



GOVERNMENT OF INDIA  
**OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION**  
TECHNICAL CENTRE, OPP SAFDURJUNG AIRPORT, NEW DELHI

**CIVIL AVIATION REQUIREMENTS**  
**SECTION 8 – AIRCRAFT OPERATIONS**  
**SERIES 'O', PART II**  
**ISSUE I, 8<sup>th</sup> JULY, 2011**

**EFFECTIVE: FORTHWITH**

File No: AV. 22024/19/2011-FSD

**Subject: OPERATION OF COMMERCIAL AIR TRANSPORT - AEROPLANES.**

## **1 INTRODUCTION**

1.1 This CAR lays down the minimum operational, equipment and instrument requirements for aeroplanes registered in India and engaged in domestic and international air transport operations.

This CAR has been issued under the provisions of Rule 133A of the Aircraft Rules, 1937 and is in conformity with ICAO Annex 6 Part I.

1.2 Applicability: These requirements are applicable to scheduled as well as non scheduled air transport operations.

## **2 DEFINITIONS**

***Aerodrome Operating Minima:*** The limits of usability of an aerodrome for:

- a) take-off, expressed in terms of runway visual range and / or visibility and, if necessary, cloud conditions;
- b) landing in precision approach and landing operations, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H) as appropriate to the category of the operation;
- c) landing in approach and landing operations with vertical guidance, expressed in terms of visibility and/or runway visual range and decision altitude/height(DA/H);and
- d) landing in non-precision approach and landing operations, expressed in terms of visibility and/or runway visual range, minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions.

***Aircraft Operating Manual:*** A manual, acceptable to the DGCA containing normal, abnormal and emergency procedures, checklists, limitations, performance information,

details of the aircraft systems and other material relevant to the operation of the aircraft. Note:- *The aircraft operating manual is the part of the operation manual.*

**Air operator Permit / certificate (AOC):** A Permit /Certificate authorizing an operator to carry out specified commercial air transport operations.

**Airworthy:** The status of an aircraft, engine, propeller or part when it conforms to its approved design and is in a condition for safe operation.

**Alternate aerodrome:** An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing. Alternate aerodromes include the following:

*Take-off alternate.* An alternate aerodrome at which an aircraft can land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure.

*En-route alternate.* An alternate aerodrome at which an aircraft would be able to land after experiencing an abnormal or emergency condition while en-route.

*ETOPS en-route alternate.* A suitable and appropriate alternate aerodrome at which an aeroplane would be able to land after experiencing an engine shut down or other abnormal or emergency condition while en- route in an ETOPS operation.

*Destination alternate.* An alternate aerodrome to which an aircraft may proceed should it become either impossible or inadvisable to land at the aerodrome of intended landing.

*Note: The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for that flight .*

**Altimetry system error (ASE):** The difference between the altitude indicated by the altimeter display, assuming a correct altimeter barometric setting, and the pressure altitude corresponding to the undisturbed ambient pressure.

**Accelerate-stop distance available (ASDA):** The length of the take-off run available plus the length of stop way, if provided.

**Approach and landing operations using instrument approach procedures.** Instrument approach and landing operations are classified as follows:

*Non-precision approach and landing operations.* An instrument approach and landing which utilizes lateral guidance but does not utilize vertical guidance.

*Approach and landing operations with vertical guidance.* An instrument approach and landing which utilizes lateral and vertical guidance but does not meet the requirements established for precision approach and landing operations.

*Precision approach and landing operations.* An instrument approach and landing using precision lateral and vertical guidance with minima as determined by the category of operation.

Note.— Lateral and vertical guidance refers to the guidance provided either by:

- a) a ground-based navigation aid; or
- b) computer generated navigation data.

Categories of precision approach and landing operations:

**Category I (CAT I) operation:** A precision instrument approach and landing with :

- a) a decision height not lower than 60 m (200 ft); and
- b) with either a visibility not less than 800 m or a runway visual range not less than 550 m.

**Category II (CAT II) operation:** A precision instrument approach and landing with:

- a) a decision height lower than 60 m (200 ft), but not lower than 30 m (100ft),; and
- b) a runway visual range not less than 300 m.

**Category IIIA (CAT IIIA) operation:** A precision instrument approach and landing with:

- a) a decision height lower than 30 m (100 ft) or no decision height; and
- b) a runway visual range not less than 175 m.

**Category IIIB (CAT IIIB) operation:** A precision instrument approach and landing with:

- a) a decision height lower than 15 m (50 ft), or no decision height; and
- b) a runway visual range less than 175 m but not less than 50 m.

**Category IIIC (CAT IIIC) operation:** A precision instrument approach and landing with no decision height and no runway visual range limitations. *Note*.— Where decision height (DH) and runway visual range (RVR) fall into different categories of operation, the instrument approach and landing operation would be conducted in accordance with the requirements of the most demanding category (e.g. an operation with a DH in the range of CAT IIIA but with an RVR in the range of CAT IIIB would be considered a CAT IIIB operation or an operation with a DH in the range of CAT II but with an RVR in the range of CAT I would be considered a CAT II operation).

**Area navigation (RNAV):** A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground- or space- based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

Note.— Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.

**Cabin crew member:** A crew member who performs, in the interest of safety of passengers, duties assigned by the operator or the pilot-in-command of the aircraft, but who shall not act as a flight crew member

**Commercial air transport operation:** An aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

**Configuration deviation list (CDL):** A list established by the organization responsible for the type design with the approval of the State of Design which identifies any external parts of an aircraft type which may be missing at the commencement of a flight, and which contains, where necessary, any information on associated operating limitations and performance correction.

**Continuing airworthiness:** The set of processes by which all aircraft comply with the applicable airworthiness requirements and remain in a condition for safe operation throughout their operating life.

**Crew member:** A person assigned by an operator to duty on an aircraft during a flight duty period.

**Cruise relief pilot:** A flight crew member who is assigned to perform pilot tasks during cruise flight, to allow the pilot-in-command or a co-pilot to obtain planned rest.

**Cruising level:** A level maintained during a significant portion of a flight.

**Dangerous goods:** Articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions or which are classified according to those Instructions.

*Note.— Dangerous goods are classified in Aircraft (Carriage of Dangerous Goods) Rules, 2003.*

**Decision altitude/height (DA/H):** A specified altitude or height in the precision approach or approach with vertical guidance at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.

*Note 1- Decision altitude (DA) is referenced to mean sea level (MSL) and decision height (DH) is referenced to the threshold elevation.*

*Note 2- The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path. In Category III operations with a decision height the required visual reference is that specified for the particular procedure and operation.*

*Note 3.— For convenience where both expressions are used they may be written in the form “decision altitude/height” and abbreviated “DA/H”.*

**Emergency locator transmitter (ELT):** A generic term describing equipment which broadcast distinctive signals on designated frequencies and, depending on

application, may be automatically activated by impact or be manually activated. An ELT may be any of the following:

*Automatic fixed ELT (ELT(AF))*: An automatically activated ELT which is permanently attached to an aircraft.

*Automatic portable ELT (ELT(AP))*. An automatically activated ELT which is rigidly attached to an aircraft but readily removable from the aircraft.

*Automatic deployable ELT (ELT(AD))*. An ELT which is rigidly attached to an aircraft and which is automatically deployed and activated by impact, and, in some cases, also by hydrostatic sensors. Manual deployment is also provided.

*Survival ELT (ELT(S))*. An ELT which is removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by survivors.

**Engine**: A unit used or intended to be used for aircraft propulsion. It consists of at least those components and equipment necessary for functioning and control, but excludes the propeller/rotors (if applicable).

**Enhanced vision system (EVS)**: A system to display electronic real-time images of the external scene achieved through the use of image sensors.

**Extended Range Operations with Twin Engined Aeroplane (ETOPS)**: Any flight by aeroplane with two turbine power engines where from any point on the route the flight time at the one engine inoperative cruise speed to an adequate aerodrome is greater than the threshold time.

**Fatigue**: A physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness and/or physical activity that can impair a crew member's alertness and ability to safely operate an aircraft or perform safety related duties.

**Flight crew member**: A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.

**Flight Data Analysis**: A process of analysing recorded flight data in order to improve the safety of flight operations.

**Flight manual**: A manual, associated with the certificate of airworthiness, containing limitations within which the aircraft is to be considered airworthy, and instructions and information necessary to the flight crew members for the safe operation of the aircraft.

**Flight operations officer / flight dispatcher**: A person designated by the operator to engage in the control and supervision of flight operations, whether licensed or not, suitably qualified in accordance with CAR Section 7, Series 'M' Part II, who supports, briefs and/or assists the pilot-in-command in the safe conduct of the flight.

**Flight plan**: Specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft

**Flight recorder:** Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

**Flight safety documents system:** A set of interrelated documentation established by the operator, compiling and organizing information necessary for flight and ground operations, and comprising, as a minimum, the operations manual and the operator's maintenance control manual.

**Flight simulation training device:** Any one of the following three types of apparatus in which flight conditions are simulated on the ground:

*A flight simulator*, which provides an accurate representation of the flight deck of a particular aircraft type to the extent that the mechanical, electrical, electronic, etc. 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;

*A flight procedures trainer*, which provides a realistic flight deck environment, and which simulates instrument responses, simple control functions of mechanical, electrical, electronic, etc. aircraft systems, and the performance and flight characteristics of aircraft of a particular class;

*A basic instrument flight trainer*, which is equipped with appropriate instruments, and which simulates the flight deck environment of an aircraft in flight in instrument flight conditions.

**General aviation operation:** An aircraft operation other than a commercial air transport operation or an aerial work operation.

**Ground handling:** Services necessary for an aircraft's arrival at, and departure from, an airport, other than air traffic services.

**Head-up display (HUD):** A display system that presents flight information into the pilot's forward external field of view.

**Human Factors Principles:** Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

**Human performance:** Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

**Instrument meteorological conditions (IMC):** Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling (CAR Section 4, Series 'E' Part 1) less than the minima specified for visual meteorological conditions.

*Note – The specified minima for visual meteorological conditions are contained in CAR Section 4, Series 'E' Part 1*

**Landing distance available (LDA):** The length of runway which is declared available and suitable for the ground run of an aeroplane landing.

**Large aeroplane:** An aeroplane of a maximum certificated take-off mass of over 5700kg.

**Maintenance:** The performance of tasks required to ensure the continuing airworthiness of an aircraft, including any one or combination of overhaul, inspection, replacement, defect rectification, and the embodiment of a modification or repair.

**Maintenance organization's procedures manual:** A document endorsed by the head of the maintenance organization which details the maintenance organization's structure and management responsibilities, scope of work, description of facilities, maintenance procedures and quality assurance or inspection systems.

**Maintenance programme:** A document which describes the specific scheduled maintenance tasks and their frequency of completion and related procedures, such as a reliability programme, necessary for the safe operation of those aircraft to which it applies.

**Maintenance release:** A document which contains a certification confirming that the maintenance work to which it relates has been completed in a satisfactory manner, either in accordance with the approved data and the procedures described in the maintenance organization's procedures manual or under an equivalent system.

**Master minimum equipment list (MMEL):** A list established for a particular aircraft type by the organization responsible for the type design with the approval of the State of Design containing items, one or more of which is permitted to be unserviceable at the commencement of a flight. The MMEL may be associated with special operating conditions, limitations or procedures.

**Maximum mass:** Maximum certificated take-off mass.

**Minimum descent altitude (MDA) or Minimum descent height (MDH):** A specified altitude or height in a non precision approach or circling approach below which descent must not be made without the required visual reference.

*Note 1— Minimum descent altitude (MDA) is referenced to mean sea level and minimum descent height (MDH) is referenced to the aerodrome elevation or to the threshold elevation if that is more than 2 m (7 ft) below the aerodrome elevation. A minimum descent height for a circling approach is referenced to the aerodrome elevation.*

*Note 2— The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path. In the case of a circling approach the required visual reference is the runway environment.*

*Note 3— For convenience when both expressions are used they may be written in the form "minimum descent altitude/height" and abbreviated "MDA/H"*

**Minimum equipment list (MEL):** A list which provides for the operation of aircraft, subject to specified conditions, with particular equipment inoperative, prepared by an

operator in conformity with, or more restrictive than, the MMEL established for the aircraft type.

**Navigation specification:** *A set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace. There are two kinds of navigation specifications:*

*Required navigation performance (RNP) specification.* A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.

*Area navigation (RNAV) specification.* A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

*Note 1.— The Performance-based Navigation (PBN) Manual (Doc 9613), Volume II, contains detailed guidance on navigation specifications.*

*Note 2.— The term RNP as previously defined as “a statement of the navigation performance, necessary for operation within a defined airspace”, has been removed from this Annex as the concept of RNP has been overtaken by the concept of PBN.*

*The term RNP in this Annex is now solely used in context of navigation specifications that require performance monitoring and alerting. E.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with onboard performance monitoring and alerting that are detailed in the PBN Manual (Doc 9613).*

**Night:** The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise as may be prescribed by the appropriate authority.

*Note - Civil twilight ends in the evening when the centre of the sun's disc is 6 degrees below the horizon and begins in the morning when the centre of the sun's disc is 6 degrees below the horizon.*

**Obstacle clearance altitude (OCA) or obstacle clearance height (OCH):** The lowest altitude or the lowest height above the elevation of the relevant runway threshold or the aerodrome elevation as applicable, used in establishing compliance with appropriate obstacle clearance criteria.

*Note 1— Obstacle clearance altitude is referenced to mean sea level and obstacle clearance height is referenced to the threshold elevation or in the case of non-precision approaches to the aerodrome elevation or the threshold elevation if that is more than 2 m (7 ft) below the aerodrome elevation. An obstacle clearance height for a circling approach is referenced to the aerodrome elevation.*

*Note 2— For convenience when both expressions are used they may be written in the form “obstacle clearance altitude/height” and abbreviated “OCA/H”.*

**Operational control:** The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of the flight.

**Operational flight plan:** The operator's plan for the safe conduct of the flight based on considerations of aeroplane performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes concerned.

**Operations manual:** A manual containing procedures, instructions and guidance for use by operational personnel in the execution of their duties.

**Operator:** A person, organization or enterprise engaged in or offering to engage in an aircraft operation.

**Operator's maintenance control manual:** A document which describes the operator's procedures necessary to ensure that all scheduled and unscheduled maintenance is performed on the operator's aircraft on time and in a controlled and satisfactory manner.

**Operations specifications:** The authorizations, conditions and limitations associated with the air operator certificate and subject to the conditions in the operations manual.

**Pilot-in-command:** The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

**Pressure-altitude:** An atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the Standard Atmosphere.

**Psychoactive substances:** Alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas coffee and tobacco are excluded.

**Performance-based navigation (PBN):** Area navigation based on performance requirements of aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

*Note.*— Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.

**Repair:** The restoration of an aeronautical product to an airworthy condition to ensure that the aircraft continues to comply with the design aspects of the appropriate airworthiness requirements used for the issuance of the type certificate for the respective aircraft type, after it has been damaged or subjected to wear.

**Required communication performance (RCP):** A statement of the performance requirements for operational communication in support of specific ATM functions.

**RCP type:** A label (e.g. RCP 240) that represents the values assigned to RCP parameters for communication transaction time, continuity, availability and integrity.

**Runway visual range (RVR):** The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.

**Safe forced landing:** Unavoidable landing or ditching with a reasonable expectancy of no injuries to persons in the aircraft or on the surface.

**Safety management system:** A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures.

**Safety programme:** An integrated set of regulations and activities aimed at improving safety.

**Small aeroplane:** An aeroplane of a maximum certificated take-off mass of 5 700 kg or less.

**State of Registry:** The State on whose register the aircraft is entered.

*Note— In the case of the registration of aircraft of an international operating agency on other than a national basis, the States constituting the agency are jointly and severally bound to assume the obligations which, under the Chicago Convention, attach to a State of Registry. See, in this regard, the Council Resolution of 14 December 1967 on Nationality and Registration of Aircraft Operated by International Operating Agencies which can be found in Policy and Guidance Material on the Economic Regulation of International Air Transport (ICAO Doc 9587).*

**State of the Operator:** The State in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.

**Synthetic flight trainer:** Any one of the following three types of apparatus in which flight conditions are simulated on the ground:

*A flight simulator, which provides an accurate representation of the flight deck of a particular aircraft type to the extent that the mechanical, electrical, electronic, etc. 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;*

*A flight procedures trainer, which provides a realistic flight deck environment, and which simulates instrument responses, simple control functions of mechanical, electrical, electronic, etc. aircraft systems, and the performance and flight characteristics of aircraft of a particular class;*

*A basic instrument flight trainer, which is equipped with appropriate instruments, and which simulates the flight deck environment of an aircraft in flight in instrument flight conditions.*

**Target level of safety (TLS):** A generic term representing the level of risk which is considered acceptable in particular circumstances.

**Total vertical error (TVE):** The vertical geometric difference between the actual pressure altitude flown by an aircraft and its assigned pressure altitude (flight level).

**Visual meteorological conditions (VMC):** Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling equal to or better than specified minima.

### 3. GENERAL REQUIREMENTS

#### 3.1 Compliance with laws, regulations and procedures.

3.1.1 The operator engaged in international operations shall ensure that all employees when abroad are fully aware and shall comply with the laws, regulations and procedures of those States in which operations are conducted.

3.1.2 The operator shall ensure that all pilots are familiar with the laws, regulations and procedures, pertinent to the performance of their duties, prescribed for the areas to be traversed, the aerodromes to be used and the air navigation facilities relating thereto. The operator shall ensure that other members of the flight crew are familiar with such of these laws, regulations and procedures as are pertinent to the performance of their respective duties in the operation of the aeroplane.

*Note.— Information for pilots and flight operations personnel on flight procedure parameters and operational procedures is contained in PANS OPS, Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS, Volume II. Obstacle clearance criteria and procedures used in certain States may differ from PANSOPS, and knowledge of these differences is important for safety reasons.*

3.1.3 An operator or a designated representative shall have responsibility for operational control.

3.1.4 Responsibility for operational control shall be delegated only to the pilot-in command and to a flight operations officer/flight dispatcher if an operator's approved method of control and supervision of flight operations requires the use of flight operations officer/flight dispatcher personnel.

*Note.— Guidance on the operational control organization and the role of the flight operations officer/flight dispatcher is contained in the Manual of Procedures for Operations Inspection, Certification and Continued Surveillance (Doc 8335). Detailed guidance on the authorization, duties and responsibilities of the flight operations officer/flight dispatcher is contained in the Preparation of an Operations Manual (Doc 9376). The requirements for age, skill, knowledge and experience for licensed flight operations officers/flight dispatchers are contained in CAR Section 7 Series 'M' Part II.*

3.1.5 If an emergency situation which endangers the safety of the aeroplane or persons becomes known first to the flight operations officer/flight dispatcher, action by that person in accordance with CAR Section 7 Series 'M' Part II and para 4.6.2 of this CAR, shall include, where necessary, notification to the appropriate authorities of the nature of the situation without delay, and request for assistance if required.

- 3.1.6 If an emergency situation arises in India which endangers the safety of the aeroplane or persons necessitates the taking of action which involves a violation of regulations or procedures, the pilot-in-command / operator shall notify the appropriate local authority (DGCA or AAI) without delay. If such emergent situation arises outside India, the pilot-in-command shall submit a report of the occurrence on any such violation to the appropriate authority of the State. The pilot-in-command shall also submit a copy of the occurrence to DGCA marked, "Attention: Director of Air Safety (DGCA Hqrs.)" with a copy endorsed to the Regional Air Safety Office where the aeroplane is normally based. Such reports shall be submitted as soon as possible and within 24 hrs.
- 3.1.7 Operators shall ensure that pilots-in-command have available on board the aeroplane all the essential information concerning the search and rescue services in the area over which the aeroplane will be flown.

*Note: This information may be made available to the pilot by means of the operations manual or such other means as is considered appropriate.*

- 3.1.8 Operators shall ensure that flight crew members demonstrate the ability to speak and understand the language used for communications as specified in ICAO Annex 1.
- 3.2 Compliance by a foreign operator with laws, regulations and procedures of a State.**

*Note:- Refer AIC 5 of 2009*

### **3.3 Safety Management**

- 3.3.1 The operator shall follow the Safety Programme established by DGCA in order to achieve an acceptable level of safety in the operation of the aircraft.
- 3.3.2 The acceptable level of safety to be achieved shall be established by the DGCA.
- 3.3.3 An operator shall implement a safety management system acceptable to the DGCA that, as a minimum:
- a) identifies safety hazards;
  - b) ensures the implementation of remedial action necessary to maintain agreed safety performance ;
  - c) provides for continuous monitoring and regular assessment of the safety performance; and
  - d) aims at a continuous improvement of the overall performance of the safety management system.

*Note.— Guidance on defining safety performance is contained in CAR Section-1, Series "C" Part 1 which lays down the aviation safety-related processes, procedures and activities for the establishment of Safety Management System (SMS) by an organization and is issued in accordance with rule 133A of the Aircraft Rules, 1937. This CAR also specifies the minimum acceptable requirements for the establishment of SMS in an organization.*

3.3.4 A safety management system shall clearly define lines of safety accountability throughout the operator's organization, including a direct accountability for safety on the part of senior management.

*Note.*— *Guidance on safety management systems is contained in the Safety Management Manual (SMM) (Doc 9859).*

3.3.5 Intentionally Left Blank.

3.3.6 An operator of an aeroplane of a maximum certificated take-off mass in excess of 5700 kg shall establish and maintain a flight data analysis programme as part of its safety management system.

*Note.*— *An operator may contract the operation of a flight data analysis programme to another party while retaining overall responsibility for the maintenance of such a programme.*

3.3.7 A flight data analysis programme shall be non-punitive and contain adequate safeguards to protect the source(s) of the data.

*Note 1.*— *Guidance on flight data analysis programmes is contained in the Safety Management Manual (SMM) (Doc 9859).*

*Note 2.*— *Legal guidance for the protection of information from safety data collection and processing systems is contained in CAR sec 5 Series F Part 1.*

3.3.8 An operator shall establish a flight safety documents system, for the use and guidance of operational personnel, as part of its safety management system.

*Note:* *Guidance on the development and organization of a flight safety documents is provided in Appendix A*

### **3.4 Dangerous goods**

The operator shall adhere to the provisions for carriage of dangerous goods contained in Aircraft (Carriage of Dangerous Goods) Rules, 2003.

### **3.5 Use of psychoactive substances**

The operator shall adhere to the provisions concerning the use of psychoactive substances contained in CAR Section 4, Series E Part I.

## **4. FLIGHT OPERATIONS**

### **4. .1 Operating facilities**

4.1 .1 The operator shall ensure that a flight will not be commenced unless it has been ascertained by every reasonable means available that the ground and/or water facilities available and directly required on such flight, for the safe operation of the aeroplane and the protection of the passengers, are adequate for the type of operation under which the flight is to be conducted and are adequately operated for this purpose.

*Note - "Reasonable means" in the above para is intended to denote the use, at the point of departure, of information available to the operator either through official information published by the aeronautical information services or readily obtainable from other sources.*

4.1.2 The operator shall ensure that any inadequacy of facilities observed in the course of operations is reported to the DGCA or concerned regulatory authority, without undue delay.

4.1.3 Subject to their published conditions of use, aerodromes and their facilities are kept continuously available for flight operations during their published hours of operations, irrespective of weather conditions.

4.1.4 An operator shall, as part of its safety management system, assess the level of rescue and fire fighting service (RFFS) protection available at any aerodrome intended to be specified in the operational flight plan in order to ensure that an acceptable level of protection is available for the aeroplane intended to be used.

4.1.5 Information related to the level of RFFS protection that is deemed acceptable by the operator shall be contained in the operations manual.

Note 1:- Appendix F contains guidance on assessing an acceptable level of RFFS protection at aerodromes.

Note 2:- *It is not intended that this guidance limit or regulate the operation of an aerodrome. The assessment performed by the operator does not in any way affect the RFFS requirements of Annex 14, Volume I, for aerodromes.*

## **4.2 Operational Certification and Supervision**

### **4.2.1 Air Operator Permit.**

4.2.1.1 An operator shall not engage in commercial air transport operations unless in possession of a valid Air Operator Permit issued by DGCA.

4.2.1.2 The air operator permit shall authorise the operator to conduct commercial air transport operations in accordance with the operations specifications.

Note: Provisions for the content of the air operator permit and its associated operations specifications are contained in 4.2.1.6 and 4.2.1.7

4.2.1.3 The issue of an air operator permit shall be dependent upon the operator demonstrating an adequate organization, method of control and supervision of flight operations, training programme as well as ground handling and maintenance arrangements consistent with the nature and extent of the operations specified.

*Note - Requirements and guidance for issue of air operator's permit are given in CAR Section 3, Series C Parts II, III, IV & V.*

4.2.1.4 The continued validity of an air operator permit shall depend upon the operator maintaining the requirements of 4.2.1.3 under the supervision of DGCA.

- 4.2.1.5 Intentionally left blank
- 4.2.1.6 The air operator certificate shall contain at least the following information and shall follow the layout of Appendix C.
- a) The State of the operator and the issuing authority;
  - b) The air operator certificate number and its expiration date;
  - c) The operator name, trading name (if different) and address of the principal place of business;
  - d) The date of issue and the name, signature and title of the authority;
  - e) The location, in a controlled document carried on board, where the contact details of operational management can be found.
- 4.2.1.7 The operations specifications associated with the air operator certificate shall contain at least the information listed in Appendix D and shall follow the layout of Appendix D for each aircraft model.
- Note - Attachment A contains additional information that may be listed in the operations specifications associated with the air operator certificate.
- 4.2.1.8 Air operator certificates and their associated operations specifications first issued from 20 November 2008 shall follow the layouts of Appendix C & D.
- 4.2.1.9 The DGCA shall establish a system for both the certification and the continued surveillance of the operator to ensure that the required standards of operations established in 4.2 are maintained.

#### **4.2.2 Surveillance of operations by a foreign operator**

*Note:- Refer AIC 5 of 2009*

#### **4.2.3 Operations Manual.**

- 4.2.3.1 The operations manual shall be amended or revised as is necessary to ensure that the information contained therein is kept up to date. All such amendments or revisions shall be issued to all personnel that are required to use this manual. in accordance with CAR Section 2, Series 'O' Part X.
- 4.2.3.2 Requirements for the organization and content of an operations manual are provided in CAR Section 2, Series 'O' Part X.

#### **4.2.4 Operating Instructions – General**

- 4.2.4.1 The operator shall ensure that all operations personnel are properly instructed in their particular duties and responsibilities and the relationship of such duties to the operation as a whole.
- 4.2.4.2 An aeroplane shall not be taxied on the movement area of an aerodrome unless the person at the controls:

- a) has been duly authorized by the operator,
- b) is fully competent to taxi the aeroplane,
- c) is qualified to use the radio telephone or a person qualified to use the radio telephone is on board; and
- d) has received instruction from a competent person in respect of aerodrome layout, routes, signs, marking, lights, air traffic control (ATC) signals and instructions, phraseology and procedures, and is able to conform to the operational standards required for safe aeroplane movement at the aerodrome.

*Note:- Requirements for issue of taxi Permit are given in CAR Section 2, Series 'X' Part VIII. 4.2.4.3 It is recommended that the operator should issue operating instructions and provide information on aeroplane climb performance with all engines operating to enable the pilot-in-command to determine the climb gradient that can be achieved during the departure phase for the existing take-off conditions and intended take-off technique. This information should be included in the operations manual.*

#### **4.2.5 In-flight simulation of emergency situations**

The operator shall ensure that when passengers or cargo are being carried, no emergency or abnormal situations shall be simulated in flight.

#### **4.2.6 Checklists**

The checklists provided in accordance with 6.1.3 shall be used by flight crew prior to, during and after all phases of operations, and in emergency, to ensure compliance with the operating procedures contained in the aircraft operating manual and the flight manual or other documents associated with the certificate of airworthiness and otherwise in the operations manual, are followed. The design and utilization of checklists shall observe Human Factors principles.

*Note- Guidance material on the application of human factors principles can be found in the Human Factor Training Manual (ICAO Doc 9683)*

#### **4.2.7 Minimum flight Altitudes**

- 4.2.7.1 The operator may establish minimum flight altitudes for those routes flown for which minimum flight altitudes have been established by the State flown over or the responsible State, provided that they shall not be less than those established by that State. In India, the minimum flight altitude as established by the Airports Authority of India shall apply.
- 4.2.7.2 An operator shall specify the method by which it is intended to determine minimum flight altitudes for operations conducted over routes for which minimum flight altitudes have not been established by the State flown over, or the responsible State, and shall include this method in the Operations Manual. The minimum flight altitudes determined in accordance with the above method shall not be lower than specified in Section 4, Series H - Part I.

- 4.2.7.3 The method for establishing the minimum flight altitudes shall require approval of DGCA.
- 4.2.7.4 DGCA may approve such method after considering the probable effects of the following factors on the safety of the operation in question:
- a) the accuracy and reliability with which the position of the aeroplane can be determined;
  - b) the inaccuracies in the indications of the altimeters used;
  - c) the characteristics of the terrain (sudden change in the elevation);
  - d) the probability of encountering unfavorable meteorological condition (e.g. severe turbulence and descending air currents);
  - e) possible inaccuracies in aeronautical charts; and
  - f) airspace restriction

#### **4.2.8 Aerodrome Operating minima**

- 4.2.8.1 The operator shall establish aerodrome operating minima for each aerodrome to be used in operations and the method of determination of such minima to be approved by DGCA. Such minima shall not be lower than any that may be established for such aerodromes except when specifically approved by DGCA,
- 4.2.8.2 While establishing the aerodrome operating minima which will apply to any particular operation, the operator shall take full account of:
- a) the type, performance and handling characteristics of the aeroplane;
  - b) the composition of the flight crew, their competence and experience;
  - c) the dimensions and characteristics of the runways which may be selected for use;
  - d) the adequacy and performance of the available visual and non-visual ground aids;
  - e) the equipment available on the aeroplane for the purpose of navigation and/or control of the flight path during the approach to landing and the missed approach;
  - f) the obstacles in the approach and missed approach areas and the obstacle clearance altitude/height for the instrument approach procedures;
  - g) the means used to determine and report meteorological conditions; and

- h) the obstacles in the climb-out areas and necessary clearance margins.

*Note.— Guidance on the establishment of aerodrome operating minima is contained in the Manual of All-Weather Operations (ICAO Doc 9365).*

- 4.2.8.3 Category II and Category III instrument approach and landing operations shall not be authorized unless RVR information is provided.

- 4.2.8.4. It is recommended that for instrument approach and landing operations, aerodrome operating minima below 800 m visibility should not be authorized unless RVR information is provided.

#### **4.2.9 Threshold crossing height for precision approaches**

An operator shall establish operational procedures designed to ensure that an aeroplane being used to conduct precision approaches crosses the threshold by a safe margin, with the aeroplane in the landing configuration and attitude.

#### **4.2.10 Fuel and Oil Records**

- 4.2.10.1 The operator shall maintain fuel and oil records to enable DGCA to ascertain that for each flight, the requirements of para 4.3.6 of this CAR have been complied with.

- 4.2.10.2 Fuel and oil records shall be retained by the operator for a period of 6 months.

#### **4.2.11 Crew**

- 4.2.11.1 *Pilot-in-command:* For each flight, the operator shall designate one pilot to act as pilot-in-command.

- 4.2.11.2 For each flight of an aeroplane above 49000 ft (15000 m), the operator shall maintain records so that the total cosmic radiation dose received by each crew member over a period of 12 consecutive months can be determined.

#### **4.2.12 Passengers**

- 4.2.12.1 An operator shall ensure that passengers are made familiar with the location and use of:

- a) seat belts;
- b) emergency exits;
- c) life jackets, if the carriage of life jackets is prescribed;
- d) oxygen dispensing equipment, if the provision of oxygen for the use of passengers is prescribed; and
- e) other emergency equipment provided for individual use including passenger emergency briefing card.

- 4.2.12.2 The operator shall inform the passengers of the location and general manner of use of the principal emergency equipment carried for collective use.
- 4.2.12.3 In an emergency during flight, passengers shall be instructed in such emergency action as may be appropriate to the circumstances.
- 4.2.12.4 The operator shall ensure that during take-off and landing and whenever, by reason of turbulence or any emergency occurring during flight, the precaution is considered necessary, all passengers on board an aeroplane shall be secured in their seats by means of the seat belts or harnesses provided.

### **4.3 Flight Preparation**

4.3.1 A flight shall not be commenced until flight preparation forms have been completed certifying that the pilot in command is satisfied that:

- a) The aeroplane is airworthy.
- b) The instruments and equipment prescribed in Para 6 of this CAR for the particular type of operation are to be undertaken are installed and are sufficient for the flight.
- c) a maintenance release as prescribed in 8.7 has been issued in respect of the aeroplane;
- d) The mass of the aeroplane and center of gravity location are such that flight can be conducted safely, taking in to account the flight condition expected;
- e) Any load carried is properly distributed and safely secured;
- f) a check has been completed indicating that the operating limitations given in para 5 of this CAR can be complied with for the flight to be undertaken; and
- g) the Standards of 4.3.3 relating to operational flight planning have been complied with.

4.3.2 Completed 'pilot acceptance report or equivalent document shall be kept by the operator for a period of six months. 4.3.3 Operational Flight Planning

4.3.3.1 An operational flight plan shall be completed for every intended flight. The operational flight plan shall be approved and signed by the pilot-in-command and, where applicable, signed by the flight operations officer/flight dispatcher, and a copy shall be filed with the operator or a designated agent, or, if these procedures are not possible, it shall be left with the aerodrome authority or on record in a suitable place at the point of departure.

*Note: The duties of the flight operations officer/flight dispatcher are contained in 4.6*

4.3.3.2 The operations manual must describe the content and use of the operational flight plan.

4.3.4 Alternate Aerodrome

4.3.4.1 Take-off alternate aerodrome

4.3.4.1.1 A take-off alternate aerodrome shall be selected and specified in the operational flight plan if the weather conditions at the aerodrome of departure are at or below the applicable aerodrome operating minima or it would not be possible to return to the aerodrome of departure for other reasons.

4.3.4.1.2 The take-off alternate aerodrome shall be located within the following distance from the aerodrome of departure:

- a) aeroplanes having two engines. Not more than a distance equivalent to a flight time of one hour at single-engine cruise speed; and
- b) aeroplanes having three or more engines. Not more than a distance equivalent to a flight time of two hours at one-engine inoperative cruise speed.

4.3.4.1.3 For an aerodrome to be selected as a take-off alternate the available information shall indicate that, at the estimated time of use, the conditions will be at or above the aerodrome operating minima for that operation.

4.3.4.2 En-route alternate aerodromes

En-route alternate aerodromes, required by 4.7 for extended range operations by aeroplanes with two turbine engines, shall be selected and specified in the operational and Air Traffic Services (ATS) flight plans.

4.3.4.3 Destination alternate aerodromes

For a flight to be conducted in accordance with the instrument flight rules, at least one destination alternate aerodrome shall be selected and specified in the operational and ATS flight plans, unless:

- a) The duration of the flight and the meteorological conditions prevailing are such that there is reasonable certainty that, at the estimated time of arrival at the aerodrome of intended landing, and for a reasonable period before and after such time, the approach and landing may be made under visual meteorological conditions; or
- b) The aerodrome of intended landing is isolated and there is no suitable destination alternate aerodrome.

4.3.5 Weather conditions

4.3.5.1 A flight to be conducted in accordance with the visual flight rules shall not be commenced unless current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions along the route or that part of the route to be flown under the visual flight rules will, at the appropriate time, be such as to render compliance with these rules possible.

- 4.3.5.2 A flight to be conducted in accordance with instrument flight rules shall not be commenced unless information is available which indicates that conditions at the aerodrome of intended landing or, where a destination alternate is required, at least one destination alternate aerodrome will, at the estimated time of arrival, be at or above the aerodrome operating minima.
- 4.3.5.3 A flight to be operated in known or expected icing conditions shall not be commenced unless the aeroplane is certificated and equipped to cope with such conditions.
- 4.3.5.4 A flight to be planned or expected to operate in suspected or known ground icing conditions shall not take off unless the aeroplane has been inspected for icing and, if necessary, has been given appropriate de icing /anti icing treatment. Accumulation of ice or other naturally occurring contaminants shall be removed so that the aeroplane is kept in an airworthy condition prior to take off.

*Note: Guidance material is given in the Manual of Aircraft Ground De-icing/Anti-icing Operations (ICAO Doc 9640)*

4.3.6 Fuel and oil supply

- 4.3.6.1 *All aeroplanes.* A flight shall not be commenced unless, taking into account both the meteorological conditions and any delays that are expected in flight, the aeroplane carries sufficient fuel and oil to ensure that it can safely complete the flight. In addition, a reserve shall be carried to provide for contingencies.
- 4.3.6.2 *Piston-engined aeroplanes.* The fuel and oil carried in order to comply with para 4.3.6.1 shall, in the case of *Piston-engined* aeroplanes, be at least the amount sufficient to allow the aeroplane:

- 4.3.6.2.1 When a destination alternate aerodrome is required, either:
- a) To fly to the aerodrome to which the flight is planned thence to the most critical (in terms of fuel consumption) alternate aerodrome specified in the operational and ATS flight plans and thereafter for a period of 45 minutes; or
  - b) To fly to the alternate aerodrome via any predetermined point and thereafter for 45 minutes, provided that this shall not be less than the amount required to fly to the aerodrome to which the flight is planned and thereafter for:
    - 1) 45 minutes plus 15 per cent of the flight time planned to be spent at the cruising level(s), or
    - 2) two hours, whichever is less.
- 4.3.6.2.2 When a destination alternate aerodrome is not required:
- a) in terms of 4.3.4.3 a), to fly to the aerodrome to which the flight is planned and thereafter for a period of 45 minutes; or

b) in terms of 4.3.4.3 b), to fly to the aerodrome to which the flight is planned and thereafter for:

- 1) 45 minutes plus 15 per cent of the flight time planned to be spent at the cruising level(s), or
- 2) two hours, whichever is less.

4.3.6.3. *Turbine-engined aeroplanes.* The fuel and oil carried in order to comply with 4.3.6.1 shall, in the case of turbine-engined aeroplanes, be at least the amount sufficient to allow the aeroplane:

4.3.6.3.1 When a destination alternate aerodrome is required, either:

a) to fly to and execute an approach, and a missed approach, at the aerodrome to which the flight is planned, and thereafter:

- 1) to fly to the alternate aerodrome specified in the operational and ATS flight plans; and then
- 2) to fly for 30 minutes at holding speed at 1500 ft (450 m) above the alternate aerodrome under standard temperature conditions, and approach and land; and
- 3) to have an additional amount of fuel sufficient to provide for the increased consumption on the occurrence of any of the potential contingencies specified by the operator to the satisfaction of the DGCA; or

b) to fly to the alternate aerodrome via any predetermined point and thereafter for 30 minutes at 450 m (1500 ft) above the alternate aerodrome, due provision having been made for an additional amount of fuel sufficient to provide for the increased consumption on the occurrence of any of the potential contingencies specified by the operator to the satisfaction of the DGCA; provided that fuel shall not be less than the amount of fuel required to fly to the aerodrome to which the flight is planned and thereafter for two hours at normal cruise consumption. 4.3.6.3.2 When a destination alternate aerodrome is not required:

a) in terms of 4.3.4.3 a), to fly to the aerodrome to which the flight is planned and additionally:

- 1) to fly 30 minutes at holding speed at 1500 ft (450 m) above the aerodrome to which the flight is planned under standard temperature conditions; and
- 2) to have an additional amount of fuel, sufficient to provide for the increased consumption on the occurrence of any of the potential contingencies specified by the operator to the satisfaction of the DGCA, and

b) in terms of 4.3.4.3 b), to fly to the aerodrome to which the flight is planned and thereafter for a period of two hours at normal cruise consumption.

- 4.3.6.4 In computing the fuel and oil required in 4.3.6.1 at least the following shall be considered:
- a) meteorological conditions forecast;
  - b) expected air traffic control routings and traffic delays;
  - c) for IFR flight, one instrument approach at the destination aerodrome, including a missed approach;
  - d) the procedures prescribed in the operations manual for loss of pressurization, where applicable, or failure of one power-unit while en route; and
  - e) any other conditions that may delay the landing of the aeroplane or increase fuel and/or oil consumption.

*Note.— Nothing in 4.3.6 precludes amendment of a flight plan in flight in order to replan the flight to another aerodrome, provided that the requirements of 4.3.6 can be complied with from the point where the flight has been replanned.*

4.3.7 Refueling with passengers on board

4.3.7.1 An aeroplane shall not be refueled when passengers are embarking, on board or disembarking unless it is properly attended by qualified personnel ready to initiate and direct an evacuation of the aeroplane by the most practical and expeditious means available.

4.3.7.2 When refuelling with passengers embarking, on board or disembarking, two way communication shall be maintained by the aeroplane's inter-communication system or other suitable means between the ground crew supervising the refuelling and the qualified personnel on board the aeroplane.

*Note 1.-- The provisions of 4.3.7.1 do not necessarily require the deployment of integral aeroplane stairs or the opening emergency exits as a prerequisite to refueling.*

*Note 2.-- Provisions concerning aircraft refueling and guidance on safe refueling practices are contained in CAR Section 2, Series H-Part II.*

*Note 3.-- Additional precautions are required when refueling with fuels other than aviation kerosene or when refueling results in a mixture of aviation kerosene with other aviation turbine fuels or when an open line is used.*

4.3.7.3 The operator shall also adhere to all precautions laid down in Rule 25 A of the Aircraft Rule 1937 regarding fuelling of aeroplane.

4.3.8 Oxygen Supply

*Note.-- Approximate altitude in the standard atmosphere corresponding to the value of absolute pressure used in the text is as follows:*

Absolute Pressure	Meters	Feet
700 hPa	3000	10000

4.3.8.1 A flight to be operated at flight altitude at which the atmospheric pressure in personnel compartments will be less than 700hPa shall not be commenced unless sufficient stored breathing oxygen is carried to supply:

- a) all crew members and 10% passengers for any period in excess of 30 minutes that the pressure in the compartment occupied by them will be between 700 hPa and 620 hPa; and
- b) the crew and passengers for any period that the atmospheric pressure in compartments occupied by them will be less than 620 hPa.

4.3.8.2 A flight to be operated with a pressurised aeroplane shall not be commenced unless a sufficient quantity of stored breathing oxygen is carried to supply all the crew members and passengers as is appropriate to the circumstances of the flight being undertaken, in the event of loss of pressurisation, for any period that the atmospheric pressure in any compartment occupied by them would be less than 700 hPa. In addition, when an aeroplane is operated at flight altitudes at which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes

at the atmospheric pressure is more than 376 hPa and cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa, there shall be no less than a 10-minute supply for the occupants of the passenger compartment.

#### **4.4 In-flight procedures**

##### **4.4.1 Aerodrome operating minima**

4.4.1.1 A flight shall not be continued towards the aerodrome of intended landing, unless the latest available information indicates that at the expected time of arrival, a landing can be effected at that aerodrome or at least one destination alternate aerodrome, in compliance with the operating minima established in accordance with 4.2.7.1.

4.4.1.2 An instrument approach shall not be continued beyond the outer marker fix in case of precision approach, or below 300 m (1 000 ft) above the aerodrome in case of non-precision approach, unless the reported visibility or controlling RVR is above the specified minimum.

4.4.1.3 If, after passing the outer marker fix in case of precision approach, or after descending below 300 m (1 000 ft) above the aerodrome in case of non-precision approach, the reported visibility or controlling RVR falls below the specified minimum, the approach may be continued to DA/H or MDA/H. In any case, an aeroplane shall not continue its approach-to-land at any aerodrome beyond a point

at which the limits of the operating minima specified for that aerodrome would be infringed.

*Note.— Controlling RVR means the reported values of one or more RVR reporting locations (touchdown, mid-point and stop-end) used to determine whether operating minima are or are not met. Where RVR is used, the controlling RVR is the touchdown RVR, unless otherwise specified by DGCA.*

#### 4.4.2 Meteorological observation

The procedures for making meteorological observations on board aircraft in flight and for recording and reporting them, contained in Annex 3 and AIP shall be followed.

#### 4.4.3 Hazardous flight conditions

Hazardous flight conditions encountered, other than those associated with meteorological conditions, shall be reported to the appropriate aeronautical station as soon as possible. The reports so rendered shall give such details as may be pertinent to the safety of other aircraft.

#### 4.4.4 Flight crew members at duty stations

4.4.4.1 *Take-off and landing.* All flight crew members required to be on flight deck duty shall be at their stations.

4.4.4.2 *En route.* All flight crew members required to be on flight deck duty shall remain at their stations except when their absence is necessary for the performance of duties in connection with the operation of the aeroplane or for physiological needs.

4.4.4.3 *Seat belts.* All flight crew members shall keep their seat belts fastened when at their stations.

4.4.4.4 *Safety harness.* Any flight crew member occupying a pilot's seat shall keep the safety harness fastened during the take-off and landing phases; all other flight crew members shall keep their safety harnesses fastened during the take-off and landing phases unless the shoulder straps interfere with the performance of their duties, in which case the shoulder straps may be unfastened but the seat belt must remain fastened.

*Note:- Safety harness includes shoulder straps and a seat belt which may be used independently.*

#### 4.4.5 Use of Oxygen

4.4.5.1 All flight crew members, when engaged in performing duties essential to the safe operation of an aeroplane in flight shall use breathing oxygen continuously whenever the circumstances prevail for which its supply has been required in 4.3.8.1 or 4.3.8.2.

4.4.5.2 All flight crew members of pressurised aeroplanes operating above an altitude where the atmospheric pressure is less than 376 hPa shall have available at the

flight duty station a quick donning type of oxygen mask which will readily supply oxygen upon demand.

- 4.4.6 Safeguarding of cabin crew and passengers in pressurized aeroplanes in the event of loss of pressurization. It is recommended that Cabin crew should be safeguarded so as to ensure reasonable probability of their retaining consciousness during any emergency descent which may be necessary in the event of loss of pressurization and, in addition, they should have such means of protection as will enable them to administer first aid to passengers during stabilized flight following the emergency. Passengers should be safeguarded by such devices or operational procedures as will ensure reasonable probability of their surviving the effects of hypoxia in the event of loss of pressurization.

*Note: It is not envisaged that cabin crew will always be able to provide assistance to passengers during emergency descent procedures which may be required in the event of loss of pressurization.*

- 4.4.7 In-flight operational instructions

Operational instructions involving a change in the ATS flight plan shall, when practicable, be coordinated with the appropriate ATS unit before transmission to the aeroplane.

*Note.- When the above co-ordination has not been possible, operational instructions do not relieve a pilot of the responsibility for obtaining an appropriate clearance from an ATS unit applicable, before making a change in flight plan*

- 4.4.8 Instrument flight procedures

- 4.4.8.1 Instrument approach procedures designed in accordance with the classification of instrument approach and landing operations as approved and promulgated by

DGCA to serve each instrument runway or aerodrome utilized for instrument flight operations.

- 4.4.8.2 All aeroplanes operated in accordance with instrument flight rules shall comply with the instrument flight procedures approved by DGCA in which the aerodrome is located.

*Note 1.— Classification of instrument approach and landing operations are in defined in the definitions.*

*Note 2.— Operational procedures recommended for the guidance of operations personnel involved in instrument flight operations are described in PANS-OPS (Doc 8168), Volume I.*

*Note 3.— Criteria for the construction of instrument flight procedures for the guidance of procedure specialists are provided in PANS-OPS (Doc 8168), Volume II.*

- 4.4.9 Aeroplane operating procedures for noise abatement

- 4.4.9.1 Aeroplane operating procedures for noise abatement should comply with the provisions as specified by aerodrome authorities.
- 4.4.9.2 Noise abatement procedures specified by an operator for any one aeroplane type should be the same for all aerodromes.

#### **4.4.10 Aeroplane operating procedures for rates of climb and descent**

It is recommended that unless otherwise specified in an air traffic control instruction, to avoid unnecessary airborne collision avoidance system (ACAS II) resolution advisories in aircraft at or approaching adjacent altitudes or flight levels, operators should specify procedures by which an aeroplane climbing or descending to an assigned altitude or flight level, especially with an autopilot engaged, may do so at a rate less than 8 m/sec or 1 500 ft/min (depending on the instrumentation available) throughout the last 300 m (1 000 ft) of climb or descent to the assigned level when the pilot is made aware of another aircraft at or approaching an adjacent

*Note.— Material concerning the development of these procedures is contained in the PANS-OPS (Doc 8168) Volume I, Part III, Section 3, Chapter 3.*

#### **4.5 Duties of pilot-in-command**

- 4.5.1 The pilot-in-command shall be responsible for the safety of all crew members, passengers and cargo on board when the doors are closed. The pilot-in-command shall also be responsible for the operation and safety of the aeroplane from the moment the aeroplane is ready to move for the purpose of taking off until the moment it finally comes to rest at the end of the flight and the engine(s) used as primary propulsion units are shut down.
- 4.5.2 The pilot-in-command shall ensure that the checklists specified in 4.2.6 are complied with in detail.
- 4.5.3 The pilot-in-command shall be responsible for notifying the nearest appropriate authority by the quickest available means of any accident involving the aeroplane, resulting in serious injury or death of any person or substantial damage to the aeroplane or property.
- 4.5.4 The pilot-in-command shall be responsible for reporting all known or suspected defects in the aeroplane, to the operator, at the termination of the flight.
- 4.5.5 The pilot-in-command shall be responsible for the journey log book or the general declaration containing the information listed in 11.4.1.
- 4.5.6 The pilot – in – command shall be responsible for the maintenance of flight discipline.
- 4.5.7 The pilot - in- command shall have final authority as the disposition of the aircraft while he/she is in command.

#### **4.6 Duties of flight operations officer/ flight dispatcher**

- 4.6.1 A flight operations officer/flight dispatcher when employed shall be trained in accordance with CAR Section 7, Series 'M' Part II shall:

- a) assist the pilot-in-command in flight preparation and provide the relevant information;
- b) assist the pilot-in-command in preparing the operational and ATS flight plans, sign when applicable and file the ATS flight plan with the appropriate ATS unit; and
- c) furnish the pilot-in-command while in flight, by appropriate means, with information which may be necessary for the safe conduct of the flight.

4.6.2 In the event of an emergency, a flight operations officer/flight dispatcher shall:

- a) initiate such procedures as outlined in the operations manual while avoiding taking any action that would conflict with ATC procedures; and
- b) convey safety-related information to the pilot-in-command that may be necessary for the safe conduct of the flight, including information related to any amendments to the flight plan that become necessary in the course of the flight.

*Note.— It is equally important that the pilot-in-command also convey similar information to the flight operations officer/ flight dispatcher during the course of the flight, particularly in the context of emergency situations.*

4.6.3 In the event of an emergency, a flight operations officer/flight dispatcher shall:

- a) initiate such procedures as outlined in the operations manual while avoiding taking any action that would conflict with ATC procedures; and
- b) convey safety-related information to the pilot -in-command that may be necessary for the safe conduct of the flight, including information related to any amendments to the flight plan that become necessary in the course of the flight.

*Note.— It is equally important that the pilot -in-command also convey similar information to the flight operations officer/ flight dispatcher during the course of the flight, particularly in the context of emergency situations.*

#### **4.7 Additional requirements for extended range operations by aeroplanes with two turbine engines ETOPS)**

4.7.1 Requirements for ETOPS are given in CAR Section 2, Series 'O' Part VIII

#### **4.8 Carry-on baggage**

The operator shall ensure that all baggage carried onto an aeroplane and taken into the passenger cabin is adequately and securely stowed.

#### **4.9 Additional requirements for single pilot operations under the Instrument Flight Rules (IFR)**

4.9.1 An aeroplane shall not be operated under the IFR by a single pilot unless approved by DGCA.

4.9.2 An aeroplane shall not be operated under the IFR or at night by a single pilot unless:

- a) the flight manual does not require a flight crew of more than one;
- b) the aeroplane is propeller-driven;
- c) the maximum approved passenger seating configuration is not more than nine;
- d) the maximum certificated take-off mass does not exceed 5 700 kg;
- e) the aeroplane is equipped as described in 6.22; and
- f) the pilot-in-command has satisfied requirements of experience, training, checking and recency described in 9.4.5.

#### 4.10 Fatigue Management

The operator shall comply with the CAR requirements established in Section - 7 Series 'J' "**Flight Duty Time Limitations**" for Flight Crew and Cabin Crew for fatigue Management.

### 5.0 AEROPLANE PERFORMANCE OPERATING LIMITATIONS

#### 5.1 General

- 5.1.1 Aeroplanes shall be operated in accordance with the provisions of the Flight Manual approved by the State of design.
- 5.1.2 Except as provided in 5.4, single-engine aeroplanes shall only be operated in conditions of weather and light, and over such routes and diversions there from, that permit a safe forced landing to be executed in the event of engine failure.

#### 5.2 Applicable to aeroplanes certificated in accordance with Parts IIIA and IIIB of Annex 8

- 5.2.1 The Standards contained in 5.2.2 to 5.2.11 inclusive are applicable to the large aeroplanes to which Parts IIIA and IIIB of Annex 8 are applicable.

*Note.— The following Standards do not include quantitative specifications comparable to those found in national airworthiness codes. In accordance with 5.1.1, they are to be supplemented by national requirements prepared by Contracting States.*

- 5.2.2 The level of performance defined by the appropriate parts of the comprehensive and details as mentioned in 5.1.1 for the aeroplanes designated in 5.2.1 shall be at least substantially equivalent to the overall level embodied in the Standards of this CAR.
- 5.2.3 An aeroplane shall be operated in compliance with the terms of its certificate of airworthiness and within the approved operating limitations contained in its flight manual.
- 5.2.4 The operator shall take such precautions as are reasonably possible to ensure that the general level of safety contemplated by these provisions is maintained under all

expected operating conditions, including those not covered specifically by the provisions of this CAR.

- 5.2.5 A flight shall not be commenced unless the performance information provided in the flight manual, supplemented as necessary with other data acceptable to the DGCA, indicates that the Standards of 5.2.6 to 5.2.11 can be complied with for the flight to be undertaken.
- 5.2.6 In applying the Standards of this CAR, account shall be taken of all factors that significantly affect the performance of the aeroplane, (including, but not limited to: the mass of the aeroplane, the operating procedures, the pressure-altitude appropriate to the elevation of the aerodrome, the ambient temperature, the wind, the runway slope, and surface conditions of runway i.e., presence of snow, slush, water, and/or ice; for landplanes, water surface condition for seaplanes). Such factors shall be taken into account directly as operational parameters or indirectly by means of allowances or margins, which may be provided in the scheduling of performance data or in comprehensive and detailed code of performance in accordance with which the aeroplane is being operated.
- 5.2.7 Mass limitations
- a) The mass of the aeroplane at the start of take-off shall not exceed the mass at which 5.2.8 is complied with, nor the mass at which 5.2.9, 5.2.10 and 5.2.11 are complied with, allowing for expected reductions in mass as the flight proceeds, and for such fuel jettisoning as is envisaged in applying 5.2.9 and 5.2.10 and, in respect of alternate aerodromes, 5.2.7 c) and 5.2.11.
  - b) In no case shall the mass at the start of take-off exceed the maximum take-off mass specified in the flight manual for the pressure-altitude appropriate to the elevation of the aerodrome, and, if used as a parameter to determine the maximum take-off mass, any other local atmospheric condition.
  - c) In no case shall the estimated mass for the expected time of landing at the aerodrome of intended landing and at any destination alternate aerodrome, exceed the maximum landing mass specified in the flight manual for the pressure-altitude appropriate to the elevation of those aerodromes, and if used as a parameter to determine the maximum landing mass, any other local atmospheric condition.
  - d) In no case shall the mass at the start of take-off, or at the expected time of landing at the aerodrome of intended landing and at any destination alternate aerodrome, exceed the relevant maximum masses at which compliance has been demonstrated with the applicable noise certification Standards in Annex 16, Volume I, unless otherwise authorized in exceptional circumstances for a certain aerodrome or a runway where there is no noise disturbance problem, by the competent authority of the State in which the aerodrome is situated.
- 5.2.8 *Take-off.* The aeroplane shall be able, in the event of a critical engine failing or for other reason at any point in the take-off, either to discontinue the take-off and stop within the accelerate-stop distance available, or to continue the take-off and clear all obstacles along the flight path by an adequate vertical or horizontal distance until the aeroplane is in a position to comply with 5.2.9. When determining the resulting take-off

obstacle accountability area, the operating conditions, such as the crosswind component and navigation accuracy, must be taken into account.

- 5.2.8.1 In determining the length of the runway available, account shall be taken of the loss, if any of the runway length due to alignment of the aeroplane prior to take-off.
- 5.2.9 *En route – one engine inoperative.* The aeroplane shall be able, in the event of the critical engine becoming inoperative at any point along the route or planned diversions therefrom, to continue the flight to an aerodrome at which the Standard of 5.2.11 can be met, without flying below the minimum flight altitude at any point.
- 5.2.10 *En route — two engines inoperative.* In the case of aeroplanes having three or more engines, on any part of a route where the location of en-route alternate aerodromes and the total duration of the flight are such that the probability of a second engine becoming inoperative must be allowed for if the general level of safety implied by the Standards of this CAR is to be maintained, the aeroplane shall be able, in the event of any two engines becoming inoperative, to continue the flight to an en-route alternate aerodrome and land.
- 5.2.11 *Landing.* The aeroplane shall, at the aerodrome of intended landing and at any alternate aerodrome after clearing all obstacles in the approach path by a safe margin, be able to land, with assurance that it can come to a stop or, for a seaplane, to a satisfactorily low speed, within the landing distance available. Allowance shall be made for expected variations in the approach and landing techniques, if such allowance has not been made in the scheduling of performance data.

### **5.3 Obstacle data**

- 5.3.1 The operator shall obtain details of all obstacle data to develop procedures to comply with 5.2.8.
- 5.3.2 The operator shall take account of charting accuracy when assessing compliance with 5.2.8.

### **5.4 Additional requirements for operations of single-engine turbine-powered aeroplanes at night and/or in Instrument Meteorological Conditions (IMC details are in Appendix B )**

- 5.4.1 In approving operations by single-engine turbine-powered aeroplanes at night and / or in IMC, DGCA shall ensure that the airworthiness certification of the aeroplane is appropriate and that the overall level of safety intended by the provisions of Annexes 6 and 8 is provided by:
- a) the reliability of the turbine engine;
  - b) the operator's maintenance procedures, operating practices, flight dispatch procedures and crew training programmes; and
  - c) equipment and other requirements provided in accordance with Appendix B.

5.4.2 All single-engine turbine-powered aeroplanes operated at night and/or in IMC shall have an engine trend monitoring system, and those aeroplanes for which the individual certificate of airworthiness is first issued on or after 1st January 2005 shall have an automatic trend monitoring system.

## **6 AEROPLANE INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS**

### **6.1 General**

6.1.1 In addition to the minimum equipment necessary for the issuance of a certificate of airworthiness, the instruments, equipment and flight documents prescribed in the following paragraphs, shall be installed or carried, as appropriate, in aeroplanes according to the aeroplane used and to the circumstances under which the flight is to be conducted. The prescribed instruments and equipment including their installation shall be of approved type.

6.1.2 An aeroplane shall carry a certified true copy of the air operator permit specified in 4.2.1, and a copy of the operations specifications relevant to the aeroplane type, issued in conjunction with the permit.

*Note.— Provisions for the content of the air operator permit and its associated operations specifications are contained in 4.2.1.6 and 4.2.1.7.*

6.1.3 The operator shall include in the Operations Manual a minimum equipment list (MEL), approved by the DGCA which will enable the pilot-in-command to determine whether a flight may be commenced or continued from any intermediate stop should any instrument, equipment or system become inoperative. Where the State of the operator is not the State of Registry, the State of the operator shall ensure that the MEL does not affect the aeroplane's compliance with the airworthiness requirements applicable in the State of Registry.

6.1.4 The operator shall provide operations staff and flight crew with an aircraft operating manual, for each aircraft type operated, containing the normal, abnormal and emergency procedures relating to the operation of the aircraft. The manual shall include details of the aircraft systems and of the checklists to be used. (The design of the manual shall observe Human Factors principles.)

*Note- Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual (ICAO Doc 9683).*

### **6.2 All aeroplanes on all flights**

6.2.1 An aeroplane shall be equipped with instruments which will enable the flight crew to control the flight path of the aeroplane, carry out any required procedural manoeuvres and observe the operating limitation of the aeroplane in the expected operating conditions.

6.2.2 An aeroplane shall be equipped with:

a) accessible and adequate medical supplies;

**Recommendation.—** *Medical supplies should comprise:*

- 1) *one or more first-aid kits for the use of cabin crew in managing incidents of ill health; and*
  - 2) *for aeroplanes required to carry cabin crew as part of the operating crew, one universal precaution kit (two for aeroplanes authorized to carry more than 250 passengers) for the use of cabin crew members in managing incidents of ill health associated with a case of suspected communicable disease, or in the case of illness involving contact with body fluids; and*
  - 3) *for aeroplanes authorized to carry more than 100 passengers, on a sector length of more than two hours, a medical kit, for the use of medical doctors or other qualified persons in treating in-flight medical emergencies.*
- b) portable fire extinguishers of a type which, when discharged, will not cause dangerous contamination of the air within the aeroplane. At least one shall be located in:
- 1) the pilot's compartment; and
  - 2) each passenger compartment that is separate from the pilot's compartment and that is not readily accessible to the flight crew.

*Note.1 - Any portable fire extinguisher so fitted in accordance with the Certificate of Airworthiness of the aeroplane may count as one prescribed.*

*Note 2. – Refer to 6.2.2.1 for fire extinguishing agents.*

- c) 1) a seat or berth for each person over an age of two years;
- 2) a seat belt for each seat and restraining belts for each berth; and
- 3) a safety harness for each flight crew seat. The safety harness for each pilot seat shall incorporate a device which will automatically restrain the occupant's torso in the event of rapid deceleration.

It is recommended that the safety harness for each pilot seat should incorporate a device to prevent a suddenly incapacitated pilot from interfering with the flight controls.

*Note: Safety harness includes shoulder straps and a seat belt which may be used independently.*

- d) means of ensuring that the following information and instructions are conveyed to passengers:
- 1) when seat belts are to be fastened;
  - 2) when and how Oxygen equipment is to be used if the carriage of oxygen is required.
  - 3) restrictions on smoking;

*Note.- Smoking is prohibited in the domestic flights.*

**Rev. 1, 30<sup>th</sup> Nov 2011**

- 4) location and use of life jackets or equivalent individual flotation devices where their carriage is required;
- 5) location and method of opening emergency exits;
- e) spare electrical fuses of appropriate ratings for replacement of those accessible in flight.

6.2.2.1 Any agent used in a built-in fire extinguisher for each lavatory disposal receptacle for towels, paper or waste in an aeroplane for which the individual certificate of airworthiness is first issued on or after 31 December 2011 and any extinguishing agent used in a portable fire extinguisher in an aeroplane for which the individual certificate of airworthiness is first issued on or after 31 December 2016 shall:

- a) meet the applicable minimum performance requirements and;
- b) not be of a type listed in Annex A, Group II of the *Montreal Protocol on Substances That Deplete the Ozone Layer*, 8th Edition, 2009.

*Note.— Information concerning extinguishing agents is contained in the UNEP Halons Technical Options Committee Technical Note No. 1 – New Technology Halon Alternatives and FAA Report No. DOT/FAA/AR-99-63, Options to the Use of Halons for Aircraft Fire Suppression Systems.*

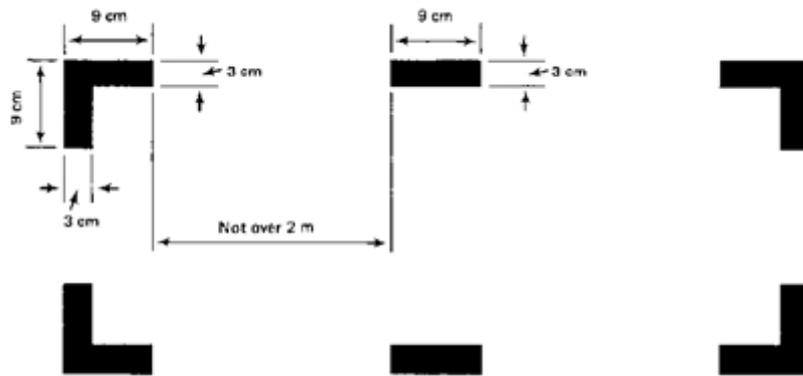
6.2.3 An aeroplane shall carry:

- a) the operations manual prescribed in 4.2.2 or those parts of it that pertain to flight operations;
- b) the flight manual for the aeroplane, or other documents containing performance data required for the application of Section 5 and any other information necessary for the operation of the aeroplanes within the terms of its certificate of airworthiness unless this data are available in the Operations Manual;
- c) current and suitable charts to cover the route of the proposed flight and any route along which it is reasonable to expect that the flight may be diverted; and
- d) any other documents prescribed in CAR Section 2, Series X- Part VII.

6.2.4 Marking of break-in points

6.2.4.1 If areas of the fuselage suitable for break-in by rescue crews in emergency are marked on an aeroplane, such areas shall be marked as shown in the diagram on locations specified by the manufacturers. The colour of the markings shall be red or yellow, and if necessary they shall be outlined in white to contrast with the background.

6.2.4.2 If the corner markings are more than 2m apart, intermediate lines 9cm x 3cm shall be inserted so that there is no more than 2 m between adjacent markings.



**6.3 Flight recorders.** The operators shall comply with the requirements given in the CAR Section 2, Series 'I' Part V and Series 'I' Part VI for installation of Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) as the case may be or the combination recorder.  
Rev. 1, 30<sup>th</sup> Nov 2011

**6.4 All aeroplanes operated as VFR flights**

6.4.1 All aeroplane when operated in accordance with VFR shall be equipped with:

- a) a magnetic compass;
- b) an accurate time piece indicating the time in hours, minutes and seconds.
- c) a sensitive pressure altimeter;
- d) an airspeed indicator;
- e) rpm indicator for each engine;
- f) free air temperature indicator;
- g) oil pressure indicator for each engine;
- h) oil quantity indicator for each tank;
- i) CHT indicator for each engine having rated BHP above 250 or EGT gauge for each engine in case turbine engine is fitted;
- j) oil temperature gauge for each engine;
- k) fuel quantity indicator for each tank;
- l) landing gear position indicator for aircraft fitted with retractable landing gear.

6.4.2 VFR flights which are operated as controlled flights shall be equipped in accordance with 6.9.

**6.5 All aeroplanes on flights over water**

**6.5.1 Seaplanes**

All seaplanes for all flights shall be equipped with

- a) one life jacket or equivalent individual flotation device, for each person on board, stowed in a position easily accessible from the seat or berth of a person for whose use it is provided.
- b) equipment for making the sound signal prescribed in the international regulations for preventing collisions at Sea, where applicable, and;
- c) one sea anchor (drogue)

*Note: "Seaplanes" include amphibians operated as seaplanes.*

**6.5.2 Landplanes**

**6.5.2.1 Landplanes shall carry the equipment prescribed in para 6.5.2.2:**

- a) when flying over water and at a distance of more than 50 NM (93 km) away from the shore, in the case of landplanes operated in accordance with 5.2.9 or 5.2.10;
- b) when flying en route over water beyond gliding distance from the shore, in the case of all other landplanes; and
- c) when taking off or landing at an aerodrome where, in the opinion of DGCA, the takeoff or approach path is so disposed over water that in the event of a mishap there would be a likelihood of a ditching.

**6.5.2.2 The equipment referred to in 6.5.2.1 shall comprise one life jacket for each person on board, stowed in a position easily accessible from the seat or berth of the person for whose use it is provided.**

*Note:- "Landplanes" includes amphibians operated as landplanes.*

**6.5.3 All aeroplanes on long range over water flights**

**6.5.3.1 In addition to the equipment prescribed in 6.5.1 or 6.5.2 whichever is applicable, the following equipment shall be installed in all aeroplanes when used over routes on which the aeroplane may be over water and at more than a distance corresponding to 120 minutes at cruising speed or 400 NM (740 km), whichever is the lesser, away from land suitable for making an emergency landing in the case of aircraft operated with 5.2.9 or 5.2.10 and 30 minutes or 185 km (100 NM), whichever is the lesser, for all other aeroplanes:**

- a) lifesaving rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in emergency, provided with such life-saving equipment including means of sustaining life as is appropriate to the flight to be undertaken; and

- b) equipment for making the pyrotechnical distress signals described in CAR Section 4 Series 'E' Part I.

6.5.3.2 Each life jacket when carried in accordance with 6.5.1 a), 6.5.2.1 and 6.5.2.2, shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

**6.6 All aeroplanes on flights over designated land areas**

Aeroplane when operated across land areas which may be designated by AAI as areas in which search and rescues would be especially difficult, shall be equipped with at least one survival radio equipment, stowed so as to facilitate its ready use in an emergency which operates on VHF. The equipment shall be portable, not dependent for operation upon the aircraft power supply and capable of being operated away from the aircraft by unskilled persons. Aeroplane shall also be equipped with such signaling devices and life-saving equipment (including means of sustaining life), as may be appropriate to the area overflown.

**6.7 All aeroplanes on high altitude flight**

*Note.— Approximate altitude in the Standard Atmosphere corresponding to the value of absolute pressure used in this text is as follows:*

<i>Absolute pressure</i>	<i>Metres</i>	<i>Feet</i>
<i>700 hPa</i>	<i>3 000</i>	<i>10 000</i>
<i>620 hPa</i>	<i>4 000</i>	<i>13 000</i>
<i>376 hPa</i>	<i>7 600</i>	<i>25 000</i>

- 6.7.1 An aeroplane intended to be operated at altitudes at which the atmospheric pressure is less than 700 hPa shall be provided with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 4.3.8.1.
- 6.7.2 An aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa but which is provided with means of maintaining pressures greater than 700 hPa in personnel compartments shall be provided with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 4.3.8.2.
- 6.7.3 Pressurised aeroplanes which are intended to be operated at flight altitude at which the atmospheric pressure would be less than 376 hPa., shall be equipped with the device to provide positive warning to the pilot of any dangerous loss of pressurisation.
- 6.7.4 Pressurized aeroplanes introduced into service before 1 July 1962 and intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa shall be equipped with a device to provide positive warning to the pilot of any dangerous loss of pressurization

- 6.7.5 An aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa, cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa shall be provided with automatically deployable oxygen equipment to satisfy the requirements of 4.3.8.2. The total number of oxygen dispensing units shall exceed the number of passenger and cabin attendant seats by at least 10 per cent.
- 6.7.6 If an aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa, and for which the individual certificate of airworthiness was first issued before 9 November 1998, should be provided with automatically deployable oxygen equipment to satisfy the requirements of 4.3.8.2. The total number of oxygen dispensing units should exceed the number of passenger and cabin crew seats by at least 10 per cent.

#### **6.8 All aeroplanes in icing conditions**

All aeroplanes shall be equipped with suitable anti-icing and/or de-icing devices when operated in circumstances in which icing conditions are reported to exist or are expected to be encountered.

#### **6.9 All aeroplanes operated in accordance with Instrument Flight Rules**

6.9.1 All aeroplanes when operated in accordance with the instrument flight rules, or when the aeroplanes cannot be maintained in a desired attitude without reference to one or more flight instruments, shall be equipped with

- a) a magnetic compass;
- b) an accurate timepiece indicating the time in hours, minutes and seconds;
- c) two sensitive pressure altimeters with counter drum-pointer or equivalent presentation;

*Note.— Neither three-pointer nor drum-pointer altimeters satisfy the requirement in 6.9.1(c).*

- d) an airspeed indicating system with means of preventing malfunctioning due to either condensation or icing;
- e) a turn and slip indicator;
- f) an attitude indicator (artificial horizon);
- g) a heading indicator (directional gyroscope);

*Note.— The requirements of 6.9.1 e), f) and g) may be met by combinations of instruments or by integrated flight director systems provided that the safeguards against total failure, inherent in the three separate instruments, are retained.*

- h) a means of indicating whether the power supply to the gyroscopic instrument is adequate;
- i) a means of indicating in the flight crew compartment the outside air temperature;
- j) a rate-of-climb and descent indicator; and
- k) such additional instruments or equipment as prescribed by DGCA.

**6.9.2 All aeroplanes over 5700 kg - Emergency power supply for electrically operated attitude indicating instruments**

6.9.2.1 All aeroplanes of a maximum certificated take off mass of over 5700 kg newly introduced into service after 1st January, 1975, shall be fitted with an emergency power supply independent of the main electrical generating system for the purpose of operating and illuminating for a minimum period of 30 minutes, an attitude indicating instrument (artificial horizon), clearly visible to the pilot-in-command. The emergency power supply shall be automatically operative after total failure of the main electrical generating system and clear indication shall be given on the instrument panel that the attitude indicator(s) is being operated by emergency power.

6.9.2.2 Those instruments that are used by any one pilot shall be so arranged as to Permit/ Certificate the pilot to see their indications readily from his or her station, with the minimum practicable deviation from the position and line of vision normally assumed when looking forward along the flight path.

**6.10 All aeroplanes when operated at night**

All aeroplanes, when operated at night shall be equipped with:

- a) all equipment specified in 6.9;
- b) position lights;
- c) anti collision lights;
- d) two landing lights;

*Note.— Aeroplanes not certificated in accordance with Annex 8 which are equipped with a single landing light having two separately energized filaments will be considered to have complied with 6.10 d).*

- e) illumination for all instruments and equipment that are essential for the safe operation of the aeroplane that are used by the flight crew;
- f) lights in all passenger compartments; and
- g) an electric torch for each crew member station

**6.11 Pressurized aeroplanes when carrying passengers — weather radar**

Pressurised aeroplanes when carrying passengers, should be equipped with operative weather radar whenever such aeroplane are operated in areas where thunderstorms

or other potentially hazardous weather conditions regarded as detectable with airborne weather radar may be expected to exist along the route either at night or under Instrument Meteorological Conditions.

**6.12 All aeroplanes operated above 15 000 m (49 000 ft) —radiation indicator**

All aeroplanes intended to be operated above 15 000 m (49 000 ft) shall carry equipment to measure and indicate continuously the dose rate of total cosmic radiation being received (i.e. the total of ionizing and neutron radiation of galactic and solar origin) and the cumulative dose on each flight. The display unit of the equipment shall be readily visible to a flight crew member.

*Note.— The equipment is calibrated on the basis of assumptions acceptable to the DGCA*

**6.13 All aero planes complying with the noise certification Standards in Annex 16, Volume I**

An aeroplane shall carry a document attesting noise certification in English language.

*Note.— The attestation may be contained in any document, carried on board, approved by DGCA*

**6.14 Mach number indicator**

All aeroplanes with speed limitations expressed in terms of Mach number, shall be equipped with a Mach number indicator.

*Note.— This does not preclude the use of the airspeed indicator to derive Mach number for ATS purposes.*

**6.15 Aeroplanes required to be equipped with ground proximitywarning systems (GPWS)**

The operator shall ensure that requirements laid down in the CAR section2 , Series 'I' Part VII in relation to the installation of Ground Proximity Warning System ( GPWS) are followed.

**6.16 Aeroplanes carrying passengers —cabin crew seats**

6.16.1 All aeroplanes shall be equipped with a forward or rearward facing (within 15 degrees of the longitudinal axis of the aeroplane) seat, fitted with a safety harness for the use of each cabin crew member required to satisfy the intent of 12.1 in respect of emergency evacuation.

6.16.2 Aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 1981

It is recommended all aeroplanes should be equipped with a forward or rearward facing (within 15 degrees of the longitudinal axis of the aeroplane) seat, fitted with a safety harness for the use of each cabin crew member required to satisfy the intent of 12.1 in respect of emergency evacuation.

*Note.— Safety harness includes shoulder straps and a seat belt which may be used independently.*

6.16.3 Cabin crew seats provided in accordance with 6.16.1 and 6.16.2 shall be located near floor level and other emergency exits as required by the DGCA for emergency evacuation.

### **6.17 Emergency locator transmitter (ELT)**

6.17.1 *All aeroplanes shall carry an automatic ELT.*

6.17.2 All aeroplanes operated on long-range over-water flights shall be equipped with at least two ELTs, one of which shall be automatic.

*Note 1: The judicious choice of numbers of ELTs, their type and placement on aircraft and associated floatable life support systems will ensure the greatest chance of ELT activation in the event of an accident for aircraft operating over water or land, including areas especially difficult for search and rescue. Placement of transmitter units is a vital factor in ensuring optimal crash and fire protection. The placement of the control and switching devices (activation monitors) of automatic fixed ELTs and their associated operational procedures will also take into consideration the need for rapid detection of inadvertent activation and convenient manual switching by crew members.*

### **6.18 Aeroplanes required to be equipped with an airborne collision avoidance system (ACAS II)**

The operator shall ensure that requirements laid down in the CAR Section 2, Series 'I' Part VIII in relation to the installation of Airborne Collision Avoidance System (ACAS) are followed.

### **6.19 Requirements for pressure-altitude reporting transponders**

6.19.1 All aeroplanes shall be equipped with a pressure- altitude reporting transponder which operates in accordance with the relevant provisions of Annex 10, Volume IV.

6.19.2 All aeroplanes for which the individual certificate of airworthiness is first issued after 1 January 2009 shall be equipped with a data source that provides pressure-altitude information with a resolution of 7.62 m (25 ft), or better.

6.19.3 After 1 January 2012, all aeroplanes shall be equipped with a data source that provides pressure-altitude information with a resolution of 7.62 m (25 ft), or better.

6.19.4 The Mode S transponder should be provided with the airborne/on-the-ground status if the aeroplane is equipped with an automatic means of detecting such status.

*Note 1.— These provisions will improve the effectiveness of airborne collision avoidance systems as well as air traffic services that employ Mode S radar. In particular, tracking processes are significantly enhanced with a resolution of 7.62 m (25 ft), or better.*

*Note 2.— Mode C replies of transponders always report pressure altitude in 30.50 m (100ft) increments irrespective of the resolution of the data source.*

6.19.5 The operator shall ensure that requirements laid down in the CAR Section 2, Series 'R' Part IV in relation to the installation of Pressure Altitude Reporting Transponder are complied with.

Note 1- These provisions will improve the effectiveness of airborne collision avoidance system as well as air traffic services that employ Mode 'S' radar. In particular tracking processes are significantly enhanced with the resolution of 7.62 M (25ft), or better.

Note 2- Mode 'C' replies of transponders always report pressure altitudes in 30.50 m (100ft) increments irrespective of the resolution of the data source.

## **6.20 Microphones**

All flight crew members required to be on flight deck duty shall communicate through boom or throat microphones below the transition level/altitude.

## **6.21 Turbo-jet aeroplanes — forward-looking wind shear warning system**

The requirements to the forward looking wind shear warning system are given in CAR Section 2 , Series 'I' Part VII

## **6.22 All aeroplanes operated by a single pilot under the instrument flight rules (IFR) or at night**

For approval in accordance with 4.9.1, all aeroplanes operated by a single pilot under the IFR or at night shall be equipped with:

- a) a serviceable autopilot that has at least altitude hold and heading select modes;
- b) a headset with a boom microphone or equivalent; and
- c) means of displaying charts that enables them to be readable in all ambient light conditions.

## **7.0 AEROPLANE COMMUNICATION AND NAVIGATION EQUIPMENT**

### **7.1 Communication equipment**

7.1.1 An aeroplane shall be provided with radio communication equipment capable of:

- a) conducting two-way communication for aerodrome control purposes;
- b) receiving meteorological information at any time during flight; and
- c) conducting two-way communication at any time during flight with at least one aeronautical station and with such other aeronautical stations and on such frequencies as may be prescribed by the appropriate authority.

*Note.— The requirements of 7.1.1 are considered fulfilled if the ability to conduct the communications specified therein is established during radio propagation conditions which are normal for the route.*

- 7.1.2 The radio communication equipment required in accordance with 7.1.1 shall provide for communications on the aeronautical emergency frequency 121.5 MHz.
- 7.1.3 For flights in defined portions of airspace or on routes where an RCP type has been prescribed, an aeroplane shall, in addition to the requirements specified in 7.1.1:
- a) be provided with communication equipment which will enable it to operate in accordance with the prescribed RCP type(s); and
  - b) be authorized by the State of the Operator for operations in such airspace.

*Note.— Information on RCP and associated procedures, and guidance concerning the approval process, are contained in the Manual on Required Communication Performance (RCP) (in preparation). This document also contains references to other documents produced by States and international bodies concerning communication systems and RCP.*

## **7.2 Navigation equipment**

- 7.2.1 An aeroplane shall be provided with navigation equipment which will enable it to proceed:
- a) in accordance with its operational flight plan; and
  - b) in accordance with the requirements of air traffic services;  
  
except when navigation for flights under the visual flight rules is accomplished by visual reference to landmarks.
- 7.2.2 For operations where a navigation specification for PBN has been prescribed, an aeroplane shall, in addition to the requirements specified in 7.2.1:
- a) be provided with navigation equipment which will enable it to operate in accordance with the prescribed navigation specification(s); and
  - b) be authorized by DGCA for operations in such operations.

*Note.— Information on performance-based navigation, and guidance concerning the implementation and operational approval process, are contained in performance based navigation manual(Doc 9613).*

7.2.3 For flights in defined portions of airspace where based on Regional Air Navigation agreement, minimum navigation performance specifications (MNPS) are prescribed, an aeroplane shall be provided with navigation equipment which:

- a) continuously provides indications to the flight crew of adherences to or departures from track to the required degree of accuracy at any point along with the track; and
- b) has been authorised by DGCA for MNPS operations concerned.

*Note.— The prescribed minimum navigation performance specifications and the procedures governing their application are given in CAR Section 2, Series 'O' Part IX.*

7.2.4 For flights in defined portions of airspace where, based on Regional Air Navigation Agreement, a reduced vertical separation minimum (RVSM) of 300 m (1 000 ft) is applied between FL 290 and FL 410 inclusive, an aeroplane:

- a) shall be provided with equipment which is capable of:
  - 1) indicating to the flight crew the flight level being flown;
  - 2) automatically maintaining a selected flight level;
  - 3) providing an alert to the flight crew when a deviation occurs from the selected flight level. The threshold for the alert shall not exceed  $\pm 90$  m (300 ft); and
  - 4) automatically reporting pressure-altitude;
- b) shall be authorized by DGCA for operation in the airspace concerned; and
- c) shall demonstrate a vertical navigation performance in accordance with the *Note* given below.

7.2.5. Prior to granting the RVSM approval required in accordance with 7.2.4 b), the DGCA shall be satisfied that:

- a) the vertical navigation performance capability of the aeroplane satisfies the requirements specified in the *Note* given below;
- b) the operator has instituted appropriate procedures in respect of continued airworthiness (maintenance and repair) practices and programmes; and
- c) the operator has instituted appropriate flight crew procedures for operations in RVSM airspace.

*Note.-- An RVSM approval is valid globally on the understanding that any operating procedures specific to a given region will be stated in the operations manual or appropriate crew guidance.*

1. In respect of groups of aeroplanes that are nominally of identical design and build with respect to all details that could influence the accuracy of height-keeping performance, the height-keeping performance capability shall be such that the total vertical error (TVE) for the group of aeroplanes shall have a mean no greater than 25 m (80 ft) in magnitude and shall have a standard deviation no greater than  $28 - 0.013z^2$  for  $0 \leq z \leq 25$  when  $z$  is the magnitude of the mean TVE in metres, or  $92 - 0.004z^2$  for  $0 \leq z \leq 80$  where  $z$  is in feet. In addition, the components of TVE shall have the following characteristics:
    - a) the mean altimetry system error (ASE) of the group shall not exceed 25 m (80 ft) in magnitude;
    - b) the sum of the absolute value of the mean ASE and of three standard deviations of ASE shall not exceed 75 m (245 ft); and
    - c) the differences between cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.
  2. In respect of aeroplanes for which the characteristics of the airframe and altimetry system fit are unique and so cannot be classified as belonging to a group of aeroplanes encompassed by paragraph 1, the height-keeping performance capability shall be such that the components of the TVE of the aeroplane have the following characteristics
    - a) the ASE of the aeroplane shall not exceed 60 m (200 ft) in magnitude under all flight conditions; and
    - b) the differences between the cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.
- 7.2.6 Operator shall ensure that, in respect of those aeroplanes mentioned in 7.2.4, adequate provisions exist for:
- a) receiving the reports of height-keeping performance issued by the monitoring agencies established in accordance with Annex 11, 3.3.4.1; and
  - b) taking immediate corrective action for individual aircraft, or aircraft type groups, identified in such reports as not complying with the height-keeping requirements for operation in airspace where RVSM is applied.
- 7.2.7 An operator that has been issued an RVSM approval shall ensure that a minimum of two aeroplanes of each aircraft type grouping of the operator have their height-keeping performance monitored, at least once every two years or within intervals of 1 000 flight hours per aeroplane, whichever period is longer. If an operator aircraft type grouping consists of a single aeroplane, monitoring of that aeroplane shall be accomplished within the specified period.

*Note.—Monitoring data from any regional monitoring programme established in accordance with Appendix E, may be used to satisfy the requirement.*

7.2.8 DGCA is responsible for airspace where RVSM has been implemented, or to issue RVSM approvals to operators within India. An aircraft operating without the approval in Indian airspace, and an operator for whom DGCA has regulatory oversight responsibility is found to be operating without the required approval in the airspace of another State, DGCA may take appropriate action in respect of aircraft and operators found to be operating in RVSM airspace without a valid RVSM approval.

*Note 1.— These provisions and procedures need to address both the situation where the aircraft in question is operating without approval in the airspace of the State, and the situation where an operator for which the State has regulatory oversight responsibility is found to be operating without the required approval in the airspace of another State.*

*Note 2.— Guidance material relating to the approval for operation in RVSM airspace is contained in the Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive (Doc 9574).*

7.2.9 The aeroplane shall be sufficiently provided with navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment will enable the aeroplane to navigate in accordance with 7.2.1 and where applicable 7.2.2, 7.2.3 and 7.2.4.

*Note.-- Guidance material relating to aircraft equipment necessary for flight in airspace where RVSM is applied is contained in the Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive (Doc 9574).*

7.2.10 On flights in which it is intended to land in instrument meteorological conditions, an aeroplane shall be provided with radio equipment capable of receiving signals providing guidance to a point from which a visual landing can be effected. This equipment shall be capable of providing such guidance for each aerodrome at which it is intended to land in instrument meteorological conditions and for any designated alternate aerodromes.

### **7.3 Installation**

The equipment installation shall be such that the failure of any single unit required for either communication or navigation purposes or both will not result in the failure of another unit required for communication or navigation purposes.

### **7.4 Electronic navigation data management**

7.4.1 An operator shall not employ electronic navigation data products that have been processed for application in the air and on the ground unless DGCA has approved the operator's procedures for ensuring that the process applied and the products delivered have met acceptable standards of integrity and that the products are compatible with the intended function of the equipment that will use them. Operator shall continue to monitor both process and products.

*Note.-- M Guidance relating to the processes that data suppliers may follow is contained in RTCA DO-200A/EUROCAE ED-76 and RTCA DO-201A/EUROCAE ED-77.*

- 7.4.2 An operator shall implement procedures that ensure the timely distribution and insertion of current and unaltered electronic navigation data to all aircraft that require it.

## **8 AEROPLANE MAINTENANCE**

*Note 1.— For the purpose of this chapter, “aeroplane” includes: powerplants, propellers, components, accessories, instruments, equipment and apparatus including emergency equipment.*

*Note 2.— Intentionally Left Blank*

*Note 3.— Guidance on continuing airworthiness requirements is contained in the Airworthiness Manual (Doc 9760).*

### **8.1 Operator's maintenance responsibilities**

- 8.1.1 Operators shall ensure that,

- a) each aeroplane they operate is maintained in an airworthy condition;
- b) the operational and emergency equipment necessary for an intended flight is serviceable;
- c) the Certificate of Airworthiness of each aeroplane they operate remains valid.

- 8.1.2 An operator shall not operate an aeroplane unless it is maintained and released to service by an organisation approved in accordance with CAR Section 2, Series 'E' Part I & IV or CAR 145.

- 8.1.3 When DGCA accepts an equivalent system, the person signing the maintenance release shall be licensed in accordance with Aircraft Rules.

- 8.1.4 An operator shall employ a person or group of persons to ensure that all maintenance is carried out in accordance with the maintenance organization exposition and CAR Section 2 or CAR 145.

- 8.1.5 The operator shall ensure that the maintenance of its aeroplanes is performed in accordance with maintenance programme.

### **8.2 Operator's maintenance control manual**

- 8.2.1 The operator shall provide, for the use and guidance of maintenance and operational personnel concerned, a maintenance control manual, acceptable to the DGCA State of Registry, in accordance with the requirements of 11.2. The design of the manual shall observe Human Factors principles.

*Note.— Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual (Doc 9683).*

- 8.2.2 The operator shall ensure that the maintenance control manual is amended as necessary to keep the information contained therein up to date.
- 8.2.3 Copies of all amendments to the operator's maintenance control manual shall be furnished promptly to all organizations or persons to whom the manual has been issued.
- 8.2.4 The operator shall provide DGCA with a copy of the operator's main-tenance control manual, together with all amendments and/or revisions to it and shall incorporate in it such mandatory material as DGCA may require

### **8.3 Maintenance Programme**

- 8.3.1 The operator shall provide, for the use and guidance of maintenance and operational personnel concerned, a maintenance programme, approved by DGCA, containing the information required by 11.3. The design and application of the operator's maintenance programme shall observe Human Factors principles.

*Note.— Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual (ICAO Doc 9683):*

- 8.3.2 Copies of all amendments to the maintenance programme shall be furnished promptly to all organisation or persons to whom the maintenance programme has been issued.

### **8.4 Maintenance records**

- 8.4.1 An operator shall ensure that the following records are kept for the period mentioned in 8.4.2:
- a) the total time in service (hours, calendar time and cycles, as appropriate) of the aeroplane and all life limited components;
  - b) the current status of compliance with all mandatory continuing airworthiness information;
  - c) appropriate details of modifications and repairs to the aeroplane and its major components;
  - d) the time in service (hours, calendar time and cycles, as appropriate) since last overhaul or its components subject to a mandatory overhaul life;
  - e) the current status of aeroplane's compliance with the maintenance programme;  
and
  - f) the detailed maintenance records to show that all requirements for signing of a maintenance release have been met.
- 8.4.2 The records in 8.4.1 a) to e) shall be kept for a minimum period of 90 days after the unit to which they refer has been permanently withdrawn from service and the records in 8.4.1 f) for a minimum period of one year after the signing of the maintenance release.

8.4.3 In the event of a temporary change of operator, the records shall be made available to new operator. In the event of any permanent change of operator, the records shall be transferred to new operator.

*Note.— In the context of 8.4.3, a judgement on what should be considered as a temporary change of operator will need to be made by the DGCA in the light of the need to exercise control over the records, which will depend on access to them and the opportunity to update them.*

## **8.5 Continuing Airworthiness Information**

8.5.1 The operator of an aeroplane over 5 700 kg maximum certificated take-off mass shall monitor and assess maintenance and operational experience with respect to continuing airworthiness and provide the information as follows:

- a) Ensure that, in respect of aeroplanes over 5 700 kg and helicopters over 3 175 kg maximum certificated take-off mass, there exists a system whereby information on faults, malfunctions, defects and other occurrences that cause or might cause adverse effects on the continuing airworthiness of the aircraft is transmitted to the organization responsible for the type design of that aircraft.
- b) Each Contracting State shall establish, in respect of aeroplanes over 5 700 kg and helicopters over 3 175 kg maximum certificated take-off mass, the type of service information that is to be reported to its airworthiness authority by operators, organizations responsible for type design and maintenance organizations. Procedures for reporting this information shall also be established.

8.5.2 The operator of an aeroplane over 5 700 kg maximum certificated take-off mass shall obtain and assess continuing airworthiness information and recommendations available from the organization responsible for the type design and shall implement resulting actions considered necessary in accordance with a procedure acceptable to DGCA .

*Note.— Guidance on the interpretation of “the organization responsible for the type design” is contained in the Airworthiness Manual (Doc 9760).*

## **8.6 Modifications and repairs**

All modifications and repairs shall comply with airworthiness requirements acceptable to DGCA. Procedures shall be established to ensure that the substantiating data supporting compliance with the airworthiness requirements are retained.

## **8.7 Approved maintenance organization**

8.7.1 Issue of approval

8.7.1.1 The approved maintenance organisation shall demonstrate compliance with the requirements given in this section and also the requirements given in CAR Section 2 or CAR 145.

8.7.1.2 The approval document shall contain at least the following:

- a) organisation's name and location;
- b) date of issue and period of validity;
- c) terms of approval.

8.7.1.3 The continued validity of the approval shall depend upon the organisation remaining in compliance with the requirements of 8.7 for an approved maintenance organization, CAR Section 2 or CAR 145.

8.7.2 Maintenance organisation's procedure manual (Maintenance System Manual)

8.7.2.1 The maintenance organisation shall provide for the use and guidance of maintenance personnel concerned a Maintenance System Manual containing the following information:

- a) a general description of the scope of work authorised under the organisation's term or approval;
- b) a description of the organisation's procedures and quality or inspection system;
- c) a general description of the organisation's facilities;
- d) names and duties of the person or persons as required by 8.7.5.1;
- e) a description of the procedures used to establish the competence of maintenance personnel as required by 8.7.5.3;
- f) a description of method used for completion and retention of maintenance records required by 8.7.6;
- g) a description of procedures for preparing the flight release and the circumstances under which the release to be signed;
- h) the personnel authorised to sign the maintenance release and scope of their authorisation;
- i) a description, when applicable, of the additional procedures for complying with an operator's maintenance procedures and requirements;
- j) a description of the procedures for complying with the service information reporting requirements
- k) a description of the procedure for receiving, assessing, amending and distributing within the maintenance organisation all necessary airworthiness data from the type certificate holder or type design organization.

8.7.2.2 The maintenance organisation shall ensure that the Maintenance System Manual is amended as necessary to keep the information contained therein up to date.

8.7.2.3 Copies of all amendments to the Maintenance System Manual shall be furnished promptly to all organisations or persons to whom the manual has been issued.

8.7.3 Safety management

8.7.3.1 Intentionally Left Blank

8.7.3.2 Intentionally Left Blank

8.7.3.3 A maintenance organization shall implement a safety management system acceptable to DGCA that, as a minimum:

- a) identifies safety hazards;
- b) ensures the implementation of remedial action necessary to maintain agreed safety performance;
- c) provides for continuous monitoring and regular assessment of the safety level achieved performance; and
- d) aims at a continuous improvement of the overall performance of the safety management system.

*Note.— Guidance on defining safety performance is contained in the Safety Management Manual (SMM) (Doc 9859).*

8.7.3.4 The safety management system shall clearly define lines of safety accountability throughout a maintenance organization, including a direct accountability for safety on the part of senior management.

*Note.— The framework for the implementation and maintenance of a safety management system is contained in the Safety Management Manual (SMM) (Doc 9859).*

8.7.4 Maintenance procedures and quality assurance system

8.7.4.1 The maintenance organisation shall establish procedures, acceptable to DGCA which ensure good maintenance practices and compliance with all relevant requirements of para 8 of this CAR.

8.7.4.2 The maintenance organisation shall ensure compliance with 8.7.3.1 by either establishing an independent quality assurance system to monitor compliance with and adequacy of the procedures, or by providing a system of inspection to ensure that all maintenance is properly performed.

8.7.5 Facilities

8.7.5.1 The facilities and working environment shall be appropriate for the task to be performed.

8.7.5.2 The maintenance organisation shall have the necessary technical data, equipment, tools and material to perform the work for which it is approved.

8.7.5.3 Storage facilities shall be provided for parts, equipment, tools and material. Storage conditions shall be such as to provide security and prevent deterioration of and damage to stored items.

8.7.6 Personnel

8.7.6.1 The maintenance organisation shall nominate a person or group of persons whose responsibilities include ensuring that the maintenance organisation is in compliance with 8.7 the requirements for an approved maintenance organisation

8.7.6.2 The maintenance organisation shall employ the necessary personnel to plan, perform, supervise, inspect and release the work to be performed.

8.7.6.3 The competence of maintenance personnel shall be established in accordance with Rule 61 of the Aircraft Rules and CAR Section 2, Series L. The person signing a maintenance release shall be duly licensed / approved.

8.7.6.4 The maintenance organisation shall ensure that all maintenance personnel receive initial and continuation training appropriate to their assigned tasks and responsibilities. The training programme established by the maintenance organisation shall include training in knowledge and skills related to human performance, including co-ordination with other maintenance personnel and flight crew.

*Note.— Guidance material to design training programmes to develop knowledge and skills in human performance can be found in the Human Factors Training Manual (ICAO Doc 9683)*

8.7.7 Records

8.7.7.1 The maintenance organisation shall retain detailed maintenance records to show that all requirements for the signing of a maintenance release have been met.

8.7.7.2 The records required by 8.7.6.1 shall be kept for a minimum period of one year after the signing of the maintenance release.

**8.8 Maintenance release**

8.8.1 A maintenance release shall be completed and signed to certify that the maintenance work performed has been completed satisfactorily and in accordance with approved data and the procedures described in the maintenance organization's procedures manual.

8.8.2 A maintenance release shall contain a certification including:

- a) basic details of the maintenance carried out including detailed reference of the approved data used;
- b) the date such maintenance was completed;
- c) when applicable, the identity of the approved maintenance organization; and

d) the identity of the person or persons signing the release.

**8.9 With effect from 31-07-2010** owners/operators shall ensure that maintenance and continuing Airworthiness Management of Aircraft is carried out in accordance with requirements and procedures as stipulated in CAR M.

## **9 AEROPLANE FLIGHT CREW**

### **9.1 Composition of the flight crew**

9.1.1 The number and composition of the flight crew shall not be less than that specified in the operations manual. The flight crews shall include flight crew members in addition to the minimum numbers specified in the flight manual or other documents associated with the certificate of airworthiness, when necessitated by considerations related to

the type of aeroplane used, the type of operation involved and the duration of flight between points where flight crews are changed.

*Note:- CAR Section 8, Series "A" Part I specifies the number of crew required.*

#### 9.1.2 Radio operator

The flight crew shall hold valid Radio Operator's licence, authorizing him to operate the type of radio transmitting equipment to be used.

#### 9.1.3 Flight engineer

When a separate flight engineer's station is incorporated in the design of an aeroplane, the flight crew shall include at least one flight engineer especially assigned to that station, unless the duties associated with that station can be satisfactorily performed by another flight crew member, holding a flight engineer licence, without interference with regular duties.

#### 9.1.4 Flight navigator

The flight crew shall include at least one member who holds a flight navigator licence as required in Sub Rule (3) of Rule 38A of the Aircraft Rule 1937 where navigation necessary for the safe conduct of the flight cannot be adequately accomplished by the pilots from the pilot station.

### **9.2 Flight crew member emergency duties**

An operator shall, for each type of aeroplane, assign to all flight crew members the necessary functions they are to perform in an emergency or in a situation requiring emergency evacuation. Annual training in accomplishing these functions shall be contained in the operator's training programme and shall include instruction in the use of all emergency and lifesaving equipment required to be carried, and drills in the emergency evacuation of the aeroplane.

### **9.3 Flight crew member training programmes**

- 9.3.1 An operator shall establish and maintain a ground and flight training programme, approved by the DGCA, which ensures that all flight crew members are adequately trained to perform their assigned duties. The training programme shall:
- a) include ground and flight training facilities and properly qualified instructors as accepted by the DGCA ;
  - b) consist of ground and flight training in the type(s) of aeroplane on which the flight crew member serves;
  - c) include proper flight crew coordination and training in all types of emergency and abnormal situations or procedures caused by power plant, airframe or systems malfunctions, fire or other abnormalities;
  - d) include training in knowledge and skills related to visual and instrument flight procedures for the intended area of operation, human performance including threat and error management and in the transport of dangerous goods;
  - e) ensure that all flight crew members know the functions for which they are responsible and the relation of these functions to the functions of other crew members, particularly in regard to abnormal or emergency procedures; and
  - f) be given on a recurrent basis, as determined by DGCA and shall include an assessment of competence.

*Note 1.— Paragraph 4.2.5 prohibits the in-flight simulation of emergency or abnormal situations when passengers or cargo are being carried.*

*Note 2.— Flight training may, to the extent deemed appropriate by DGCA, be given in flight simulation training devices approved by the DGCA for that purpose.*

*Note 3.— The scope of the recurrent training required by 9.2 and 9.3 may be varied and need not be as extensive as the initial training given in a particular type of aeroplane.*

*Note 4.— The use of correspondence courses and written examinations as well as other means may, be utilized in meeting the requirements for periodic ground training as approved by DGCA*

*Note 5.— Provisions for training in the transport of dangerous goods are contained in the Aircraft ( Carriage of Dangerous Goods ) Rule 2003*

*Note 6.— Guidance material to design training programmes to develop knowledge and skills in human performance can be found in the Human Factors Training Manual (Doc 9683).*

*Note 7.— Information for pilots and flight operations personnel on flight procedure parameters and operational procedures is contained in PANS-OPS, Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS, Volume II. Obstacle clearance criteria and procedures used in certain States may differ from PANS-OPS, and knowledge of these differences is important for safety reasons.*

*Note 8.— Guidance material to design flight crew training programmes can be found in the Preparation of an Operations Manual (Doc 9376).*

*Note 9.— Guidance material on the different means used to assess competence can be found in the Attachment to Chapter 2 of the Procedures for Air Navigation Services — Training (PANS-TRG, Doc 9868).*

- 9.3.2 The requirement for recurrent flight training in a particular type of aeroplane shall be considered fulfilled by:
- a) the use, to the extent deemed feasible by the State of the Operator, of flight simulation training devices approved by DGCA for that purpose; or
  - b) the completion within the appropriate period of the proficiency check required by 9.4.4 in that type of aeroplane.

#### **9.4 Qualifications**

*Note.— See the Manual of Procedures for the Establishment of a State's Personnel Licensing System (Doc 9379) for guidance of a general nature on cross-crew qualification, mixed-fleet flying and cross-credit.*

- 9.4.1 Recent experience — pilot-in-command and co-pilot
- 9.4.1.1 An operator shall not assign a pilot-in-command or a co-pilot to operate at the flight controls of a type or variant of a type of aeroplane during take-off and landing unless that pilot has operated the flight controls during at least three take-offs and landings within the preceding 90 days on the same type of aeroplane or in a flight simulator approved for the purpose.
- 9.4.1.2 When a pilot-in-command or a co-pilot is flying several variants of the same type of aeroplane or different types of aeroplanes with similar characteristics in terms of operating procedures, systems and handling, DGCA shall decide under which conditions the requirements of 9.4.1.1 for each variant or each type of aeroplane can be combined.
- 9.4.2 *Intentionally Left Blank*
- 9.4.3 Pilot-in-command area, route and aerodrome qualification
- 9.4.3.1 An operator shall not utilize a pilot as pilot-in-command of an aeroplane on a route or route segment for which that pilot is not currently qualified until such pilot has complied with 9.4.3.2 and 9.4.3.3.
- 9.4.3.2 Each such pilot shall demonstrate to the operator an adequate knowledge of:
- a) the route to be flown, and the aerodromes which are to be used.
- This shall include knowledge of:
- 1. the terrain and minimum safe altitudes;
  - 2. the seasonal meteorological conditions;

3. the meteorological, communication and air traffic facilities, services and procedures;
  4. the search and rescue procedures; and
  5. the navigational facilities and procedures, including any long-range navigation procedures, associated with the route along which the flight is to take place; and
- b) Procedures applicable to flight paths over heavily populated areas and areas of high air traffic density, obstructions, physical layout, lighting, approach aids and arrival, departure, holding and instrument approach procedures, and applicable operating minima.

*Note,- That portion of the demonstration relating to arrival, departure, holding and instrument approach procedures may be accomplished in an appropriate training device which is adequate for this purpose.*

- 9.4.3.3 A pilot-in-command shall have made an actual approach into each aerodrome of landing on the route, accompanied by a pilot who is qualified for the aerodrome, as a member of the flight crew or as an observer on the flight deck, unless:
- a) the approach to the aerodrome is not over difficult terrain and the instrument approach procedures and aids available are similar to those with which the pilot is familiar, and a margin approved by DGCA is added to the normal operating minima, or there is reasonable certainty that approach and landing can be made in visual meteorological conditions; or
  - b) the descent from the initial approach altitude can be made by day in visual meteorological conditions; or
  - c) the operator qualifies the pilot-in-command to land at the aerodrome concerned by means of an adequate pictorial presentation; or
  - d) the aerodrome concerned is adjacent to another aerodrome at which the pilot-in-command is currently qualified to land.
- 9.4.3.4 The operator shall maintain a record, sufficient to satisfy DGCA, of the qualification of the pilot and of the manner in which such qualification has been achieved.
- 9.4.3.5 An operator shall not continue to utilize a pilot as a pilot-in-command on a route or within an area specified by the operator and approved by DGCA unless, within the preceding 12 months, that pilot has made at least one trip as a pilot member of the flight crew, or as a check pilot, or as an observer in the flight crew compartment:
- a) within that specified area; and
  - b) if appropriate, on any route where procedures associated with that route or with any aerodromes intended to be used for take-off or landing require the application of special skills or knowledge.

- 9.4.3.6 In the event that more than 12 months elapse in which a pilot-in-command has not made such a trip on a route in close proximity and over similar terrain, within such a specified area, route or aerodrome, and has not practised such procedures in a training device which is adequate for this purpose, prior to again serving as a pilot-in-command within that area or on that route, that pilot must requalify in accordance with 9.4.3.2 and 9.4.3.3.
- 9.4.4 Pilot proficiency checks
- 9.4.4.1 *Intentionally Left Blank*
- 9.4.4.2 *Intentionally Left Blank*
- 9.4.5 Single pilot operations under the instrument flight rules (IFR) or at night
- 9.4.5.1 The State of the Operator shall prescribe requirements of experience, recency and training applicable to single pilot operations intended to be carried out under the IFR or at night.
- 9.4.5.2 The pilot-in-command shall:
- a) for operations under the IFR or at night, have accumulated at least 50 hours flight time on the class of aeroplane, of which at least 10 hours shall be as pilot-in-command;
  - b) for operations under the IFR, have accumulated at least 25 hours flight time under the IFR on the class of aeroplane, which may form part of the 50 hours flight time in sub-paragraph a);
  - c) for operations at night, have accumulated at least 15 hours flight time at night, which may form part of the 50 hours flight time in sub-paragraph a);
  - d) for operations under the IFR, have acquired recent experience as a pilot engaged in a single pilot operation under the IFR of:
    - i) at least five IFR flights, including three instrument approaches carried out during the preceding 90 days on the class of aeroplane in the single pilot role; or
    - ii) an IFR instrument approach check carried out on such an aeroplane during the preceding 90 days;
  - e) for operations at night, have made at least three takeoffs and landings at night on the class of aeroplane in the single pilot role in the preceding 90 days; and
  - f) have successfully completed training programmes that include, in addition to the requirements of 9.3, passenger briefing with respect to emergency evacuation, autopilot management, and the use of simplified in-flight documentation.

9.4.5.3 The initial and recurrent flight training and proficiency checks indicated in 9.3.1 and 9.4.4 shall be performed by the pilot-in-command in the single pilot role on the class of aeroplane in an environment representative of the operation.

## **9.5 Flight crew equipment**

A flight crew member assessed as fit to exercise the privileges of a licence, subject to the use of suitable correcting lenses, shall have a spare set of the correcting lenses readily available when exercising those privileges.

## **10 FLIGHT OPERATIONS OFFICER/FLIGHT DISPATCHER**

10.1 When the State of the Operator requires that a flight operations officer/flight dispatcher, employed in conjunction with an approved method of control and supervision of flight operations, be licensed, that flight operations officer/flight dispatcher shall be licensed in accordance with the provisions of Annex 1.

10.2 In accepting proof of qualifications other than the option of holding of a flight operations officer/flight dispatcher licence, the State of the Operator, in accordance with the approved method of control and supervision of flight operations, shall require that, as a minimum, such persons meet the requirements specified in Annex 1 for the flight operations officer/flight dispatcher licence.

10.3 A flight operations officer/flight dispatcher shall not be assigned to duty unless that person has:

- a) satisfactorily completed an operator-specific training course that addresses all the specific components of its approved method of control and supervision of flight operations specified in 4.2.1.3;

*Note.— Guidance on the composition of such training syllabi is provided in the Training Manual (Doc 7192), Part D-3 — Flight Operations Officers/ Flight Dispatchers.*

- b) made, within the preceding 12 months, at least a one- way qualification flight in the flight crew compartment of an aeroplane over any area for which that individual is authorized to exercise flight supervision. The flight should include landings at as many aerodromes as practicable;

*Note.— For the purpose of the qualification flight, the flight operations officer/flight dispatcher must be able to monitor the flight crew intercommunication system and radio communications, and be able to observe the actions of the flight crew.*

c) demonstrated to the operator a knowledge of:

- 1) the contents of the operations manual
- 2) the radio equipment in the aeroplanes used; and
- 3) the navigation equipment in the aeroplanes used;

- d) demonstrated to the operator a knowledge of the following details concerning operations for which the officer is responsible and areas in which that individual is authorized to exercise flight supervision:
- 1) the seasonal meteorological conditions and the sources of meteorological information;
  - 2) the effects of meteorological conditions on radio reception in the aeroplanes used;
  - 3) the peculiarities and limitations of each navigation system which is used by the operation; and
  - 4) the aeroplane loading instructions;
- e) demonstrated to the operator knowledge and skills related to human performance relevant to dispatch duties; and
- f) demonstrated to the operator the ability to perform the duties specified in 4.6.
- 10.4 A flight operations officer/ flight dispatcher assigned to duty should maintain complete familiarization with all features of the operation which are pertinent to such duties, including knowledge and skills related to human performance.
- Note.— Guidance material to design training programmes to develop knowledge and skills in human performance can be found in the Human Factors Training Manual (Doc 9683).*
- 10.5 A flight operations officer/flight dispatcher should not be assigned to duty after 12 consecutive months of absence from such duty, unless the provisions of Para 10. are met.

## **11 MANUALS, LOGS AND RECORDS**

*Note.— The following additional manuals, logs and records are associated with this Part but are not included in this section:*

*Fuel and oil records — see 4.2.10*

*Maintenance records — see 8.4*

*Flight time records — see 4.2.11.3*

*Flight preparation forms — see 4.3*

*Operational flight plan — see 4.3.3.1*

*Pilot-in-command route and airport qualification records — see 9.4.3.4*

### **11.1 Flight manual**

*Note.— The flight manual contains the information specified in Annex 8.*

The flight manual shall be updated by implementing changes made mandatory by the State of Registry.

## **11.2 Operator's maintenance control manual**

The operator's maintenance control manual provided in accordance with 8.2, which may be issued in separate parts, shall contain the following information:

- a) a description of the procedures required by 8.1.1 including, when applicable:
  - 1) a description of the administrative arrangements between the operator and the approved maintenance organization;
  - 2) a description of the maintenance procedures and the procedures for completing and signing a maintenance release when maintenance is based on a system other than that of an approved maintenance organization.
- b) names and duties of the person or persons required by 8.1.4;
- c) a reference to the maintenance programme required by 8.3.1;
- d) a description of the methods used for the completion and retention of the operator's maintenance records required by 8.4;
- e) a description of the procedures for monitoring, assessing and reporting maintenance and operational experience required by 8.5.1;
- f) a description of the procedures for complying with the service information reporting requirements of Annex 8, Part II, 4.2.3 f) and 4.2.4;
- g) a description of procedures for assessing continuing airworthiness information and implementing any resulting actions, as required by 8.5.2;
- h) a description of the procedures for implementing action resulting from mandatory continuing airworthiness information;
- i) a description of establishing and maintaining a system of analysis and continued monitoring of the performance and efficiency of the maintenance programme, in order to correct any deficiency in that programme;
- j) a description of aircraft types and models to which the manual applies;
- k) a description of procedures for ensuring that un-serviceabilities affecting airworthiness are recorded and rectified; and a description of the procedures for advising the State of Registry of significant in-service occurrences

## **11.3 Maintenance programme**

11.3.1 A maintenance programme for each aeroplane as required by 8.3 shall contain the following information:

- a) maintenance tasks and the intervals at which these are to be performed, taking into account the anticipated utilization of the aeroplane;

- b) when applicable, a continuing structural integrity programme;
- c) procedures for changing or deviating from a) and b) above; and
- d) when applicable, condition monitoring and reliability programme descriptions for aircraft systems, components and powerplants.

11.3.2 Maintenance tasks and intervals that have been specified as mandatory in approval of the type design shall be identified as such.

11.3.3 The maintenance programme should be based on maintenance programme information made available by the State of Design or by the organization responsible for the type design, and any additional applicable experience.

#### **11.4 Journey log book**

11.4.1 The aeroplane journey log book should contain the following items and the corresponding roman numerals:

- I -- Aeroplane nationality and registration
- II -- Date
- III -- Names of crew members
- IV -- Duty assignments of crew members
- V -- Place of departure
- VI -- I Place of arrival
- VII -- Time of departure
- VIII -- Time of arrival
- IX -- Hours of flight
- X -- Nature of flight (private, aerial work, scheduled or non-scheduled).
- XI -- Incidents, observations, if any
- XII -- Signature of person in charge

11.4.2 Entries in the journey log book should be made currently and in ink or indelible pencil.

11.4.3 Completed journey log book should be retained to provide a continuous record of the last two years operations.

*Note.- The details of contents of journey log book are given in CAR Section 2, Series 'X' Part VI.*

### **11.5 Records of emergency and survival equipment carried**

Operators shall at all times have available for immediate communication to rescue coordination centers, lists containing information on the emergency and survival equipment carried on board any of their aeroplanes engaged in international air navigation. The information shall include, as applicable, the number, colour and type of life rafts and pyrotechnics, details of emergency medical supplies, water supplies and the type and frequencies of the emergency portable radio equipment.

### **11.6 Flight Recorder Records:**

An operator shall ensure, to the extent possible, in the event the aeroplane becomes involved in an accident or incident, the preservation of all related flight recorder records and if necessary the associated flight recorders, their retention in safe custody pending their disposition as determined by DGCA.

## **12 CABIN CREW**

### **12.1 Assignment of emergency duties**

An operator shall provide adequate number of cabin crew in accordance with Rule 38B of the Aircraft Rules 1937, in order to effect a safe and expeditious evacuation of the aeroplane, and the necessary functions to be performed in an emergency or a situation requiring emergency evacuation. The operator shall assign these functions for each type of aeroplane.

### **12.2 Cabin crew at emergency evacuation stations**

Each cabin crew member assigned to emergency evacuation duties shall occupy a seat provided in accordance with 6.16 during take-off and landing and whenever the pilot-in-command so directs.

### **12.3 Protection of cabin crew during flight**

Each cabin crew member shall be seated with seat belt or, when provided, safety harness fastened during take-off and landing and whenever the pilot-in-command so directs.

*Note.— The foregoing does not preclude the pilot-in-command from directing the fastening of the seat belt only, at times other than during take-off and landing.*

### **12.4 Training**

An operator shall establish and maintain a training programme, approved by DGCA, to be completed by all persons before being assigned as a cabin crew member. Cabin crew members shall complete a recurrent training programme annually. These training programmes shall ensure that each person is:

- a) competent to execute those safety duties and functions which the cabin crew member is assigned to perform in the event of an emergency or in a situation requiring emergency evacuation;

- b) drilled and capable in the use of emergency and life-saving equipment required to be carried, such as life jackets, life rafts, evacuation slides, emergency exits, portable fire extinguishers, oxygen equipment, first-aid and universal precaution kits, automated external defibrillators;
- c) when serving on aeroplanes operated above 3 000 m (10 000 ft), knowledgeable as regards the effect of lack of oxygen and, in the case of pressurized aeroplanes, as regards physiological phenomena accompanying a loss of pressurization;
- d) aware of other crew members' assignments and functions in the event of an emergency so far as is necessary for the fulfilment of the cabin crew members' own duties;
- e) aware of the types of dangerous goods which may, and may not, be carried in a passenger cabin; and
- f) knowledgeable about human performance as related to passenger cabin safety duties including flight crew-cabin crew members coordination.

*Note 1.- Requirements for the training of cabin crew members in the transport of dangerous goods are included in the Dangerous Goods Training Programme contained in Annex 18 — The Safe Transport of Dangerous Goods by Air and the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284).*

*Note 2. -Guidance material to design training programmes to develop knowledge and skills in human performance can be found in the Human Factors Training Manual (Doc 9683).*

### **13. SECURITY**

In the context of this CAR, the word security is used in the sense of prevention of illicit acts against civil aviation.

#### **13.1 Domestic commercial operations**

The security requirements contained in this paragraph shall be followed in respect of domestic and international air transport operations.

#### **13.2 Security of the flight crew compartment**

- 13.2.1 In all aeroplanes which are equipped with a flight crew compartment door, this door shall be capable of being locked, and means shall be provided by which cabin crew can discreetly notify the flight crew in the event of suspicious activity or security breaches in the cabin.
- 13.2.2 All passenger-carrying aeroplanes of a maximum certificated take-off mass in excess of 45,500 kg or with a passenger seating capacity greater than 60 shall be equipped with an approved flight crew compartment door that is designed to resist penetration by small arms fire and grenade shrapnel, and to resist forcible intrusions by unauthorized persons. This door shall be capable of being locked and unlocked from either pilot's station.

- 13.2.3 In all aeroplanes which are equipped with a flight crew compartment door in accordance with 13.2.2:
- a) this door shall be closed and locked from the time all external doors are closed following embarkation until any such door is opened for disembarkation, except when necessary to permit access and egress by authorized persons; and
  - b) means shall be provided for monitoring from either pilot's station the entire door area outside the flight crew compartment to identify persons requesting entry and to detect suspicious behavior or potential threat. All new aircraft to be imported after 1st of Jan ,2008 should have cockpit door surveillance system (CDSS) installed at the time of import. Aircraft already importing should comply with this requirement during their next 'C' check falling after 1st Jan,2008
- 13.2.4 All passenger-carrying aeroplanes should be equipped with an approved flight crew compartment door, where practicable, that is designed to resist penetration by small arms fire and grenade shrapnel and to resist forcible intrusions by unauthorized persons. This door should be capable of being locked and unlocked from either pilot's station.
- 13.2.5 In all aeroplanes which are equipped with a flight crew compartment door in accordance with 13.2.4:
- a) the door should be closed and locked from the time all external doors are closed following embarkation until any such door is opened for disembarkation, except when necessary to permit access and egress by authorized persons; and
  - b) means should be provided for monitoring from either pilot's station the entire door area outside the flight crew compartment to identify persons requesting entry and to detect suspicious behaviour or potential threat.

### **13.3 Aeroplane search procedure checklist**

An operator shall ensure that there is on board a checklist of the procedures to be followed in searching for a bomb in case of suspected sabotage and for inspecting aeroplanes for concealed weapons, explosives or other dangerous devices when a well-founded suspicion exists that the aeroplane may be the object of an act of unlawful interference. The checklist shall be supported by guidance on the appropriate course of action to be taken should a bomb or suspicious object be found and information on the least-risk bomb location specific to the aeroplane.

### **13.4 Training programmes**

- 13.4.1 An operator shall establish and maintain an approved security training programme which ensures crew members act in the most appropriate manner to minimize the consequences of acts of unlawful interference. As a minimum, this programme shall include the following elements:
- a) determination of the seriousness of any occurrence;
  - b) crew communication and coordination;

- c) appropriate self-defense responses;
- d) use of non-lethal protective devices assigned to crew members;
- e) understanding of behavior of terrorists so as to facilitate the ability of crew members to cope with hijacker behavior and passenger responses;
- f) live situational training exercises regarding various threat conditions;
- g) flight deck procedures to protect the aeroplane; and
- h) aeroplane search procedures and guidance on least-risk bomb locations where practicable.

13.4.2 An operator shall also establish and maintain a training programme to acquaint appropriate employees with preventive measures and techniques in relation to passengers, baggage, cargo, mail, equipment, stores and supplies intended for carriage on an aeroplane so that they contribute to the prevention of acts of sabotage or other forms of unlawful interference.

### **13.5 Reporting acts of unlawful interference**

Following an act of unlawful interference, the pilot-in-command shall submit, without delay, a report of such an act to the BCAS in New Delhi.

### **13.6 Miscellaneous**

13.6.1 Specialized means of attenuating and directing the blast should be provided for use at the least-risk bomb location.

13.6.2 Where an operator accepts the carriage of weapons removed from passengers, the aeroplane should have provision for stowing such weapons in a place so that they are inaccessible to any person during flight time.

**(E. K. Bharat Bhushan)**  
Director General of Civil Aviation

**FLIGHT SAFETY DOCUMENTS SYSTEM**

*Supplementary to Para 3.3*

**1. Introduction**

- 1.1 The following material provides guidance on the organization and development of an operator's flight safety documents system. It should be understood that the development of a flight safety documents system is a complete process, and changes to each document comprising the system may affect the entire system. Guidelines applicable to the development of operational documents have been produced by government and industry sources and are available to operators. Nevertheless, it may be difficult for operators to make the best use of these guidelines, since they are distributed across a number of publications.
- 1.2 Furthermore, guidelines applicable to operational documents development tends to focus on a single aspect of documents design, for example, formatting and typography. Guidelines rarely cover the entire process of operational documents development. It is important for operational documents to be consistent with each other, and consistent with regulations, manufacturer requirements and Human Factors principles. It is also necessary to ensure consistency across departments as well as consistency in application. Hence the emphasis on an integrated approach, based on the notion of the operational documents as a complete system.
- 1.3 The guidelines in this Attachment address the major aspects of an operator's flight safety documents system development process, with the aim of ensuring compliance with Chapter 3, 3.3. The guidelines are based not only upon scientific research, but also upon current best industry practices, with an emphasis on a high degree of operational relevance.

**2. Organization**

- 2.1 A flight safety documents system should be organized according to criteria which ensure easy access to information required for flight and ground operations contained in the various operational documents comprising the system and which facilitate management of the distribution and revision of operational documents.
- 2.2 Information contained in a flight safety documents system should be grouped according to the importance and use of the information, as follows:
  - a) time critical information, e.g., information that can jeopardize the safety of the operation if not immediately available;
  - b) time sensitive information, e.g., information that can affect the level of safety or delay the operation if not available in a short time period;
  - c) frequently used information;
  - d) reference information, e.g., information that is required for the operation but does not fall under b) or c) above; and
  - e) information that can be grouped based on the phase of operation in which it is used.

2.3 Time critical information should be placed early and prominently in the flight safety documents system.

2.4 Time critical information, time sensitive information, and frequently used information should be placed in cards and quick-reference guides.

### **3. Validation**

The flight safety documents system should be validated before deployment, under realistic conditions. Validation should involve the critical aspects of the information use, in order to verify its effectiveness. Interactions among all groups that can occur during operations should also be included in the validation process.

### **4. Design**

4.1 A flight safety documents system should maintain consistency in terminology and in the use of standard terms for common items and actions.

4.2 Operational documents should include a glossary of terms, acronyms and their standard definition, updated on a regular basis to ensure access to the most recent terminology. All significant terms, acronyms and abbreviations included in the flight documents system should be defined.

4.3 A flight safety documents system should ensure standardization across document types, including writing style, terminology, use of graphics and symbols, and formatting across documents. This includes a consistent location of specific types of information, consistent use of units of measurement and consistent use of codes.

4.4 A flight safety documents system should include a master index to locate, in a timely manner, information included in more than one operational document.

*Note.— The master index must be placed in front of each document and consist of no more than three levels of indexing. Pages containing abnormal and emergency information must be tabbed for direct access.*

4.5 A flight safety documents system should comply with the requirements of the operator's quality system, if applicable.

### **5. Deployment**

Operators should monitor deployment of the flight safety documents system, to ensure appropriate and realistic use of the documents, based on the characteristics of the operational environment and in a way which is both operationally relevant and beneficial to operational personnel. This monitoring should include a formal feedback system for obtaining input from operational personnel.

### **6. Amendment**

6.1 Operators should develop an information gathering, review, distribution and revision control system to process information and data obtained from all sources relevant to the type of operation conducted, including, but not limited to, the State of the Operator, State of design, State of Registry, manufacturers and equipment vendors.

*Note.— Manufacturers provide information for the operation of specific aircraft that emphasizes the aircraft systems and procedures under conditions that may not fully match the requirements of operators. Operators should ensure that such information meets their specific needs and those of the local authority.*

6.2 Operators should develop an information gathering, review and distribution system to process information resulting from changes that originate within the operator, including:

- a) changes resulting from the installation of new equipment;
- b) changes in response to operating experience;
- c) changes in an operator's policies and procedures;
- d) changes in an operator certificate; and
- e) changes for purposes of maintaining cross fleet standardization.

*Note.— Operators should ensure that crew coordination philosophy, policies and procedures are specific to their operation.*

6.3 A flight safety documents system should be reviewed:

- a) on a regular basis (at least once a year);
- b) after major events (mergers, acquisitions, rapid growth, downsizing, etc.);
- c) after technology changes (introduction of new equipment); and
- d) after changes in safety regulations.

6.4 Operators should develop methods of communicating new information. The specific methods should be responsive to the degree of communication urgency.

*Note.— As frequent changes diminish the importance of new or modified procedures, it is desirable to minimize changes to the flight safety documents system.*

6.5 New information should be reviewed and validated considering its effects on the entire flight safety documents system.

6.6 The method of communicating new information should be complemented by a tracking system to ensure currency by operational personnel. The tracking system should include a procedure to verify that operational personnel have the most recent updates.

Appendix B

**ADDITIONAL REQUIREMENTS FOR APPROVED OPERATIONS BY SINGLE-ENGINE  
TURBINE-POWERED AEROPLANES AT NIGHT AND/OR IN INSTRUMENT  
METEOROLOGICAL CONDITIONS (IMC)**

*(See Section 5, 5.4.1)*

Airworthiness and operational requirements provided in accordance with Para 5.4.1, shall satisfy the following:

**1. Turbine engine reliability**

1.1 Turbine engine reliability shall be shown to have a power loss rate of less than 1 per 100 000 engine hours.

Note.-- Power loss in this context is defined as any loss of power, the cause of which may be traced to faulty engine or engine component design or installation, including design or installation of the fuel ancillary or engine control systems.

1.2 The operator shall be responsible for engine trend monitoring.

1.3 To minimize the probability of in-flight engine failure, the engine shall be equipped with:

- a) an ignition system that activates automatically, or is capable of being operated manually, for take-off and landing, and during flight, in visible moisture;
- b) a magnetic particle detection or equivalent system that monitors the engine, accessories gearbox, and reduction gearbox, and which includes a flight deck caution indication; and
- c) an emergency engine power control device that permits continuing operation of the engine through a sufficient power range to safely complete the flight in the event of any reasonably probable failure of the fuel control unit.

**2. Systems and equipment**

Single-engine turbine-powered aeroplanes approved to operate at night and/or in IMC shall be equipped with the following systems and equipment intended to ensure continued safe flight and to assist in achieving a safe forced landing after an engine failure, under all allowable operating conditions:

- a) two separate electrical generating systems, each one capable of supplying all probable combinations of continuous in-flight electrical loads for instruments, equipment and systems required at night and/or in IMC;
- b) a radio altimeter;
- c) an emergency electrical supply system of sufficient capacity and endurance, following loss of all generated power, to as a minimum:
  - 1) maintain the operation of all essential flight instruments, communication and navigation systems during a descent from the maximum certificated altitude in a glide configuration to the completion of a landing;

- 2) lower the flaps and landing gear, if applicable;
- 3) provide power to one pitot heater, which must serve an air speed indicator clearly visible to the pilot;
- 4) provide for operation of the landing light specified in 2 j);
- 5) provide for one engine restart, if applicable; and
- 6) provide for the operation of the radio altimeter;
- d) two attitude indicators, powered from independent sources;
- e) a means to provide for at least one attempt at engine re-start;
- f) airborne weather radar;
- g) a certified area navigation system capable of being programmed with the positions of aerodromes and safe forced landing areas, and providing instantly available track and distance information to those locations;
- h) for passenger operations, passenger seats and mounts which meet dynamically-tested performance standards and which are fitted with a shoulder harness or a safety belt with a diagonal shoulder strap for each passenger seat;
- g) in pressurized aeroplanes, sufficient supplemental oxygen for all occupants for descent following engine failure at the maximum glide performance from the maximum certificated altitude to an altitude at which supplemental oxygen is no longer required;
- J) a landing light that is independent of the landing gear and is capable of adequately illuminating the touchdown area in a night forced landing; and
- k) an engine fire warning system.

### **3. Minimum equipment list**

DGCA may require the minimum equipment list of an operator approved in accordance with para 5.4 to specify the operating equipment required for night and/or IMC operations, and for day/VMC operations.

### **4. Flight manual information**

The flight manual shall include limitations, procedures, approval status and other information relevant to operations by single-engine turbine-powered aeroplanes at night and/or in IMC.

### **5. Event reporting**

- 5.1 An operator approved for operations by single-engine turbine-powered aeroplanes at night and/or in IMC shall report all significant failures, malfunctions or defects to DGCA who in turn will notify the State of Design.

5.2 DGCA may review the safety data and monitor the reliability information so as to be able to take any actions necessary to ensure that the intended safety level is achieved. DGCA may notify major events or trends of particular concern to the appropriate Type Certificate Holder and the State of Design.

## **6. Operator planning**

6.1 Operator route planning shall take account of all relevant information in the assessment of intended routes or areas of operations, including the following:

- a) the nature of the terrain to be overflown, including the potential for carrying out a safe forced landing in the event of an engine failure or major malfunction;
- b) weather information, including seasonal and other adverse meteorological influences that may affect the flight; and
- c) other criteria and limitations as specified by DGCA.

6.2 An operator shall identify aerodromes or safe forced landing areas available for use in the event of engine failure, and the position of these shall be programmed into area navigation system.

Note 1. A 'safe' forced landing in this context means a landing in an area at which it can reasonably be expected that it will not lead to serious injury or loss of life, even though the aeroplane may incur extensive damage.

Note 2.-- Operation over routes and in weather conditions that permit a safe forced landing in the event of an engine failure, as specified in para 5.1.2, is not required by Appendix B, 6.1 and 6.2 for aeroplanes approved in accordance with para 5.4. The availability of forced landing areas at all points along a route is not specified for these aeroplanes because of the very high engine reliability, additional systems and operational equipment, procedures and training requirements specified in this Appendix.

## **7. Flight crew experience, training and checking**

7.1 DGCA may prescribe the minimum flight crew experience required for night/IMC operations by single-engine turbine-powered aeroplanes.

7.2 An operator's flight crew training and checking shall be appropriate to night and/or IMC operations by single-engine turbine-powered aeroplanes, covering normal, abnormal and emergency procedures and, in particular, engine failure, including descent to a forced landing in night and/or in IMC conditions.

## **8. Route limitations over water**

DGCA may apply route limitation criteria for single-engine turbine-powered aeroplanes operating at night and/or in IMC on over water operations if beyond gliding distance from an area suitable for a safe forced landing/ditching having regard to the characteristics of the aeroplane, seasonal weather influences, including likely sea state and temperature, and the availability of search and rescue services.

## **9. Operator certification or validation**

The operator shall demonstrate the ability to conduct operations by single-engine turbine-powered aeroplanes at night and/or in EVIC through a certification and approval process specified by the State of the Operator.

Note.-- Guidance on the airworthiness and operational requirements is contained in Attachment.

**Draft**

AIR OPERATOR PERMIT		
1	STATE OF OPERATOR <sup>2</sup>	1
	DIRECTOR GENERAL OF CIVIL AVIATION, OPP. SAFDARJUNG AIRPORT, NEW DELHI, INDIA – 110003  (ISSUING AUTHORITY) <sup>3</sup>	
AOP # <sup>4</sup> : Expiry Date <sup>5</sup> :	<b>OPERATOR NAME<sup>6</sup></b> Db a trading name <sup>7</sup> : Operator address <sup>8</sup> :  Telephone <sup>9</sup> :  Fax:  E-mail:	<b>OPERATIONAL POINTS OF CONTACT<sup>10</sup></b>  Contact details, at which operational management can be contacted without undue delay, are listed in _____ <sup>11</sup>
This certificate certifies that _____ <sup>12</sup> is authorized to perform commercial air operations, as defined in the attached operations specifications, in accordance with the operations manual and the _____ <sup>13</sup> .		
Date of issue <sup>14</sup> :	Name and signature <sup>15</sup> : Title	

Notes.—

1. For use of the State of the Operator.
2. Replace by the name of the State of the Operator.
3. Replace by the identification of the issuing authority of the State of the Operator.
4. Unique AOC number, as issued by the State of the Operator.
5. Date after which the AOC ceases to be valid (dd-mm-yyyy).
6. Replace by the operator's registered name.
7. Operator's trading name, if different. Insert "dba" before the trading name (for "doing business as").

8. *Operator's principal place of business address.*

9. *Operator's principal place of business telephone and fax details, including the country code. E-mail to be provided if available.*

10. *The contact details include the telephone and fax numbers, including the country code, and the e-mail address (if available) at which operational management can be contacted without undue delay for issues related to flight operations, airworthiness, flight and cabin crew competency, dangerous goods and other matters as appropriate.*

11. *Insert the controlled document, carried on board, in which the contact details are listed, with the appropriate paragraph or page reference, e.g.: "Contact details are listed in the operations manual, Gen/Basic, Chapter 1, 1.1" or "... are listed in the operations specifications, page 1" or "... are listed in an attachment to this document".*

12. *Operator's registered name.*

13. *Insertion of reference to the appropriate civil aviation regulations.*

14. *Issuance date of the AOC (dd-mm-yyyy).*

15. *Title, name and signature of the authority representative. In addition, an official stamp may be applied on the AOC.*

**Draft**

**Appendix D**

<b>OPERATIONS SPECIFICATIONS</b> (subject to the approved conditions in the operations manual)				
<b>ISSUING AUTHORITY CONTACT DETAILS<sup>1</sup></b>				
Telephone: _____		Fax: _____		E-mail: _____
AOC# <sup>2</sup> : _____		Operator name <sup>3</sup> : _____		Date <sup>4</sup> : _____ Signature: _____
Dba trading name: _____				
Aircraft model <sup>5</sup> :				
Types of operation: Commercial air transportation <input type="checkbox"/> Passengers <input type="checkbox"/> Cargo <input type="checkbox"/> Other <sup>6</sup> : _____				
Area(s) of operation <sup>7</sup> :				
Special limitations <sup>8</sup> :				
SPECIAL AUTHORIZATIONS	YES	NO	SPECIFIC APPROVALS <sup>9</sup>	REMARKS
Dangerous goods	<input type="checkbox"/>	<input type="checkbox"/>		
Low visibility operations				
Approach and landing	<input type="checkbox"/>	<input type="checkbox"/>	CAT <sup>10</sup> : ____ RVR: ____ m DH: ____ ft	
Take-off	<input type="checkbox"/>	<input type="checkbox"/>	RVR <sup>11</sup> : ____ m	
RVSM <sup>12</sup> <input type="checkbox"/> N/A	<input type="checkbox"/>	<input type="checkbox"/>		
ETOPS <sup>13</sup> <input type="checkbox"/> N/A	<input type="checkbox"/>	<input type="checkbox"/>	Maximum diversion time <sup>14</sup> : ____ minutes	
Navigation specifications for PBN operations <sup>15</sup>	<input type="checkbox"/>	<input type="checkbox"/>		<sup>16</sup>
Continuing airworthiness	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<sup>17</sup>	
Other <sup>18</sup>	<input type="checkbox"/>	<input type="checkbox"/>		

**Notes.—**

*1. Telephone and fax contact details of the authority, including the country code. E-mail to be provided if available.*

2. *Insert the associated AOP number.*
3. *Insert the operator's registered name and the operator's trading name, if different. Insert "dba" before the trading name (for "doing business as").*
4. *Issuance date of the operations specifications (dd-mm-yyyy) and signature of the authority representative.*
5. *Insert the Commercial Aviation Safety Team (CAST)/ICAO designation of the aircraft make, model and series, or master series, if a series has been designated (e.g. Boeing-737-3K2 or Boeing-777-232). The CAST/ICAO taxonomy is available at: <http://www.intlaviationstandards.org/>.*
6. *Other type of transportation to be specified (e.g. emergency medical service).*
7. *List the geographical area(s) of authorized operation (by geographical coordinates or specific routes, flight information region or national or regional boundaries).*
8. *List the applicable special limitations (e.g. VFR only, day only).*
9. *List in this column the most permissive criteria for each approval or the approval type (with appropriate criteria).*
10. *Insert the applicable precision approach category (CAT I, II, IIIA, IIIB or IIIC). Insert the minimum RVR in metres and decision height in feet. One line is used per listed approach category.*
11. *Insert the approved minimum take-off RVR in metres. One line per approval may be used if different approvals are granted.*
12. *"Not applicable (N/A)" box may be checked only if the aircraft maximum ceiling is below FL 290.*
13. *Extended range operations (ETOPS) currently applies only to twin-engined aircraft. Therefore the "Not applicable (N/A)" box may be checked if the aircraft model has more than 2 engines. Should the concept be extended to 3 or 4-engined aircraft in the future, the "Yes" or "No" checkbox will be required to be checked.*
14. *The threshold distance may also be listed (in NM), as well as the engine type.*
15. *Performance-based navigation (PBN): one line is used for each PBN specification authorization (e.g. RNAV 10, RNAV 1, RNP 4), with appropriate limitations or conditions listed in the "Specific Approvals" and/or "Remarks" columns.*
16. *Limitations, conditions and regulatory basis for operational approval associated with the performance-based navigation specifications (e.g. GNSS, DME/DME/IRU). Information on performance-based navigation, and guidance concerning the implementation and operational approval process, are contained in the Performance-based Navigation Manual (Doc 9613).*
17. *Insert the name of the person/organization responsible for ensuring that the continuing airworthiness of the aircraft is maintained and the regulation that requires the work, i.e. within the AOC regulation or a specific approval (e.g. EC2042/2003, Part M, Subpart G).*

*18. Other authorizations or data can be entered here, using one line (or one multi-line block) per authorization (e.g. special approach authorization, MNPS, approved navigation performance).*

Additional information that may be listed in the Operations Specifications associated with the air operator Permit/certificate.

The following additional items may be included in the operations specifications:

- a) special aerodrome operations (e.g. short take-off and landing operations or land and hold short operations);
- b) special approach procedures (e.g. steep gradient approach, instrument landing system precision runway monitor approach, localizer-type directional aid precision runway monitor approach, RNP approach, etc.);
- c) single-engine passenger transport at night or in instrument meteorological conditions; and
- d) operations in areas with special procedures (e.g. operations in areas using different altimetry units or altimeter setting procedures).

**Draft**

**Monitoring data from any regional monitoring programme**

Arrangements shall be put in place, through interregional agreement, for the sharing between regions of data from monitoring programmes.

*Note.— Guidance material relating to vertical separation and monitoring of height-keeping performance is contained in the Manual on Implementation of a 300m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive (Doc 9574).*

**Draft**

Appendix 'F'

**RESCUE AND FIRE FIGHTING SERVICES (RFFS) LEVELS**

**1. Purpose and scope**

**1.1 Introduction**

The purpose of this Appendix is to provide guidance for assessing the level of RFFS deemed acceptable by aeroplane operators using aerodromes for different purposes.

**1.2 Basic concepts**

1.2.1 While all aeroplane operators should aim to have the level of RFFS protection required by CAR Section 4, Series B Part I Para 9.2, some of the aerodromes currently used do not meet these requirements. Furthermore, CAR Section 4, Series B Part I provisions relates to the level of aerodrome RFFS to be provided for aeroplanes normally using an aerodrome.

1.2.2 If an aerodrome is exposed to a temporary reduction of its RFFS capability, CAR Section 4, Series B Part I, Para 2.11.3 requires that: "Changes in the level of protection normally available at an aerodrome for rescue and fire fighting shall be notified to the appropriate air traffic services units and aeronautical information services units to enable those units to provide the necessary information to arriving and departing aircraft. When such a change has been corrected, the above units shall be advised accordingly".

1.2.3 The following guidance is intended to assist operators in making the assessment required by para 4.1.4. It is not intended that this guidance limit or regulate the operation of an aerodrome.

**2. Glossary of terms**

**Aerodrome RFFS category.** The RFFS category for a given aerodrome, as published in the appropriate Aeronautical Information Publication (AIP).

**Aeroplane RFFS category.** The category derived from CAR Section 4, Series B Part I, Table 9-1 for a given aeroplane type.

**RFFS category.** Rescue and fire fighting services category as defined in CAR Section 4, Series B Part I.

**Temporary downgrade.** RFFS category as notified, including by NOTAM, and resulting from the downgrade of the level of RFFS protection available at an aerodrome, for a period of time not exceeding 72 hours.

**3. Minimum acceptable aerodrome RFFS category**

**3.1 Planning**

3.1.1 In principle, the published RFFS category for each of the aerodromes used for a given flight should be equal to or better than the aeroplane RFFS category. However, if the aeroplane RFFS category is not available at one or more of the aerodromes required to be specified in the operational flight plan, an operator should ensure that the aerodrome has the minimum level of RFFS which is deemed acceptable for the intended use in accordance with the instructions contained in the operations manual. When establishing acceptable levels of minimum RFFS for these situations, the operator may use the criteria in Table F-1.

3.1.1.1 Intended operations to aerodromes with RFFS categories below the levels specified in CAR Section 4, Series B Part I Para 9.2.3, should be coordinated between the aeroplane operator and the aerodrome operator.

**Table F-1**

Minimum acceptable aerodrome category for rescue and fire fighting

Aerodromes (Required to be specified in the operational flight plan) <sup>(1)</sup>	Minimum acceptable aerodrome RFFS category (Based on published aerodrome RFFS category)
Departure and destination aerodrome	RFFS category for each aerodrome should be equal to or better than the aeroplane RFFS category.  <b>One</b> category <sup>(2)</sup> below the aeroplane RFFS category may be accepted where provided as a remission in accordance with CAR Section 4, Series B Part I, Para 9.2, but not lower than Category 4 for aeroplanes with maximum certificated take-off mass of over 27 000 kg and not lower than Category 1 for other aeroplanes.
Departure and destination aerodrome in case of temporary downgrade and Take-off alternate, destination alternate and en-route alternate aerodromes	<b>One</b> category <sup>(2)</sup> below the aeroplane RFFS category may be accepted where provided as a remission in accordance with CAR Section 4, Series B Part I, Para 9.2 but not lower than Category 4 for aeroplanes with maximum certificated take-off mass of over 27 000 kg and not lower than Category 1 for other aeroplanes.
ETOPS en-route alternate aerodrome	<b>One</b> category <sup>(2)</sup> below the aeroplane RFFS category, but not lower than RFFS Category 4 for aeroplanes with maximum certificated take-off mass of over 27 000 kg or not lower than Category 1 for all other aeroplanes, under the condition that aerodrome is in operation (applicable within India) and for outside India at least 30 minutes notice will be given to the aerodrome operator prior to the arrival of the aeroplane provided the State of Authority approved/accepted.

(1) If an individual aerodrome serves more than one purpose, the highest required category corresponding to that purpose at the time of expected use applies.

(2) Refer para 9.2.3 of CAR Section 4, Series B Part 1 – Aerodrome Design and Operations.

Appendix 6

**MINIMUM PERFORMANCE REQUIREMENTS FOR FIRE EXTINGUISHERS**

(a) *Hand fire extinguishers.*

(1) The following minimum number of hand fire extinguishers must be conveniently located and evenly distributed in passenger compartments:

Passenger capacity	No. of extinguishers
7 through 30	1
31 through 60	2
61 through 200	3
201 through 300	4
301 through 400	5
401 through 500	6
501 through 600	7
601 through 700	8

(2) At least one hand fire extinguisher must be conveniently located in the pilot compartment.

(3) At least one readily accessible hand fire extinguisher must be available for use in each Class A or Class B cargo or baggage compartment and in each Class E cargo or baggage compartment that is accessible to crewmembers in flight.

(4) At least one hand fire extinguisher must be located in, or readily accessible for use in, each galley located above or below the passenger compartment.

(5) Each hand fire extinguisher must be approved.

(6) At least one of the required fire extinguishers located in the passenger compartment of an airplane with a passenger capacity of at least 31 and not more than 60, and at least two of the fire extinguishers located in the passenger compartment of an airplane with a passenger capacity of 61 or more must contain Halon 1211 (bromochlorodifluoromethane  $\text{CBrClF}_2$ ), or equivalent, as the extinguishing agent. The type of extinguishing agent used in any other extinguisher required by this section must be appropriate for the kinds of fires likely to occur where used.

(7) The quantity of extinguishing agent used in each extinguisher required by this section must be appropriate for the kinds of fires likely to occur where used.

(8) Each extinguisher intended for use in a personnel compartment must be designed to minimize the hazard of toxic gas concentration.

(b) Built-in fire extinguishers. If a built-in fire extinguisher is provided—

(1) Each built-in fire extinguishing system must be installed so that—

(i) No extinguishing agent likely to enter personnel compartments will be hazardous to the occupants; and

(ii) No discharge of the extinguisher can cause structural damage.

(2) The capacity of each required built-in fire extinguishing system must be adequate for any fire likely to occur in the compartment where used, considering the volume of the compartment and the ventilation rate.

**Draft**