



Circulaire

**CIR/FCL 20**

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**Objet :** La qualification d'avions  
multimoteurs multipilotes  
(ME-MPA).

**Betreft:** De bevoegdverklaring voor  
meermotorige  
meerpilootvliegtuigen (ME-MPA)

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licences civiles de pilote d'avions.  
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Art. 56 § 3, 57, § 2 en 3, en 65 § 2.

JAR-FCL 1.240/ 1.245 / 1.250 / 1.261 / 1.262  
Appendix 1 & 2 to JAR-FCL 1.240 & 1.295  
Appendix 1 to JAR-FCL 1.261(a)  
Appendix 1 to JAR-FCL 1.261(c)(2)  
AMC FCL 1.261(a)  
AMC FCL 1.261(c) (2)  
IEM FCL 1.240(b)(1)

JAR-FCL 1.240/ 1.245 / 1.250 / 1.261 / 1.262  
Appendix 1 & 2 to JAR-FCL 1.240 & 1.295  
Appendix 1 to JAR-FCL 1.261(a)  
Appendix 1 to JAR-FCL 1.261(c)(2)  
AMC FCL 1.261(a)  
AMC FCL 1.261(c) (2)  
IEM FCL 1.240(b)(1)

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## FCL 20

Cette circulaire décrit le programme et les procédures qui sont d'application pour l'épreuve d'aptitude et le contrôle de compétence pour la qualification de type d'avions multimoteurs multipilotes (ME-MPA).

Elle comprend :

- **Appendix 1 to JAR-FCL 1.240 & 1.295**  
Skill test & proficiency check for aeroplane type/class ratings and ATPL.
- **Appendix 2 to JAR-FCL 1.240 & 1.295**  
Contents of the ATPL/type rating/ training/ skill test and proficiency check on multi-pilot aeroplanes.
- **Appendix 1 to JAR-FCL 1.261(a)**  
Theoretical knowledge instruction requirements for skill test/ proficiency checking for class/type ratings.
- **Appendix 1 to JAR-FCL 1261(C) (2)**  
Approval of aeroplane zero flight time type rating courses
- **AMC FCL 1.261(a)**  
Syllabus of theoretical knowledge instruction for class/type ratings for SE and ME aeroplanes.
- **AMC FCL 1.261(c)(2)**  
Guidelines for approval of an aeroplane type rating course.
- **IEM FCL 1.240 (b)(1)**  
ATPL/type rating/training/skill test and proficiency check form on multi-engine multi-pilot aeroplanes.

## FCL 20

Deze circulaire beschrijft het programma en de procedures die van toepassing zijn voor de vaardigheidstest en de bekwaamheidsproef voor de typebevoegdverklaring voor meermotorige meerpilootvliegtuigen (ME-MPA).

Zij omvat:

- **Appendix 1 to JAR-FCL 1.240 & 1.295**  
Skill test & proficiency check for aeroplane type/class ratings and ATPL
- **Appendix 2 to JAR-FCL 1.240 & 1.295**  
Contents of the ATPL/type rating/ training/ skill test and proficiency check on multi-pilot aeroplanes.
- **Appendix 1 to JAR-FCL 1.261(a)**  
Theoretical knowledge instruction requirements for skill test/ proficiency checking for class/type ratings.
- **Appendix 1 to JAR-FCL 1261(c)(2)**  
Approval of aeroplane zero flight time type rating courses
- **AMC FCL 1.261(a)**  
Syllabus of theoretical knowledge instruction for class/type ratings for SE and ME aeroplanes.
- **AMC FCL 1.261(c)(2)**  
Guidelines for approval of an aeroplane type rating course.
- **IEM FCL 1.240 (b)(1)**  
ATPL/type rating/training/skill test and proficiency check form on multi-engine multi-pilot aeroplanes.

## **Appendix 1 to JAR-FCL 1.240 & 1.295**

### **Skill test and proficiency check for aeroplane type/class ratings and ATPL**

(See JAR-FCL 1.240 through 1.262 and 1.295)

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

(See AMC FCL 1.261(a))

(See IEM FCL 1.240(1) and (2))

1 The applicant shall have completed the required instruction in accordance with the syllabus (see also Appendix 1 to JAR-FCL 1.261(a) and Appendices 2 & 3 to JAR-FCL 1.240). The administrative arrangements for confirming the applicant's suitability to take the test, including disclosure of the applicant's training record shall be checked by the examiner.

2 Items to be covered in skill tests/proficiency checks are given in the applicable Appendix 2 & 3 to JAR-FCL 1.240. 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 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 of at least 4 hours. There is no limit to the number of skill tests/proficiency checks that may be attempted.

#### **CONDUCT OF THE TEST/CHECK – GENERAL**

5 The examiner will ensure that the test is conducted safely, with respect to the requirements of the Royal Decree of 4 March 2008 and in conformity with the guidelines of CIR/FCL 28.

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 for the initial issue of a multi-pilot aeroplane type rating or ATPL(A) shall be required to operate as 'pilot flying' (PF) during all sections of the test/check (in accordance with Appendix 2 to 1.240 & 1.295). The applicant 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.

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	± 5°
Precision approach	half scale deflection, azimuth and glide path

#### Heading

all engines operating	± 5°
with simulated engine failure	± 10°

#### Speed

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

#### CONTENT OF THE SKILL TEST/PROFICIENCY CHECK

15 (a) The skill test and proficiency check contents and sections are set out in Appendix 2 to JAR-FCL 1.240 for multi-pilot aeroplanes and at Appendix 3 to JAR-FCL 1.240 for single-pilot aeroplanes. The application and report form as set out in IEM FCL 1.240 (b)(1) will be used.

(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 JAR–FCL 1.240 & 1.295**

### **Contents of the ATPL/type rating/training/skill test and proficiency check on multi-pilot aeroplanes**

(See JAR–FCL 1.240 through 1.262 and 1.295)

(See Appendix 1 to JAR-FCL 1.520 & 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 JAR–STD;
- (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	Examiner's initials when test completed
<b>Manoeuvres/Procedures</b> (including Multi-Crew Cooperation)							
<b>SECTION 1</b>							
<b>1 Flight preparation</b>							
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	
<b>SECTION 2</b>							
<b>2 Take-offs</b>							
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 <sub>2</sub> ,			P----->	----->			

	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	
(In aeroplanes which are not certificated as transport category aeroplanes (JAR/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 shortly after 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	
<b>SECTION 3</b>							
<b>3 Flight Manoeuvres and Procedures</b>							
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
<b>Manoeuvres/Procedures</b> (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							

Manoeuvres/Procedures (including Multi-Crew Cooperation)	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
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
<b>Manoeuvres/Procedures</b> (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 (JAR/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				Instructor's initials when training completed	ATPL/[MPL]/TYPE-RATING SKILL TEST/PROF CHECK	
	OTD	FTD	FS	A		Chkd in FS A	Examiner's initials when test completed
<b>Manoeuvres/Procedures</b> (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; <u>followed by:</u> (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*----->	----->			
<b>SECTION 4</b>							
<b>4 Missed Approach Procedures</b>							
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
<b>Manoeuvres/Procedures</b> (including Multi-Crew Cooperation)							
<b>SECTION 5</b>							
<b>5 Landings</b>			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, JAR-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
<b>Manoeuvres/Procedures</b> (including Multi-Crew Cooperation)	OTD	FTD	FS	A		FS A	
<b>SECTION 6</b>							
<p><b>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)</b></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 (task sharing, 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	Examiner's 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 II/III operations shall be accomplished in accordance with Operational Rules.**

**IEM FCL 1.240(b)(1)**

**ATPL/type rating/training/skill test and proficiency check form on multi-engine multi-pilot aeroplanes**

See JAR-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:

<b>1</b>	<b>Theoretical training for the issue of a type rating performed during period</b>		
from:	to:	at:	
mark obtained:	% (Pass mark 75%):	Type and number of licence:	
Signature of instructor:		Name in capital letters:	

<b>2</b>	<b>Simulator (aeroplane type):</b>	Three or more axes:	YES*	NO*	Ready for service and used
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		
Type and No of licence:			Name in capital letters:		

<b>3</b>	<b>Flight training:</b>		
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:	
Type and No of licence:		Name in capital letters:	

<b>4</b>	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

**In case of revalidation**

Rating:	was valid till		revalidated till	
	date		date	

## **Appendix 1 to JAR–FCL 1.261(a)**

### **Theoretical knowledge instruction requirements for skill test/proficiency checking for class/type ratings**

(See JAR–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 JAR-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 an JAR-OPS 1 operator or a Training Organisation having a specific approved arrangement with a JAR-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 JAR-STD 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 STD operator (see AMC STD 1A.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 JAR-OPS 1.945(d)(2).
- (d) For an initial approval to conduct ZFTT the operator shall have held a JAR-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 TRTO 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 JAR-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 JAR-OPS 1.945 (d)(2), has operational experience acceptable to the Authority on the aeroplane type.
- (f) The check required in JAR-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 JAR-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.

**AMC FCL 1.261(a)**

**Syllabus of theoretical knowledge instruction for class/type ratings for single-engine and multi-engine aeroplanes**

See JAR–FCL 1.261(a)

See Appendix 1 to JAR–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  $V_{so}$ ,  $V_{st}$
  - 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 JAR-FCL 1.261(c)(2)

See Appendix 1 and 2 to JAR-FCL 1.055

See Appendix 2 to JAR-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, STD 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 TRTO 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 JAR-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, STD training and if not approved for Zero Flight Time Training in accordance with Appendix 1 to JAR-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 JAR-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 a TRTO 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 TRTO 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 A TRTO 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 of a JAA Member State. When the sub-contracted organisation is not approved by a JAA Member State the approving Authority of the TRTO 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 JAA approved organisation. The other obligations of the TRTO, such as student progress monitoring and an adequate form of quality system management, can be

AMC FCL 1.261(C) (continued)

exercised by the TRTO 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 TRTO 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 pre-requisite for progression to the flight training phase of the type rating course.

## FLIGHT TRAINING

### 10. Synthetic Training Devices (STD)

10.1 STDs 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 STD training, .

10.2 The amount of training required when using STDs 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 STD 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 STDs used during the flight training programme accurately replicate the flight deck environment, operation and aeroplane response. Such STDs 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 STD 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 un-supervised.
- 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 JAR-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 STDs 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 TRTO 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 JAR-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 TRTO 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, a TRTO Course Completion Certificate may be issued confirming completion of ground and STD 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.