GOVERNMENT OF INDIA

OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
OPP. SAFDARJUNG AIRPORT, NEW DELHI-110 003

CIVIL AVIATION REQUIREMENTS
SECTION 7 - FLIGHT CREW STANDARDS TRAINING AND LICENSING
SERIES 'B' PART XIX
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Subject: Requirement for undergoing Type Rating training on aeroplanes powered by gas turbine engines

Purpose:

1.1 Rule 41 of the Aircraft Rules, 1937 requires applicants for licenses and ratings to produce proof of having acquired the flying experience and having passed satisfactorily the test and examinations specified in Schedule II in respect of the license or rating concerned.

1.2 In order to standardize and streamline the process, this Civil Aviation Requirement provides the basic guidelines for pilots to undertake type rating training in various Approved Training Organisation (ATO) & operator with ATRP approvals for Scheduled, Non-Scheduled and General Aviation Operations.

1.3 This Civil Aviation Requirement has been issued under the provisions of Rule 133A of Aeroplane Rules 1937.

2. Applicability:

2.1 The provisions of this CAR shall apply to all Pilot License Holders for undertaking type rating training at any ATO in India or any ICAO Contracting state and operators with ATRP approval.

2.2 The pre-requisite or requirements shall be met, before undergoing the type training by both the Trainee Pilot and the ATO / Organization providing the training.

3. Definitions

3.1 “Approved training” means a training the curriculum of which has been approved by the Director-General.

3.2 “Approved training organization (ATO)” means an organization approved by and operating under the supervision of a Contracting State in accordance with the requirements of Annex 1 to perform approved training.

Note: The Contracting State is required to ensure that the ATO is included in the

State's ongoing safety oversight programme.

3.3 "Approved" means accepted by the Director-General as suitable for a particular purpose.

3.4 "Contracting State" means any State which is for the time being a party to the Convention on International Civil Aviation concluded at Chicago on December 7, 1944, and any amendment which may be made thereto under the provisions of Article 94 thereof.

3.5 "Endorsement" with respect to a licence means an entry in the licence indicating the privileges which the licence holder is entitled to exercise, including any observation impacting the exercise of such privileges.

3.6 "Flight Simulator" means a device which provides an accurate representation of the flight deck of a particular aircraft type to the extent that the mechanical, electrical, electronic and the like, aircraft systems control functions, the normal environment of flight crew members, and the performance and flight characteristics of that type of aircraft are realistically simulated.

3.7 "Flight Simulation Training Device" means Flight Simulator, Flight Procedures Trainers or Basic Instrument Flight Trainer in which flight conditions are simulated on the ground.

3.8 "Foreign ATO" means an approved training organization (ATO) located outside of the State or outside of the territory of the States of the regional safety oversight organization.

3.9 "Gas Turbine" means an internal combustion engine that uses air as the working fluid to drive a turbine.

3.10 "Licence" means a licence issued under The Aircraft Rules, 1937.

3.11 "Operator" means a person, organisation or enterprise engaged in or offering to engage in aircraft operation.

3.12 "Rating" means an authorisation entered on a licence and forming part thereof, stating special conditions, privileges or limitations pertaining to such licence.

3.13 "Type of aircraft" means all aircraft of the same basic design including all modifications thereto except those modifications which result in a change in handing or flight characteristics.

3.14 "Type rating" means a rating for each type of aircraft.

4. General Requirements:

4.1 Prior to commencement of training, the ATO / operator with ATRP approval shall ensure that the training requirements are accomplished and required documents are submitted on completion of type rating course in accordance with this CAR to the Director of Training and Licensing, DGCA.

4.2 In case of any clarification is required, please contact, FSD DGCA.

4.3 The license and medical of the trainee pilot need not be current and valid during the training and checks on simulators, however the medical must be current for skill tests and all training/checks on aeroplane.

4.4 The trainee pilot shall pass both the DGCA technical specific and performance (if applicable) examination or the ATO examination authorised by the regulatory authority of the relevant contracting state. The trainee pilot should have passed all requisite written examinations before commencement of the FFS and that must be valid during entire training and checks.

4.5 Ground and simulator training shall be completed in the same ATO.

4.6 Skill tests (Day/Night) and IR/PPC Check (CA 40/41) forms as applicable shall be used, which is available on the DGCA web site. (www.dgca.gov.in)

4.7 The skill tests of the trainee pilot shall be carried out by an Examiner, other than those who had imparted the training.

Note: Examiners shall not conduct skill tests or assessments of competence of candidates for the issue of a licence, rating, or certificate to whom they have provided more than 25 % of the required flight instruction for the licence, rating or certificate for which the skill test or assessment of competence is being taken.

4.8 Training and checks must be carried out by the Instructor/Examiner approved by the same State Regulatory Authority (CAA) who has approved the ATO.

4.9 The type rating training shall be conducted as per the syllabus stipulated in Appendix A of this CAR.

4.10 Complete Type Rating training as covered in this CAR shall be completed within 06 months from the date of commencement of FFS training. If there is a break in training in between FFS stage, then the minimum training to restart the FFS shall be as follows:

a) Gap more than 30 days: 01 FFS with 02 hrs. PF
b) If the period of training exceeds six months, the training shall be started again from the beginning.

5. Responsibility of Submission of documents for endorsement:

5.1 The ATO shall provide a consolidated single document of all training documents to DGCA, PEL FCL at 'dtl1.dgca@nic.in or dtl1.dgca@gov.in' to verify the authenticity of the documents & training undertaken.

5.2 The applicant shall upload the following original documents on the eGCA portal.

a. Ground training & tests records.

b. Training reports (session wise) of simulator/aeroplane training, tests, and checks, including any additional/remedial training imparted.

c. State Regulatory Authority approval of ATO.

d. State Regulatory Authority qualification certificate for all FSTDs used in the training program.

e. Proof for validity of the Instructor/Examiner as applicable.

f. All other documents required in accordance with the Aircraft Rules, 1937 and CARs for the purpose of endorsement.

6. The syllabus for various Aeroplanes has been standardized. Appendix A describes the quantum of type rating training applicable to different type of aeroplanes.

7. Credit towards reduced/shortened type ratings shall be as per the OSD, FC document for the relevant type of aeroplane.

Vikram Dev Dutt

Director General of Civil Aviation

APPENDIX A

Type A	Jet Aeroplanes (Narrow body & Wide body) such as: i) A 320 family I A 330/ A 340/ A 350/ A 380. ii) B 737 family, B747/ B757/ B777/ B787. iii) Embraer 135/145 and above iv) CRJ
Type B	Turbo Prop Aeroplanes above 5700 Kg such as: i) ATR family ii) Q 400 iii) SKA 350 iv) Dornier
Type C	Jet Aeroplanes which are not specified in Type A and Jet Aeroplanes below 5700 Kg such as: i) Challenger ii) Gulf Stream iii) Global iv) Falcon v) Citation vi) Embraer Phenom series
Type D	Turbo Prop Aeroplanes (SE/ME) below 5700 kg such as: i) King Air 90 Series ii) Beechcraft 200 Series iii) Pilatus Series iv) Cessna 208 Series v) DHC Series vi) Piaggio Series Note: Type D training applies only to turboprop aeroplanes which are below 5700kg in the series listed above. If the aeroplane is part of the series but above 5700kg then Type B training will apply.

Note 1: This list of aeroplanes given above is only indicative and by no means exhaustive. For any clarification on the matter, please contact FSD, DGCA.

Sl No.	Training I Check	Description of training I check	Jet Aircraft		Turbo-Prop Aircraft	
			Type A	Type C	Type B	Type D
1	Pre• requisite Qualification(A)	Minimum hours/Licence Requirements on aeroplane	CPL(ME) with IR The applicant should hold or have held a multi engine rating with IR.			As per OSD FC Minimum CPL(SE) with IR
2	Pre• requisite Qualification (B) MCC	Classroom /Approved E Learning/CBT modules	16 Hours	16 Hours	NA	NA
		FSTD (Minimum FTD Level 5 /FNPT II MCC)	Refer Appendix C Note: The MCC course is a one-time course and need not be repeated for subsequent type ratings			
3	Ground Training	The ground training shall not be more than 8 hours in a day. There should not be any FFS simulator sessions during the ground training period. A 'home study' is not approved and no credit shall be provided for the same. Credit for Computer-Based Training (CBT) shall be given as approved in the course.	As per the approved type rating training course which shall include a minimum of the mandatory training elements of the operational suitability data for the relevant type of aircraft.			As per OSD FC
4	Ground Training	(UPRT) upset prevention and recovery training. Ground training maybe completed prior to conduct of MCC sessions.	5hrs	5hrs	5hrs	5hrs

		UPRT simulator/aircraft training to be completed as per the training manual of DGCA approved ATO/operator with ATRP approval. UPRT ground and simulator syllabus shall be completed in the same ATO. For ATOs without DGCA approval, the UPRT approval should be mentioned in the State Regulatory Authority approval of the ATO. In case of the ATO/operator with ATRP approval does not have UPRT compliant simulators, the individual may complete the UPRT syllabus in an alternate ATO.				

Sl No.	**Training I Check**	**Description of training I check**	**Jet Aircraft**		**Turbo-Prop Aircraft**	
			Type A	**Type C**	**Type B**	**Type D**
5	Exam	An exam on technical specific and performance subjects (if applicable) shall be conducted by the ATO / operator with ATRP approval on completion of Ground Training. The certified marked answer sheets and tests should be uploaded on the eGCA portal (Not applicable incase the trainee has passed the DGCA technical specific and performance examinations)	Minimum of 70 % pass marks			

6	Simulator Training	• FFS training sessions to be undertaken after successful completion of 2 and 3 above: • Each session, briefing and de-briefing will be of appropriate duration with a minimum as given in the OSD FC. • Minimum time between the end of a FFS session and the beginning of next training sessionshall be 18 hours. • Training objective of each session shall be achieved, trainee shall be given appropriate additional training till the minimum level ofproficiency is achieved. • The records of each simulator session with briefing and de-briefing remarks certified by the trainer shall be uploaded on the eGCA portal. • Note: CRM and TEM are to be integrated into all practical exercises.	As per the approved type rating training course which shall be in compliance with the Type Rating Footprint given in the Operational Suitability Data for the relevant type of aircraft. Note: The OSD FC type rating footprint establishes the minimum training requirements which shall be met, and the ATO/Operator may increase the training footprint and get it approved as required.
7	LOFT	LOFT session as Pilot Flying (PF) on a minimum of Level "C/D" FFS	The requirement to conduct LOFT will be as per the OSD FC for the relevant type of aircraft, however, the ATO/Operator may include the same in the type rating footprint and get it approved as required.

8	Skill Test	After completion of the above training, the trainee pilot shall undergo the indicated sessions of SKILL TEST DAY/NIGHT (with an examiner other than the one who imparted training. (Refer para 4.7) in a level "D" FFS. Note: IR PPC checks can be combined with skill test in accordance with CAR Section 8 Series F Part II. Note: Skill Test (D/N) is a mandatory regulatory requirement for the successful completion of type rating.	(Day & Night Check) of a minimum duration of 2 hours each

9	Other Training	All other training such as LVTO / ZFTT / Base Training, Differences or Familiarisation training, CRM, SEP, DGR training etc. that are required and relevant as per the existing guidelines in various CARs shall be completed before exercising theprivileges of the rating. Note: These trainings except Base Training (Aircraft Familiarization) may also be conducted before skill tests.	As Required

Note 2: All training programs approved before the issue of this CAR shall be revised for compliance and submitted for approval latest by 1 year from the date of issue of this CAR.

Note 3: If the OSD FC data is not available for the relevant type aircraft, the applicant for a type rating training course shall submit the proposed training footprint to FSD, DGCA for scrutiny and approval.

Note 4: Type D Aeroplane/Ground training will be as per the OSD FC data. If the same does not exist, following type rating training on aeroplane shall apply:

Type of Training	Ground Training	Familiarisation flight	Normal Operations	Abnormal Operations	IR training and check	Skill test (D&N)
Duration (Minimum)	20 hours	00:45 day 00:45 night	03:30 hrs	06:30 hrs	01:30 hrs (training) 01:00 (check)	SE 00:45 mins day and night each ME 01:00 hr day and night each

Appendix B. Acronyms

ATO	Approved Training Organization
ATRP	Airline Type Rating Programme
CBT	Computer Based Training
CCQ	Cross Crew Qualification
CRM	Crew Resource Management
CTR	Common Type Rating
Difference Level	A designated level of difference as defined in CS-FCD for the evaluation of pilot training, checking and currency
FFS	Full Flight Simulator
FSB	Flight Standardization Board
FSTD	Flight Simulation Training Device
LVO	Low Visibility Operations
MTOW	Maximum Take Off Weight
MPA	Multi-Pilot Aeroplane
NAA	National Aviation Authority
PPC	Pilot Proficiency Check
OPS	Operations
OSD	Operational Suitability Data
PF	Pilot Flying
PFD	Primary Flight Display
PIC	Pilot In Command
PM	Pilot Monitoring
Route Sector	Flight comprising take-off, departure, cruise of not less than 15 minutes, arrival, approach and landing.
SFE	Synthetic Flight Examiner
SFI	Synthetic Flight Instructor
SOP	Standard Operating Procedure
TRE	Type Rating Examiner
TRI	Type Rating Instructor
ZFTT	Zero Flight Time Training

Appendix C

Multi-crew cooperation (MCC) training course

1. The objectives of MCC training are to develop the technical and non-technical components of the knowledge, skills and attitudes required to operate a multi crew aircraft.

2. The MCC training course should comprise both theoretical and practical elements and should be designed to achieve the training objectives.

3. The MCC course shall consist of the following:

   (a) Basic MCC training;
   (b) Advanced Gas Turbine aeroplane training;
   (c) Advanced airline operations scenario training; and
   (d) Final assessment.

4. CRM shall be integrated into all practical exercises of the MCC course.

5. Threat-and-error management (TEM) is central to the course instruction; the concepts of threat anticipation, threat recognition, recovery to safe flight, error management, and consequent avoidance of undesired aeroplanes states shall be emphasised at all times.

6. Duration

TRAINING ELEMENTS	Minimum FSTD time per crew
6.1 BASIC MCC TRAINING *(Mandatory if flying in multi pilot environment) The practical MCC training may be reduced to no less than 12 hours if the same FFS is used for both the MCC and type rating training.	20 hours
6.2 ADVANCED GAS TURBINE AEROPLANE TRAINING *(Mandatory for Type A and Type C Aeroplanes)	10 hours
6.3 ADVANCED AIRLINE OPERATIONS SCENARIO TRAINING* *(For ATRP candidates only)	8 hours
6.4 FINAL ASSESSMENT	2 hours

(a) The MCC training course shall be completed within 6 months at an ATO.

(b) On completion of the MCC training course the applicant shall be given a certificate of completion for each module that was successfully completed.

(c) An FNPT II MCC or an equivalent FSTD that has a similar visual cueing system to the FFS may also be acceptable provided that the device is representative of the same class of multi-pilot, multi-engine aeroplane specified in terms of passenger load, mass, and performance, and equipped with equivalent aeroplane systems and avionics functionality.

(d) Defence Pilots who have operated in a multi crew environment in a transport category aeroplane need not undergo the Basic MCC Training (6.1).

(e) Defence Pilots who have flown a gas turbine powered aeroplanes (Turbojet or Turbofan) need not undergo the advanced gas turbine aeroplane training (6.2).

Note 1: Defence pilots are qualified pilots as defined in Rule 41 of the Aircraft Rules, 1937. The final assessment as given in Para 6.4 does not apply to defence pilots if they satisfy both Para (d) and (e) as given above.

Note 2: The ratio of PF to PM / PNF during MCC training shall be 50:50.

7. Basic MCC Training

BASIC MCC TRAINING			
Training objectives	**Performance indicators**	**Knowledge**	**Practical Exercises**
Monitoring and cross-checking	(a) Monitor and cross-check all actions; (b) Monitor aeroplane trajectory in critical flight phases; (c) Take appropriate actions in response to deviations from the flight path.	(a) SOPs; (b) Aeroplane systems; (c) Undesired aeroplane states.	In a commercial air transport environment, apply multi-crew procedures, including principles of TEM and CRM to the following: (a) Pre-flight preparation: (1) FMS initialisation. (2) radio and navigation equipment preparation; (3) flight documentation;
Task sharing	(a) Apply SOPs in both PF and PM roles; (b) Make and respond to standard callouts.	(a) PF and PM roles; (b) SOPs.	
Use of checklists	Utilise checklists appropriately according to SOPs.	(a) SOPs; (b) Checklist philosophy.	

Briefings	Prepare and deliver appropriate briefings.	(a) SOPs; (b) Interpretation of FMS data and in-flight documentation.	(4) Computation of take-off performance data. (b) Take-off and climb: (1) before take-off checks; (2) normal take-offs; (3) rejected take-offs; (4) take-offs with abnormal and emergency situations included. (c) Cruise: emergency descent. (d) Descent and approach: (1) instrument flight procedures; (2) holding; (3) 3D Operations using raw data; (4) 3D Operations using flight director; (5) 3D Operations using autopilot; (6) one-engine-inoperative approach; (7) 2D Operations (8) computation of approach and landing data; (9) all engines go-around; (10) go-around with one engine inoperative; (11) Wind shear during approach. (e) landing: transition from instrument to visual flight on reaching decision altitude or height or
Flight management	(a) Maintain a constant awareness of the aeroplane automation state; (b) Manage automation to achieve optimum trajectory and minimum workload; (c) Take effective recovery actions from automation anomalies; (d) Manage aeroplane navigation, terrain clearance; (e) Manage aeroplane fuel state and take appropriate actions.	(a) Understanding of aeroplane performance and configuration; (b) Systems; (c) SOPs; (d) Interpretation of FMS data and in-flight documentation; (e) Minimum terrain clearance; (f) Fuel management.	
FMS use	Programme, manage and monitor FMS in accordance with SOPs.	(a) Systems (FMS); (b) SOPs; (c) Automation.	

Systems normal operations	Perform and monitor normal systems operation in accordance with SOPs.	. (a) Systems; (b) SOPs.	minimum descent altitude or height; (f) after landing and post flight procedures; (g) selected emergency and abnormal procedures.
Systems abnormal and emergency operations	(a) Perform and monitor abnormal systems operation in accordance with SOPs; (b) Utilise electronic and paper abnormal checklists in accordance with SOPs.	(a) Systems; (b) SOPs; (c) Emergency and abnormal procedures and checklists; (d) Recall items	
Environment, weather, and air traffic control (ATC)	(a) Communicate effectively with ATC; (b) Avoid misunderstandings by requesting clarification; (c) Adhere to ATC instructions; (d) Construct a mental model of the local ATC and weather environment.	(a) Systems; (b) SOPs; (c) ATC environment and phraseology; (d) Procedures for hazardous weather conditions.	

8. Advanced gas turbine aeroplane flying training

The student pilot should develop a flight path management competency, including energy management, as pilot flying (PF), and associated active monitoring skills as pilot monitoring (PM). Aeroplane procedures used during this training should develop the student pilot's understanding of the aeroplane flight envelope and inertia, as well as of the relationship between thrust and attitude. This phase should include an introduction to prevention and recovery of upsets, which builds confidence, skill, and resilience.

ADVANCED GAS TURBINE AEROPLANE FLYING TRAINING			
Training Elements	**Performance Indicators**	**Knowledge**	**Practical Exercises**
Advanced gas turbine aeroplane flying training	(a) Understand and apply combinations of thrust and attitude that ensure a stable, safe flight in various aeroplane configurations and altitudes. (b) Manage the (much) wider range of speed and thrust at both low level and high level.	Elements and components of jet orientation: (a) glass cockpit displays; (b) propulsion; (c) aerodynamics; (d) flight controls;	(a) Take-off, approach, landing, go-around. (b) Flight deck management practices. (c) Complex problem-solving techniques. (d) Advanced handling. (e) Manual handling skills (no autopilot, no auto

	(c) Demonstrate good judgement and correct use of lift and drag devices during various phases of the flight. (d) Use displays along with all available aids to stay mentally ahead when piloting all profiles. (e) Understand and recognise the precursors of high-energy approaches. (f) Know angle-of-attack (AoA) versus attitude indications at low level as well as at high level. (g) Practice upset prevention as a priority, and clearly recognise when and how recovery is necessary, by using the required pilot skills to mitigate loss of control in-flight (LOC-I) events.	(e) performance; (f) jet flight planning; (g) weight and balance; (h) basic jet flying; (i) pilot techniques for jet flying, advanced-handling-skills development; (j) flight path management; (k) auto flight; (l) high-altitude operations; (m) Introduction into prevention and recovery of upsets.	thrust, and where possible, no flight director). (f) Flight at different speeds, including slow flight and altitudes within the normal flight envelope. (g) Steep turns. (h) Aeroplane stability and stall awareness. (i) Upset prevention techniques and approach-to-stall recovery events (appropriate to FSTD limitations and capabilities). (j) High-energy approach prevention. (k) Go-around management of approach and landing configurations.

9. Advanced airline operations scenario training

The student pilot should be trained to apply the core competencies to conduct a safe and efficient operation in realistic airline operations scenarios. The airline-representative scenarios should include normal and non-normal situations. Operations should be run in real time according to a typical schedule. The scenarios should be constructed in an airline context in order to emphasise the following:

(i) Threat-and-error management (TEM);
(ii) Crew resource management (CRM);
(iii) Flight path management, including energy management; and
(iv) Interaction with internal and external stakeholders in the resolution of scenarios.

ADVANCED AIRLINE OPERATIONS SCENARIO TRAINING			
Training Elements	**Performance Indicators**	**Knowledge**	**Practical Exercises**
Advanced airline operations scenario training	(a) Execute pre-flight preparation in accordance with airline or OEM SOPs. (b) Conduct an effective crew briefing, including cabin crew managers (CCMs). (c) Display good airmanship and TEM skills in assessing	(a) Knowledge of systems (b) SOPs. (c) Normal and non-normal checklists and procedures.	(a) check-in procedures. (b) pre-flight preparation: (1) weather analysis; (2) flight planning; (3) fuel planning;

	aeroplane serviceability, weather planning, fuel planning, and destination facilities. (d) Conduct cockpit preparation and briefings in an effective and accurate manner. (e) Manage and execute engine start, taxi-out and pre-take-off checks safely and in accordance with airline or OEM SOPs. (f) Manage and execute runway line-up, take-off, climb, cruising, descent, approach, landing and taxi-in safely and in accordance with airline or OEM SOPs. (g) During non-normal operations, display good system knowledge, and apply non- normal procedures, communications, TEM, situational awareness (SA), decision-making and aeroplane handling.		(4) configuration deviation list (CDL), dispatch deviation procedures guide (DDPG), and minimum equipment list (MEL) analysis; and (5) Cabin crew briefing. (c) normal procedures: Cockpit preparation, pushback, engine starting, taxiing, take-off, climb, cruising, descent, landing, shutdown, and disembarkation procedures. (d) on time performance: (1) weather analysis; (2) flight planning; and (3) fuel planning. (e) non-normal procedures: (1) as per (c) above, in case of a technical or operational non-normal event; (2) TEM; (3) diversion decision-making; (4) communication; (5) diversion; (6) fuel SA; and (7) Passenger and crew care.

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