

GOVERNMENT OF INDIA
CIVIL AVIATION DEPARTMENT

CIVIL AVIATION REQUIREMENTS
SECTION 2 - AIRWORTHINESS
SERIES 'A' PART IV
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Subject: **Airworthiness Regulation and Safety Oversight of Engineering Activities of Operators.**

1. OBJECTIVE:

- 1.1 Safety oversight of engineering activities of operator and maintenance organisation is a function to ensure effective implementation of the safety related airworthiness rules, regulations and requirements contained in the various National documents and Standards and Recommended Practices and associated procedures contained in the ICAO Annexes to the Convention and other related documents particularly Annexes 1,6,8. The safety oversight airworthiness programme is aimed to detect the weaknesses in the engineering activities of the operators, maintenance and other related organisations so that necessary corrective measures can be taken in time before they become a potential safety hazard and that the capability of the organisation to exercise airworthiness control be maintained at or above the level required by the regulations.
- 1.2 All maintenance work on aircraft engaged in public transport operations shall be performed by approved organisations. All work performed by an approved organisation shall be regulated by its Quality Control Organisation which shall be headed by an approved Quality Control Manager. The approved organisations shall ensure that aircraft are maintained in accordance with the specified approved procedures and the maintenance work is done by licensed or approved persons.
- 1.3 Directorate General of Civil Aviation lays down the standards and procedures for ensuring compliance with various airworthiness requirements and continuous monitoring of approved organisations. These requirements are aimed to implement the standards and recommended practices laid down in the ICAO Annexes 1, 6 and 8.
- 1.4 DGCA regional and sub-regional officers carry out surveillance checks to ensure that the standards laid down are enforced. The Regional and Sub-Regional offices give feed-back to headquarters regarding any weaknesses in the systems, and also suggested corrective actions. DGCA headquarters, thereafter, takes necessary corrective action under the Aircraft Rules/CAR to remove the system deficiencies.
- 1.5 This Civil Aviation Requirement briefly outlines the salient airworthiness requirements and

the system under which the airworthiness control and the safety oversight is required to be exercised on the engineering activities by the operators and the DGCA officers. The CAR is issued under the provisions of Rule 133A of the Aircraft Rules, 1937 and Section A of the Aircraft Act, 1934 for information, guidance and compliance by the concerned agencies.

2. APPLICABILITY:

All Indian operators engaged in Scheduled air transport services for carriage of passengers, mail or cargo and maintenance organisations engaged in maintenance of aircraft and approved in accordance with CAR Section 2 Series 'E' shall comply with the requirements of this CAR. The airworthiness oversight and safety requirements are equally applicable to the operators of Non scheduled (Passenger/Cargo) air transport service who should follow the requirements as applicable, keeping in view the scope and extent of their operations. For new organizations seeking permission to commence operations or maintenance activities, it shall be a prerequisite for grant of the approval to furnish information confirming that they have established the necessary system and have adequate qualified manpower and infrastructure to implement the airworthiness regulation and in-house oversight of their engineering activities as stipulated in this CAR. Concerned DGCA officers shall also exercise the safety oversight of engineering activities of the organisations as described in this CAR.

3. AIRWORTHINESS AND SAFETY REGULATION - OVERVIEW:

Various statutory/regulatory documents, namely the Aircraft Act 1934, the Aircraft Rules 1937, Aeronautical Information Publication (AIP), Civil Aviation Requirements (CAR), Aeronautical Information Circular (AIC), stipulate the safety and airworthiness requirements applicable to different type of operations and maintenance activities, which shall be complied with by the concerned organisation. In addition implementation of the following salient airworthiness and safety requirements shall be closely monitored by the organisation and DGCA officers to enhance safety of operations.

3.1 MAINTENANCE APPROVAL:

3.1.1 Rule 155A of the Aircraft Rules, 1937 requires that an operator shall have access to an adequate organisation for maintenance of aircraft. Rule 133B specifies the conditions for approval of an organisation. Besides requirement of maintenance organisation, in accordance with Rule 134 of the Aircraft Rules, no person shall operate any air transport service in India without obtaining the necessary permit for operating such services. The operating permit shall be maintained current and valid and the operations shall be conducted within the scope and provisions of the permit.

3.1.2 The organisation shall demonstrate, before grant of the approval/permit their capability to satisfactorily maintain the aircraft and safely operate the air transport services sought to be operated. It is the responsibility of the operator to satisfy the DGCA that their maintenance support arrangements are to a satisfactory standard. The operator may have his own maintenance organisation approved by the DGCA in accordance with Rule 133B or may contract his maintenance work to another DGCA approved organisation. The approved organisation shall have to have his own approved maintenance programme, quality control and safety oversight setup. It shall be ensured that the manpower, infrastructure, facilities, systems and maintenance operating capability does not degrade below the required level at any time and is enhanced continuously commensurate with expansion of activities.

3.1.3 In accordance with Rule 140 of the Aircraft Rules, 1937 all operators shall comply with the stipulated engineering, inspection manual and safety requirements to ensure that the passenger and the aircraft are protected at an adequate level of safety throughout the operation.

3.1.4 Leased Aircraft: The requirements for maintenance and safe operation of foreign aircraft leased for operation by or on behalf of Indian operators for public transport are laid down in CAR Section 3, Series 'C' Part I under the provision Rule 133A of the Aircraft Rules, 1937 and Section 5A of The Aircraft Act, 1934.

3.2 MAXIMUM AGE FOR IMPORTANT OF AIRCRAFT:

3.2.1 The maximum permissible age and cycle flying hours of aircraft for import into India Shall be in accordance with CAR Section 2 Series 'F' Part XX and CAR Section 3 Series 'C'.

3.3 REGISTRATION OF AIRCRAFT:

In accordance with Rule 5 of the Aircraft Rules, 1937, no person shall fly or assist in flying any aircraft unless it has been registered in accordance with Rule 30 of the Aircraft Rules, 1937. The procedure for registration is detailed in CAR Section 2, Series 'F' Part I. Further, the aircraft shall bear its nationality and registration marking and the name and address of the owner affixed thereon in accordance with Rule 37 of the Aircraft Rules, 1937.

3.4 AIRCRAFT TYPE CERTIFICATE:

3.4.1 To be eligible for issue of Indian Certificate of Airworthiness (C of A), each aircraft either manufactured in India or elsewhere shall conform to Type Design and shall be in a condition for safe operation. In accordance with Rule 49 of the Aircraft Rules, 1937 and CAR Section

2, Series 'F' Part II, aircraft designed and manufactured in India, shall be type certificated by DGCA, India. Aircraft imported into India, must conform to Type Design under the regulations of Federal Aviation Administration of USA (FAA), European Airworthiness Consortium (JAA) or any other authority acceptable to DGCA, India.

3.4.2 For cargo operations, the aircraft shall be certified in the category by the Airworthiness Authority of The Country of export manufacture and acceptable to DGCA.

3.4.3 The Aircraft proposed to be utilized by the operators shall be fitted with all the mandatory instruments and equipments and in accordance with the Type Certificate and such equipment as specified in CAR Section 2.

3.5 AIRWORTHINESS:

3.5.1 In Accordance with Rule 15 of the Aircraft Rules, 1937, no aircraft registered in India shall be flown unless it has a current and valid C of A issued/revalidated in accordance with Rule 50 of the Aircraft Rules, 1937 unless it is flown for the purpose of flight test for C of A renewal in the close vicinity of the departing aerodrome. The procedure for issue and revalidation of C of A is detailed in CAR Section 2, Series 'F' Part III & IV.

3.5.2 All aircraft shall be maintained in a continuous state of airworthiness and meet the applicable airworthiness requirements including those relating to identification, equipment, mandatory modification, applicable maintenance schedules, replacement of components when due, failing which the C of A shall stand suspended or deemed to be suspended in accordance with Rule 55 the Aircraft Rules, 1937 CAR Section 2 Series 'F' Part V.

3.5.3 It shall be ensured by the operator that all instruments, systems, equipment and accessories on board the aircraft are serviceable unless these are covered under an approved Minimum Equipment/Configuration Deviation List (MEL/CDL). The MEL/CDL shall be prepared by the operator based on the Master Minimum Equipment List and got approved by the DGCA in accordance with CAR Section 2, Series 'B' Part I.

3.5.4 Maintenance support arrangements shall only be provided by the organisations approved by the DGCA for the specific type of work in accordance with CAR Section 2, Series 'E'. Such arrangements shall be reflected in the Quality Control manual of the operators.

3.5.5 The approved organisation shall provide, for the use and guidance of its personnel, Engineering Organisation manual Quality Control Manual, Maintenance System Manual, which shall contain details of information concerning policies, procedures, practices and quality control method relating to activities of the operator and containing such further

information as may be specified by the DGCA.

- 3.5.6 The approved Maintenance Organisations shall maintain their capability at or above the standard based on which initial approval was accorded by the DGCA. To ensure that the operator has continued capability to conduct engineering functions commensurate with the scope of approval, the Quality Control Division of the organisation shall carry out detailed audit frequently and submit report to the concerned office of the DGCA. The DGCA officers shall also conduct frequent surveillance checks. Discrepancies detected must be rectified forthwith, failing which approval of the firm may be revoked.
- 3.5.7 The operator shall submit the following information while applying for renewal of approval of the Organisation.
- a. continued compliance of applicable Aircraft Rules, CARs and AICs.
 - b. In-house safety audit team reports highlighting the discrepancies of the operator along with the action taken report carried out within 60 days prior to expiry of the validity of approval.
- 3.5.8 The operator shall maintain his aircraft in a continued state of airworthiness and shall ensure that all maintenance is being performed according to the approved maintenance programme, methods, standards and techniques specified in the Maintenance/Quality Control Manual. Detailed requirements for maintenance, certification and continued maintenance programme laid down in Rule 60 of the Aircraft Rules, 1937 and CAR Section 2 Series 'F' Part III and IX shall be complied with.
- 3.5.9 The approved organisation shall have the maintenance programme of the aircraft approved prior to commencement of operations. The operator can base his programme on the manufacturers' Maintenance Planning Document (MPD) or any DGCA approved programme and shall have adequate facilities in terms of trained manpower, adequate inventory, reliability monitoring system, shop facilities etc. The maintenance programme once approved, shall be updated based on DGCA/Manufacturers instructions, SBS, in service experience etc.
- 3.6 QUALITY CONTROL:
- 3.6.1 The approved organisation shall have a full-fledged Quality Control Department headed by a Quality Control Manager assisted by Deputy Quality Control Manager(s) and adequate number of trained technical officers.

- 3.6.2 The Quality Control department shall have dedicated cells for:
- a. delay, defect and engineering incident investigation
 - b. reliability analysis, engine performance monitoring and component life control
 - c. compliance of service bulletins and modifications, maintenance of technical records, schedules, issue of technical circulars and distribution of technical data.
- 3.6.3 The Quality Control cell shall have a proper system of maintaining the records of each AME/approved authorised person (including foreign AMEs, if employed) in order to ensure that:
- a. the licences are maintained current/valid.
 - b. the licences are endorsed for the type of aircraft;
 - c. authorisation/approvals are current/valid. For this purpose a fool proof system of record keeping in proper formats, preferably a computer based system, shall be established and followed.
- 3.6.4 The operator shall ensure compliance of all applicable Mandatory SBs/Mods and Airworthiness Directives and proper record be maintained to show current status, repeat and terminating actions.
- 3.6.5 The QC department shall ensure that all certifications are executed by appropriately licenced/approved persons and according to procedures specified in the approved Quality Control Manual.
- 3.6.6 The QC department shall ensure that carried forward defects and deferred maintenance are properly attended in time.
- 3.6.7 QC department shall ensure that vendors hold DGCA approval.
- 3.6.8 The various allied/support shops shall comply with regulations regarding cleanliness, approved schedules, documents, calibration and adequacy of test benches and availability of approved inspector-in-charge and sufficient number of licensed/approved personnel, as applicable.

3.6.9 The QC cell shall associate with Flight Safety Department to investigate engineering incidents & take such corrective measures promptly as called for.

3.6.10 The storage facilities shall be adequate in terms of protection of part, control of shelf life, storage conditions etc.

3.6.11 Negative trends in the maintenance/inspection programme noted during routine surveillance or by continuing surveillance programme shall be immediately arrested and action taken to reverse the trend. Examples of situations indicating negative trends include increase in the following:

- Aircraft delays
- Premature removal rates
- Number of engine shut down rates,
- Number of short term escalations,
- Deferred maintenance (MEL) items and length of time they remain deferred.
- Repeat Pilot Reports etc.

3.6.12 The operator shall have a sound airworthiness performance monitoring system. This function provides for collecting and analysing operational and airworthiness data. This monitoring is done through:-

a. Emergency responding which includes identifying critical situations like in Flight Shut Down (IFSD), uncontained engine failure, depressurization etc.

b Day to Day Monitoring: Scheduled operators shall conduct daily meeting to discuss morning launch delays and activities of the previous day. Other operators may conduct these meetings at less frequent intervals.

c Long term monitoring: This system shall include appropriate means of reporting and accounting operational and airworthiness data at specified intervals to reveal trend related information and take corrective action. Typical example of the data used to monitor airworthiness performance are:-

- Pilot reports compiled ATA codewise.

- Inspection findings complied ATA codewise, Failure rates complied ATA codewise.
- Tear down/strip reports
- Pre-mature removal rate (Including engine)
- Engine shut down rate
- Deferred items (MEL)
- Mechanical Defect summaries.
- Mechanical Reliability Reports.

3.7 ENGINEERING PERSONNEL:

3.7.1 In accordance with Rule 54 of the Aircraft Rules, 1937, all manufacturing/maintenance work performed on civil registered aircraft shall be carried out and certified by

appropriately licensed AMEs and/or authorised/approved persons. The operator shall have sufficient number of AMEs holding licences issued by DGCA in various categories in accordance with Rule 61 of the Aircraft Rules, 1937 and CAR Section 2 Series 'L' Part I. The engineers should be supported by sufficient number of trained experienced technicians in each trade. However, DGCA may allow appropriately qualified/licenced foreign engineers to carry out and certify maintenance work of Indian registered aircraft to enable engineers of the operator to acquire necessary maintenance experience and licence.

3.7.2 An operator employing any foreign AME shall obtain for him the required security clearance through DGCA before the AME is scheduled for maintenance work. The AME should also be given thorough familiarisation about Indian rules, regulations, CARs, operators' control manual and facilities available at bases and enroute stations. After the Quality Control Manager is satisfied with and has certified, the foreign AME has to pass an oral check by a DGCA board in accordance with AIC 17 of 1994 and then only the AME will be authorised to certify the aircraft.

3.7.3 An operator employing appropriately licenced AME from any other domestic airlines shall familiarise him with differences in the aircraft in their fleet if any, and the QC Manual/ Procedure. The AME shall be deputed for Inspection/ certification work only after

he has passed an oral check conducted by DGCA board as per AIC 17 of 1994.

3.7.4 Where the AMEs are required to be trained on a particular type of aircraft, the operator shall get the training programme approved along with the names of AMEs.

3.7.5 Revoke of licence/approvals:

In accordance with Rule 61 of the Aircraft Rules, 1937, any licence, authorisation, approval or Certificate of Competency may be cancelled, suspended or endorsed, if the holder has not performed the work in a careful and competent manner or the holder has signed for work not licenced to deal with or it is undesirable that the holder should continue to exercise his privileges granted under this rule.

3.8. LITERATURE:

3.8.1 The Q.C Manual maintenance System Manual, Maintenance/Overhaul/Structural Manuals, Illustrated Parts Catalog, Wiring Manual, Service Bulletins, Airworthiness Directives and related guidance materials shall be kept and amended to keep them upto date by the Q.C. department. The operator shall remain on the mailing list of the manufacturers and Airworthiness Authorities of country of manufacture of aircraft, engine and equipment installed thereon for the purpose of receiving SBs, ADs and regular amendments to the various documents.

3.8.2 A master folder of each type of regulatory/policy document viz. CARs, AICs, Airworthiness Advisory Circulars, SBs etc. shall be maintained by the QC Office for reference of QC personnel and AMEs. All publications, documents, maintenance schedules, forms shall be frequently screened for completeness.

3.9 A master copy of approved maintenance shedules/Special Inspection shcedures shall be kept in the QC Department.

Whenever a new inspection item or routine functional check of any component is introduced, it should be immediately included in the relevant maintenance schedule so that it could be carried out at the required periodicity. There shall be a check for completed inspection schedules to ensure that all items of inspection are duly certified and carried out.

3.10 The QC department shall maintain up to date Mandatory Modification list in respect of each type of aircraft, engine, system operated alongwith the applicability and compliance status.

- 3.11 Major repairs/Modification shall be accomplished with approved drawing and by approved persons as envisaged in Rule 52 the Aircraft rules, 1937.
- 3.12 GENERAL:
- 3.12.1 The operator shall have his own facilities for replay of Cockpit Voice Recorder. For readout of FDR/DFDR he should have his own facilities or make approved arrangement acceptable to DGCA.
- 3.12.2 The operator shall have necessary technical literatue tools, special tools, appropriately licensed AMEs, battery cart/GPU, trestles, jacks, trained manpower etc. for carrying out the required maintenance.
- 3.12.3 The operator shall have facilities and approved persons or satisfactory arrangements with DGCA approved firm to carry out additional structural inspection of aging aircraft to keep them in a continued state of airworthiness.
- 3.12.4 The operator engaged in operations with twin engined aircraft shall ensure compliance of the requirement relating to etop operations.
- 3.12.5 Before commencing operations to a new station or establishing a night halt station, the Q.C. Manager shall carry out and ensure that all facilities as envisaged in CAR Section 3, Series 'E' Part I and Section 2, Series 'E' Part IX are available. A certificate to that effect shall be forwarded to the concerned Regional Airworthiness Office by the Q.C. Manager.
- 3.12.6 The operator shall have a system of frequent exchange of information between Operations and Engineering Department to improve co-ordination and understanding of operational and airworthiness matters. A record of such discussions shall be maintained.
- 3.13 The DGCA issues Airworthiness Advisory Circulars, Air Safety Circulars Bulletins to the industry for guidance and advice in order to enhance safety of aircraft operations. The orgnaisations shall go through these materials and take action wherever required.
- 3.14 The operator has to arrange or conduct training whenever a new aircraft type is inducted or new AMEs are recruited. The organisation must, therefore, have the training programme approved and ensure its compliance.
- 3.15 The DGCA conducts AME licence examination periodically. All organisations shall, therefore, train their maintenance personnel and have them appear in the said examinations, so as to ensure sufficient qualified AMEs on their employment.

4. IMPLEMENTATION OF AIRWORTHINESS OVERSIGHT PROGRAMME:

Effective safety regulation and oversight of airworthiness functions can be achieved only by joint efforts on the part of the operators, maintenance organisations and the regulatory authority. It is, therefore, essential that in addition to the airworthiness programme of the DGCA, the operators and maintenance organisations should also have their in-house surveillance programme commensurate with the type and scale of their operations activities.

Broadly, the surveillance programme may be conducted on the following lines:

- 4.1 The operators and maintenance organisations shall lay down their policies and procedures for compliance of the airworthiness, safety, training and internal safety audit programme in their engineering procedures and training manuals. The responsibility of implementation of the policies and procedures contained in these manuals shall be assigned and division of responsibility for this purpose shall be clearly reflected in the relevant manuals.
- 4.2 The day-to-day safety regulation and in-house monitoring of the airworthiness functions of the operator and the maintenance organisations shall be exercised by the Quality Control Manager and by his inspectors and dedicated staff. Necessary check lists should be devised for carrying out such monitoring. There shall be a proper system of documentation and record keeping of the deficiencies observed and corrective measures taken.
- 4.3 In addition to the day-to-day monitoring, periodic in-house safety audit shall be carried out by the dedicated safety audit team of the operator and the maintenance organisations to ensure that the airworthiness safety regulations are complied with. Corrective action shall be taken immediately by the Chief of Flight Safety in consultation with the Quality Control Manager on the deficiencies observed during the audit. Relevant record and data in proper format shall be maintained in this regard.
- 4.4 In order to discharge the responsibility for safety oversight in accordance with ICAO Annex 6, Aircraft Act, 1934, Aircraft Rules, 1937, and the CARs made thereunder, surveillance of all airworthiness and safety functions including training, shall also be carried out by the DGCA officers viz. officers of the Regional and Subregional Airworthiness offices directly supervising the activities of the organisations working in their area of control. Deficiencies observed shall be intimated to the operator concerned for immediate corrective action. Director of Airworthiness (DAW) of the region concerned shall ensure that necessary actions are taken on the observations made.
- 4.5 The DGCA safety audit teams or other nominated officers shall carry out safety audit or

special checks of the operators and the maintenance organisation periodically. The deficiencies observed by the team during the audit shall be brought to the notice of the concerned organisation for prompt corrective action. The DAW in the DGCA Headquarters shall take appropriate measures to ensure that necessary actions are taken by the operator or the maintenance organisation to remove the deficiencies and to implement the

safety recommendations. Where punitive action is required to be taken for serious lapses, the DAW (Hdqrs.) shall initiate the same promptly.

5. INDUSTRY CONSULTATION AND REVIEW OF IMPLEMENTATION OF THE AIRWORTHINESS REGULATION AND OVERSIGHT PROGRAMME:

Review of implementation of the airworthiness regulation and oversight programme shall be carried out as and when required by the DGCA Headquarters jointly with the operator and maintenance organisations to assess functioning and effectiveness of the programmes. The DAW (Hdqrs.) shall co-ordinate the review. This would also provide an opportunity to the organisations to learn from the experience of others and to improve their own systems. During the review, it would also be assessed whether the national rules, regulations, procedures and requirements are adequate and effective in the implementation of the relevant ICAO Standards and Recommended Practices and if found necessary, appropriate amendments would be suggested.

Sd/-

(H. S. KHOLA)

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