



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

CIVIL AVIATION REQUIREMENTS  
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**Subject: OPERATION OF COMMERCIAL AIR TRANSPORT- HELICOPTERS**

### INTRODUCTION

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

This CAR is issued under the provision of Rule 29C of the Aircraft Rules 1937 and is in conformity with ICAO Annex 6 Pt III.

These requirements are applicable to scheduled as well as non-scheduled air transport operations.

### DEFINITIONS

**Aerial work.** An aircraft operation in which an aircraft is used for specialized services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc.

**Aircraft.** Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

**Aircraft operating manual (Flight Crew Operating Manual - FCOM).** A manual, acceptable to 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 part of the Operations manual*

**Air operator Permit/ Certificate.** An operating permit/ certificate or an equivalent document issued by DGCA authorizing an operator to carry out specified commercial air transport operations.

**Alternate heliport.** A heliport specified in the flight plan to which a flight may proceed when it becomes inadvisable to land at the heliport of intended landing.

*Note.- An alternate heliport may be the heliport of departure.*

**Approach and landing operations using instrument approach procedures.**

Instrument approach and landing operations are classified as follows:

Non-precision approach and landing operation. 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 decision height not lower than 60 m (200 ft) and 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 decision height lower than 60 m (200 ft), but not lower than 30 m (100 ft), and a runway visual range not less than 350 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 200 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 200 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).*

**Approach and landing phase - helicopters.** That part of the flight from 1000 ft (300m) above the elevation of the final approach and take-off area (FATO), if the flight is planned to exceed this height, or from the commencement of the descent in the other cases, to landing or to the balked landing point.

**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.

**Category A rotorcraft.** Category A rotorcraft means multiengine rotorcraft designed with engine and system isolation features specified in FAR part 29 and utilizing scheduled take off and landing operations under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight in the event of engine failure.

**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.

**Congested area.** In relation to a city, town or settlement, any area which is substantially used for residential, commercial or recreational purposes.

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

**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 (DA) or decision height (DH).** 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 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.*

**Defined point after take-off.** The point, within the take-off and initial climb phase, before which the helicopter's ability to continue the flight safely, with one engine inoperative, is not assured and a forced landing may be required.

**Defined point before landing.** The point, within the approach and landing phase, after which the helicopter's ability to continue the flight safely, with one engine inoperative, is not assured and a forced landing may be required.

*Note.- Defined points apply to performance class 2 helicopters only.*

**Elevated heliport.** A heliport located on a raised structure on land.

**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.

**En-route phase.** That part of the flight from the end of the take-off and initial climb phase to the commencement of the approach and landing phase.

*Note.* - Where adequate obstacle clearance cannot be guaranteed visually, flights must be planned to ensure that obstacles can be cleared by an appropriate margin. In the event of failure of the critical power-unit, operators may need to adopt alternative procedures.

**Final approach and take-off area (FATO).** A defined area over which the final phase of the approach manoeuvre to hover or landing is completed and from which the take-off maneuver is commenced. Where the FATO is to be used by performance Class I helicopters, the defined area includes the rejected take-off area available.

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

**Flight duty period.** The total time from the moment a flight crew member commences duty, immediately subsequent to a rest period and prior to making a flight or a series of flights, to the moment the flight crew member is relieved of all duties having completed such flight or series of flights.

**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 inter-related 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 operators' maintenance control manual.

**Flight time-helicopters.** The total time from the moment a helicopter's rotor blades start turning until the moment the helicopter finally comes to rest at the end of the flight, and the rotor blades are stopped.

**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.

**Helicopter.** A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes.

**Helideck.** A heliport located on a floating or fixed off-shore structure.

**Heliport.** An Aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

**Heliport operating minima.** The limits of usability of a heliport 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.

**Human Factor 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 less than the minima specified for visual meteorological conditions.

*Note.- The specified minima for visual meteorological conditions as contained in CAR Section 4 Series 'E' Part I.*

**Landing decision point (LDP).** The point used in determining landing performance from which, a power-unit failure occurring at this point, the landing may be safely continued or a balked landing initiated.

*Note.- LDP applies to performance Class I helicopters.*

**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 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 organisation's procedures manual (Maintenance system manual / MOE).** A document 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 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 heliport elevation or to the threshold elevation if that is more than 2 m (7ft) below the heliport elevation. A minimum descent height for a circling approach is referenced to the heliport 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.*

**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.

**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.

*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.- 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 heliport elevation or the threshold elevation if that is more than 2 m (7 ft) below the heliport elevation. An obstacle clearance height for a circling approach is referenced to the heliport elevation.*

**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 helicopter performance, other operating limitations and relevant expected conditions on the route to be followed and at the heliports 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.

**Performance Class 1 helicopter.** A helicopter with performance such that, in case of critical power-unit failure, it is able to land on the rejected take-off area or safely continue the flight to an appropriate landing area, depending on when the failure occurs.

**Performance Class 2 helicopter.** A helicopter with performance such that, in case of critical power-unit failure, it is able to safely continue the flight, except when the failure occur prior to a defined point after take-off or after a defined point before landing, in which cases a forced landing may be required.

**Performance Class 3 helicopter.** A helicopter with performance such that, in case of a power-unit failure at any point in the flight profile, a forced landing must be performed.

**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.

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

**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 navigation performance (RNP).** A statement of the navigation performance necessary for operation within a defined airspace.

*Note.— Navigation performance and requirements are defined for a particular RNP type and/or application.*

**Rest period.** Any period of time on the ground during which a flight crew member is relieved of all duties by the operator.

**RNP type.** A containment value expressed as a distance in nautical miles from the intended position within which flights would be for at least 95 per cent of the total flying time.

Example.— RNP 4 represents a navigation accuracy of plus or minus 7.4 km (4 NM) on a 95 per cent containment basis.

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

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

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

**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.

**Take-off and initial climb phase.** That part of the flight from the start of take-off to 1000 ft (300 m) above the elevation of the FATO, if the flight is planned to exceed this height, or to the end of the climb in the other cases.

**Take-off decision point (TDP).** The point used in determining take-off performance from which, a power-unit failure occurring at this point, either a rejected take-off may be made or a take-off safely continued.

*Note.- TDP applies to performance Class I helicopters.*

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

*Note.- The specified minima are contained in CAR Section 4 Series 'E' Part I.*

**VToss.** The minimum speed at which climb shall be achieved with the critical power-unit inoperative, the remaining power-units operating within approved operating limits.

*Note.- The speed referred to above may be measured by instrument indications or achieved by a procedure specified in the flight manual.*

## 1. GENERAL REQUIREMENTS

### 1.1 Compliance with Laws Regulations and Procedures

1.1.1 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.

1.1.2 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 heliport 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 helicopter.

*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.*

1.1.3 Operators shall ensure that flight crew members demonstrate the ability to speak and understand the language used for radiotelephony communications as specified in ICAO Annex 1.

1.1.4 The operator shall nominate a person in the operations department who shall be vested with the responsibility for operational control.

1.1.5 Responsibility for operational control shall be delegated only to the pilot-in-command and 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.*

- 1.1.6 If an emergency situation which endangers the safety of the helicopter or persons becomes known first to the flight operations officer/flight dispatcher, action by that person in accordance with 2.6.1 shall include, where necessary, notification to the appropriate authorities of the nature of the situation without delay, and requests for assistance if required.
- 1.1.7 If an emergency situation occurs within India, which endangers the safety of the helicopter or persons necessitates the taking of action which involves a violation of regulations or procedures, the pilot-in-command/operator shall notify the nearest Air Safety office of DGCA without delay. In the event such emergency situation occurs outside India, the pilot-in-command shall notify the appropriate local authority without delay and if required by the State in which the incident occurs, the pilot-in-command shall also submit a report of the occurrence on any such violation to the appropriate authority of such State. The pilot-in-command shall submit a copy of the occurrence to the DGCA marked attention of Director of Air Safety (Hqrs.) with a copy endorsed to the Regional Air Safety Office where the helicopter is normally based. Such reports shall be submitted within 48 hours.
- 1.1.8 Operators shall ensure that pilot-in-command have available on board the helicopter, all the essential information concerning the search and rescue services in the area over which the helicopter 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.*

## **1.2 Safety Management**

- 1.2.1 The Operator shall follow the safety programme established by DGCA, from time to time, to achieve an acceptable level of safety in the operation of aircraft.
- 1.2.2 The safety programme includes the legislative and regulatory provisions, which the operator is required to comply for the conduct of safe operations. It also includes provisions relating to activities such as incident reporting, safety investigations, safety audits and safety promotions as required in the various documents issued by DGCA.

*Note.— Guidance on safety programmes is contained in the Safety Management Manual (SMM) (Doc 9859), and the definition of acceptable levels of safety is contained in Appendix III.*

- 1.2.3 Intentionally left blank
- 1.2.4 From 1 January 2009, an operator shall implement a safety management system acceptable to DGCA in order to comply with the above safety programme. The accepted safety management system, as a minimum:
- a) identify safety hazards;
  - b) ensure that remedial action necessary to maintain an acceptable level of safety is implemented;
  - c) provide for continuous monitoring and regular assessment of the safety level achieved; and
  - d) aim to make continuous improvement to the overall level of safety.

- 1.2.5 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).*

- 1.2.6 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 system is provided in Appendix I.*

- 1.3 Dangerous goods.** The operator shall adhere to the provisions for carriage of dangerous goods as contained in Aircraft (Carriage of Dangerous Goods) Rules, 2003 and CAR Section 3 Series 'L' Part II.

- 1.4 Use of psychoactive substances.** The operator shall adhere to the provisions concerning the use of psychoactive substances as contained in Rule 24 of the Aircraft Rules, 1937 and CAR Section 4 Series 'E' Part I.

## **2 FLIGHT OPERATIONS**

### **2.1 Operating facilities**

- 2.1.1 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 helicopter 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" as stated above, 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.*

- 2.1.2 The operator shall ensure that any inadequacy of facilities observed in the course of operations is reported to the authority responsible for them, without undue delay.

- 2.1.3 Airports Authority of India shall ensure that subject to their published conditions of use, heliports and their facilities are kept continuously available

for flight operations during their published hours of operations, irrespective of weather conditions.

## **2.2 Operational certification and supervision**

### **2.2.1 Air operator permit /certificate**

2.2.1.1 An operator shall not engage in commercial air transport operations unless in possession of a valid Air operator permit / certificate issued by DGCA.

2.2.1.2 The Air operator permit /certificate shall authorise the operator to conduct commercial air transport operations in accordance with specified authorizations, conditions and limitations as may be specified therein.

2.2.1.3 An air operator certificate issued by another Contracting State, shall be recognized as valid, provided that the requirements under which the certificate was issued are at least equal to the applicable requirements specified in this CAR.

2.2.1.4 The issue of an Air operator permit / certificate by DGCA 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.

2.2.1.5 The continued validity of an Air operator permit/ certificate shall depend upon the operator maintaining the requirements of 2.2.1.4 under the supervision of DGCA.

2.2.1.6 The Air operator permit / certificate shall contain the following:

- a) Name and address of the operator;
- b) Date of issue of the permit/certificate;
- c) Validity of the permit/certificate;
- d) Description of the type of operations authorised;
- e) the aircraft type(s) along with their manufacturers' serial number and registration marking; and
- f) Authorized areas of operations or routes.

2.2.1.7 The operator shall ensure that its capability to undertake air transport operations and maintenance of aircraft is not allowed to degrade and shall ensure compliance with CAR Section 2 Series 'A' Part IV and CAR Section 8 Series 'A' Part II in this regard.

### **2.2.2 Operations manual**

2.2.2.1 The operator shall provide an operations manual for the use and guidance of the personnel engaged in the operation of the aircraft. The contents of the manual shall meet the requirements of the CAR Section 2 Series 'O' Part X. The operations manual shall be amended or revised as 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.

### **2.2.3 General operating instructions**

2.2.3.1 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.

2.2.3.2 A helicopter rotor shall not be turned under power without a qualified pilot at the controls.

2.2.3.3 The operator should issue operating instructions and provide information on helicopter climb performance with all engines operating to enable the pilot-in-command to determine the climb gradient that can be achieved during the take-off and initial climb phase for the existing take-off conditions and intended take-off technique. This information should be included in the operations manual.

### **2.2.4 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.

### **2.2.5 Checklists**

The checklists provided in accordance with 4.1.3 shall be used by flight crews 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. The design and utilisation of check lists shall observe human factors principle.

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

### **2.2.6 Minimum flight altitudes**

2.2.6.1 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.

2.2.6.2 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 CAR Section 4 Series 'E' Part I.

2.2.6.3 The method for establishing the minimum flight altitudes should be approved by the DGCA.

2.2.6.4 DGCA may approve such method only 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 helicopter can be determined;
- (b) the inaccuracies in the indications of the altimeters used;
- (c) the characteristics the terrain (sudden change in the elevation);
- (d) the probability of encountering unfavorable meteorological conditions (e.g. severe turbulence and descending air currents);
- (e) possible inaccuracies in aeronautical charts; and
- (f) airspace restrictions.

### **2.2.7 Heliport operating minima**

2.2.7.1 The operator shall establish heliport operating minima for each heliport to be used in operations and the method of determination of such minima shall be approved by DGCA. Such minima shall not be lower than any that may be established for such heliports by DGCA for helicopter operation. Determination of minima is in accordance with ICAO All Weather Operations Document 9365-AN/910.

2.2.7.2 While establishing the heliport operating minima which will apply to any particular operation, the operator shall take full account of:

- i) the type, performance and handling characteristics of the helicopter;
- ii) the composition of the flight crew, their competence and experience;
- iii) the declared distances;
- iv) the adequacy and performance of the available visual and non-visual ground aids;
- v) the equipment available on the helicopter for the purpose of navigation and/or control of the flight path during the approach to landing and the missed approach;
- vi) the obstacles in the approach and missed approach areas and the obstacle clearance altitude/height for the instrument approach procedures;
- vii) the means used to determine and report meteorological conditions; and
- viii) the obstacles in the climb-out areas and necessary clearance margins.

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

2.2.7.4 For instrument approach and landing operations, heliport operating minima below 800 m visibility shall not be authorized unless RVR information or an accurate measurement or observation of visibility is provided.

*Note.- Guidance on the operationally desirable and currently attainable accuracy of measurement or observation is given in ICAO Annex-3— Meteorological Service for International Air Navigation, Attachment B.*

### **2.2.8 Fuel and Oil Records**

2.2.8.1 The operator shall maintain fuel and oil records to enable DGCA to ascertain that for each flight, the requirements of para 2.3.6 of this CAR have been complied with.

2.2.8.2 Fuel and oil records shall be retained by the operator for a period of six months.

### **2.2.9 Crew**

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

2.2.9.2 Flight time, flight duty periods and rest periods. An operator shall formulate requirements to limit flight time and flight duty periods and for the provision of adequate rest periods for all its crew members. These requirements shall be in accordance with the CAR Sec-7 Series J Part II and included in the operations manual.

2.2.9.3 An operator shall maintain current records of the flight time, flight duty periods and rest periods of all its crew members.

### **2.2.10 Passengers**

2.2.10.1 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 cards.

2.2.10.2 The operator shall inform the passengers of the location and general manner of use of the principal emergency equipment carried for collective use.

2.2.10.3 In an emergency during flight, passengers shall be instructed in such emergency action as may be appropriate to the circumstances.

2.2.10.4 The operator shall ensure that during take-off and landing and whenever, by reason of turbulence or any emergency occurring during flight, precaution is considered necessary, all passengers on board a helicopter shall be secured in their seat by means of seat belts or harnesses provided.

### **2.2.11 Over water flights**

All helicopters on flights over water in accordance with 4.5.1 shall be certificated for ditching. Sea state shall be an integral part of ditching information.

### **2.3 Flight Preparation**

**2.3.1** A flight shall not be commenced until the pilot has issued pilot's acceptance report either on tech-log or any other appropriate document, certifying that the pilot-in-command is satisfied that:

- a) The helicopter is airworthy and has valid maintenance release.
- b) The instruments and equipment as prescribed by the manufacturer/DGCA are installed and are sufficient for the flight/ type of operation to be undertaken;
- c) All emergency equipment required for the intended flight are serviceable and are on board;
- d) The mass of the helicopter and center of gravity location are such that flight can be conducted safely, taking into account the flight conditions expected;
- e) Any load carried is properly distributed and safely secured;
- f) It carries sufficient fuel and oil for the intended flight in accordance with this part of the CAR;
- g) The engines are operating with normal parameters at rated power;
- h) The various documents required for the flight are valid and are on board;
- i) There is no physical damage apparent during his walk around inspection;
- j) The flight controls of the helicopter are working freely and in correct senses.
- k) View of the pilot is not interfered with/by any part of the helicopter structure.
- l) A check has been completed to ensure that the aircraft can be operated within approved operating limitations contained in the Certificate of Airworthiness/ Flight Manual or other appropriate and relevant documents;
- m) That the operational flight plan has been completed for the intended flight.

*Note.- As regard to item 2.3.1(g), the pilot shall ensure before take-off that engine(s) is/are developing correct power.*

**2.3.2** Completed pilot acceptance report (flight preparation form) shall be kept by the operator for a period of six months.

#### **2.3.3 Operational Flight Planning**

2.3.3.1 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 heliport authority or on record in a suitable place at the point of departure.

2.3.3.2 The operations manual shall describe the content and use of the operational flight plan.

2.3.3.3 All documents relating to operational flight plan shall be retained by the operator for a period of six months.

### **2.3.4 Alternate Heliports:**

2.3.4.1 For a flight to be conducted in accordance with the instrument flight rules, at least one suitable alternate heliport shall be specified in the operational flight plan, unless:

- a) the duration of the flight and meteorological conditions prevailing are such that there is reasonable certainty that, at the estimated time of arrival at the heliport of intended landing, and for a reasonable period before and after such time, the approach and landing can be made under visual meteorological conditions as prescribed by the DGCA; or
- b) the heliport of intended landing is isolated and no suitable alternate is available. A point of no return (PNR) shall be determined.

2.3.4.2 Suitable off-shore alternates may be specified subject to the following:

- a) the off-shore alternates shall be used only after a point of no return (PNR). Prior to PNR on-shore alternates shall be used;
- b) mechanical reliability of critical control systems and critical components shall be considered and taken into account when determining the suitability of the alternates;
- c) one engine inoperative performance capability shall be attainable prior to arrival at the alternate;
- d) deck availability shall be guaranteed; and
- e) weather information must be reliable and accurate.

*Note.- The landing technique specified in the flight manual following control system failure may preclude the nomination of certain helidecks as alternate heliports.*

2.3.4.3 Off-shore alternates should not be used when it is possible to carry enough fuel to have an on-shore alternate. Such circumstances should be exceptional and should not include payload enhancement in adverse weather conditions.

### **2.3.5 Weather conditions**

2.3.5.1 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.

2.3.5.2 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 heliport of intended landing or, when an alternate is required, at least one alternate heliport will, at the time of arrival, be at or above the heliport operating minima.

2.3.5.3 A flight to be operated in known or expected icing conditions shall not be commenced unless the helicopter is certificated and equipped to cope with such conditions.

2.3.5.4 A flight to be planned or expected in suspected or known icing conditions shall not be commenced unless the helicopter has been inspected for icing and, if necessary, has been given appropriate de/anti-icing treatment. Accumulation of ice or other naturally occurring contaminants shall be removed so that the helicopter is kept in an airworthy condition prior to take-off.

### **2.3.6 Fuel and oil supply**

2.3.6.1 All helicopters: A flight shall not be commenced unless, taking into account both the meteorological conditions and any delays that are expected in flight, the helicopter 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.

2.3.6.2 Visual Flight Rules (VFR) operations: The fuel and oil carried in order to comply with 2.3.6.1 shall, in the case of VFR operations, be at least the amount sufficient to allow the helicopter:

- a) to fly to the heliport to which the flight is planned;
- b) to fly thereafter for a period of 20 minutes at best-range speed plus 10 % of the planned flight time; and
- c) 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.

### **2.3.6.3 Instrument flight rules (IFR) operations:**

The fuel and oil carried in order to comply with 2.3.6.1 shall, in the case of IFR operations, be at least the amount sufficient to allow the helicopter:

2.3.6.3.1 When an alternate is not required, in terms of 2.3.4.1 a), to fly to the heliport to which the flight is planned, and thereafter:

- a) to fly 30 minutes at holding speed at 1500 feet (450m) above the destination heliport under standard temperature conditions and approach and land; and

- b) 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.

2.3.6.3.2 When an alternate is required, to fly to and execute an approach, and a missed approach, at the heliport to which the flight is planned, and thereafter:

- a) to fly to the alternate specified in the flight plan; and then
- b) to fly for 30 minutes at holding speed at 1500 ft (450 m) above the alternate under standard temperature conditions, and approach and land; and
- c) 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.

2.3.6.3.3 When no suitable alternate is available, in terms of 2.3.4.1 b), to fly to the heliport to which the flight is planned and thereafter for a period of two hours at holding speed.

2.3.6.4 In computing the fuel and oil required in 2.3.6.1 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 engine while en route; and
- e) any other conditions that may delay the landing of the helicopter or increase fuel and/or oil consumption.

*Note.- Nothing in para 2.3.6 precludes amendment of a flight plan in flight in order to replan the flight to another heliport, provided that the requirements of para 2.3.6 can be complied with from the point where the flight has been replanned.*

### **2.3.7 Refueling with passengers on board or rotor turning:**

A helicopter should not be refueled with passengers embarking, on board, disembarking or when the rotor is turning unless the operator is granted specific authorisation by DGCA setting forth the conditions under which such fuelling may be carried out.

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

*Note.- 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.*

### **2.3.8 Oxygen supply**

2.3.8.1 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% of the 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.

2.3.8.2 A flight to be operated with a pressurised helicopter shall not be commenced unless 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 a helicopter is operated at flight altitudes at which the atmospheric pressure is more than 376 hpa, and cannot descend safely to a flight altitude at which the atmospheric pressure is equal to 620 hpa, within four minutes, there shall be no less than a 10 minute supply for the occupants of the passenger compartment.

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

Absolute Pressure	Meters	Feet
700 hpa	3000	10000
620 hpa	4000	13000
376 hpa	7600	25000

## **2.4 In-flight procedures**

### **2.4.1 Heliport operating minima**

2.4.1.1 A flight shall not be continued towards the heliport of intended landing, unless the latest available information indicates that at the expected time of arrival, a landing can be effected at that heliport or at least one alternate heliport, in compliance with the operating minima established in accordance with 2.2.7.1

2.4.1.2 An instrument approach shall not be continued beyond the outer marker fix in case of precision approach, or below 1000 ft (300 m) above the heliport in case of non precision

approach, unless the reported visibility or controlling RVR is above the specified minimum.

2.4.1.3 If, after passing the outer marker fix in case of precision approach, or after descending below 1000 ft (300 m) above the heliport 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, a helicopter shall not continue its approach-to-land at any heliport beyond a point at which the limits of the operating minima specified for that heliport would be infringed.

#### **2.4.2 Meteorological observation**

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

#### **2.4.3 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.

#### **2.4.4 Flight crew members at duty stations**

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

2.4.4.2 Enroute - 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 helicopter or for physiological needs.

2.4.4.3 Seat belts - All flight crew members shall keep their seat belts fastened when at their stations.

2.4.4.4 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 harness 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.*

#### **2.4.5 Use of Oxygen**

All flight crew members, when engaged in performing duties essential to the safe operation of a helicopter in flight shall use breathing oxygen continuously whenever the circumstances prevail for which its supply has been required in para 2.3.8.1 or 2.3.8.2.

#### **2.4.6 Safeguarding of cabin crew and passengers in pressurised helicopter in the event of loss of pressurisation:**

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 pressurisation and, in addition, they should have such means of protection as will enable them to administer first aid to passengers during stabilised 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 pressurisation.

*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 pressurisation.*

#### **2.4.7 In-flight operational instructions**

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

*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, if applicable, before making a change in flight plan.*

#### **2.4.8 Instrument flight procedures**

2.4.8.1 One or more instrument approach procedures to serve each final approach and take-off area or heliport utilized for instrument flight operations shall be approved and promulgated by the DGCA or by the State which is responsible for the heliport when located outside the territory of India.

2.4.8.2 All helicopters operated in accordance with instrument flight rules shall comply with the instrument approach procedures approved by DGCA or by the State which is responsible for the heliport, when located outside the territory of India.

**2.4.9. Helicopter operating procedures for noise abatement**

Noise abatement procedures specified by an operator for any one helicopter type should be the same for all heliports.

**2.5 Duties of Pilot-in-command**

2.5.1 The pilot-in-command shall be responsible for the operation and safety of the helicopter and for the safety of all crew members, passengers and cargo on board, from the moment the engine(s) are started until the helicopter finally comes to rest at the end of the flight, with the engine(s) shut down and the rotor blades stopped.

2.5.2 The pilot-in-command shall ensure that the checklists specified in 2.2.5 are complied with in detail.

2.5.3 The pilot-in-command shall be responsible for notifying the nearest appropriate authority by the quickest available means of any accident involving the helicopter, resulting in serious injury or death of any person or substantial damage to the helicopter or property.

2.5.4 The pilot-in-command shall be responsible for reporting all known or suspected defects in the helicopter, to the operator, at the termination of the flight.

2.5.5 The pilot-in-command shall be responsible for the journey log book or the general declaration containing the information listed in 9.4.1.

2.5.6 The pilot-in-command shall be responsible for maintenance of flight discipline.

2.5.7 The pilot-in-command shall have the final authority as to the disposition of the helicopter while in command.

**2.6 Duties of Flight Dispatcher/Operations Officer**

2.6.1 A flight operations officer/ flight dispatcher in conjunction with a method of control and supervision of flight operations in accordance with 4.2.1.4 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.

2.6.2 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.*

## **2.7 Carry on baggage:**

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

## **3 HELICOPTER PERFORMANCE OPERATING LIMITATIONS**

### **3.1 General**

- 3.1.1 Helicopters shall be operated in accordance with the provisions of the Flight Manual approved by the State of design and in compliance with para 3 of this CAR.

3.1.2 Performance Class 3 helicopters 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. The conditions of this paragraph apply also to performance class 2 helicopters prior to the defined point after takeoff and after the defined point before landing.

3.1.3 Intentionally left blank

3.1.4 Only performance class 1 helicopters shall be permitted to operate from elevated heliports in congested areas.

3.1.5. Performance Class 3 helicopters are not permitted to operate from elevated heliports or helidecks.

### **3.2 Operating limitations.**

3.2.1 Helicopter shall meet design standards laid down by FAA of USA or JAA of Europe or CAA of UK or of any other authority acceptable to DGCA and performance standards contained in 3.2.2 to 3.2.7.

3.2.2 The level of performance shall be as specified in the Flight Manual duly approved by the State of design and shall be at least substantially equivalent to the overall level embodied in the provisions of this section.

3.2.3 A helicopter shall be operated in compliance with the terms of its certificate of airworthiness and within the approved operating limitations contained in its flight manual.

3.2.4 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 provision of this CAR.

3.2.5 A flight shall not be commenced unless the performance information provided in the flight manual indicates that the provisions of 3.2.6 and 3.2.7 can be complied with, for the flight to be undertaken.

3.2.6 In applying the provisions of this chapter, account shall be taken of all factors that significantly affect the performance of the helicopter (such as: mass, operating procedures, the pressure-altitude appropriate to the elevation of the operating site, temperature, wind and condition of the surface). 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 the comprehensive and detailed code of performance in accordance with which the helicopter is being operated.

**3.2.7 Mass limitations.**

- a) The mass of the helicopter at the start of take-off shall not exceed the mass at which provisions of 3.2.7.1 is complied with, nor the mass at which 3.2.7.2 and 3.7.2.3 are complied with, allowing for expected reduction in mass as the flight proceeds and for fuel jettisoning as in applying 3.2.7.2 and in respect of alternates 3.2.7 ( c ) and 3.2.7.3.
- 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 and temperature appropriate to the elevation of the operating site, 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 destination and at any alternate, exceed the maximum landing mass specified in the flight manual for the pressure-altitude and temperature appropriate to the elevation of those operating sites, and, if used as a parameter to determine the maximum landing mass, any other local atmospheric condition.
- d) At no stage in the flight, where noise abatement compliance is necessary, the mass shall exceed the relevant maximum mass at which compliance with applicable noise certification standards in Annex 16, Volume I has been demonstrated.

### 3.2.7.1 Take-off and initial climb phase

#### 3.2.7.1.1 For performance Class 1 helicopters.

The helicopter shall be able, in the event of the critical power-unit failing at or before the take-off decision point, to discontinue the take-off and stop within the rejected take-off area available, or, in the event of the failure occurring at or past the take-off decision point, to continue the take-off and then climb, clearing all obstacles along the flight path by an adequate margin until the helicopter is in a position to comply with 3.2.7.2.1.

#### 3.2.7.1.2 For performance Class 2 helicopters.

The helicopter shall be able, with all engines operating, to clear all obstacles along its flight path by an adequate margin until it is in a position to comply with 3.2.7.2.1. The helicopter shall be able, in the event of the critical power-unit becoming inoperative at any time after reaching a defined point after take-off, to continue the take-off and initial climb and clear all obstacles along its flight path by an adequate margin until it is in a position to comply with 3.2.7.2.1. Before the defined point, failure of a critical power-unit may cause the helicopter to force land, therefore the conditions of 3.1.2 shall apply before the defined point.

#### 3.2.7.1.3 For performance Class 3 helicopters.

The helicopter shall be able, with all engines operating, to clear all obstacles along its flight path by an adequate margin until it is in a position to comply with 3.2.7.2.2. At any point of the flight path, failure of a power-unit will cause the helicopter to force land, therefore the conditions of 3.2 shall apply.

### 3.2.7.2 En-route phase

#### 3.2.7.2.1 For performance Class 1 and Class 2 helicopters.

The helicopter shall be able, in the event of the critical power-unit becoming inoperative at any point in the en-route phase, to continue the flight to an operating site at which the requirement of 3.2.7.3.1 for Class 1 helicopters, or the requirement of 3.2.7.3.2 for Class 2 helicopters can be met, without flying below the appropriate minimum flight altitude at any point. In the case of helicopters having three or more power-units, on any part of the route where the location of suitable inter-mediate operating sites and the total duration of the flight are such that the probability of a second power-unit becoming inoperative must be allowed for if the general level of safety implied by the Standard of this chapter is to be maintained, the helicopter shall be able, in the event of any two power-units becoming inoperative, to continue the flight to a suitable operating site and make a landing thereat.

3.2.7.2.2 For performance Class 3 helicopters.

The helicopter shall be able, with all power-units operating, to continue along its intended route or planned diversions without flying at any point below the appropriate minimum flight altitude. At any point of the flight path, failure of a power-unit will cause the helicopter to force land, therefore the conditions of 3.1.2 shall apply.

### **3.2.7.3 Approach and landing phase**

3.2.7.3.1 For performance Class 1 helicopters.

In the event of the critical power-unit becoming inoperative at any point during the approach and landing phase, before the landing decision point, the helicopter shall, at the destination and at any alternate, after clearing all obstacles in the approach path by a safe margin, be able to land and stop within the landing distance available or to perform a bailed landing and clear all obstacles in the flight path by an adequate margin equivalent to that specified in 3.2.7.1.1. In case of the failure occurring after the landing decision point, the helicopter shall be able to land and stop within the landing distance available.

3.2.7.3.2 For performance Class 2 helicopters.

With all engines operating, the helicopter shall, at the destination and at any alternate, after clearing all obstacles in the approach path by a safe margin, be able either to land and stop within the landing distance available or to perform a bailed landing and clear all obstacles in the flight path by an adequate margin equivalent to that specified in 3.2.7.1.2. In the event of the critical power-unit becoming inoperative before the defined point before landing, the same specifications are applicable. After the defined point, failure of a power-unit may cause the helicopter to force land, therefore the condition of 3.1.2 shall apply, therefore the conditions of 3.1.2 shall apply.

3.2.7.3.3 For performance Class 3 helicopters.

With all engines operating, the helicopter shall, at the destination and at any alternate, after clearing all obstacles in the approach path by a safe margin, be able to land and stop within the landing distance available or to perform a bailed landing and clear all obstacles in the flight path by an adequate margin equivalent to that specified in 3.2.7.1.3. At any point of the flight path, failure of a power-unit will cause the helicopter to force land, therefore the conditions of 3.1.2 shall apply.

## **3.3 Obstacle data.**

3.3.1 The operator shall have a system to obtain details of all obstacle data along the flight path and calculate the take-off, en-route and landing performance taking into account such obstacle data. For Indian airports the operator may

obtain obstacle data for calculating the performance of the aircraft from the Airports Authority of India.

- 3.3.2 The operator shall take account of charting accuracy when considering such obstacle data.
- 3.4 Placards, listings, instrument markings or combinations thereof, containing those operating limitations prescribed by the DGCA / manufacturer for visual presentation, shall be displayed in the helicopter cockpit.

#### **4. HELICOPTER INSTRUMENTS, EQUIPMENT, AND FLIGHT DOCUMENTS**

##### **4.1 General**

- 4.1.1 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 helicopter according to the helicopter used and to the circumstances under which the flight is to be conducted. The prescribed instruments and equipment, including their installation, shall be approved or accepted by the DGCA.
- 4.1.2 A helicopter shall carry a certified true copy of the air operator Permit/ certificate specified in 2.2.1, and a copy of the authorizations, conditions and limitations relevant to the helicopter type, issued in conjunction with the certificate.
- 4.1.3 The operator shall include in the operations manual a minimum equipment list (MEL), approved by 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.
- 4.1.4 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).*

##### **4.2 All helicopters on all flights**

- 4.2.1 A helicopter shall be equipped with instruments which will enable the flight crew to control the flight path of the helicopter, carry out any required procedural manoeuvres and observe the operating limitation of the helicopter in the expected operating conditions.
- 4.2.2 Helicopters shall be equipped with
- a) One or more first-aid kits as appropriate to the number of passengers the helicopter is authorised to carry in accordance with CAR Section 2, Series 'X' Part III;

- d) Portable fire extinguishers of a type which, when discharged, will not cause dangerous contamination of the air within the helicopter. 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.
- 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 must incorporate a device which will automatically restrain the occupant's torso in the event of rapid deceleration.
  - 4) 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.*

- 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.

**4.2.3 A helicopter shall carry:**

- a) the operations manual prescribed in 2.2.2; or those parts of it that pertain to flight operations;
- b) the helicopter flight manual for the helicopter, or other documents containing performance data required for the application of Chapter 3 and any other information necessary for the operation of the helicopter within the terms of its certificate of airworthiness, unless these data are available in the operations manual; and
- 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.
- d) Any other document prescribed in CAR, Section 2, Series 'X' Part VII

#### 4.2.4 Marking of break-in points

4.2.4.1 If areas of the fuselage suitable for break-in by rescue crews in emergency are marked on a helicopter, such areas shall be marked as prescribed in Appendix II 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.

4.2.4.2 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.

*Note.- para 4.2.4 does not require all helicopters to have break in areas.*

#### 4.3 Flight recorders

All helicopters shall be equipped with an approved FDR and CVR in accordance with CAR Section 2 Series 'I' Part V and Series 'I' Part VI.

#### 4.4 All helicopters operated in accordance with Visual Flight Rules.

4.4.1 All helicopters 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) main rotor rpm indicator;
- f) free air temperature indicator fitted with engines having provisions for carburetor heat control in case carburetor air temperature gauge is not installed;
- g) oil pressure indicator for each engine;
- h) oil quantity indicator for each tank. A dip stick or a sight gauge is acceptable;
- i) CHT indicator for each engine having rated BHP above 250 or an EGT gauge for each jet engine;
- j) oil temperature gauge for each turbine engine/piston engine having rated BHP above 250;
- k) fuel quantity indicator for each tank;
- l) an approved Emergency Locator Transmitter (ELT);
- m) Torque Indicator/RPM indicator, where applicable;
- n) Such additional equipment or instruments as may be prescribed by DGCA.

4.4.2. VFR flights which are operated as controlled flights shall be equipped in accordance with 4.10.

#### **4.5 All helicopters on flights over water**

##### **4.5.1 Means of floatation**

All helicopters intended to be flown over water shall be fitted with a permanent or rapidly deployable means of floatation so as to ensure a safe ditching of the helicopter when:

- a) flying over water at a distance from land corresponding to more than 10 minutes at normal cruise speed in the case of performance Class 1 or 2 helicopters; or
- b) flying over water beyond autorotational or safe forced landing distance from land in the case of performance Class 3 helicopters.

##### **4.5.2 Emergency equipment**

4.5.2.1 Performance Class 1 and 2 helicopters operating in accordance with the provisions of 4.5.1, shall be equipped with:

- a) one life jacket, or equivalent individual floatation device, 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;
- b) life saving rafts in sufficient numbers/capacity 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
- c) equipment for making the pyrotechnical distress signals;
- d) one set of survival radio equipment per raft, but not more than a total of two sets stowed as to facilitate their ready use in an emergency, which operate on VHF. The equipment should be portable, water resistant, self buoyant, not dependant for operations upon the helicopter power supply and capable of being operated away from the helicopter by unskilled persons.

4.5.2.2 Intentionally left blank.

4.5.2.3 Performance Class 3 helicopters when operating over water beyond autorotational distance from land shall be equipped as specified in 4.5.2.1.

4.5.2.4 In the case of performance Class 2 and Class 3 helicopters, when taking off or landing at a heliport where, in the opinion of the DGCA the take-off or approach path is so disposed over water that in the event of a mishap there would be likelihood of a ditching, at least the equipment required in 4.5.2.1 a) shall be carried.

4.5.2.5 Each life jacket and equivalent individual flotation device when carried in accordance with 4.5 shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

4.5.2.6 Intentionally left blank.

4.5.2.7 Rafts which are not deployable by remote control and which have a mass of more than 40 kg should be equipped with some means of mechanically assisted deployment

4.5.2.8 Intentionally left blank

**4.6 All helicopters on flights over designated land areas:**

Helicopters, when operated across land areas, which may be designated by AAI as areas in which search and rescue 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 helicopter power supply and capable of being operated away from the helicopter by unskilled persons. Helicopter 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.

**4.7 Emergency Locator Transmitter (ELT):**

4.7.1 Except as provided for in 4.7.2, until 1 January 2005 all Performance Class 1 and 2 helicopters operating on flights over water as described in 4.5.1 a) and Performance Class 3 helicopters operating as described in 4.5.1 b) shall be equipped with at least one ELT(S) per raft carried but not more than a total of two ELTs are required.

4.7.2 Performance Class 1 and 2 helicopters for which the individual certificate of airworthiness is first issued after 1 January 2002, operating on flights over water as described in 4.5.1 a) and Performance Class 3 helicopters for which the individual certificate of airworthiness is first issued after 1 January 2002, operating as described in 4.5.1 b) shall be equipped with at least one automatic ELT and at least one ELT(S) in a raft.

4.7.3 From 1 January 2005, all Performance Class 1 and 2 helicopters operating on flights over water as described in 4.5.1 a) and Performance Class 3 helicopters operating as described in 4.5.1 b) shall be equipped with at least one automatic ELT and at least one ELT(S) in a raft.

4.7.4 Except as provided for in 4.7.5, until 1 January 2005 helicopters on flights over designated land areas as described in 4.6 shall be equipped with at least one ELT.

4.7.5 Helicopters for which the individual certificate of airworthiness is first issued after 1 January 2002, on flights over designated land areas as described in 4.6 shall be equipped with at least one automatic ELT.

4.7.6 From 1 January 2005, helicopters on flights over designated land areas as described in 4.6 shall be equipped with at least one automatic ELT.

- 4.7.7 It is recommended that all helicopters should carry an automatic ELT.
- 4.7.8 ELT equipment carried to satisfy the requirements of 4.7.1, 4.7.2, 4.7.3, 4.7.4, 4.7.5, 4.7.6 and 4.7.7 shall operate in accordance with the relevant provisions of Annex 10, Volume III.

#### **4.7 All helicopters on high altitude flights**

- 4.8.1 A helicopter intended to be operated at altitudes at which the atmospheric pressure is less than 700 hpa in personnel compartments, shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 2.3.8.1.
- 4.8.2 A helicopter 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 pressure 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 2.3.8.2.
- 4.8.3 A helicopter intended to be operated at flight altitudes at which the atmospheric pressure is more than 376 hpa, which 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 2.3.8.2. The total number of oxygen dispensing units shall exceed the number of passenger and cabin crew seats by at least 10 per cent.

#### **4.8 All Helicopters in icing conditions**

All helicopters 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.

#### **4.10 All helicopters when operated in accordance with Instruments Flight Rules.**

- 4.10.1 All helicopters when operated in accordance with Instruments Flight Rules, or when the helicopter cannot be maintained in a desired attitude without reference to one or more flight instruments, shall be equipped with
- (a) Magnetic compass;
  - (b) An accurate time piece indicating the time in hours, minutes and seconds;

- (c) Two sensitive pressure altimeters;

Helicopter imported into the country after 1<sup>st</sup> July 2000, shall be fitted with two sensitive pressure Altimeters with counter drum pointer or equivalent presentation.

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

- (d) An airspeed indicating system with means of preventing malfunctioning due to either condensation or icing;

- (e) A slip indicator;

- (f) three attitude indicators.(artificial horizon), one of which may be replaced by a turn indicator;

- (g) heading indicator (directional gyroscope);

*Note.- The requirements of (e) (f) and (g) above may be met by combination of instruments or by integrated flight director systems provided that the safeguards against the total failures, inherent in the 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) rate of climb and descent indicator ;

- (k) a stabilization system, unless it has been demonstrated to the satisfaction of the DGCA that the helicopter possesses, by nature of its design, adequate stability without such a system; and

- (l) Such additional instruments or equipment as may be prescribed by the DGCA.

4.10.2 All performance class 1 and class 2 helicopters when operated in accordance with the Instrument Flight Rules 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. This emergency 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.

#### **4.11 All helicopters when operated at night**

4.11.1 All helicopters, when operated at night shall be equipped with:

- a) all equipment specified in 4.10;
- b) position lights;
- c) anti-collision lights;
- d) two landing lights each fitted with single filament lamps or the light having dual filament lamp with separately energised filaments;
- e) illumination for all instruments and equipment that are essential for the safe operation of the helicopter that are used by the flight crew;
- f) an electric torch for each crew member station;
- g) lights in all passenger compartments and cockpit; and
- h) adequate source of electrical energy.

4.11.2 One of the landing lights should be trainable, at least in the vertical plane.

#### **4.12 Significant weather detection**

Helicopters when carrying passengers, should be equipped with operative weather radar or other significant weather detection equipment whenever such helicopters are being operated in areas where thunderstorms or other potentially hazardous weather conditions regarded as detectable, may be expected to exist along the route either at night or under Instrument Meteorological Conditions.

4.13 All helicopters shall carry a document in English language attesting noise certification.

#### **4.14 Helicopters carrying passengers - cabin crew seats.**

4.14.1 All helicopters requiring carriage of cabin crew as per para 10.1 shall be equipped with a forward or rearward facing (within fifteen degrees of the longitudinal axis of the helicopter) seat, fitted with a safety harness for the use of each cabin crew member for carrying out emergency evacuation.

4.14.2 Cabin crew seats shall be located near floor level and other emergency exits for emergency evacuation.

#### **4.15 Helicopters required to be equipped with Pressure Altitude Reporting Transponder**

Helicopters shall be fitted with Pressure Altitude Reporting Transponder in accordance with CAR Section 2 Series 'R' Part IV.

#### **4.16 Microphones**

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

### **5 HELICOPTER COMMUNICATION AND NAVIGATION EQUIPMENT**

#### **5.1 Communication Equipment**

5.1.1 All helicopters shall be fitted with radio communication equipment capable of

- a) conducting two way communication for heliport control purposes;
- b) receiving meteorological information at any time during flight, and
- c) conducting two way communication at any time during flight with atleast one station and with such other aeronautical stations and on such frequencies as may be prescribed by the appropriate authority. All helicopters fitted with HF communication equipment shall be capable of operating on SSB mode.

5.1.2 The radio communication equipment shall provide for communications on the aeronautical emergency frequency 121.5 MHz.

#### **5.2 Navigation Equipment**

5.2.1 A helicopter 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, if not so precluded by DGCA, navigation for flights under the visual flight rules is accomplished by visual reference to landmarks.

5.2.2 For flights in defined portions of airspace or on routes where an RNP type has been prescribed, a helicopter shall, in addition to the requirements specified in 5.2.1:

- a) be provided with navigation equipment which will enable it to operate in accordance with the prescribed RNP type(s); and
- b) be authorized by the DGCA for operations in such airspace

*Note.- Information on RNP and associated procedures, and guidance concerning the approval process, are contained in the Manual on Required Navigation Performance (RNP) (ICAO-Doc 9613). This document also contains a comprehensive list of references to other documents produced by States and international bodies concerning navigation systems and RNP.*

5.2.3 The helicopter shall be sufficiently provided with the navigation equipment to ensure that in the event of failure of one item of equipment at any stage of flight, the remaining equipment will enable the aircraft to navigate in accordance with para 5.2.1.& when applicable para 5.2.2

- 5.2.4 On flights in which it is intended to land in Instrument Meteorological Condition (IMC) an helicopter shall be provided with a radio equipment capable of receiving signals providing guidance to a point from which a visual landing can be effected. This equipment should be capable of providing such guidance at each heliport at which it is intended to land in instrument meteorological conditions and at any designated alternate heliports.
- 5.3 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.

## **6 HELICOPTER MAINTENANCE**

### **6.1 Operator's maintenance responsibilities**

#### **6.1.1 Operators shall ensure that, in accordance with procedures acceptable to DGCA**

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

#### **6.1.2 An operator shall not operate a helicopter unless it is maintained and released to service by an organization approved in accordance with CAR, Section 2, Series 'E' or CAR-145.**

#### **6.1.3 Intentionally left blank**

#### **6.1.4 An operator shall employ a person or group of persons to ensure that all maintenance is carried out in accordance with the maintenance control manual (Quality Control cum Maintenance System manual/ Maintenance organisation exposition).**

#### **6.1.5 The operator shall ensure the maintenance of its helicopters is performed in accordance with the maintenance programme approved by DGCA.**

### **6.2 Operator's maintenance control manual (Quality Control/ Maintenance System manual/ Maintenance organisation exposition).**

#### **6.2.1 The operator shall provide, for the use and guidance of maintenance and operational personnel concerned, a Maintenance control manual/Maintenance organisation exposition, acceptable to DGCA, in accordance with the requirements of para 9.2. 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).*

#### **6.2.2 The operator shall ensure that the Maintenance control manual is amended as necessary to keep the information contained therein up to date.**

6.2.3 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.

6.2.4 The operator shall provide a copy of the operator's maintenance control manual, together with all amendments and/or revisions to it to the Regional Airworthiness Office and shall incorporate in it such mandatory material as DGCA may require.

## **6.2 Maintenance programme**

6.3.1 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 para 9.3. 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).*

6.3.2 Copies of all amendments to the maintenance programme shall be furnished promptly to all organizations or persons to whom the maintenance programme has been issued.

## **6.4 Maintenance records**

6.4.1 An operator shall ensure that the following records are kept for the periods mentioned in 6.4.2:

- a) the total time in service (hours, calendar time and cycles, as appropriate) of the helicopter 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 helicopter and its major components.
- d) the time in service (hours, calendar time and cycles, as appropriate) since last overhaul of the helicopter or its components subject to a mandatory overhaul life;
- e) the current status of the helicopter's compliance with the maintenance programme; and
- f) the detailed maintenance records to show that all requirements for a maintenance release have been met.

6.4.2 The records in 6.4.1 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 6.4.1 f) for a minimum period of one year after the signing of the maintenance release.

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

## **6.5 Continuing airworthiness information**

6.5.1 The operator shall monitor and assess maintenance and operational experience with respect to airworthiness and shall ensure that 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 in accordance with CAR,Sec-2,Series C,Part I.

6.5.2 The operator 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 CAR,Sec-2,Series C,Part I.

## **6.6 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.

## **6.7 Maintenance release**

6.7.1 A maintenance release shall be completed and signed to certify that the maintenance work has been completed satisfactorily and in accordance with approved data and the procedures described in the maintenance organisation procedures.

6.7.2 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) 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.

## **6.8 Records**

6.8.1 An operator shall ensure that the following records are kept:

- a) in respect of the entire helicopter: the total time in service;
- b) in respect of the major components of the helicopter:
  - 1) the total time in service;
  - 2) the date of the last overhaul;

- 3) the date of the last inspection;
- c) in respect of those instruments and equipment, the serviceability and operating life of which are determined by their time in service;
  - 1) such records of the time in service as are necessary to determine their serviceability or to compute their operating life;
  - 2) the date of the last inspection.

6.8.2 These records shall be kept for a period of 90 days after the end of the operating life of the unit to which they refer.

6.8.3 The records shall be transferred to the new operator in the event of any change of operator.

## **7 FLIGHT CREW**

### **7.1 Composition of the flight crew**

7.1.1 The number and composition of the flight crew shall not be less than that specified in the operations manual. The flight crew 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 helicopter used, the type of operation involved and the duration of flight between points where flight crews are changed.

7.1.2 The flight crew shall include at least one member who holds a valid licence issued or rendered valid by DGCA, authorising operation of the type of radio transmitting equipment to be used.

### **7.2 Flight Crew member emergency duties**

An operator shall, for each type of helicopter, assign to all flight crew members the necessary functions they are to perform in an emergency including 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 helicopter.

### **7.3 Flight crew member training programmes**

7.3.1 An operator shall establish and maintain a ground and flight training programme approved by the DGCA. The training programme shall:

- a) include ground and flight training facilities and properly qualified instructors as determined by DGCA;
- b) consist of ground and flight training in the type(s) of helicopter on which the flight crew member serves;

c) include proper flight crew coordination and training for all types of emergency and abnormal situations or procedures caused by powerplant, transmission, rotor, 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 and 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 2.2.4 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 the DGCA, be given in flight simulation training devices approved by DGCA for that purpose.*

*Note 3.- The scope of the recurrent training required by 7.2 and 7.3 may be varied and need not be as extensive as the initial training given in a particular type of helicopter.*

*Note 4. - Provisions for training in the transport of dangerous goods are contained in Aircraft (Carriage of Dangerous Goods) Rules, 2003.*

*Note 5.- 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).*

*Note 6. - 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 7. - Guidance material to design flight crew training programmes can be found in the Preparation of an Operations Manual (Doc 9376).*

*Note 8. – 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) document.*

7.3.2 The requirement for recurrent flight training in a particular type of helicopter shall be considered fulfilled by:

- a) the use, to the extent deemed feasible by DGCA, flight simulation training devices approved by the DGCA for that purpose; or
- b) the completion within the appropriate period of the proficiency check required by 7.4.4 in that type of helicopter.

## **7.4 Qualifications**

### **7.4.1 Recent experience - pilot-in-command**

7.4.1.1 An operator shall not assign a pilot to act as pilot-in-command of a type or variant of a type of a helicopter when carrying passengers unless, on the same type of helicopter within the preceding 90 days, that pilot has made at least three takeoffs and landings.

7.4.1.2 When a pilot-in-command is flying several variants of the same type of helicopter or different types of helicopter with similar characteristics in terms of operating procedures, systems and handling, DGCA shall decide under which conditions the requirements of 7.4.1.1 for each variant or each type of helicopter can be combined.

### **7.4.2 Recent experience – co-pilot**

7.4.2.1 An operator shall not assign a co-pilot to operate at the flight controls during take-off and landing of a type or variant of a type of a helicopter unless, on the same type of helicopter within the preceding 90 days, that co-pilot has operated the flight controls, as pilot-in-command or as co-pilot, during three take-offs and landings or has otherwise demonstrated competence to act as co-pilot on a flight simulator approved for the purpose.

7.4.2.2 When a co-pilot is flying several variants of the same type of helicopter or different types of helicopter with similar characteristics in terms of operating procedures, systems and handling, DGCA shall decide under which conditions the requirements of 7.4.2.1 for each variant or each type of helicopter can be combined.

### 7.4.3 Pilot-in-command route and heliport qualification

7.4.3.1 An operator shall not utilize a pilot as pilot-in-command of a helicopter on a route or route segment for which that pilot is not currently qualified on that type of operations until such pilot has complied with 7.4.3.2 and 7.4.3.3.

7.4.3.2 Each such pilot shall demonstrate to the operator an adequate knowledge of:

- a) the route to be flown, and the heliports 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 procedure, 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.*

7.4.3.3 A pilot-in-command shall have made an actual approach into each heliport of landing on the route, accompanied by a pilot who is qualified for the heliport, as a member of the flight crew or as an observer on the flight deck, unless:

- a) the approach to the heliport 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 to be 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 heliport concerned by means of an adequate pictorial presentation.

7.4.3.4 The operator shall maintain a record, sufficient to satisfy the DGCA of the qualification of the pilot and of the manner in which such qualification has been achieved.

7.4.3.5 An operator shall not continue to utilize a pilot as a pilot-in-command on a route unless, within the preceding 12 months, the pilot has made at least one trip between the terminal points of that route as a pilot member of the flight crew, or as a check or an examiner pilot, or as an observer on the flight deck. In the event that more than 12 months elapse in which a pilot has not made such a trip on a route in close proximity and over similar terrain, prior to again serving as a pilot-in-command on that route, that pilot must requalify in accordance with 7.4.3.2 and 7.4.3.3.

#### 7.4.4 Pilot proficiency checks

7.4.4.1 An operator shall ensure that piloting technique and the ability to execute emergency procedures is checked in such a way as to demonstrate the pilot's competence on each type or variant of type of helicopter. Where the operation may be conducted under instrument flight rules, an operator shall ensure that the pilot's competence to comply with such rules is demonstrated to either a DGCA approved instructor or examiner or to a DGCA Flight Inspector. Such checks shall be performed twice within any period of one year. Any two such checks which are similar and which occur within a period of four consecutive months shall not alone satisfy this requirement.

Note.- Flight simulation training devices approved by DGCA may be used for those parts of the checks for which they are specifically approved.

7.4.4.2 When an operator schedules flight crew on several variants of the same type of helicopter or different types of helicopter with similar characteristics in terms of operating procedures, systems and handling, DGCA shall decide under which conditions the requirements of 7.4.4.1 for each variant or each type of helicopter can be combined.

#### 7.5 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.

#### 7.6 Flight time, flight duty periods and rest periods

The flight time, flight duty periods and rest periods shall be followed as stipulated in CAR Section 7 Series 'J' Part II.

## 8 Flight operations officer/Flight dispatcher

8.1 Flight Operations Officer/Flight Dispatcher when employed shall meet the training requirements of CAR Section 7, Series 'M' Part II.

8.2 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 2.2.1.4;
- b) made within the preceding 12 months, at least a one-way qualification flight in a helicopter over any area for which that person is authorized to exercise flight supervision. The flight should include landings at as many heliports 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 helicopters used; and
  - 3) the navigation equipment in the helicopters 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 helicopters used;
  - 3) the peculiarities and limitations of each navigation system which is used by the operation; and
  - 4) the helicopter loading instructions;
- e) satisfied the operator as to knowledge and skills related to human performance as they apply to dispatch duties; and
- f) demonstrated to the operator the ability to perform the duties specified in 2.6.

## **9 MANUALS, LOGS AND RECORDS**

**9.1 Flight Manual** - Each aircraft shall have a Flight Manual or equivalent approved document on board, which shall be kept upto date.

### **9.2 Operator's maintenance control manual (Quality Control cum Maintenance System Manual)**

The operator's Quality Control cum Maintenance System Manual provided in accordance with 6.2, which may be issued in separate parts, shall contain the following information:

- a) description of the procedures required by 6.1.1 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 6.1.4;
- c) a reference to the maintenance programme required by 6.3.1;
- d) a description of the methods used for the completion and retention of the operator's maintenance records required by 6.4;
- e) a description of the procedures for monitoring, assessing and reporting maintenance and operational experience required by 6.5.1;
- f) a description of the procedures for complying with the service information reporting requirements of CAR Section 2, Series C, Part 1;
- g) a description of procedures for assessing continuing airworthiness information and implementing any resulting actions, as required by 6.5.2;
- 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 helicopter types and models to which the manual applies;
- k) a description of procedures for ensuring that unserviceabilities affecting airworthiness are recorded and rectified;
- l) a description of the procedures for advising DGCA of significant in-service occurrences;
- m) a description of procedures to control the leasing of aircraft and related aeronautical products; and
- n) a description of the Operator's Quality Control cum Maintenance System Manual amendment procedures.

### **9.3 Maintenance programme**

**9.3.1** A maintenance programme for each helicopter as required by 6.3 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 helicopter;
- 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 helicopter systems, components, power transmissions, rotors and power plants.

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

9.3.3 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.

#### **9.4 Journey log book**

9.4.1 The helicopter journey log book should contain the following minimum items and the corresponding roman numerals:

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

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

9.4.3 Completed journey log books should be retained to provide a continuous record of the last six months' operations.

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

#### **9.5 Records of emergency and survival equipment**

Operators shall at all times have available for immediate communication to rescue co-ordination centres, lists containing information on the emergency and survival equipment carried on board any of their helicopters 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.

## **9.6 Flight Recorder Records**

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

## **9 CABIN CREW**

### **10.1 Assignment of emergency duties**

An operator shall provide adequate number of Cabin crew in accordance with rule 38(B) of the Aircraft Rules 1937 in order to effect a safe and expeditious evacuation of the helicopter, 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 helicopter.

### **10.2 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 do not preclude the pilot in command from directing the fastening of the seat belt only, at time other than during take off and landing.*

### **10.3 Training**

The operator shall establish and maintain a training programme approved by the DGCA for cabin crew in accordance CAR Section 7 Series 'M' Part I.

### **10.4 Flight time, flight duty period and rest period**

The operator shall comply with the flight time, flight duty period and rest period requirements as given in CAR Section 7 Series 'J' Part I.

## **11. SECURITY**

### **11.1 Helicopter search procedures 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. The checklist shall be supported by guidance on the course of action to be taken should a bomb or suspicious object be found.

## **11.2 Training programme**

- 11.2.1 Operator shall establish and maintain a training programme which enables crew members to act in the most appropriate manner to minimise the consequences of acts of unlawful interference.
- 11.2.2 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 helicopter so that they contribute to the prevention of acts of sabotage or other forms of unlawful interference.

## **11.3 Reporting acts of unlawful interference**

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

## **12. Compliance with the CAR**

The operator shall ensure that all concerned personnel required to implement the provisions of this CAR are given adequate briefing about the content of this CAR and the method of compliance. The policies and procedures laid down by the operator shall also contain this aspect.



( P. K. Chattopadhyay )  
Joint Director General

**APPENDIX I**

**FLIGHT SAFETY DOCUMENTS SYSTEM**

**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 tend 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 Appendix address the major aspects of an operator's flight safety documents system development process, with the aim of ensuring compliance with para 1.1.8. 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 the 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.

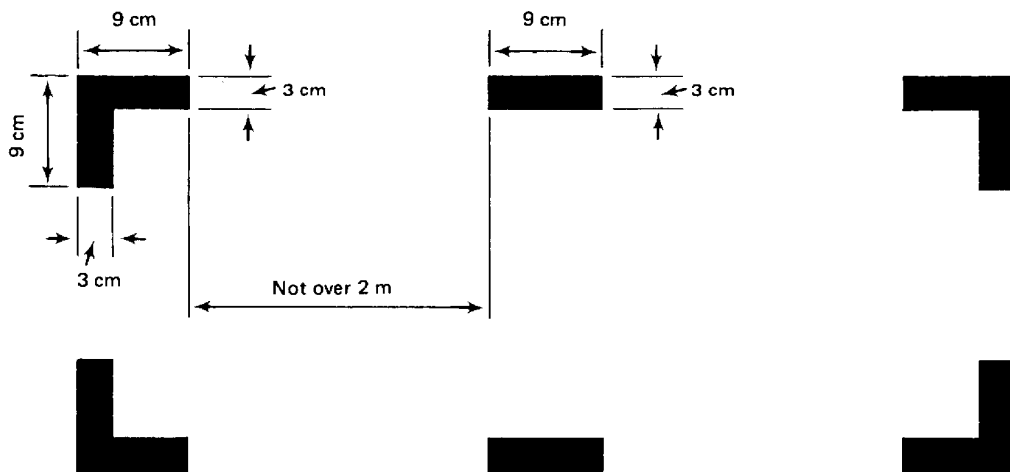
*Note.- As frequent changes diminish the importance of new or modified procedures, it is desirable to minimize changes to the flight safety documents system.*

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

- 6.7 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 II

MARKING OF BREAK-IN POINTS



MARKING OF BREAK-IN POINTS

## **ACCEPTABLE LEVEL OF SAFETY**

### **1. Introduction**

1.1 The introduction of the concept of acceptable level of safety responds to the need to complement the prevailing approach to the management of safety based upon regulatory compliance, with a performance based approach that aims for continuous improvement to the overall level of safety.

1.2 Acceptable level of safety expresses the safety goals of an oversight authority, an operator, or a services provider. From the perspective of the relationship between oversight authorities and operators/services providers, it provides the minimum safety objective(s) acceptable to the oversight authority to be achieved by the operators/services providers while conducting their core business functions. It is a reference against which the oversight authority can measure safety performance.

1.3 Establishing acceptable level(s) of safety for the safety programme does not replace legal, regulatory, or other established requirements, nor does it relieve States from their obligations regarding the Convention on International Civil Aviation and its related provisions.

1.4 Establishing acceptable level(s) of safety for the safety management system does not relieve operators/services providers from their obligations under relevant national regulations and the Convention on International Civil Aviation.

### **2. Scope**

2.1 Within each State, different acceptable levels of safety may be established between the oversight authority and individual operators/services providers.

2.2 Each agreed established level of safety should be commensurate with the complexity of individual operator/service providers operational contexts, and the level to which safety deficiencies can be tolerated and realistically addressed.

### **3. Implementation**

3.1 The concept of acceptable level of safety is expressed in terms of safety performance indicators and safety performance targets, and implemented through safety requirements.

3.2 The relationship between acceptable level of safety, safety performance indicators, safety performance targets and safety requirements is as follows: acceptable level of safety is the overarching concept; safety performance indicators are the measures or metrics to determine if the acceptable level of safety has been achieved, safety performance targets are the quantified objectives pertinent to the acceptable level of safety, and safety requirements are the tools or means required to achieve the safety performance targets.

3.3 The safety performance indicators of an acceptable level of safety should be uncomplicated and linked to major components of a State safety programme, or an operator/services provider safety management system (SMS). They are generally expressed in numerical terms.

3.4 The safety performance targets of an acceptable level of safety should be determined after weighing what is desirable and what is realistic for individual operator/services providers. Safety performance targets should be measurable, acceptable to the parties involved, and consistent with the acceptable level of safety.

3.5 The safety requirements to achieve the safety performance targets of an acceptable level of safety should be expressed in terms of operational procedures, technology and systems, programmes, contingency arrangements and so forth, to which measures of reliability, availability and/or accuracy may be added.

3.6 An acceptable level of safety should be expressed by several safety performance indicators and translated into several safety performance targets, rather than by single ones.

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