches with or without visual approach aids;
- (D) practise take-offs, circuits, and approaches and landings;
- (v) Exercise 5:  
Explain and demonstrate night emergency procedures to include:
  - (A) simulated engine failure (to be terminated with recovery at a safe altitude);
  - (B) simulated engine failure at various phases of flight;
  - (C) simulated inadvertent entry to IMC (not on base leg or final);
  - (D) internal and external lighting failure;
  - (E) other malfunctions and emergency procedures as required by the Aircraft Flight Manual.
- (vi) Exercise 6:  
solo night circuits.
- (vii) Exercise 7:
  - (A) explain and demonstrate night cross-country techniques;
  - (B) practise night cross-country dual and as SPIC to a satisfactory standard.

## SUBPART J — INSTRUCTORS

In **AMC1 FCL.930.FI**, paragraph (d) is amended:

‘(d) The skill test assessment of competence is additional to the course training time.’

In **AMC1 FCL.940.FI(a)(2)**, the following changes are made:

‘AMC1 FCL.940.FI(a)(2); FCL.940.IRI FI, IRI — Revalidation and renewal

(a) The refresher training for the revalidation of the FI and IRI certificate should be undertaken as a seminar covering the following items:

### ~~FI OR IRI REFRESHER SEMINAR~~

- (a1) FI or IRI refresher seminars made available in Member States should have due regard to geographical location, numbers attending, and periodicity throughout the territory of the Member State concerned.
- (b2) Such seminars should run for at least 2 days, and attendance from participants will be required for the whole duration of the seminar including breakout groups and workshops. Different aspects, such as inclusion of participants holding certificates in other categories of aircraft, should be considered.
- (c3) Some experienced FIs or 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.



- (d4) The attendance form will be completed and signed by the organiser of the seminar as approved by the competent authority, following attendance and satisfactory participation by the FI or IRI.
  - (e5) The content of the FI or IRI refresher seminar should be selected from the following:
    - (i1) new or current rules or regulations, with emphasis on knowledge of Part-FCL and operational requirements;
    - (ii2) teaching and learning;
    - (iii3) instructional techniques;
    - (iv4) the role of the instructor;
    - (v5) national regulations (as applicable);
    - (vi6) human factors;
    - (vii7) flight safety, incident and accident prevention;
    - (viii8) airmanship;
    - (ix9) legal aspects and enforcement procedures;
    - (x10) navigational skills including new or current radio navigation aids;
    - (xi11) teaching instrument flying;
    - (xii12) weather-related topics including methods of distribution.
    - (xiii13) any additional topic selected by the competent authority.
  - (f6) 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 and workshops.
- (b) If the instructor rating has lapsed for more than 3 years when assessing the refresher training programme, the ATO should consider all the above and the following items:
- (1) The amount of refresher training needed should be determined on a case-by-case basis by the ATO following an assessment of the candidate by taking into account the following factors:
    - (i) the experience of the applicant;
    - (ii) the amount of time elapsed since the expiry of the FI or IRI certificate;
    - (iii) the technical elements of the FI/IRI course as determined by the assessment of the candidate by the ATO.
  - (2) Once the ATO has determined the needs of the applicant, it should develop an individual training programme that should be based on the content of the FI or IRI training course and should focus on the aspects where the applicant has shown the greatest needs.'

The text of **AMC1 FCL.930.TRI** is replaced as follows:

~~TRI TRAINING COURSE: AEROPLANES~~

**GENERAL**

(a) ~~The aim of the TRI(A) training course is to train aeroplane licence holders to the level of competence defined in FCL.920 and adequate for a TRI.~~



~~(b) — The training course should develop safety awareness throughout by teaching the knowledge, skills and attitudes relevant to the TRI task, and should be designed to give adequate training to the applicant in theoretical knowledge instruction, flight instruction and FSTD instruction to instruct for an aeroplane type rating for which the applicant is qualified.~~

~~(c) — The TRI(A) training course should give particular emphasis to the role of the individual in relation to the importance of human factors in the man-machine environment and the role of CRM.~~

~~(d) — Special attention should be given to the applicant's maturity and judgment including an understanding of adults, their behavioural attitudes and variable levels of learning ability. During the training course the applicants should be made aware of their own attitudes to the importance of flight safety. It will be important during the training course to aim at giving the applicant the knowledge, skills and attitudes relevant to the role of the TRI.~~

~~(e) — For a TRI(A) the amount of flight training will vary depending on the complexity of the aeroplane type. A similar number of hours should be used for the instruction and practice of pre-flight and post-flight briefing for each exercise. The flight instruction should aim to ensure that the applicant is able to teach the air exercises safely and efficiently and should be related to the type of aeroplane on which the applicant wishes to instruct. The content of the training programme should cover training exercises applicable to the aeroplane type as set out in the applicable type rating courses.~~

~~(f) — A TRI(A) may instruct in a TRI(A) course once he or she has conducted a minimum of four type rating instruction courses.~~

~~(g) — 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.~~

~~(h) — The student instructor should learn how to identify common errors and how to correct them properly, which should be emphasised at all times.~~

#### CONTENT

~~(i) — The training course consists of three parts:~~

~~(1) — Part 1: teaching and learning instruction that should comply with AMC1 FCL.920;~~

~~(2) — Part 2: technical theoretical knowledge instruction (technical training);~~

~~(3) — Part 3: flight instruction.~~

#### Part 1

~~The content of the teaching and learning part of the FI training course, as established in AMC1 FCL.930.FI, should be used as guidance to develop the course syllabus.~~

#### Part 2

#### TECHNICAL THEORETICAL KNOWLEDGE INSTRUCTION SYLLABUS

~~(a) — The technical theoretical knowledge instruction should comprise of not less than 10 hours training to include the revision of technical knowledge, the preparation of lesson plans and the development of classroom instructional skills to enable the TRI(A) to instruct the technical theoretical knowledge syllabus.~~

~~(b) — If a TRI(A) certificate for MP aeroplanes is sought, particular attention should be given to multi-crew cooperation. If a TRI(A) certificate for SP aeroplanes is sought, particular attention should be given to the duty in SP operations.~~

~~(c) — The type rating theoretical syllabus should be used to develop the TRI(A)'s teaching skills in relation to the type technical course syllabus. The course instructor should deliver example lectures~~



from the applicable type technical syllabus and the candidate instructor should prepare and deliver lectures on topics selected by the course instructor from the type rating course.

### Part 3

#### FLIGHT INSTRUCTION SYLLABUS

(a) — The course should be related to the type of aeroplane on which the applicant wishes to instruct.

(b) — TEM, CRM and the appropriate use of behavioural markers should be integrated throughout.

(c) — The content of the training programme should cover all the significant exercises applicable to the aeroplane type.

(d) — The applicant for a TRI(A) certificate should be taught and made familiar with the device, its limitations, capabilities and safety features, and the instructor station, including emergency evacuation.

#### FSTD TRAINING

(e) — The applicant for a TRI(A) certificate should be taught and made familiar with giving instruction from the instructor station. In addition, before being checked for base training instruction, the applicant for a TRI(A) should be taught and made familiar with giving instruction from all operating positions, including demonstrations of appropriate handling exercises.

(f) — Training courses should be developed to give the applicant experience in training a variety of exercises, covering both normal and abnormal operations. The syllabus should be tailored appropriate to the aeroplane type, using exercises considered more demanding for the student. This should include engine-out handling and engine-out operations in addition to representative exercises from the type transition course.

(g) — The applicant should be required to plan, brief, train and debrief sessions using all relevant training techniques.

#### AEROPLANE TRAINING

(h) — The applicant for a TRI(A) certificate should receive instruction in an FFS to a satisfactory level in:

(1) — right hand seat familiarisation, which should include at least the following as pilot flying:

(i) — re-flight preparation and use of checklists;

(ii) — taxiing;

(iii) — take-off;

(iv) — rejected take-off;

(v) — engine failure during take-off, after v1;

(vi) — engine inoperative approach and go-around;

(vii) — one engine (critical) simulated inoperative landing;

(viii) — other emergency and abnormal operating procedures (as necessary).

(2) — aeroplane training techniques:

(i) — methods for giving appropriate commentary;

(ii) — particularities of handling the aeroplane in touch and go manoeuvres;





~~(iii) — intervention strategies developed from situations role played by a TRI course instructor, taken from but not limited to:~~

- ~~(A) — take-off configuration warning;~~
- ~~(B) — over controlling;~~
- ~~(C) — high flare: long float;~~
- ~~(D) — long flare;~~
- ~~(E) — baulked landing;~~
- ~~(F) — immediate go-around from touch;~~
- ~~(G) — too high on approach: no flare;~~
- ~~(H) — incorrect configuration;~~
- ~~(I) — TAWS warning;~~
- ~~(J) — misuse of rudder;~~
- ~~(K) — over control in roll axis during flare;~~
- ~~(L) — incapacitation;~~
- ~~(M) — actual abnormal or emergencies.~~

~~(i) — Additionally, if the applicant is required to train emergency or abnormal procedures in an aeroplane, synthetic device training as follows:~~

- ~~(1) — appropriate methods and minimum altitudes for simulating failures;~~
- ~~(2) — incorrect rudder inputs;~~
- ~~(3) — failure of a critical engine;~~
- ~~(4) — approach and full-stop landing with simulated engine-out.~~

~~(j) — In this case, the abnormal manoeuvres refer to engine-out handling as necessary for completion of type rating training. If the applicant is required to train other abnormal items in the transition course, additional training will be required.~~

~~(k) — Upon successful completion of the training above, the applicant should receive training in an aeroplane in flight under the supervision of a TRI(A). At the completion of training the applicant instructor should be required to conduct a training flight under the supervision and to the satisfaction of a TRI(A) nominated for this purpose by the training organisation.~~

#### ~~TRAINING FOR ASYMMETRIC POWER FLIGHT ON SP-MET AEROPLANES~~

~~(l) — During this part of the training, special emphasis is to be placed on the:~~

- ~~(1) — circumstances in which actual feathering and un-feathering practice will be done, for example safe altitude; compliance with regulations about minimum altitude or height for feathering practice, weather conditions, distance from nearest available aerodrome.~~
- ~~(2) — procedure to use for instructor and student co-operation, for example 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 or re-started or set at zero thrust and identifying each control and naming the engine it is going to affect.~~
- ~~(3) — consideration to be given to avoid over-working the operating engine, and the degraded performance when operating the aeroplane during asymmetric flight.~~



(4) — need to use the specific checklist for the aeroplane type.

**LONG BRIEFINGS:**

(m) — Flight on asymmetric power

(1) — introduction to asymmetric flight;

(2) — feathering the propeller: method of operation;

(3) — effects on aeroplane handling at cruising speed;

(4) — introduction to effects upon aeroplane performance;

(5) — note foot load to maintain a constant heading (no rudder trim);

(6) — un-feathering the propeller: regain normal flight;

(7) — finding the zero thrust setting: comparison of foot load when feathered and with zero thrust set.

(8) — effects and recognition of engine failure in level flight;

(9) — the forces and the effects of yaw;

(10) — types of failure:

(i) — sudden or gradual;

(ii) — complete or partial.

(11) — yaw, direction and further effects of yaw;

(12) — flight instrument indications;

(13) — identification of failed engine;

(14) — the couples and residual out of balance forces: resultant flight attitude;

(15) — use of rudder to counteract yaw;

(16) — use of aileron: dangers of misuse;

(17) — use of elevator to maintain level flight;

(18) — use of power to maintain a safe air speed and altitude;

(19) — supplementary recovery to straight and level flight: simultaneous increase of speed and reduction in power;

(20) — identification of failed engine: — idle engine;

(21) — use of engine instruments for identification:

(i) — fuel pressure or flow;

(ii) — RPM gauge response effect of CSU action at lower and higher air speed;

(iii) — engine temperature gauges.

(22) — confirmation of identification: close the throttle of identified failed engine;

(23) — effects and recognition of engine failure in turns;

(24) — identification and control;

(25) — side forces and effects of yaw.

(n) — During turning flight:



- (1) — effect of 'inside' engine failure: effect sudden and pronounced;
- (2) — effect of 'outside' engine failure: effect less sudden and pronounced;
- (3) — the possibility of confusion in identification (particularly at low power):
  - (i) — correct use of rudder;
  - (ii) — possible need to return to lateral level flight to confirm correct identification;
- (4) — visual and flight instrument indications;
- (5) — effect of varying speed and power;
- (6) — speed and thrust relationship;
- (7) — at normal cruising speed and cruising power: engine failure clearly recognised;
- (8) — at low safe speed and climb power: engine failure most positively recognised;
- (9) — high speed descent and low power: possible failure to notice asymmetry (engine failure);
- (o) — Minimum control speeds:
  - (1) — ASI colour coding: red radial line

Note: this exercise is concerned with the ultimate boundaries of controllability in various conditions that a student can reach in a steady asymmetric power state, approached by a gradual speed reduction. Sudden and complete failure should not be given at the flight manual vmca. The purpose of the exercise is to continue the gradual introduction of a student to control an aeroplane in asymmetric power flight during extreme or critical situations. It is not a demonstration of vmca.

- (2) — 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 vsse;
- (3) — establish a minimum control speed for each asymmetrically disposed engine: to establish critical engine (if applicable);
- (4) — effects on minimum control speeds of:
  - (i) — bank;
  - (ii) — zero thrust setting;
  - (iii) — take-off configuration:
    - (A) — landing gear down and take-off flap set;
    - (B) — landing gear up and take-off flap set.

Note: it is important to appreciate that the use of 5° of bank towards the operating engine produces a lower vmca 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 vmca for the specific type. Thus the vmca quoted in the aeroplane manual will have been obtained using the technique.

- (p) — Feathering and un-feathering:
  - (1) — minimum heights for practising feathering or un-feathering drills;
  - (2) — engine handling: precautions (overheating, icing conditions, priming, warm-up and method of simulating engine failure: reference to aircraft engine manual and service instructions and bulletins).
- (q) — Engine failure procedure:
  - (1) — 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;



(2) — flight phase:

(i) — in cruising flight;

(ii) — critical phase such as immediately after take-off or during the approach to landing or during a go-around.

(r) — 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. The flight manual or equivalent document (for example owner's manual or pilot's operating handbook) is to be consulted to establish the exact order of these procedures.

For example, one flight manual or equivalent document (for example owner's manual or pilot's operating handbook) may call for the raising of flaps and landing gear before 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 manual or equivalent document (for example owner's manual or pilot's operating handbook) for the specific aeroplane type being used on the course.

(s) — In-flight engine failure in cruise or other flight phase not including take-off or landing:

(1) — immediate actions:

(i) — recognition of asymmetric condition;

(ii) — identification and confirmation of failed engine:

idle leg = idle engine;

closing of throttle for confirmation.

(iii) — cause and fire check:

(A) — typical reasons for failure;

(B) — methods of rectification.

(iv) — feathering decision and procedure:

(A) — reduction of other drag;

(B) — need for speed but not haste;

(C) — use of rudder trim.

(2) — subsequent actions:

(i) — live engine:

(A) — temperature, pressures and power;

(B) — remaining services;

(C) — electrical load: assess and reduce as necessary;

(D) — effect on power source for air driven instruments;



- (E) — landing gear;
- (F) — flaps and other services.
- (ii) — re-plan flight:
  - (A) — ATC and weather;
  - (B) — terrain clearance, SE cruise speed;
  - (C) — decision to divert or continue.
  - (iii) — fuel management: best use of remaining fuel;
  - (iv) — dangers of re-starting damaged engine;
  - (v) — action if unable to maintain altitude: effect of altitude on power available;
  - (vi) — effects on performance;
  - (vii) — effects on power available and power required;
  - (viii) effects on various airframe configuration and propeller settings;
  - (ix) — use of flight or owner's manual:
    - (A) — cruising;
    - (B) — climbing: ASI colour coding (blue line);
    - (C) — descending;
    - (D) — turning.
  - (x) — 'live' engine limitations and handling;
  - (xi) — take-off and approach: control and performance;
  - (t) — Significant factors:
    - (1) — significance of take-off safety speed:
      - (i) — effect of landing gear, flap, feathering, take-off, trim setting and systems for operating landing gear and flaps;
      - (ii) — effect on mass, altitude and temperature (performance).
    - (2) — significance of best SE climb speed (vyse):
      - (i) — acceleration to best engine climb speed and establishing a positive climb;
      - (ii) — relationship of SE climb speed to normal climb speed;
      - (iii) — action if unable to climb.
    - (3) — significance of asymmetric committal height and speed: action if baulked below asymmetric committal height;
  - (u) — Engine failure during take-off:
    - (1) — below vmca or unstick speed:
      - (i) — accelerate or stop distance considerations;
      - (ii) — prior use of flight manual data if available.
    - (2) — above vmca or unstick speed and below safety speed;
    - (3) — immediate re-landing or use of remaining power to achieve forced landing;



- (4) — considerations:
  - (i) — degree of engine failure;
  - (ii) — speed at the time;
  - (iii) — mass, altitude, temperature (performance);
  - (iv) — configuration;
  - (v) — length of runway remaining;
  - (vi) — position of any obstacles ahead;
- (v) — Engine failure after take-off:
  - (1) — simulated at a safe height and at or above take-off safety speed;
  - (2) — considerations:
    - (i) — need to maintain control;
    - (ii) — use of bank towards operating engine;
    - (iii) — use of available power achieving best SE climb speed;
    - (iv) — mass, altitude, temperature (performance);
    - (v) — effect of prevailing conditions and circumstances.
  - (3) — Immediate actions:
    - (i) — maintenance of control, including air speed and use of power;
    - (ii) — recognition of asymmetric condition;
    - (iii) — identification and confirmation of failed engine;
    - (iv) — feathering and removal of drag (procedure for type);
    - (v) — establishing best SE climb speed.
  - (4) — Subsequent actions: whilst carrying out an asymmetric power climb to the downwind position at SE best rate of climb speed:
    - (i) — cause and fire check;
    - (ii) — live engine, handling considerations;
    - (iii) — remaining services;
    - (iv) — ATC liaison;
    - (v) — fuel management.

Note: these procedures are applicable to aeroplane type and flight situation.

- (w) — Asymmetric committal height:
    - (1) — 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 vyse 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.~~

~~(2) — Circuit approach and landing on asymmetric power:~~

~~(i) — definition and use of asymmetric committal height;~~

~~(ii) — use of standard pattern and normal procedures;~~

~~(iii) — action if unable to maintain circuit height;~~

~~(iv) — speed and power settings required;~~

~~(v) — decision to land or go-around at asymmetric committal height: factors to be considered;~~

~~(3) — Undershooting: importance of maintaining correct air speed, (not below vyse).~~

~~(x) — Speed and heading control:~~

~~(1) — height, speed and power relationship: need for minimum possible drag;~~

~~(2) — establishing positive climb at best SE rate of climb speed:~~

~~(i) — effect of availability of systems, power for flap and landing gear;~~

~~(ii) — operation and rapid clean-up.~~

~~Note 1: The air speed at which the decision is made to commit the aeroplane to a landing or to go-around should normally be the best SE 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.~~

~~(y) — Engine failure during an all engines approach or missed approach:~~

~~(1) — use of asymmetric committal height and speed considerations;~~

~~(2) — 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.~~

~~(z) — Instrument flying on asymmetric power:~~

~~(1) — considerations relating to aircraft performance during:~~

~~(i) — straight and level flight;~~

~~(ii) — climbing and descending;~~

~~(iii) — standard rate turns;~~

~~(iv) — level, climbing and descending turns including turns onto pre-selected headings.~~

~~(2) — vacuum operated instruments: availability;~~

~~(3) — electrical power source.~~

~~ADDITIONAL TRAINING FOR PRIVILEGES TO CONDUCT LINE FLYING UNDER SUPERVISION~~



~~(aa) — In order to be able to conduct line flying under supervision, as provided in FCL.910.TRI(a), the TRI should have received the additional training described in paragraph (k) of this AMC.~~

#### ~~TRAINING WHERE NO FSTD EXISTS~~

~~(ab) — Where no FSTD exists for the type for which the certificate is sought, a similar course of training should be conducted in the applicable aeroplane type. This includes all elements listed under this sub paragraph, the synthetic device elements being replaced with appropriate exercises in an aeroplane of the applicable type.~~

AMC1 FCL.930.TRI TRI — Training course

TRI TRAINING COURSE: AEROPLANES

#### GENERAL

- (a) The aim of this AMC is to detail the training modules required for the TRI course according to the privileges sought.
- (b) The training course should develop safety awareness throughout by teaching the knowledge, skills and attitudes relevant to the TRI task, and should be designed to give adequate training to the applicant in theoretical-knowledge instruction, flight instruction and FSTD instruction to instruct for an aeroplane type rating for which the applicant is qualified.
- (c) The TRI(A) training course should give particular emphasis to the role of the individual in relation to the importance of human factors in the man-machine environment and the role of CRM.
- (d) Special attention should be given to the applicants' maturity and judgment including their understanding of adults, their behavioural attitudes and variable levels of learning ability. During the training course the applicants should be made aware of their own attitude towards the importance of flight safety. During the training course it is important to aim to teach the applicant the knowledge, skills and attitudes relevant to the role of the TRI.
- (e) For a TRI(A), the amount of time for flight training should vary depending on the complexity of the aeroplane type. A similar number of hours should be allotted to the instruction and practice of pre-flight and post-flight briefing for each exercise.
- (f) The flight instruction should aim to ensure that the applicant is able to teach the air exercises safely and efficiently and should be related to the type of aeroplane on which the applicant wishes to instruct. The content of the training programme should cover training exercises applicable to the aeroplane type as set out in the applicable type rating courses.
- (g) It is to be noted that airmanship is a vital element 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.
- (h) The student instructor should learn how to identify common errors and how to correct them properly, which should be emphasised at all times.

#### CONTENT

- (i) The training course consists of three parts:
  - (1) Part 1: teaching and learning instruction that should comply with AMC1 FCL.920;
  - (2) Part 2: technical theoretical knowledge instruction (technical training);
  - (3) Part 3: flight instruction.





**Part 1**

The content of the teaching and learning part of the FI training course, as established in AMC1 FCL.930.FI, should be used as guidance to develop the course syllabus.

**Part 2****TECHNICAL THEORETICAL KNOWLEDGE INSTRUCTION SYLLABUS**

- (a) The technical theoretical knowledge instruction should comprise not less than 10 hours of training in order to refresh Part 1 theoretical topics, as necessary, and aircraft technical knowledge. It should include the preparation of lesson plans and the development of briefing room instructional skills. A proportion of the allotted 10 hours could be integrated with the practical flight instruction lessons in Part 3, using expanded pre-flight and post-flight briefing sessions. Consequently, for practical purposes, Part 2(a) and Part 3 could be considered complementary to each other.
- (b) If a TRI(A) certificate for MP aeroplanes is sought, particular attention should be given to multi-crew cooperation. If a TRI(A) certificate for SP aeroplanes is sought, particular attention should be given to the duty in SP operations.

**Part 3****FLIGHT INSTRUCTION SYLLABUS**

- (a) The course should be related to the type of aeroplane on which the applicant wishes to instruct. It should consist of at least 5 hours of flight instruction for single-pilot aeroplane operated in single-pilot operations, and 10 hours for multi-pilot aircraft or single-pilot certified aircraft operated in multi-pilot operations per candidate instructor.
- (b) TEM, CRM and the appropriate use of behavioural markers should be integrated throughout.
- (c) The training programme should include a variety of exercises, covering both normal and abnormal operations, among which engine-out handling applicable to the aeroplane type.
- (d) The course should comprehensively cover the whole range of instructor skills enabling the applicant to plan, brief, train and debrief sessions using all relevant training techniques appropriate to pilot training.

**FSTD TRAINING**

- (e) The applicant for a TRI(A) certificate should be taught and made familiar with the device, its limitations, capabilities and safety features, as well as the instructor station, including emergency evacuation.
- (f) The applicant for a TRI(A) certificate should be taught and made familiar with giving instruction from the instructor station.
- (g) Training courses should be developed in such a way so as to help the applicant gain experience in training a variety of exercises, covering both normal and abnormal operations. The syllabus should be tailored and appropriate to the aeroplane type, using exercises considered more demanding for the student. This should include engine-out handling and engine-out operations in addition to representative exercises from the type transition course. The applicant should be required to plan, brief, train and debrief sessions using all relevant training techniques.



**AEROPLANE TRAINING for LIFUS and non-restricted TRI(A)**

The content of training for:

LIFUS TRI(A) is defined in (h) (FFS) and (k)(1) (aeroplane).

TRI(A) non-restricted is defined in (h), (i), (j) (FFS) and (k)(2) (aeroplane).

In addition, before being supervised for LIFUS or checked for base training instruction, the applicant for a TRI(A) should be taught and made familiar with giving instruction from all operating positions, including demonstrations of appropriate handling exercises.

(h) The applicant for a TRI(A) certificate should receive instruction in an FFS in accordance with FCL.905.TRI(b)(ii) in:

(1) right-hand seat familiarisation, which should include at least the following as PF:

- (i) pre-flight preparation and use of checklists;
- (ii) taxiing;
- (iii) take-off;
- (iv) rejected take-off;
- (v) engine failure during take-off, after  $V_1$ ;
- (vi) engine-inoperative approach and go-around;
- (vii) one engine (critical) simulated inoperative landing;
- (viii) other emergency and abnormal operating procedures (as necessary).

(2) aeroplane training techniques:

- (i) methods for giving appropriate commentary;
- (ii) particularities of handling the aeroplane in touch-and-go manoeuvres;
- (iii) intervention strategies developed from situations role-played by a TRI course instructor, taken from but not limited to:
  - (A) take-off configuration warning;
  - (B) over-controlling;
  - (C) high flare: long float;
  - (D) long flare;
  - (E) baulked landing;
  - (F) immediate go-around from touch;
  - (G) too high on approach: no flare;
  - (H) incorrect configuration;
  - (I) TAWS warning;
  - (J) misuse of rudder;
  - (K) over-control in roll axis during flare;
  - (L) incapacitation;
  - (M) actual abnormal or emergencies.



- (i) Additionally, if the applicant is required to train emergency or abnormal procedures in an aeroplane, synthetic device training should be included as follows:
- (1) appropriate methods and minimum altitudes for simulating failures;
  - (2) incorrect rudder inputs;
  - (3) failure of a critical engine;
  - (4) approach and full-stop landing with simulated engine-out.
- (j) In this case, the abnormal manoeuvres refer to engine-out handling as necessary for completion of the type rating training. If the applicant is required to train other abnormal items in the training course, additional training will be required.

(k) Additional training

(1) For LIFUS:

In order to be able to conduct line flying under supervision, as provided for in FCL.910.TRI(A), the TRI should have received the following additional training.

Training in an aeroplane in flight

This training should consist of at least one sector where the applicant instructor either:

- observes a TRI(A) conducting actual line flying under supervision, or
- conducts role-play line flying under supervision for a TRI(A) who is qualified for line flying under supervision.

Upon completion of the above-mentioned training, the applicant shall conduct a role-play 'line flying under supervision' sector. This flight shall be conducted under the supervision of a TRI(A), nominated for this purpose by the training organisation, and to their satisfaction.

(2) For non-restricted TRI(A):

Training courses should be developed in such a way so as to help the applicant gain experience in training a variety of exercises, covering both normal and abnormal operations. The syllabus should be tailored and appropriate to the aeroplane type, using exercises considered more demanding for the student.

This may include simulated engine-out handling and engine-out operations in addition to representative exercises from the type transition course.

The syllabus has to be assessed by the management system as required in ORA.GEN.200.

(3) Training where no FSTD exists:

Where no FSTD exists for the type for which the certificate is sought, a course of training should be conducted in the applicable aeroplane type. This includes all the elements listed below, with the synthetic device elements being replaced with the appropriate exercises in the aeroplane.

The syllabus has to be assessed by the management system as required in ORA.GEN.200.

TRAINING FOR ASYMMETRIC POWER FLIGHT ON SP MET AEROPLANES

(l) During this part of the training, particular emphasis is to be placed on:

- (1) the circumstances under which actual feathering and unfeathering will be practised, for example safe altitude, compliance with regulations regarding minimum altitude or height



- for feathering practice, weather conditions, distance from the nearest available aerodrome;
- (2) the procedure to be used for instructor and student cooperation, for example 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 or restarted or set at zero thrust and identifying each control and naming the engine it is going to affect;
  - (3) the consideration to be given to avoid over-working the operating engine, and the degraded performance when operating the aeroplane during asymmetric flight;
  - (4) the need to use the specific checklist for the given aeroplane type.

#### LONG BRIEFINGS

##### (m) Flight on asymmetric power:

- (1) introduction to asymmetric flight;
- (2) feathering the propeller: method of operation;
- (3) effects on aeroplane handling at cruising speed;
- (4) introduction to the effects upon aeroplane performance;
- (5) note foot load to maintain a constant heading (no rudder trim);
- (6) unfeathering the propeller: regain normal flight;
- (7) finding the zero-thrust setting: comparison of foot load when feathered and with zero thrust set;
- (8) effects and recognition of engine failure in level flight;
- (9) the forces and the effects of yaw;
- (10) types of failure:
  - (i) sudden or gradual;
  - (ii) complete or partial;
- (11) yaw, direction and further effects of yaw;
- (12) flight instrument indications;
- (13) identification of failed engine;
- (14) the couples and residual out-of-balance forces: resultant flight attitude;
- (15) use of rudder to counteract yaw;
- (16) use of aileron: dangers of misuse;
- (17) use of elevator to maintain level flight;
- (18) use of power to maintain safe airspeed and altitude;
- (19) supplementary recovery to straight and level flight: simultaneous increase in speed and reduction in power;
- (20) identification of failed engine: = idle engine;
- (21) use of engine instruments for identification:



- (i) fuel pressure or flow;
- (ii) RPM gauge response effect of CSU action at lower and higher airspeed;
- (iii) engine temperature gauges;
- (22) confirmation of identification: close the throttle of identified failed engine;
- (23) effects and recognition of engine failure in turns;
- (24) identification and control;
- (25) side forces and effects of yaw.
- (n) During turning flight:
  - (1) effect of 'inside' engine failure: effect sudden and pronounced;
  - (2) effect of 'outside' engine failure: effect less sudden and pronounced;
  - (3) the possibility of confusion in identification (particularly at low power):
    - (i) correct use of rudder;
    - (ii) possible need to return to lateral level flight to confirm correct identification;
  - (4) visual and flight instrument indications;
  - (5) effect of varying speed and power;
  - (6) speed and thrust relationship;
  - (7) at normal cruising speed and cruising power: engine failure clearly recognised;
  - (8) at low-safe speed and climb power: engine failure most positively recognised;
  - (9) high-speed descent and low power: possible failure to notice asymmetry (engine failure).
- (o) Minimum control speeds:
  - (1) ASI colour coding: red radial line.
 

Note: This exercise is intended to explore the ultimate boundaries of controllability of the aircraft in an asymmetric state in various conditions with a steady power setting. This is achieved by using a fixed power setting and adjusting the aircraft attitude in order to obtain 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 the control of an aeroplane in asymmetric power flight during extreme or critical situations. It is not a demonstration of  $V_{MCA}$ .
  - (2) techniques for assessing critical speeds with wings level and recovery — dangers involved when minimum control speed and stalling speed are very close: use of  $V_{sse}$ ;
  - (3) establish a minimum control speed for each asymmetrically disposed engine: to establish critical engine (if applicable);
  - (4) effects on minimum control speeds of:
    - (i) bank;
    - (ii) zero-thrust setting;
    - (iii) take-off configuration:
      - (A) landing gear down and take-off flap set;
      - (B) landing gear up and take-off flap set.



Note: It is important to appreciate that the use of 5° of bank towards the operating engine produces a better climb performance than that obtained with the wings held level. It is now normal for manufacturers to use these conditions when determining the asymmetric climb performance of the aircraft. Thus, the  $V_{MCA}$  quoted in the AFM may be different to the speeds determined during this exercise.

(p) Feathering and unfeathering:

- (1) minimum heights for practising feathering or unfeathering drills;
- (2) engine handling: precautions (overheating, icing conditions, priming, warm-up and method of simulating engine failure: reference to aircraft engine manual and service instructions and bulletins).

(q) Engine failure procedure:

- (1) 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;
- (2) flight phase:
  - (i) in cruising flight;
  - (ii) critical phase such as immediately after take-off or during the approach to land or during a go-around.

(r) 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 aeroplane type. The AFM is to be consulted in order to establish the exact order of these procedures.

For example, one AFM may call for the raising of flaps and landing gear before feathering whereas 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 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 is to be used as general guidance only and the exact order of precedence is determined by reference to the AFM for the specific aeroplane type being used in the course.

(s) In-flight engine failure in cruise or other flight phase not including take-off or landing:

- (1) immediate actions:
  - (i) control the aircraft;
  - (ii) recognition of asymmetric condition;
  - (iii) identification and confirmation of failed engine:
    - (A) idle leg = idle engine;
    - (B) closing of throttle or power lever, as appropriate, for confirmation;
  - (iv) cause of failure and fire check:



- (A) typical reasons for failure;
- (B) methods of rectification;
- (v) feathering decision and procedure:
  - (A) reduction of other drag;
  - (B) need for speed but not haste;
  - (C) use of rudder trim;
- (2) subsequent actions:
  - (i) 'live' (operating) engine:
    - (A) temperature, pressures and power;
    - (B) remaining services;
    - (C) electrical load: assess and reduce as necessary;
    - (D) effect on power source for air-driven instruments;
    - (E) landing gear;
    - (F) flaps and other services;
  - (ii) replan flight:
    - (A) ATC and weather;
    - (B) terrain clearance, SE cruise speed;
    - (C) decision to divert or continue;
  - (iii) fuel management: best use of remaining fuel;
  - (iv) dangers of restarting damaged engine;
  - (v) action if unable to maintain altitude: effect of altitude on power available;
  - (vi) effects on performance;
  - (vii) effects on power available and power required;
  - (viii) effects on various airframe configuration and propeller settings;
  - (ix) use of AFM:
    - (A) cruising;
    - (B) climbing: ASI colour coding (blue line);
    - (C) descending;
    - (D) turning;
  - (x) 'live' engine limitations and handling;
  - (xi) take-off and approach: control and performance.
- (t) Significant factors:
  - (1) significance of take-off safety speed:
    - (i) effect on aircraft performance of landing gear, flap, feathering, take-off, trim setting and systems for operating landing gear and flaps;
    - (ii) effect of mass, altitude and temperature (performance);



- (2) significance of best SE climb speed ( $V_{yse}$ ):
    - (i) acceleration to best engine climb speed and establishing a positive climb;
    - (ii) relationship of SE climb speed to normal climb speed;
    - (iii) action if unable to climb;
  - (3) significance of asymmetric committal height and speed: action if baulked below asymmetric committal height.
- (u) Engine failure during take-off:
- (1) below  $V_{MCA}$  or unstick speed:
    - (i) accelerate or stop distance considerations;
    - (ii) prior use of AFM data, if available;
  - (2) above  $V_{MCA}$  or unstick speed and below safety speed;
  - (3) immediate relanding or use of remaining power to achieve forced landing;
  - (4) considerations:
    - (i) degree of engine failure;
    - (ii) speed at the time;
    - (iii) mass, altitude, temperature (performance);
    - (iv) configuration;
    - (v) length of remaining runway;
    - (vi) position of any obstacles ahead.
- (v) Engine failure after take-off:
- (1) simulated at a safe height and at or above take-off safety speed;
  - (2) considerations:
    - (i) need to maintain control;
    - (ii) use of bank towards operating engine;
    - (iii) use of available power achieving best SE climb speed;
    - (iv) mass, altitude, temperature (performance);
    - (v) effect of prevailing conditions and circumstances;
  - (3) immediate actions:
    - (i) maintaining control, including airspeed and use of power;
    - (ii) recognition of asymmetric condition;
    - (iii) identification and confirmation of failed engine;
    - (iv) feathering and removal of drag (procedure for type);
    - (v) establishing best SE climb speed;
  - (4) subsequent actions: whilst carrying out an asymmetric power climb to the downwind position at SE best rate of climb speed:
    - (i) cause of failure and fire check;





- (ii) 'live' engine, handling considerations;
- (iii) remaining services;
- (iv) ATC liaison;
- (v) fuel management.

Note: These procedures are applicable to aeroplane type and flight situation.

(w) Asymmetric committal height:

- (1) 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 land.

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 the pilot's competence.

- (2) Circuit approach and landing at asymmetric power:

- (i) definition and use of asymmetric committal height;
- (ii) use of standard pattern and normal procedures;
- (iii) action if unable to maintain circuit height;
- (iv) speed and power settings required;
- (v) decision to land or go-around at asymmetric committal height: factors to be considered.

- (3) Undershooting: importance of maintaining an appropriate airspeed.

(x) Speed and heading control:

- (1) height, speed and power relationship: need for minimum possible drag;
- (2) establishing positive climb at best SE rate of climb speed:
  - (i) effect of availability of systems, power for flap and landing gear;
  - (ii) operation and rapid clean-up.

Note 1: The airspeed at which the decision is made to commit the aeroplane to a landing or go-around should normally be the best SE 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.

(y) Engine failure during an all-engine approach or missed approach:



- (1) use of asymmetric committal height and speed considerations;
- (2) speed and heading control: decision to attempt a landing, go-around or forced landing as circumstances dictate.

Note: At least one demonstration and practice of engine failure in this situation should be performed during the course.

- (z) Instrument flying at asymmetric power:
- (1) considerations relating to aircraft performance during:
    - (i) straight and level flight;
    - (ii) climb and descent;
    - (iii) standard rate turns;
    - (iv) level, climbing and descending turns including turns onto preselected headings;
  - (2) vacuum-operated instruments: availability;
  - (3) electrical power source.'

In **AMC2 FCL.930.TRI**, the title is amended as follows:

'AMC2 FCL.930.TRI TRI — ~~†~~ Training course'

A new **AMC1 FCL.940.TRI;FCL.940.SFI** is added as follows:

'AMC1 FCL.940.TRI(a)(1)(ii) and (2)(ii), (b)(1)(ii) and (b)(2)(i) and FCL.940.SFI(a)(2) Revalidation and renewal

- (a) The refresher training for the revalidation of the TRI and SFI should be held as a seminar covering the following items. The seminar may be conducted using a combination of either e-learning, two-way online meetings and face-to-face seminars, and should consist of 6 hours of learning. The content of the refresher seminar for the revalidation should be selected from the following:
- (1) relevant changes to national or European Union regulations;
  - (2) the role of the instructor;
  - (3) teaching and learning styles;
  - (4) observational skills;
  - (5) instructional techniques;
  - (6) briefing and debriefing skills;
  - (7) threat and error management;
  - (8) human performance and limitation;
  - (9) flight safety, incident and accident prevention including those specific to the ATO;
  - (10) significant changes in the content of the relevant part of the aviation system;
  - (11) legal aspects and enforcement procedures;
  - (12) developments in competency-based instruction;
  - (13) report writing;



(14) any additional topics suggested by the competent authority.

(b) For the refresher training for the renewal of the TRI and SFI certificate, the ATO should consider all of the above and the following items:

(1) The amount of refresher training needed should be determined on a case-by-case basis by the ATO following an assessment of the candidate by taking into account the following factors:

(i) the experience of the applicant;

(ii) the amount of time lapsed since the expiry of the TRI or SFI certificate;

(iii) the technical elements of the SFI/TRI course as determined by the assessment of the candidate by the ATO.

(2) Once the ATO has determined the needs of the applicant, it should develop an individual training programme that should be based on the content of the TRI or SFI training course and focus on the aspects where the applicant has shown the greatest needs.'

In **AMC1 FCL.930.CRI**, (f)(1) is amended as follows:

'(1) Part 1: teaching and learning that should follow the content of comply with AMC1 FCL.920;'

#### SUBPART K — EXAMINERS

In **GM1 FCL.1005(b)**, the following amendment is made:

'Examples of a situation where the examiner should consider if his/her objectivity is affected are when the applicant is a relative or a friend of the examiner, or when they are linked by economical interests or political affiliations, etc.'

In **AMC1 FCL.1015**, (b)(2) is amended as follows:

'(2) for other examiners, at least 3 days, divided into theoretical training (1 day) and practical training in an FFS conducting real or role-played proficiency checks, and skill tests or assessments of competence (at least 2 days).'

In **GM1 FCL.1015 Examiner standardisation**, the following amendments are made:

In (a)(3):

'(3) two tests or checks related to CPL, IR/MPL or ATPL;'

In (b):

'(b) An examiner should plan at least 2 hours for a LAPL, SPL or BPL, 3 hours for a PPL, CPL, IR or class rating test or checks, and at least 4 hours for instructor certificates, FI, CPL, IR, MPL, ATPL or MP type rating tests or checks, including pre-flight briefing and preparation, conduct of the test, check or assessment of competence, debriefing, evaluation of the applicant and documenttation.'

In (c)(3):

'(3) 60 minutes for IR, FI, EIR, instructor certificates and SP type or class ratings;'



In (c)(4):

'(4) 120 minutes for CPL/IR, MPL, ATPL and MP type ratings.'

In **AMC1 Appendix 3**, the following amendments are made:

In B(c):

'(c) The ATP modular course should ~~last be completed within~~ 18 months. This period may be extended where additional training is provided by the ATO. The flight instruction and skill test need to be completed within the period of validity of the pass in the theoretical examinations.'

In E(a):

'(a) The CPL modular course should ~~last be completed within~~ 18 months. This period may be extended where additional training is provided by the ATO. The flight instruction and skill test need to be completed within the period of validity of the pass in the theoretical examinations.'

In H(c):

'(c) The ATP modular course should ~~last be completed within~~ 18 months. This period may be extended where additional training is provided by the ATO. The flight instruction and skill test need to be completed within the period of validity of the pass in the theoretical examinations.'

In **GM1 Appendix 3; Appendix 6; FCL.735.H**, the following amendments are made:

For the ATPL(H/IR) integrated the Total FSTD credits field is changed:

~~'65 hrs FFS or~~

~~60 hrs FTD 2, 3 or~~

~~55 hrs FNPT II/III or~~

~~10 hrs in at least an FNPT I~~ **Note 2'**

For the ATPL(H)/VFR integrated the Total FSTD credits field is changed:

~~'40 hrs FFS or~~

~~35 hrs FTD 2, 3 or~~

~~30 hrs FNPT II/III or~~

~~5 hrs in at least an FNPT I~~ **Note 2'**

For the CPL(H) Integrated the Total FSTD credits field is changed:

~~'35 hrs FFS or~~

~~30 hrs FTD 2, 3 or~~

~~25 hrs FNPT II/III or~~

~~5 hrs in at least an FNPT I~~ **Note 2'**

For the CPL(H) modular the Total FSTD credits field is changed:

~~'10 hrs FFS or FTD 2,3 or FNPT II/III or~~

~~5 hrs in at least an FNPT I~~ **Note 2'**



The text at the end of the table is changed:

'Note 1: In this matrix FSTD credits refer to helicopter FSTDs if not mentioned otherwise.

Note 2: Totals are not shown for the FSTD used in the course as they may be made in various combinations. It should be noted that the credit shown in the separate phases of the course is the maximum FSTD credit available for each phase.'

**GM1 Appendix 7 IR skill test** is deleted:

'GM1 to Appendix 7 – IR skill test

~~To the skill test, an ME centreline thrust aeroplane is considered an SE aeroplane.'~~



## 4. References

### 4.1. Affected regulations

Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 311, 25.11.2011, p. 1), as amended by Commission Regulation (EU) No 290/2012 of 30 March 2012 (OJ L 100, 5.4.2012, p. 1), Commission Regulation (EU) No 70/2014 of 27 January 2014 (OJ L 23, 28.1.2014, p. 25), and Commission Regulation (EU) No 245/2014 of 13 March 2014 (OJ L 74, 14.3.2014, p. 33)

### 4.2. Affected CS, AMC and GM

Annex to ED Decision 2011/016/R of 15 December 2011 on 'Acceptable Means of Compliance and Guidance Material to Part-FCL' (Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council)

Annex to ED Decision 2014/022/R of 1 April 2014 on 'AMC and GM to Part-FCL – Amendment 1' (amending the Acceptable Means of Compliance and Guidance Material to Part-FCL of Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council)

### 4.3. Reference documents

Not applicable.

