



Government of India
Office of the Director General of Civil Aviation
Opp. Safdurjung Airport, New Delhi – 110 003

Training Manual
For DGCA Officers
(Aircraft Engineering Directorate)
(TRGML-AED-1/2016)

EDITION – 2016

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PREFACE

Directorate General of Civil Aviation (DGCA) being a regulatory body has to ensure the competency of its workforce. Hence DGCA is committed to provide training or take other actions to reach the established level of competency, and evaluate the effectiveness of these actions. This policy document provides an overview of various training requirement of DGCA Officers at all level. The training as envisaged will enable the officers to understand the context, duties and responsibilities, relevant regulatory provisions and make them familiar with the relevant ICAO documents.

This policy document of the DGCA provides common guidelines for all Directorates regarding various trainings to enhance the skills and competency of officers. The policy document sets forth the authority and procedural methods by which Training Directorate as well as other Directorates plans and executes various trainings of DGCA Officers at all level.

Furthermore, this policy supersedes the policy document DGCA POLICY/TRG-2006 dated 14th October 2006 and is also subject to amendment by DGCA to keep pace with the time and standards.

-Sd-
(M. Sathiyavathy)
Director General of Civil Aviation
(Approved vide F. No. A-33022/16/2013-TRG)

New Delhi
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TRAINING POLICY FOR DGCA OFFICERS

INTRODUCTION:

International aviation standards require that a civil aviation authority shall provide its officers with comprehensive training to ensure the competency of its officer workforce.

Directorate General of Civil Aviation (DGCA) is a regulatory body, under Ministry of Civil Aviation, responsible for the safety oversight of civil aircraft operations in India. DGCA is committed to establish and control the competencies of its officers. For this purpose, DGCA is committed to provide training or take other actions to reach the established level of competency, and shall evaluate the effectiveness of these actions. The DGCA shall ensure that officers of DGCA are competent to carry out the tasks assigned to them and have the necessary qualification, experience and training to perform their respective functions satisfactorily.

In order to ensure that the officers in DGCA are qualified, have operational or technical work experience and their training is compatible with the activities they are required to carry out, DGCA has prepared a comprehensive Training Policy.

OBJECTIVE:

Objective of the Training Policy is to provide an overview of various training requirement of DGCA Officers at all level. The training as envisaged, will enable the officers to understand the context, duties and responsibilities, relevant regulatory provisions and make them familiar with the relevant ICAO documents. The training thus imparted will ensure to meet the vision of DGCA – ‘Endeavour to promote safe and efficient air transportation through regulation and proactive safety oversight system’.

TRAINING PROGRAM:

The training program for AED officers shall contain primarily the following trainings:

Initial/Induction Training: The newly inducted officers shall be provided an induction training to enable officers to get a general understanding about the organisation, its vision, mission and acquire necessary competencies required for performing their job.

On-the -job Training: After Completion of Initial Induction Training, the newly inducted officers will be provided on-the-job training to enable them to handle their responsibilities independently.

Recurrent Training: Officers will be provided recurrent training to maintain/upgrade the competency level and also for updating their awareness to relevant regulations/developments etc. This training shall be conducted at least once in two years.

Specialized/Technical Training: (one-time courses taken any time – ongoing process): DGCA shall nominate officers for technical and developmental courses as applicable.

INITIAL/ INDUCTION TRAINING:

Initial/Induction Training course will be conducted for each newly inducted officer in DGCA. There will be three (3) modules:

Module-I will be organised by the Training Directorate of DGCA in co-ordination with other directorates and training establishments. The purpose of this Module is to familiarize officers with the Government System particularly DGCA and the functioning of the various Directorates. Syllabus of this module is decided by Training Directorate of DGCA.

Modules-II (Aircraft Engineering Orientation Programme) for officers of AED directorate will be organized through AED. The purpose of this Module is to familiarize officers with the functioning of the various divisions of AED Directorate. Topics/Contents for Module-II is placed at Appendix 'A'.

Module-III (On the Job Training) for officers of AED directorate will also be organized through AED. Topics/Contents for Module-III (OJT) training is placed at Appendix 'B'.

On-the-Job Training entails the completion of three levels of training for each technical job function. The three levels encompass the study of reference materials, task observation, and task performance, as further defined below. An OJT trainer must validate all Levels (I, II, and III) of performance. The OJT training process follows a logical progression of three levels as shown in the table below:

Level	Trainee	Trainer
Level I – Knowledge	Study	Discuss
Level II – Understanding	Observe	Demonstrate
Level III – Performance	Perform	Evaluate

Level-I training (Knowledge) is typically a self-study effort on the part of the trainee with guided discussion and validation conducted by the OJT trainer afterwards. The time allowed for this should be appropriate to the complexity of the task and the amount of material to be studied. Levels II and III involve the actual performance of the task. Level I training typically involve a review of all reference materials applicable to the job tasks for which training has been identified. Level I training may be satisfied through classroom training or other delivery methods.

Level II Training (Task Observation) involves observation of the performance of specific job tasks. This training typically involves the trainee observing and/or assisting the OJT trainer in the performance of those specific job tasks for which the trainee will be held accountable. Level II training may be satisfied through appropriate training that provides the opportunity for the trainee to observe and/or assist the trainer performing the task.

Level III Training (Task Performance) involves the application of knowledge and skills to the performance of specific job tasks. Typically, the trainee performs the job task under the observation of a qualified OJT trainer. The trainer assesses the performance of the task and indicates on the trainee's OJT training plan when Level III performance is

achieved. OJT shall be documented in the individual officer's Training Dossier as per format given at Appendix 'F'.

RECURRENT TRAINING:

DGCA officers require continuous development of their competencies related to their respective responsibilities. This should be accomplished through periodic training such as recurrent training or continuation training. To ensure that DGCA officers maintain proficiency and keep current on aircraft and equipment, techniques, procedures and new developments in their respective areas of expertise, it is essential that they receive periodic recurrent training.

The Recurrent Training course may share content with the Initial Training course, but varies in emphasis from one to other, as the Initial Training course provides a fuller treatment across all subject area. The Recurrent Training course focuses on changes from year to year in regulations, guidance material as well as significant events occurring in the industry and the local environment from time to time. Topics/Contents for recurrent training is placed at Appendix 'C'.

SPECIALISED TRAINING:

For officers to upgrade their knowledge at par with international standards and for efficient functioning, DGCA shall periodically develop programmes under special training programmes/schemes in association with international organisations like EU-India Co-operation Project, India-US ACP program, COSCAP, ENAC France, ICAO FPP China, SAA etc. The purpose of specialized training is to upgrade the knowledge and competency of DGCA officers at par with international standards and for efficient functioning. Duration of training is based on the course and the hosting organization.

PREPARATION OF ANNUAL TRAINING PLAN:

Aircraft Engineering Directorate will establish Training Plans for all its officers that sets out the training to be provided to the officers annually and the out station proposals along with the estimated cost of training will be submitted to the Training Directorate for consideration and necessary action. For prioritising the trainings, all trainings with priority requirements shall be marked as 'mandatory training' in the training plan. It is the responsibility of the Training Directorate to finalise the training plans of all the Directorates in consultations with their Representatives in Training Committee Meeting. The finalized proposals will be submitted to DG for in-principle approval and accordingly projected budget requirement may be sent to MOCA.

Training Calendar will be finalised in March once the budget is allocated by MOCA under training head. Approved training Calendar for the year will be shared with each Directorate and also uploaded on the website of DGCA.

TRAINING RESPONSIBILITIES:

The Director (Training) has the overall responsibility of training of DGCA officers. A training Committee may be constituted under the chairmanship of Director (Training) and the representative of all the Directorates as members. In every Directorate, an

officer of the level of Deputy Director/Assistant Director shall be identified and assigned the responsibility of consolidating, monitoring and projecting the annual training requirement of his/her directorate. This officer may be called as Training Coordinating Officer (TCO). The TCO shall report to the Director (Training) for all training related work and will be designated as member of Training Committee. The Director (Training) after analysing the requirement projected by all directorates shall consolidate a plan and convene a meeting with all TCOs and their directors prior to process the training plan/calendar of DGCA for DG's concurrence.

PROCESS FOR CONDUCTING VARIOUS TRAININGS:

After seeking DG's in-principle approval, AED will then move the proposal for individual training as per approved calendar through Training Directorate and get the necessary approval of the DG and MOCA.

REVIEW OF TRAINING PROGRAM:

Each directorate is expected to periodically review the Training Program and carry out revisions so that the training of officers is continuously updated to keep abreast of the latest developments taking place in the aviation field. One of the methods is to analyse the feedback received after training which may be considered for revision of policies, syllabus, and curriculum. The directorates may utilize the Training Evaluation Form given in Appendix D, for this purpose.

TRAINING FILES AND RECORDS:

All training completed by an officer will be documented in his or her training file. Officers who complete a formal external or in-house training course will receive a Certificate of Completion to be added to their training file (Physical File). On completion of training each officer will submit a Training Evaluation Form (Appendix 'D'). The data/feedback will be considered while formulating next training programme. Each directorate shall establish and maintain a training file for each officer posted in their respective directorate as per format given at Appendix 'E'.

As and when any officer undergoes any training, he/she shall update his/her training folder. The responsibility of updating and maintaining of the individual training records lies with individual officers. However, the Training Cell of AED shall be responsible for maintaining the standardized training records / dossiers of all concerned officials of AED.

MODULE: II – AIRCRAFT ENGINEERING ORIENTATION PROGRAMME

Module: II-A - Aero Engineering Division Orientation Programme (02 days)

Sl. No.	Field of Study	Days/Hours
1.	Aircraft Acts and Aircraft Rules <ul style="list-style-type: none">• Overview of the Aircraft Act and Aircraft Rules• The Aircraft Rule - Overview of relevant Civil Aviation Requirements.• Overview of applicable ICAO requirements.• Familiarization with Type Certificate, TCDS, etc.• Certification and Aircraft Engineering requirements overview.• Familiarization with various Regulatory Authorities & their websites	01/2 day
2.	An Overview of DGCA's Civil Aviation Regulations (CARs) <ul style="list-style-type: none">• Section 6- Design Standards and Type Certification• Series – A: CAR – 21• Series – B: Approval of Design Organizations• Series – C: Certification Requirements for Noise and Emission• Brief introduction about relevant CARs & ICAO Annexes and Docs	01/2 day
3.	An Overview of Aircraft Engineering Requirements/ Design Standards (FAA & EASA) <ul style="list-style-type: none">• Overview of the Foreign Design Standards• Aircraft Engineering Codes of FAA• Aircraft Engineering Codes – 21, 23 , 25, 27, 29, etc• Certification Standards of EASA• CS – 21, 23, 25, 27, 29, etc	01/2 day
4.	Aircraft Engineering Functions <ul style="list-style-type: none">• Familiarization with procedures for issue of Type Certificate, type acceptance/validation, Indian Technical Standard Order (ITSO) Authorization, etc• Familiarization with continued Aircraft Engineering requirements, ADs and SBs, etc• Familiarization with procedures for approval of modifications, alternations and repair scheme• Familiarization with DGCA Surveillance Program, Safety Management System (SMS) and Regulatory Audit Policy and Procedures• Familiarization with procedures followed in Flight Recorder, Material Testing, Failure Investigation and Fuel testing laboratories	01/2 day

Module: II-B - Aero Laboratory Division Orientation Programme (02 days)

Sl. No.	Field of Study	Days/Hours
1.	<p align="center">Failure Investigation Laboratory</p> <ul style="list-style-type: none"> • Overview of Rules and Regulations in investigation • Concept of Failure Investigation in Aviation. • Familiarization with Investigation Techniques. • Familiarization with Investigation Equipment and Tools. • Familiarization with Analysis and report preparation. 	01/2 day
2.	<p align="center">Material Testing Laboratory</p> <ul style="list-style-type: none"> • Overview of welding sample – specifications and standards • Familiarization with specifications and standards of upholstery material for aircraft cabins. • Familiarization with Testing techniques • Familiarization with equipments used 	01/2 day
3.	<p align="center">Flight Data Recorder Laboratory</p> <ul style="list-style-type: none"> • Overview of CVR and FDR – Requirements and Rule Position • Familiarization of Downloading and processing of raw data • Familiarization with Analysis, preparation of transcript, tables and graphs • Familiarization with Report preparation 	01/2 day
4.	<p align="center">Fuel Testing Laboratory</p> <ul style="list-style-type: none"> • Familiarization with sample processing and testing techniques • Familiarization with fuel standards and specifications • Familiarization with testing equipment • Familiarization with physical and chemical properties of fuel and lubricants 	01/2 day

Module: II-C - Air Transport Division Orientation Programme (01 day)

Sl. No.	Field of Study	Days/Hours
1.	<p align="center">Aircraft Acts and Aircraft Rules</p> <ul style="list-style-type: none"> • Overview of the Aircraft Act and Aircraft Rules • Overview of relevant Civil Aviation Requirements. • Overview of relevant Air Transport Circulars. 	01 day
2.	<p align="center">Role of Air Transport in AED</p> <ul style="list-style-type: none"> • Familiarization with Slot Allocation Process. • Familiarization with Preparedness meeting for operation to International destination by Indian registered air carrier • Familiarization with Air Fare Monitoring • Familiarization with Air Traffic Data • Familiarization with Parliament Questions and VIP References • Familiarization with Air Transport related Grievances and RTI 	

Module: II-D – Aviation Environment Division Orientation Programme (01 day)

Sl. No.	Field of Study	Days/Hours
1.	<p align="center">Aviation and its Impact on Environment</p> <ul style="list-style-type: none"> • Growth of Aviation Industry – National and Global Scenario • Impact on Environment – the basic concepts. • Climate Change, Local Air Quality, Community Noise. 	01 day
2.	<p align="center">An Overview of International Negotiations and Rule Position</p> <ul style="list-style-type: none"> • United Nation Framework Convention on Climate Change (UNFCCC) – an overview. • Kyoto Protocol and ICAO’s responsibility in reducing carbon emissions from international aviation • Committee on Aviation Environment Protection (CAEP) • Four Pillar strategy to reduce carbon emissions from aviation 	
3.	<p align="center">Measures Adopted by DGCA on Environmental Protection</p> <ul style="list-style-type: none"> • Noise abatement measures • Noise Mapping and Monitoring Study for IGI airport – a case history • Carbon Footprint of Civil Aviation • Alternative Fuels and Biofuels – a substitute to conventional fossil fuel • Local Air Quality – Standards and circulars 	

TASKS FOR MODULE III (ON THE JOB TRAINING)

1. AERO ENGINEERING DIVISION	
Task No.	Task
Aircraft Type Certification/Validation Process	
1.	Process of documents for acceptance of TC and TCDS issued by FAA or EASA
2.	Process of documents for validation of TC and TCDS issued by CAA (other than FAA or EASA)
Aircraft Supplement Type Certification Process	
1.	Process of documents for acceptance of STC issued by FAA or EASA
2.	Process of documents for acceptance/validation of STC issued by CAA (other than FAA or EASA)
Modification and Repair Process	
1.	Process of documents for approval of modification and repair for Indian Registered aircraft
Approval of Design Organization CAR 21	
1.	Process of Approval of Design Organization – JA category
2.	Process for Approval Design Organization – JB category
3.	Process for carrying out Surveillance Audit of DOA
4.	Process for carrying out Regulatory Audit of DOA
5.	Process for issuing SB's and AD's for continued Aircraft Engineering
Approval of ITSO Items	
1.	Process of Approval of indigenous developed ITSO items
2.	Process for acceptance of TSOs items
3.	Process of Software Certification/Validation

2. AERO LABORATORY DIVISION	
A. Aircraft Accident/Incident Investigation Laboratory	
1.	Process of Collection of background Data and Selection of sample
2.	Process of collection of visual and photographic evidences
3.	Process of preparation of sample for mechanical testing
4.	Process of cleaning of sample and collection of macroscopic, microscopic and metallographic examinations
5.	Process of preparation of final report
B. Material Testing Laboratory	
Approval of Upholstery Materials	
1.	Process of sample preparation
2.	Process of drawing test results and comparison with applicable specifications and standards
3.	Process of preparation of final reports
Approval of Welding Sample	
1.	Process of sample preparation
2.	Process of drawing test results and comparison with applicable specifications and standards
3.	Process of preparation of final reports
C. Physical and Chemical Laboratory	
Routine Monitoring of ATF Samples	
1.	Process of preparation of standard solution, applicable standards and specifications
2.	Process of carrying out physical and chemical analysis as per applicable specification
3.	Process of report preparation and maintenance of records

Approval of Fuel Tank /Pipeline Commissioning	
1.	Process of evaluation of fresh proposal in respect of commissioning of fuel tank/pipeline
2.	Process of carrying out physical and chemical analysis as per applicable specification
3.	Process of report preparation and maintenance of records
Analysis of ATF/Lubricating Oil for Accidents/Incidents	
1.	Process of evaluation of accidental samples in respect of accident/incident aircraft
2.	Process of carrying out physical and chemical analysis as per applicable specification
3.	Process of report preparation and maintenance of records
Approval of VVIP Flight ATF Samples	
1.	Process of evaluation of fuel sample in respect of VVIP flight
2.	Process of carrying out physical and chemical analysis as per applicable specification
3.	Process of report preparation and maintenance of records
D. Flight Recorder Laboratory	
Routine Monitoring of Flight Recorders	
1.	Process for routine monitoring of Cockpit Voice Recorder
2.	Process for routine monitoring of Flight Data Recorder
3.	Process of report preparation and maintenance of records
Analysis of Flight Recorders for Accidents/Incidents	
1.	Process for downloading of CVR Raw Data
2.	Process for conversion of raw data into audio files
3.	Process of preparation of transcript
4.	Process for downloading of FDR Raw Data
5.	Process for conversion of raw data into engineering units
6.	Process of preparation of tables and graphs
7.	Process of correlation of CVR and FDR data

3. Aircraft Transport Division	
Traffic Movement and Fare Monitoring	
1.	Process for collection of monthly air traffic data
2.	Process for analyzing traffic data and preparation of report
3.	Process of monitoring of airfare on daily basis
4.	Process of analyzing air fare and preparation of report
5.	Process for approving amendments to airline schedules and slot allocation
6.	Process of handling VIP References and Public Grievances
7.	Process of handling Parliament Questions and RTI on Air Transport related issues

4. Aviation Environment Unit	
1.	Processing of documents with regard to carbon footprint of each stakeholders
2.	Processing of documents with regard to Standards and Specifications for Air Quality
3.	Processing of documents with regard to Standards and Specifications for Noise from aircraft operations

TOPICS / CONTENTS FOR RE-CURRENT TRAINING

Sl. No.	Training areas
1.	Propeller maintenance
2.	Non-destructive testing
3.	Test equipment, selection, application and calibration
4.	Processing and analysis of flight data
5.	Aircraft accident prevention and investigation
6.	Aircraft manufacturing certification system
7.	Modern technologies applied for aviation fuel and lubricants
8.	Accident and Incident Investigation
9.	Airport Carbon Management
10.	Airport Environment Management
11.	Airport Environment Management
12.	Airport Strategic Human Resources Management
13.	Leadership and Management training
14.	Personal Development
15.	Software Fundamentals
16.	Software Job Functions
17.	Aircraft Certification Systems Evaluation Program
18.	Aircraft Certification Indoctrination
19.	Fatigue and Damage Tolerance Analysis
20.	Lightning Protection of Avionics
21.	Airborne Electronic Hardware Job Functions
22.	Non-destructive Inspection and Evaluation
23.	Introduction to Aircraft loads/Basic Loads
24.	NextGen Advanced Communications
25.	NextGen Advanced Navigations
26.	Aircraft Electromagnetic Compatibility
27.	Human Factors Certification Job Aid
28.	Type Validation Procedures
29.	Composite Structural Engineering Technology
30.	Introduction to Fatigue and Fatigue Management
31.	Structures: Fatigue Management of Small Airplane
32.	Structures: Composite Safety and Certification Initiatives
33.	Structures: Finite Element Modelling and Analysis Validation
34.	Aircraft Seat Dynamic Impact Test Procedure
35.	Electrical: System Aspects of Certification
36.	Electrical: Software and Airborne Electronic Hardware
37.	Electrical: Aircraft Systems Cyber Security Awareness
38.	Electrical: Certification of Aircraft for Flight in Icing Conditions
39.	Repairs and Alterations for Aircraft Certification
40.	Aviation Safety Engineer/Systems Job Functions
41.	Aviation Safety Engineer/Airframe Job Functions
42.	Aviation Safety Engineer/Propulsion Job Functions
43.	Suspected unapproved Parts
44.	Structural Inspection Programs Evaluation
45.	Aircraft Certification Systems Evaluation
46.	Maintenance Review Board (MRB) & Maintenance Steering Group-3 (MSG-3)

TRAINING EVALUATION FORM

Name of the Officer	
Designation	
Topic / Title of Course	
Period / Date of Course	
Name of the Instructor	
Location / Venue	

Evaluation:

Rate each of the following statements using the scale below (1 to 5).

1=Strongly Agree	2=Agree	3=Neither Agree nor Disagree	4=Disagree	5=Strongly Disagree
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1.	The objectives were clearly presented for each lessons.	
2.	The design of the lessons enhanced my ability to meet the lesson objectives.	
3.	The lesson content was directly related to the stated intent / objectives of lesson.	
4.	The information in the course materials supported the lesson objectives.	
5.	The learning environment was free from distraction.	
6.	The instructor provided assistance when I needed it.	
7.	I feel confident that I met the stated objectives.	
8.	Overall, this training was highly effective.	

Comments, Observations or Suggestions, if any:

(Trainee's Signature)

**TRAINING DOSSIER
MASTER LIST (AIRCRAFT ENGINEERING DIRECTORATE)**

Name:-

No.	Subject	Remarks
SECTION 1 – EMPLOYMENT DOCUMENTS		
1.	DGCA Vacancy Circular	
2.	Appointment Letter	
3.	Contract	
4.	Certificate of Assumption Charge/Joining Letter	
5.	Job Description	
6.	Any Previous Employment (Prior to DGCA)	
SECTION 2 - CREDENTIALS		
1.	DGCA Inspector Identification (Authorisation Card)	
2.	Airport Entry Pass	
3.	Passport	
SECTION 3 - QUALIFICATIONS		
1.	Academic Qualification	
2.	Professional Qualifications	
3.	AME/Pilot/Other Licence (if available)	
SECTION 4 – DGCA INITIAL TRAINING		
1.	DGCA Indoctrination Training Course	
2.	Personnel Licensing Training (PEL)	
SECTION 5 – DGCA ON-THE-JOB TRAINING (OJT)		
1.	DGCA – On-the-Job Training	
SECTION – 6 – DGCA SPONSORED CONTINUATION AND RECURRENT TRAINING		
1.	DGCA Documentation of Continuation Training	
2.	DGCA Recurrent Inspector Training	
3.	Any Specialized Training	
SECTION 7 – ALL OTHER INDUSTRY TRAINING		
1.	Training 1	
2.	Training 2	
SECTION 8 MISCELLANEOUS		
1.	Additional Qualifications (as applicable)	

EMPLOYEE'S ON-THE-JOB TRAINING RECORD

1. IDENTIFYING INFORMATION:

Last Name: _____ First Name: _____

Initials: _____

Position: _____ Section / Division: _____

2. OJT ACTIVITY DOCUMENTATION:

Job Task or Subject Matter	Date Level Completed			*Name(s) and Signature of OJT Trainer
	Level I (Understanding)	Level II (Demonstration)	Level III (Performance)	

3. CERTIFICATION:

(a) * By appending my signature in this column, I certify that the trainee has completed the OJT documented above and is competent to perform the task without supervision.

(b) I hereby confirm that I have completed the OJT documented above with the qualified OJT Trainer(s).

Signature: _____

Date: _____