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

CIVIL AVIATION REQUIREMENTS
SECTION 8 – AIRCRAFT OPERATIONS
SERIES 'O' PART III
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Subject: Operation of General Aviation Aeroplanes

1. INTRODUCTION

1.1 This CAR lays down provisions for an aircraft operation other than commercial air transport operation or an aerial work operation for aeroplanes / registered in India and engaged in general aviation and lays down the minimum operational, equipment and instrument requirements.

1.2 This CAR has been issued under the provision of Rule 29 and Rule 133A of the Aircraft Rules 1937, for adoption of the minimum operational, equipment and instrument requirement of ICAO as per Annex 6 Part II up to Amendment 43.

1.3 This CAR is issued in supersession of CAR Section 8 Series ‘O’ Part III, Issue IV, dated 13th April 2022.

2. APPLICABILITY

2.1 The provisions of CAR are applicable to Indian registered aeroplanes engaged in general aviation which include aeroplanes to general Aviation such as certified in private or passenger category for state governments, corporate business houses, individual owner(s) or when such aeroplanes are not engaged in commercial air transport operations and aerial work.

2.2 The Section 2 of this CAR is applicable to all the general aviation operations of aeroplanes and Section 3 adds additional requirements when general aviation operations are conducted with the following:

a) Aeroplanes with a maximum certificated take-off mass exceeding 5700 kg; or

b) Aeroplanes equipped with one or more turbine engines; or

c) Aeroplanes with a seating configuration of more than 9 passenger’s seats.

The above applicability does not preclude a general aviation operator from satisfying the requirements of Section “3” where it may be to the operator’s advantage or in the interest of safety.

3. ABBREVIATIONS

(used in this CAR)

ACAS	Airborne collision avoidance system
ADRS	Aircraft data recording system
ADS	Automatic dependent surveillance
AIR	Airborne image recorder
AIRS	Airborne image recording system
AOC	Air operator certificate
APCH	Approach
APU	Auxiliary power unit
APV	Approach procedure with vertical guidance
AR	Authorization required
ASE	Altimetry system error
ATC	Air traffic control
ATM	Air traffic management
ATN	Aeronautical telecommunication network
ATS	Air traffic services
CAR	Civil Aviation Requirements
CARS	Cockpit audio recording system
CAT I	Category I
CAT II	Category II
CAT III	Category III
CDFA	Continuous descent final approach
CDL	Configuration deviation list
CFIT	Controlled flight into terrain
CPDLC	Controller-pilot data link communications
CVR	Cockpit voice recorder
CVS	Combined vision system
DA	Decision altitude
DA/H	Decision altitude/height
DH	Decision height
DLR	Data link recorder
DLRS	Data link recording system

DME	Distance measuring equipment
EFB	Electronic flight bag
EFIS	Electronic flight instrument system
ELT	Emergency locator transmitter
ELT(AD)	Automatic deployable ELT
ELT(AF)	Automatic fixed ELT
ELT(AP)	Automatic portable ELT
ELT(S)	Survival ELT
EPR	Engine pressure ratio
EUROCAE	European Organisation for Civil Aviation Equipment
EVS	Enhanced vision system
FANS	Future air navigation system
FAS	Final approach segment
FDR	Flight data recorder
FL	Flight level
FM	Frequency modulation
FPFM	Flight Planning and Fuel Management Manual
FPL	Filed flight plan
GBAS	Ground-based augmentation system
GCAS	Ground collision avoidance system
GLS	GBAS landing system
GNSS	Global navigation satellite system
GPS	Global positioning system
GPWS	Ground proximity warning system
HUD	Head-up display
IFR	Instrument flight rules
ILS	Instrument landing system
IMC	Instrument meteorological conditions
INS	Inertial navigation system
ISA	International standard atmosphere
LED	Light emitting diode
LVO	Low-visibility operations
MDA	Minimum descent altitude

MDA/H	Minimum descent altitude/height
MDH	Minimum descent height
MEL	Minimum equipment list
MLS	Microwave landing system
MMEL	Master minimum equipment list
MNPS	Minimum navigation performance specification
MOPS	Minimum operational performance specification
NAV	Navigation
NM	Nautical mile
NPA	Non precision approach
NVIS	Night vision imaging systems
OCA	Obstacle clearance altitude
OCA/H	Obstacle clearance altitude/height
OCH	Obstacle clearance height
PANS	Procedures for Air Navigation Services
PBAOM	Performance-based aerodrome operating minimum
PBC	Performance-based communication
PBCS	Performance-based communication and Surveillance
PBN	Performance-based navigation
PBS	Performance-based surveillance
PNR	Point of no return
RCP	Required communication performance
RNAV	Area navigation
RNP	Required navigation performance
ROASS	Runway overrun awareness and alerting system
RSP	Required surveillance performance
RTCA	Radio Technical Commission for Aeronautics
RVR	Runway visual range
RVSM	Reduced vertical separation minima
SBAS	Satellite-based augmentation system
SOP	Standard operating procedure
SMS	Safety Management System
SVS	Synthetic vision system

TAWS	Terrain awareness system
TCAS	Traffic alert and collision avoidance system
TLS	Target level of safety
TVE	Total vertical error
UTC	Coordinated universal time
VFR	Visual flight rules
VMC	Visual meteorological conditions
VOR	VHF omnidirectional radio range
VSM	Vertical separation minima
WXR	Weather radar

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SECTION 1: GENERAL

CAPTER 1.1 DEFINITIONS

When the following terms are used in the CAR for the operation of aircraft in international general aviation, they have the following meanings:

Acts of unlawful interference. These are acts or attempted acts such as to jeopardize the safety of civil aviation, including but not limited to:

a) unlawful seizure of aircraft in flight,

b) destruction of an aircraft in service,

c) hostage-taking on board an aircraft or on aerodromes,

d) forcible intrusion on board an aircraft, at an airport or on the premises of an aeronautical facility,

e) introduction on board an aircraft or at an airport of a weapon or hazardous deviceor material intended for criminal purposes,

f) use of an aircraft in service for the purpose of causing death, serious bodily injury, or serious damage to property or the environment,

g) communication of false information such as to jeopardize the safety of an aircraft in flightor on the ground, of passengers, crew, ground personnel or the general public, at an airport or on the premises of a civil aviation facility.

Advanced aircraft. An aircraft with equipment in addition to that required for a basic aircraft for a given take- off, approach or landing operation.

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

Aerodrome. A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

Aerodrome operating minima. The limits of usability of an aerodrome for:

a) Take-off, expressed in terms of runway visual range and/or visibility and, if necessary, cloud conditions;

b) Landing in 2D instrument approach operations, expressed in terms of visibility and/orrunway visual range minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions; and

c) Landing in 3D instrument approach operations, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H) as appropriate

to the type and/or category of the operation.

Aeroplane*.* A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

Agreement summary*.* When an aircraft is operating under an Article 83 bis agreement between the State of Registry and another State, the agreement summary is a document transmitted with the Article 83 bis Agreement registered with the ICAO Council that identifies succinctly and clearly which functions and duties are transferred by the State of Registry to that other State.

Note. — The other State in the above definition refers to the State of the principal locationof a general aviation operator.

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*.* A manual 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 traffic service (ATS)*.* A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service,approach control service or aerodrome control service).

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

Alternate aerodrome*.* An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing where the necessary services and facilities are available, where aircraft performance requirements can be met and which is operational at the expected time of use. Alternate aerodromes include the following:

- *Take-off alternate.* An alternate aerodrome at which an aircraft would be able to land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure.
- *En-route alternate.* An alternate aerodrome at which an aircraft would be able toland in the event that a diversion becomes necessary while en-route.
- *Destination alternate.* An alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodromeof intended landing.

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

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

Appropriate airworthiness requirements. The comprehensive and detailed airworthiness codes established, adopted or accepted by a Contracting State for the

class of aircraft, engine or propeller under consideration.

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

Basic aircraft*.* An aircraft which has the minimum equipment required to perform the intended take-off, approach or landing operation.

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.

Combined vision system (CVS)*.* A system to display images from a combination of an enhanced vision system (EVS) and a synthetic vision system (SVS).

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

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

Continuing airworthiness. The set of processes by which an aircraft, engine, propeller, rotor or part complies with the applicable airworthiness requirements and remains in a condition for safe operation throughout its operating life.

Continuing airworthiness records. Records which are related to the continuing airworthiness status of an aircraft, engine, propeller, rotor or associated part.

Continuous descent final approach (CDFA). A technique, consistent with stabilized approach procedures, for flying the final approach segment (FAS) of an instrument non- precision approach (NPA) procedure as a continuous descent, without level- off, from an altitude/height at or above the final approach fix altitude/height to a point approximately 15 m (50 ft) above the landing runway threshold or the point where the flare maneuver begins for the type of aircraft flown; for the FAS of an NPA procedure followed by a circling approach, the CDFA technique applies until circling approach minima (circling OCA/H) or visual flight maneuver altitude/height are reached.

Corporate aviation operation*.* The non-commercial operation or use of aircraft by a company for the carriage of passengers or goods as an aid to the conduct of company business, flown by a professional pilot(s) employed to fly the aircraft.

Crew member*.* A person assigned by an operator to duty on an aircraft during a 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 accordance with "Carriage of Dangerous Goods" Rules, 2026.

Decision altitude (DA)* or *Decision height (DH). A specified altitude or height in a 3D instrument approach operation 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 visualreference is that specified for the particular procedure and operation.

Note 3. — For convenience where both expressions are used, they may be written in the form "Decision altitude/height" and abbreviated "DA/H".

***Duty**.* Any task that flight or cabin crew members are required by the operator to perform, including, for example, flight duty, administrative work, training, positioning and standby when it is likely to introduce fatigue.

Electronic flight bag (EFB). An electronic information system, comprised of equipment and applications for flight crew, which allows for the storing, updating, displaying and processing of EFB functions to support flight operations or duties.

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 andwhich is automatically deployed and activated by impact, and, in some cases, also by hydrostatic sensors. Manual deployment is also provided.

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

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

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

Note. — EVS does not include night vision imaging systems (NVIS).

***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 are planned to ensure that obstacles can be cleared by and appropriate margin. In the event of failure of the critical engine, operators may need to adopt alternative procedures.

Extended flight over water*.* A flight operated over water at a distance of more than 93 km(50 NM), or 30 minutes at normal cruising speed, whichever is the lesser, away from landsuitable for making an emergency landing.

Fatigue*.* A physiological state of reduced mental or physical performance capability resulting from sleep loss, extended wakefulness, circadian phase, and/or workload (mental and/or physical activity) that can impair a person's alertness and ability to perform safety-related operational duties.

Filed flight plan (FPL or eFPL). The latest flight plan as submitted by the pilot, an operator or a designated representative for use by ATS units.

Note. — The FPL denotes a filed flight plan exchanged using aeronautical fixed service while eFPL denotes a filed flight plan exchanged using flight and flow – information for a collaborative environment (FF-ICE) service. The eFPL allows for the exchange of additional information not contained within the FPL.

Final approach segment (FAS). That segment of an instrument approach procedure in which alignment and descent for landing are accomplished.

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*.* A period which commences when a flight or cabin crew member is required to report for duty that includes a flight or a series of flights and which finishes when the aircraft finally comes to rest and the engines are shut down at the end of the last flight on which he/she is a crew member.

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 plan*.* Specified information relative to an intended flight or portion of a flight of an aircraft.

Note 1. — The term flight plan may be prefixed by the words "preliminary", "filed", "current" or "operational" to indicate the context and different stages of a flight.

Note 2. — When the word "message" is used as a suffix to this term, it denotes the content and format of the flight plan data as transmitted.

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

Automatic deployable flight recorder (ADFR)*.* A combination flight recorder installed on the aircraft which is capable of automatically deploying from the aircraft.

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

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

Flight time — Aeroplanes*.* The total time from the moment an aeroplane first moves for the purpose of taking off until the moment it finally comes to rest at the end of the flight.

Note. — Flight time as here defined is synonymous with the term "block to block" time or"chock to chock" time in general usage which is measured from the time an aeroplane first moves for the purpose of taking off until it finally stops at the end of the flight.

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

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

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

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

Industry codes of practice*.* Guidance material developed by an industry body, for a particular sector of the aviation industry to comply with the requirements of the International Civil Aviation Organization's Standards and Recommended Practices, otheraviation safety requirements and the best practices deemed appropriate.

Note. — Some States accept and reference industry codes of practice in the developmentof regulations to meet the requirements of Annex 6, Part II, and make available, for the industry codes of practice, their sources and how they may be obtained.

Instrument approach operations. An approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methodsfor executing instrument approach operations:

- A two-dimensional (2D) instrument approach operation, using lateral navigation guidance only; and

- A three-dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance.

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

- *A ground-based radio navigation aid; or*

- *Computer-generated navigation data from ground-based, space-based, self-contained navigation aids or a combination of these.*

Specified minima for visual Meteorological conditions are contained in CAR, Section 8, Series C Part I

Instrument approach procedure (IAP). A series of predetermined maneuvers by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to aposition at which holding or en-route obstacle clearance criteria apply. Instrument approach procedures are classified as follows:

Non-precision approach (NPA) procedure*.* An instrument approach procedure designed for 2D instrument approach operations TypeA.
Note. — Non-precision approach procedures may be flown using a continuous descent final approach (CDFA) technique. CDFAs with advisory vertical navigation (VNAV) guidance calculated by on-board equipment are considered 3D instrument approach operations. CDFAs with manual calculation of the required rate of descent are considered2D instrument approach operations. For more information on CDFAs, refer to PANS-OPS(Doc 8168), Volume I, Part I, Part II, Section 5.

Approach procedure with vertical guidance (APV)*.* A performance-based navigation (PBN) instrument approach procedure designed for 3D instrument approach operations Type A.

Precision approach (PA) procedure. An instrument approach procedure based on navigation systems (ILS, MLS, GLS and SBAS CAT I) designed for 3D instrument approach operations Type A or B.

Note. — Refer to Section 2, Chapter 2.2, Para 2.2.2.3.2, for instrument approach operation types.

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. — Specified minima for visual Meteorological conditions are contained CAR, Section 8, Series C Part I

Isolated aerodrome. A destination aerodrome for which there is no destination alternate aerodrome suitable for a given aeroplane type.

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

Low-visibility operations (LVO). Approach operations in RVRs less than 550 m and / or with a DH less than 60 m (200 ft) or take-off operations in RVRs less than 400 m.

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

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

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

Maintenance release. A document which contains a certification confirming that the maintenance work to which it relates has been completed in a satisfactory manner, in accordance with the appropriate airworthiness requirements.

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.

Meteorological information. Meteorological report, analysis, forecast, and any other statement relating to existing or expected meteorological conditions.

Minimum descent altitude (MDA)* or *minimum descent height (MDH). A specified altitude or height in a 2D instrument approach operation or circling approach operation below which descent must not be made without the required visual reference.

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

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

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

Minimum equipment list*.* 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.

Modification. A change to the type design of an aircraft, engine, propeller or rotor.

Note – A modification may also include the embodiment of the modification which is a maintenance task subject to a maintenance release. Further guidance on aircraft maintenance – modification and repair is contained in the Airworthiness Manual (Doc 9760).

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

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

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

Note 1.— The Performance-based Navigation (PBN) Manual (Doc 9613), Volume II contains detailed guidance on navigation specifications and CAR Section 8 Series S Part IV.

Note 2. — The term RNP, previously defined as "a statement of the navigation performance necessary for operation within a defined airspace", has been removed from this CAR as the concept of RNP has been overtaken by the concept of PBN. The term RNP in this CAR is now solely used in the context of navigation specifications that require performance monitoring and alerting, e.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with on-board performance monitoring and alerting that are detailed in Doc 9613.

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

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

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

Note 1.— Obstacle clearance altitude is referenced to mean sea level and obstacle clearance height is referenced to the threshold elevation or in the case of non-precision approach procedures to the aerodrome elevation or the threshold elevation if that is

more than 2 m (7 ft.) below the aerodrome elevation. An obstacle clearance height for a circling approach procedure is referenced to the aerodrome elevation.
Note 2. — For convenience when both expressions are used, they may be written in the form "obstacle clearance altitude/height" and abbreviated "OCA/H"

Operating base*.* The location from which operational control is exercised.

Note. — An operating base is normally the location where personnel involved in the operation of the aeroplane work and the records associated with the operation are located. An operating base has a degree of permanency beyond that of a regular point of call.

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

Operational credit**.** A credit authorized for operations with an advanced aircraft enabling a lower aerodrome operating minimum than would normally be authorized for a basic aircraft, based upon the performance of advanced aircraft systems utilizing the available external infrastructure.

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

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

Operator*.* The person, organization or enterprise engaged in or offering to engage in an aircraft operation.
Note. — In the context of this CAR, the operator is not engaged in the transport of passengers, cargo or mail for remuneration or hire.

Performance-based aerodrome operating minimum (PBAOM). A lower aerodrome operating minimum, for a given take-off, approach or landing operation, than is available when using a basic aircraft.

Note 1. — The PBAOM is derived by considering the combined capabilities of the aircraft and available ground facilities. Additional guidance material on PBAOM may be found in the Manual of All-Weather Operations (Doc 9365).

Note 2. — PBAOM may be based on operational credits.

Note 3. — PBAOM are not limited to PBN operations.

Performance-based communication (PBC)*.* Communication based on performance specifications applied to the provision of air traffic services.

Note. — An RCP specification includes communication performance requirements that are allocated to system components in terms of the communication to be provided and associated transaction time, continuity, availability, integrity, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Performance-based navigation (PBN)*.* Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach

procedure or in a designated airspace.

Note. — Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity and functionality needed for the proposed operation in the context of a particular airspace concept. Availability of a global navigation satellite system signal in space and/or some other navigation aid infrastructure is considered within the airspace concept in order to enable the navigation specification.

Performance-based surveillance (PBS). Surveillance based on performance specifications applied to the provision of air traffic services.

Note. — An RSP specification includes surveillance performance requirements that are allocated to system components in terms of the surveillance to be provided and associated data delivery time, continuity, availability, integrity, accuracy of the surveillance data, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Pilot-in-command. The pilot designated by the operator or the owner as being in command and charged with the safe conduct of a flight.

Point of no return. The last possible geographic point at which an aircraft can proceed to the destination aerodrome as well as to an available en-route alternate aerodrome for a given flight.

Preliminary flight plan (PFP). The information related to a flight submitted by an operator or a designated representative to conduct collaborative planning of a flight, prior to filing a flight plan.

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

Repair. The restoration of an aircraft, engine, propeller or associated part to an airworthy condition in accordance with the appropriate airworthiness requirements.

Required communication performance (RCP) specification. A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based communication.

Required surveillance performance (RSP) specification. A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based surveillance.

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

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

Safety management system (SMS). A systematic approach to managing safety,

including the necessary organizational structures, accountability, responsibilities, policies and procedures.

Series of flights. Series of flights are consecutive flights that:

a) begin and end within a period of 24 hours; and
b) are all conducted by the same pilot-in-command.

Specific approval. An approval which is documented in the Operations Specifications for commercial air transport operations or in the list of specific approvals for General Aviation Operations non-commercial operations.

Note. — The terms authorization, specific approval, approval and acceptance are further described in Attachment 3.D.

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

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

State of the Aerodrome*.* The State in whose territory the aerodrome is located.

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.

State of the principal location of a general aviation operator*.* The State in which the operator of a general aviation aircraft has its principal place of business or, if there is no such place of business, its permanent residence.

Note. — Guidance concerning the options for the principal location of a general aviation operator is contained in the Manual on the Implementation of Article 83 bis of the Convention on International Civil Aviation (Doc 10059).

Synthetic vision system (SVS). A system to display data-derived synthetic images of the external scene from the perspective of the flight deck.

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

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

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

Note. — The specified minima are contained in CAR, Section 8 Series C Part I

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SECTION 2: GENERAL AVIATION OPERATIONS

CHAPTER 2.1 GENERAL

Note 1.— Although the Convention on International Civil Aviation allocates to the DGCA certain functions which that State is entitled to discharge, or obligated to discharge, as the case may be, the Assembly recognized, in Resolution A23-13, that the DGCA may be unable to fulfil its responsibilities adequately in instances where aircraft are leased, chartered or interchanged — in particular without crew — by the operator of another State and that the Convention may not adequately specify the rights and obligations of the State of the operator in such instances until such time as Article 83 bis *of the Convention enters into force. Accordingly, the Council urged that if, in the above-mentioned instances, the DGCA finds itself unable to discharge adequately the functions allocated to it by the Convention, it delegates to the State of the Operator, subject to acceptance by the latter State, those functions of the DGCA that can more adequately be discharged by the State of the Operator. It was understood that pending entry into force of Article 83* bis *of the Convention the foregoing action would only be a matter of practical convenience and would not affect either the provisions of the Chicago Convention prescribing the duties of the DGCA or any third State. However, as Article 83* bis *of the Convention entered into force on 20 June 1997, such transfer agreements will have effect in respect of Contracting States which have ratified the related Protocol (Doc 9318) upon fulfilment of the conditions established in Article 83* bis*.*

Note 2. — In the case of international operations effected jointly with aircraft not all of which are registered in the same Contracting State, nothing in this Part prevents the States concerned entering into an agreement for the joint exercise of the functions placed upon the DGCA by the provisions of the relevant Annexes and CARs

2.1.1 Compliance with laws, regulations and procedures

2.1.1.1 The pilot-in-command shall comply with the laws, regulations and procedures of those States in which operations are conducted.

2.1.1.2 The pilot-in-command shall be familiar with the laws, regulations and procedures, pertinent to the performance of pilot-in-command's duties, prescribed for the areas to be traversed, the aerodromes to be used and the air navigation facilities relating thereto. The pilot-in-command 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 aircraft.

Note 1. – Compliance with more restrictive measures, not in contravention of the provisions of 2.1.1.1, may be required by the State of Registry.

Note 2. - Rules covering flight over the high seas are contained in CAR Section 9 Series C Part I.

Note 3.— Information for pilots on flight procedure parameters and operational procedures is contained in PANS-OPS (Doc 8168), Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS

(Doc 8168), 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.

2.1.1.3 The pilot-in-command shall have responsibility for operational control.

Note. — The rights and obligations of a State with respect to the operation of aircraft registered in that State are not affected by this provision.

2.1.1.4 If an emergency situation which endangers the safety of the aircraft 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 accordance with the procedure as prescribed in CAR, Section 5 Series C Part I. 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 aircraft is normally based. Such reports shall be submitted within 48 hours.

2.1.1.5 *The pilot-in-command should have available on board the aircraft the essential information concerning the search and rescue services in the area over which the aircraft will be flown.*

2.1.1.6 The pilot-in-command shall ensure that flight crew members demonstrate the ability to speak and understand the language used for aeronautical radiotelephony communications as specified in CAR Section 7 Series G Part III.

2.1.2 Dangerous goods

2.1.2.1 General applicability

Note 1. — Provisions for carriage of dangerous goods are contained in the Aircraft (Carriage of Dangerous Goods) Rules, 2026.

Note 2.— Article 35 of the Convention refers to certain classes of cargo restrictions.

2.1.3 Use of psychoactive substances

Note. — Provisions concerning the use of psychoactive substances are contained in Rule 24 of the Aircraft Rules, 1937.

2.1.4 Specific approvals

The pilot-in-command shall not conduct operations for which a specific approval is required unless such approval has been issued by the DGCA. Specific approvals shall follow the layout and contain at least the information listed in Appendix 2.4.

CHAPTER 2.2 FLIGHT OPERATIONS

2.2.1.1 Operating facilities

The pilot-in-command 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 including communication facilities and navigation aids available and directly required on such flight, for the safe operation of the aircraft, are adequate for the type of operation under which the flight is to be conducted.

Note. — "Reasonable means" in this Standard is intended to denote the use, atthe point of departure, of information available to the pilot-in-command either through official information published by the aeronautical information services or readily obtainable from other sources.

2.2.1.2 The pilot-in-command, in making a decision on the adequacy of facilities and services available at an aerodrome of intended operation, should assess the level of safety risk associated with the aircraft type and nature of the operation, in relation to the availability of rescue and fire-fighting services (RFFS).

2.2.2 Operational management

2.2.2.1 For aeroplanes –Operating instructions — General

An aeroplane shall not be taxied on the movement area of an aerodrome unless the person at the controls is an appropriately qualified pilot or:

2.2.2.1.1 has been duly authorized by the owner or in the case where it is leased the lessee, or a designated agent;

2.2.2.1.2 is fully competent to taxi the aeroplane;

2.2.2.1.3 is qualified to use the radio if radio communications are required; and

2.2.2.1.4 has received instruction from a competent person in respect of aerodrome layout, and where appropriate, information on routes, signs, marking, lights, ATC signals and instructions, phraseology and procedures, and is able to conform to the operational standards required for safe aeroplane movement at the aerodrome.

2.2.2.2 For helicopters – Operating instructions — General

Refer to CAR Section 8 Series O Part V

2.2.2.3 Operating minima

Note.— Reference to operating minima in this section refers to aerodrome operating minima

2.2.2.3.1 The pilot-in-command shall establish aerodrome operating minima in accordance with criteria specified by the DGCA, for each aerodrome to be used in operations. When establishing operating minima, any conditions that may be prescribed in the list of specific approvals shall be observed. Such minima shall not be lower than any that may be established by the State of the Aerodrome, except when specifically approved by that State.

2.2.2.3.1.1 The DGCA shall authorize operational credit(s) for operations of advanced aircraft. Where the operational credit relates to low visibilityoperations, the State of Registry shall issue a specific approval. Such authorizations shall not affect the classification of the instrument approach procedure.

Note 1. — Operational credit includes:

a) for the purposes of an approach ban (2.2.4.1.2), or dispatch considerations, a minimum below the operating minima; or
b) reducing or satisfying the visibility requirements; or

c) Requiring fewer ground facilities as compensated for by airbornecapabilities.

Note 2.— Guidance on operational credit and how to express the operational credit in the specific approvals template is contained in Manual of All-Weather Operations (Doc 9365) and OC 18 of 2014.

Note 3.— Information regarding a HUD or equivalent displays, including references to RTCA and EUROCAE documents, is contained in the Manual of All-Weather Operations (Doc 9365) and OC 18 of 2014.

2.2.2.3.1.2 When issuing a specific approval for the operational credit, DGCA shall ensure that:

a) the aircraft meets the appropriate airworthiness certification requirements;

b) the information necessary to support effective crew tasks for the operation is appropriately available to both pilots where the number of flight crew members specified in the operations manual (or other documents associated with the certificate of airworthiness) is more than one;

c) the operator/owner has carried out a safety risk assessment of the operations supported by the equipment;

d) the operator/owner has established and documented normal and abnormal procedures and MEL;

e) the operator/owner has established a training programme for the flight crew members and relevant personnel involved in the flight preparation;

f) the operator/owner has established a system for data collection, evaluation and trend monitoring for low visibility operations for which there is an operational credit; and

g) the operator/owner has instituted appropriate procedures with respect to continuing airworthiness (maintenance and repair) practices and programmes.

Note 1.— Guidance on safety risk assessments is contained in the Safety Management Manual (SMM) (Doc 9859).

Note 2.— Guidance on operational approvals is contained in the Manual of All Weather Operations (Doc 9365).

2.2.2.3.1.3 For operations with operational credit with minima above those related to low visibility operations, the State of Registry shall establish criteria for the safe operation of the aircraft.

Note. — Guidance on operational credit for operations with minima above those related to low visibility operations is contained in the Manual of All-Weather Operations (Doc 9365).

2.2.2.3.2. Instrument approach operations shall be classified based on the designed lowest operating minima below which an approach operation shall only be continued with the required visual reference as follows:

- Type A: a minimum descent height or decision height at or above 75 m (250ft.); and
- Type B: a decision height below 75 m (250 ft.). Type B instrument approachoperations are categorized as:

1) Category I (CAT I): a decision height not lower than 60 m (200 ft.) and witheither a visibility not less than 800 m or a runway visual range not less than550 m;
2) Category II (CAT II): a decision height lower than 60 m (200 ft.) but not lowerthan 30 m (100 ft.) and a runway visual range not less than 300 m;
3) Category III (CAT III): a decision height lower than 30 m (100 ft) or no decision height and a runway visual range less than 300 m or no runway visual range limitations;

Note 1. — Where decision height (DH) and runway visual range (RVR) fall into different categories of operation, the instrument approach operation would be conducted in accordance with the requirements of the most demanding category.

This does not apply if the RVR and/or DH has been approved as operational credits.

Note 2. — The required visual reference means that section of the visual aids or ofthe 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 operation, the required visual reference is the runway environment.

Note 3.— Guidance on approach classification as it relates to instrument approach operations, procedures, runways and navigation systems is containedin the Manual of All-Weather Operations *(Doc 9365).*

2.2.2.3.3 The operating minima for 2D instrument approach operations using instrument approach procedures shall be determined by establishing a minimum

descent altitude (MDA) or minimum descent height (MDH), minimumvisibility and, if necessary, cloud conditions.

Note. — For guidance on applying a continuous descent final approach (CDFA)flight technique on non-precision approach procedures, refer to PANS-OPS (Doc 8168), Volume I, Part I, Section 4, Chapter 1, paragraph 1.7.

2.2.2.3.4 The operating minima for 3D instrument approach operations using instrument approach procedures shall be determined by establishing a decision altitude (DA)or decision height (DH) and the minimum visibility or RVR.

2.2.2.3.5 The State of Registry shall issue a specific approval for instrument approach operations in low visibility which shall only be conducted when RVR information is provided.

Note – Guidance on low visibility operations is contained in the Manual of All Weather Operations (Doc 9365).

2.2.2.3.6 For take-off in low visibility, the State of Registry shall issue a specific approval for the minimum take-off RVR.

Note. — In general, visibility for take-off is defined in terms of RVR. An equivalent horizontal visibility may also be used.

2.2.2.4 Briefings

2.2.2.4.1 The pilot-in-command shall ensure that crew members and passengers are made familiar withthe location and use of:

a) Seat belts or harnesses as appropriate;

b) Emergency exits;

c) Life jackets, if the carriage of life jackets is prescribed;

d) Oxygen dispensing equipment if the use of oxygen is anticipated; and

e) Other emergency equipment provided for individual use, includingpassenger emergency briefing cards.

2.2.2.4.2 The pilot-in-command shall ensure that all persons on board are aware of the location and general manner of use of the principal emergency equipment carried for collective use.

2.2.2.4.3 In an emergency during flight, the pilot-in-command shall ensure that passengers are instructed in such emergency action as may be appropriate tothe circumstances.

2.2.2.4.4 The pilot-in-command shall ensure that, during take-off and landing and whenever considered necessary by reason of turbulence or any emergency occurring during flight, all passengers on board an aircraft shall be secured in their seats by means of the seat belts or harnesses provided.

2.2.3 Flight preparation

2.2.3.1 A flight shall not be commenced until the pilot-in-command is satisfied that:

a) the aircraft is airworthy, duly registered and that appropriate certificateswith respect thereto are aboard the aircraft;

b) the instruments and equipment installed in the aircraft are appropriate,taking into account the expected flight conditions;

c) any necessary maintenance has been performed in accordance with chapter 2.6;

d) the mass of the aircraft and centre of gravity location are such that the flight can be conducted safely, taking into account the flight conditions expected;

e) any load carried is properly distributed and safely secured; and

f) the aircraft operating limitations, contained in the flight manual, or its equivalent, will not be exceeded.

2.2.3.2 The pilot-in-command should have sufficient information on climb performance with all engines operating to enable determination of the climb gradient that can be achieved during the departure phase for the existing take-off conditions and intended take-off technique.

2.2.3.3 Flight planning

Before commencing a flight the pilot-in-command shall be familiar with all available meteorological information appropriate to the intended flight. Preparation for a flight away from the vicinity of the place of departure, and forevery flight under the instrument flight rules, shall include:

a) a study of available current weather reports and forecasts; and

b) the planning of an alternative course of action to provide for the eventuality that the flight cannot be completed as planned, because of weather conditions.

Note 1. — It is the practice in some States to declare, for flight planning purposes, higher minima for an aerodrome when nominated as an alternate, than for the same aerodrome when planned as that of intended landing.

Note 2.— The requirements for flight plans are contained in CAR Section 9 Series C Part I — Rules of the Air and the procedures relating to flight plans and associated services are contained in the Procedures for Air Navigation Services- Air Traffic Management (PANS-ATM, Doc 4444).

Note 3.— Detailed guidance on the use of the FF-ICE services, including the use of a preliminary flight plan, can be found in the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (Doc 9965).

2.2.3.4 Meteorological conditions – visual flight rules

2.2.3.4.1 A flight to be conducted in accordance with VFR 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 partof the route to be flown under VFR will, at the appropriate time, be such as to enable compliance with these rules.

2.2.3.5. Meteorological conditions – instrument flight rules - aeroplanes

2.2.3.5.1 A flight to be conducted in accordance with the instrument flight rules shall not:

a) take off from the departure aerodrome unless the meteorological conditions, at the time of use, are at or above the aerodrome operating minima for that operation; and

b) takeoff or continue beyond the point of in-flight re-planning unless at the aerodrome of intended landing or at each alternate aerodrome to be selected in compliance with 2.2.3.8, current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions will be, at the estimated time of use, at or above the aerodrome operating minima for that operation.

2.2.3.5.2 The DGCA shall establish criteria to be used for the estimated time of use of an aerodrome including a margin of time.

Note. — A widely accepted time margin for "estimated time of use" is one hour before and after the earliest and latest time of arrival. Additional considerationscan be found in the Flight Planning and Fuel Management (FPFM) Manual (Doc9976).

2.2.3.6 Meteorological conditions -instrument flight rules - helicopters

Refer to CAR Section 8 Series O Part V

2.2.3.7 Flight in icing conditions

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

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

Note. — Guidance material for aeroplanes is given in the Manual of Aircraft Ground De-icing/Anti-icing Operations (Doc 9640).

2.2.3.8 Alternate aerodromes

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

2.2.3.8.1.1 For aeroplanes:

a) the duration of the flight from the departure aerodrome, or from the point of in-flight re-planning, to the destination aerodrome is such that, taking into account all meteorological conditions and operational information relevant to the flight, at the estimated time of use, a reasonable certainty exists that:

1) the approach and landing may be made under visual meteorological conditions; and

2) separate runways are usable at the estimated time of use of the destination aerodrome with at least one runway having an operational instrument approach procedure; or

b) the aerodrome of intended landing is isolated and:

1) a standard instrument approach procedure is prescribed for the aerodrome of intended landing;

2) a point of no return has been determined; and

3) a flight shall not be continued past the point of no return unless available current meteorological information indicates that the following meteorological conditions will exist at the estimated time of use:

I. a cloud base of at least 300 m (1 000 ft.) above the minimum associated with the instrument approach procedure; and

II. visibility of at least 5.5 km (3 NM) or of 4 km (2 NM) more than the minimum associated with the instrument approach procedure.

Note. — Separate runways are two or more runways at the same aerodrome configured such that if one runway is closed, operations to the other runway(s)can be conducted.

2.2.3.8.1.2 For Helicopters

Refer to CAR Section 8 Series O Part V

2.2.3.8.2 *Refer to CAR Section 8 Series O Part V*

2.2.3.8.3 *Refer to CAR Section 8 Series O Part V*

2.2.3.9 Fuel and oil requirements

2.2.3.9.1 A flight shall not be commenced unless, taking into account both the meteorological conditions and any delays that are expected in flight, the aircraft carries sufficient fuel and oil to ensure that it can safely complete theflight.

2.2.3.9.2 For aeroplanes, the amount of fuel to be carried must permit:

a) when the flight is conducted in accordance with the instrument flight rules and a destination alternate aerodrome is not required in accordance with 2.2.3.8, or when the flight is to an isolated aerodrome, flight to the aerodrome of intended landing, and after that, have a final reserve fuel for at least 45 minutes at normal cruising altitude; or

b) when the flight is conducted in accordance with the instrument flight rules

and a destination alternate aerodrome is required, flight to the aerodrome of intended landing, then to an alternate aerodrome, and after that, have a final reserve fuel for at least 45 minutes at normal cruising altitude; or

c) when the flight is conducted in accordance with day VFR, flight to the aerodrome of intended landing, and after that, have a final reserve fuel for at least 30 minutes at normal cruising altitude; or

d) when the flight is conducted in accordance with night VFR, flight to the aerodrome of intended landing and thereafter have a final reserve fuel for at least 45 minutes at normal cruising altitude.

Note 1. — Nothing in 2.2.3.9 precludes amendment of a flight plan in flight in order to replan the flight to another aerodrome, provided that the requirements of 2.2.3.9 can be complied with from the point where the flight is replanned.

Note 2.— Guidance on planning operations to isolated aerodromes iscontained in the Flight Planning and Fuel Management (FPFM) Manual *(Doc 9976).*

2.2.3.9.3 For helicopters – VFR operations.

Refer to CAR Section 8 Series O Part V

2.2.3.9.4 *For helicopters – IFR operations.*

Refer to CAR Section 8 Series O Part V

2.2.3.9.5 *For Helicopters - Refer to CAR Section 8 Series O Part V*

2.2.3.9.6 The use of fuel after flight commencement for purposes other than originally intended during pre-flight planning shall require a re-analysis and, if applicable, adjustment of the planned operation.

2.2.3.10 Refueling with passengers on board

2.2.3.10.1 An aircraft should not be refueled when passengers are embarking, on board or disembarking unless it is attended by the pilot-in-command or other qualified personnel ready to initiate and direct an evacuation of the aircraft by the most practical and expeditious means available.

2.2.3.10.2 When refueling with passengers embarking, on board or disembarking, two-way communications should be maintained by the aircraft's intercommunication system or other suitable means between the ground crew supervising the refueling and the pilot-in-command or other qualified personnelrequired by 2.2.3.10.1

Note 1. — The provisions of 2.2.3.10.1 do not necessarily require the deploymentof integral aircrafts stairs or the opening of emergency exits as a prerequisite to refueling.

Note 2.— Provisions concerning aircraft refueling are contained in CAR Section 4 Series B Part I, Volume I, and guidance on safe refueling practices is contained in the Airport Services Manual (Doc 9137), Parts 1 and 8

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

Note.4 — Provisions concerning aircraft refueling and safe refueling practicesare contained in Rule 25A of the Aircraft Rules,1937 and CAR Section 2, Series H, Part II

2.2.3.11 Oxygen supply

The pilot-in-command shall ensure that breathing oxygen is available to crew members and passengers in sufficient quantities for all flights at such altitudeswhere a lack of oxygen might result in impairment of the faculties of crew members or harmfully affect passengers.

Note 1. — Guidance on the carriage and use of oxygen is given in Appendix 2.A.

Note 2. — Approximate altitudes in the Standard Atmosphere corresponding to thevalues of absolute pressure are as follows:

Absolute pressure	*Metres*	*Feet*
700 hPa	*3 000*	*10 000*
620 hPa	*4 000*	*13 000*
376 hPa	*7 600*	*25 000*

2.2.4 In-flight procedures

2.2.4.1 Operating minima

2.2.4.1.1 A flight shall not be continued towards the aerodrome of intended landing, unless the latest available information indicates that at the expected time of arrival, a landing can be effected at that aerodrome or at least one destination alternate aerodrome, in compliance with the operating minima established in accordance with 2.2.2.3.

2.2.4.1.2 An instrument approach shall not be continued below 300 m (1 000 ft.) above the aerodrome elevation or into the final approach segment unless the reported visibility or controlling RVR is at or above the aerodrome operating minima.

Note. - Criteria for the final approach segment is contained in PANS-OPS (Doc8168), Vol II.

2.2.4.1.3 If, after entering the final approach segment or after descending below 300 m (1 000 ft.) above the aerodrome elevation, the reported visibility or controlling RVR falls below the specified minimum, the approach may be continued to DA/H or MDA/H. In any case, an aircraft shall not continue its approach-to- land beyond a point at which the limits of the aerodrome operating minima would be infringed.

Note. — Controlling RVR means the reported values of one or more RVR reporting locations (touchdown, midpoint and stop-end) used to determine whether operating

minima are or are not met. Where RVR is used, the controlling RVR is the touchdown RVR, unless otherwise specified by DGCA criteria.

2.2.4.2 Meteorological and operational observations by pilots.

2.2.4.2.1 When weather conditions likely to affect the safety of other aircraft are encountered, they should be reported as soon as possible.

Note. — The procedures for making meteorological observations on board aircraft in flight and for recording and reporting them are contained in CAR Section 9 Series M Part I, the PANS-ATM (Doc 4444), the PANS-MET (Doc 10157) and the appropriate Regional Supplementary Procedures *(Doc 7030).*

2.2.4.2.2 For aeroplanes, the pilot-in-command should report runway braking action when the runway braking action encountered is not as good as reported.

Note. — The procedures for making special air-reports regarding runway braking action are contained in the PANS-ATM (Doc 4444), Chapter 4, and Appendix 1.

2.2.4.3 Hazardous flight conditions

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

2.2.4.4 Aeroplane operating procedure for landing performance

An approach to land should not be continued below 300 m (1 000 ft) above aerodrome elevation unless the pilot-in-command is satisfied that, with the runway surface condition information available, the aeroplane performance information indicates that a safe landing can be made.

Note 1.— The procedures for using runway surface condition information on board aircraft are contained in the PANS-Aerodromes (Doc 9981) and in the performance section of the aeroplane flight manual, and for aeroplanes certificated in accordance with Annex 8, Part IIIB, the Aeroplane Performance Manual *(Doc 10064).*

Note 2.— Guidance on development of aeroplane performance information for aeroplanes certificated in accordance with Annex 8, Part IIIB is contained in the Aeroplane Performance Manual *(Doc 10064)*

2.2.4.5 Flight Crew members at duty stations.

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

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

2.2.4.5.3 *Seat belts.* All flight crew members shall keep their seat belts fastened when at theirstations.

2.2.4.5.4 *Safety harness.* When safety harnesses are provided, any flight crew member occupyinga pilot's seat shall keep the safety harness fastened during the take-off and landing phases; all other flight crew members shall keep their safety harnesses fastened during the take-offand 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 remainfastened.

Note. — Safety harness includes shoulder strap(s) and a seat belt which may be used independently.

2.2.4.6 Use of oxygen

All flight crew members, when engaged in performing duties essential to the safe operation of an aircraft in flight, shall use breathing oxygen continuously whenever the circumstances prevail for which its supply has been prescribed in 2.2.3.11.

2.2.4.7 Safeguarding of cabin crew and passengers in pressurized aircraft in the event of loss of pressurization

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

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

2.2.4.8 In-flight fuel management

2.2.4.8.1 The pilot-in-command shall monitor the amount of usable fuel remaining on board toensure it is not less than the fuel required to proceed to an aerodrome where a safe landing can be made with the planned final reserve fuel remaining.

Note. – The protection of final reserve fuel is intended to ensure safe landing at any aerodrome when unforeseen occurrences may not permit a safe completion of an operation as originally planned.

2.2.4.8.2 The pilot-in-command shall advise ATC of a minimum fuel state by declaring MINIMUM FUEL when, having committed to land at a specific aerodrome, the pilot calculates that any change to the existing clearance to that aerodrome or other air traffic delays, may result in landing with less than the planned final reserve fuel.

Note 1. — The declaration of MINIMUM FUEL informs ATC that all planned options have been reduced to a specific aerodrome of intended landing and any change to the existing clearance, or air traffic delays, may result in landing with less than the planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.

2.2.4.8.3 The pilot-in-command shall declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL, when the calculated usable fuel

estimated to be available upon landing at the nearest aerodrome where a safe landing can be made isless than the planned final reserve fuel.

Note 1. — The planned final reserve fuel refers to the value calculated in 2.2.3.9 and is the minimum amount of fuel required upon landing at any aerodrome.

Note 2. - Refer to CAR Section 8 Series O Part V

Note 3.— The words "MAYDAY FUEL" describe the nature of the distress conditions as required in CAR Section 9 Series D Part III, 5.3.2.1.1, b) 3).

2.2.4.9 Instrument approach procedures

2.2.4.9.1 One or more instrument approach procedures designed to support instrument approach operations shall be approved and promulgated by the State in which the aerodrome is located, to serve each instrument runway or aerodrome utilized for instrument flight operations.

2.2.4.9.2 Aircraft operated in accordance with the instrument flight rules shall comply with the instrument approach procedures approved by the State of the Aerodrome.

Note 1. — See 2.2.2.3.2 for instrument approach operation classifications.

Note 2. — Information for pilots on flight procedure parameters and operational procedures is contained in PANS-OPS, Volume I. Criteria for the construction of visual and instrument flightprocedures 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 (see2.1.1.1).

2.2.5 Duties of pilot-in-command

2.2.5.1 The pilot-in-command shall be responsible for the operation, safety and security of the aircraft and the safety of all crew members, passengers and cargo on board.

2.2.5.2 The pilot-in-command shall be responsible for ensuring that a flight:

a) will not be commenced if any flight crew member is incapacitated from performing duties by any cause such as injury, sickness, fatigue, the effects of any psychoactive substance; and

b) will not be continued beyond the nearest suitable aerodrome when flight crew members' capacity to perform functions is significantly reduced by impairment offaculties from causes such as fatigue, sickness or lack of oxygen.

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

Note. — A definition of the term "serious injury" is contained in CAR, Section 5, Series'C', Part I.

2.2.6 Cabin baggage (take-off and landing)

The pilot-in-command shall ensure that all baggage carried onto an aircraft and taken into the passenger cabin is securely stowed.

2.2.7 Helicopter over-water flights

Refer to CAR Section 8 Series O Part V

CHAPTER 2.3 AIRCRAFT PERFORMANCE OPERATING LIMITATIONS

2.3.1 General

2.3.1.1 An aircraft shall be operated:

a) in compliance with the terms of its airworthiness certificate or equivalent approved document;

b) within the operating limitations prescribed by the certificating authority of the DGCA; and

c) if applicable, within the mass limitations imposed by compliance with the applicable noise certification Standards in CAR Section 6 Series C Part II, unless otherwise authorized in exceptional circumstances for a certain aerodrome or a runway where there is no noise disturbance problem, by the State of the Aerodrome.

2.3.1.2 Placards, listings, instrument markings, or combinations thereof, containing those operating limitations prescribed by the certificating authority of the DGCA for visual presentation, shall be displayed in the aircraft.

2.3.1.3 *Refer to CAR Section 8 Series O Part V*

2.3.1.4 The pilot-in-command shall determine that aircraft performance will permit the take-off and departure to be carried out safely.

CHAPTER 2.4 AIRCRAFT INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

Note. — Specifications for the provision of aircraft communication and navigation equipment are contained in PARA 2.5

2.4.1 General

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 aircraft according to the aircraft 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.

2.4.2 Aircraft on all flights

2.4.2.1 An aircraft shall be equipped with instruments which will enable the flight crew to control the flight path of the aircraft, carry out any required procedural maneuvers and observe the operating limitations of the aircraft in the expected operating conditions.

2.4.2.2 An aircraft shall be equipped with or carry on board:

a) an accessible first-aid kit;

b) portable fire extinguishers of a type which, when discharged, will not cause dangerous contamination of the air within the aircraft. 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 andthat is not readily accessible to the flight crew;

Note. — Refer to 2.4.2.3 for fire extinguishing agents.

c) 1) a seat or berth for each person over an age to be determined by the DGCA; and

2) a seat belt for each seat and restraining belts for each berth;

d) the following manuals, charts and information:

1) the flight manual or other documents or information concerning any operating limitations prescribed for the aircraft by the certificating authority of the DGCA, required for the application of Chapter 2.3;
2) any specific approval issued by the DGCA, if applicable, for the operation(s)to be conducted;
3) current and suitable charts for the route of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted;
4) procedures, as prescribed in CAR Section 9, Series C, Part I for pilots-in-command of intercepted aircraft;
5) visual signals for use by intercepting and intercepted aircraft, as

contained in CARSection 9 Series C Part I ; and

6) the journey log book for the aircraft;

e) where the aircraft is fitted with fuses that are accessible in flight, spare electrical fuses of appropriate ratings for replacement of those fuses.

2.4.2.3 Any agent used in a built-in fire extinguisher for each lavatory disposal receptacle for towels, paper or waste in an aircraft for which the individual certificate of airworthiness is first issued on or after 31 December 2011 and any extinguishing agent used in a portable fire extinguisher in an aircraft for which the individual certificate of airworthiness is first issued on or after 31 December 2018 shall:

a) meet the applicable minimum performance requirements of the DGCA; and

b) not be of a type listed in the 1987 *Montreal Protocol on Substances that Deplete the Ozone Layer* as it appears in the Eighth Edition of the *Handbook for the Montreal Protocol on Substances that Deplete the Ozone La*yer, Annex A, Group II.

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

2.4.2.4 Aircraft on all flights should be equipped with the ground-air signal codes for searchand rescue purposes.

2.4.2.5 Aircraft on all flights should be equipped with a safety harness for each flightcrew member seat.

Note. -- Safety harness includes shoulder strap(s) and a seat belt which may beused independently.

2.4.2.6 Marking of break-in points

2.4.2.6.1 If areas of the fuselage suitable for break-in by rescue crews in emergency are marked on an aircraft such areas shall be marked as shown below (see Figure 2.4-1). The color of the markings shall be red or yellow, and if necessary, they shall be outlined in white to contrast with the background.

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

Note. — This Standard does not require any aircraft to have break-in areas.

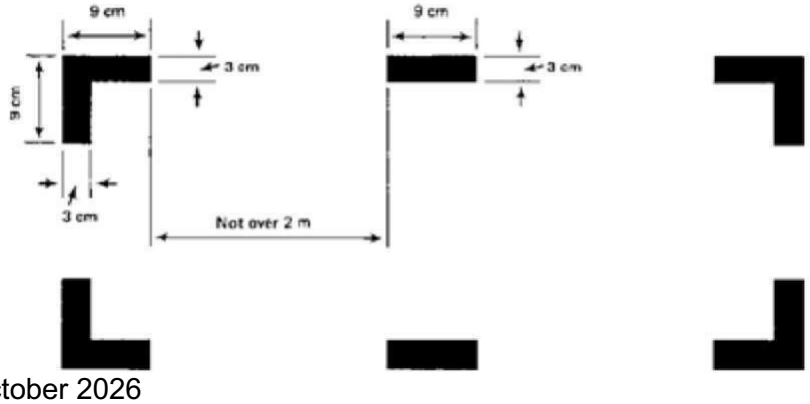


Figure 2.4-1 MARKING OF BREAK-IN POINTS (see 2.4.2.6)

2.4.3 All aircraft operated as VFR flights

2.4.3.1 All aircraft when operated as VFR flights shall be:

a) equipped with a means of measuring and displaying:

1. magnetic heading;
2. barometric altitude;
3. indicated airspeed;

b) equipped with, or shall carry, a means of measuring and displaying time in hours,minutes and seconds; and

c) equipped with such additional equipment as may be prescribed by the appropriate authority.

2.4.3.2 For aeroplanes, *VFR flights which are operated as controlled flights should be equipped in accordance with 2.4.7.*

2.4.4 Aircraft on flights over water

2.4.4.1 Seaplanes

Seaplanes for all flights shall be equipped with:

a) one life jacket, or equivalent individual floatation device, for each person onboard,stowed in a position readily accessible from the seat or berth;

b) equipment for making the sound signals prescribed in the *InternationalRegulations for Preventing Collisions at Sea*, where applicable;

c) one anchor; and

d) one sea anchor (drogue), when necessary to assist in maneuvering.

Note. — "Seaplanes" includes amphibians operated as seaplanes.

2.4.4.2 Landplanes

Single-engined landplanes

All single-engined landplanes:

a) when flying en route over water beyond gliding distance from the shore; or

b) when taking off or landing at an aerodrome where, in the opinion of the pilot-in- command, the take-off or approach path is so disposed over water that in the eventof a mishap there would be a likelihood of a ditching; should carry 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.

Note. — "Landplanes" includes amphibians operated as landplanes.

2.4.4.3 Aeroplanes on extended flights over water

2.4.4.3.1 All aeroplanes operated on extended flights over water shall be equipped

with, at a minimum, 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.

2.4.4.3.2 The pilot-in-command of an aeroplane operated on an extended flight over water shall determine the risks to survival of the occupants of the aeroplane in the event of a ditching. The pilot-in-command shall take into account the operating environment and conditions such as, but not limited to, sea state and sea and air temperatures, the distance from land suitable for making an emergency landing, and the availability of search and rescue facilities. Based upon the assessment of these risks, the pilot-in- command shall, in addition to the equipment required in 2.4.4.3.1, ensure that the aeroplane is equipped with:

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

b. Equipment for making the distress signals described in CAR Section 9 Series C Part I.

2.4.4.4 Helicopters on fights over water

Refer to CAR Section 8 Series O Part V

2.4.5 Aircraft on flights over designated land areas

Aircraft, when operated across land areas which have been designated by the State concerned as areas in which search and rescue would be especially difficult, shall be equipped with such signaling devices and life-saving equipment (including means of sustaining life) as may be appropriate to the area overflown.

2.4.6 Aircraft on high altitude flights

2.4.6.1 Aircraft intended to be operated at high altitudes shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 2.2.3.11.

2.4.6.2 Aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 1990: Pressurized aeroplanes intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa shall be equipped with a device to provide positive warning to the flight crew of any dangerous loss of pressurization

2.4.6.3 Aeroplanes for which the individual certificate of airworthiness was first issued before 1January 1990: *Pressurized aeroplanes intended to be operated at flight altitudes at whichthe atmospheric pressure is less than 376 hPa should be equipped with a device to provide positive warning to the flight crew of any dangerous loss of pressurization.*

2.4.7 All aircraft operated in accordance with the instrument flight rules

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

a) equipped with a means of measuring and displaying:

1) magnetic heading (standby compass);

2) barometric altitude;

Note. – Due to the long history of misreadings, the use of drum-pointer altimeters is not recommended.

3) indicated airspeed, with a means of preventing malfunctioning due to eithercondensation or icing;

4) for aeroplanes, turn and slip;

5) for aeroplanes, aircraft attitude;

6) stabilized aircraft heading;

Note. — Requirements of 4), 5) and 6) may be met by combinations of instruments or by integrated flight director systems provided that the safeguards against total failure, inherent inthe three separate instruments, are retained.

7) whether the supply of power to the gyroscopic instruments is adequate;

8) the outside air temperature;

9) rate-of-climb and descent;

a) equipped with, or shall carry, a means of measuring and displaying time in hours, minutes and seconds; and

b) Equipped with such additional instruments or equipment as may beprescribed by the appropriate authority.

2.4.8 Aircraft when operated at night

2.4.8.1 Aeroplanes, when operated at night, shall be equipped with:

a. the equipment specified in 2.4.7; and

b. the lights required by CAR, Section 9 Series C Part I, for aircraft in flightor operating on the movement area of an aerodrome;

Note. — Specifications for lights meeting the requirements of CAR Section 9 Series C Part I. General characteristics of lights are specified in Annex 8.

c. a landing light;

d. illumination for all flight instruments and equipment that are essential forthe safe operation of the aircraft that are used by the flight crew;

e. lights in all passenger compartments; and

f. an independent portable light for each crew member station.

2.4.8.2 Helicopters when operated at night

Refer to CAR Section 8 Series O Part V

2.4.8.3 *Refer to CAR Section 8 Series O Part V*

2.4.9 Aircraft complying with noise certification Standards in Annex 16, Volume I

An aircraft shall carry a document attesting noise certification as per CAR, Section 2, Series 'X', Part VII. When the document, or a suitable statement attesting noise certification as contained in another document approved by the State of Registry, is issued in a language other than English, it shall include an English translation.

Note. 1 — The attestation may be contained in any document, carried on board, approved by the DGCA.

2.4.10 Mach number indicator

Aeroplanes with speed limitations expressed in terms of Mach number shall be equipped with a means of displaying Mach number.

2.4.11 Aeroplanes required to be equipped with ground proximity warning systems (GPWS)

Aeroplanes so defined in CAR, Section 2, Series 'I', Part 'VII' shall be fitted with Ground Proximity Warning System (GPWS).

2.4.12 Emergency locator transmitter (ELT)

For aeroplanes:

2.4.12.1 All aeroplanes should carry an automatic ELT.

2.4.12.2 Except as provided for in 2.4.12.3, all aeroplanes shall be equipped with at least one ELT of any type.

2.4.12.3 All aeroplanes for which the individual certificate of airworthiness is first issuedafter 1 July 2008 shall be equipped with at least one automatic ELT.

2.4.12.4 ELT equipment carried to satisfy the requirements of 2.4.12.1, 2.4.12.2 and 2.4.12.3 shall operate in accordance with the relevant provisions of Section 9 Series D Part IV.

For helicopters:

2.4.12.5 Refer to CAR Section 8 Series O Part V

2.4.12.6 Refer to CAR Section 8 Series O Part V

2.4.12.7 Refer to CAR Section 8 Series O Part V

Note. — The judicious choice of numbers of ELTs, their type and placement on aircraft, and associated floatable life-support systems, will ensure the greatest chance of ELT activation in the event of an accident for aircraft operating over water or land, including

areas especially difficult for search and rescue. Placement of transmitter units is a vital factor in ensuring optimalcrash and fire protection. The placement of the control and switching devices (activation monitors) of automatic fixed ELTs and their associated operational procedures will also take into consideration the need for rapid detection of inadvertent activation and convenient manual switching by crew members.

2.4.13 Aircraft required to be equipped with a pressure-altitude reporting transponder

2.4.13.1 Aeroplanes shall be equipped with a pressure-altitude reporting transponder which operates in accordance with the CAR, Section 2 Series I, Part VIII and CAR Section 2,Series R, Part IV

2.4.13.2 Aeroplanes operating as VFR flights shall be equipped with a pressure altitude reporting transponder which operates in accordance with the relevant provision of CAR,Section 2, Series 'R', Part 'IV'.

Unless exempted by the appropriate authorities, aeroplanes operating as VFR flights shall be equipped with a pressure-altitude reporting transponder which operates in accordance with the relevant provision of CAR Section 9 Series D Part V 10.

Note. — These provisions are intended to support the effectiveness of ACAS as well as toimprove the effectiveness of air traffic services.

2.4.13.3 Refer to CAR Section 8 Series O Part V

2.4.13.4 Refer to CAR Section 8 Series O Part V

Note. - These provisions are intended to support the effectiveness of ACAS as well as to improve the effectiveness of air traffic services. The intent is also for aircraft not equipped with pressure-altitude reporting transponders to be operated so as not to share airspace used by aircraft equipped with airborne collision avoidance systems. To this end, exemptions from the carriage requirement for pressure-altitude reporting transponders could be given by designating airspace where such carriage is not required.

2.4.14 Microphones

2.4.14.1 For aeroplanes, when operating under the instrument flight rules all flight crew members required to beon flight deck duty should communicate through boom or throat microphones below thetransition level/altitude.

2.4.14.2 Refer to CAR Section 8 Series O Part V

2.4.15 Aircraft equipped with automatic landing systems, a head-up display (HUD) or equivalent displays, enhanced vision systems (EVS), synthetic vision systems (SVS) and/or combined vision systems (CVS)

Notwithstanding Para 2.2, 2.2.2.3.1.1 to 2.2.2.3.1.3, where aircraft are equipped with automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS, or any combination of those systems into a hybrid system, criteria for the use of such systems for the safe operation of an aircraft shall be established by the State of Registry.

Note 1.— Information regarding automatic landing systems, ~~a~~ HUD or equivalent displays, EVS, SVS or CVS, is contained in the Manual of All-Weather Operations (Doc 9365) and OC 18 of 2014.

2.4.16 Flight recorders

The operators shall comply with the requirements given in CAR Section 2 Series 'I' Part V and VI for installation of FDR (Flight Data Recorder) and CVR (Cockpit Voice recorder) as the case may be or the combination recorder (FDR/CVR).

2.4.17 Electronic flight bags (EFBs)

Note. — Guidance on EFB equipment, functions and specific approval is contained in the Manual on Electronic Flight Bags (EFBs) (Doc 10020).

2.4.17.1 EFB equipment

Where portable EFBs are used on board an aircraft, the pilot-in-command and/or the operator/owner shall ensure that they do not affect the performance of the aircraft systems, equipment or the ability to operate the aircraft.

2.4.17.2 EFB functions

2.4.17.2.1 Where EFBs are used on board an aircraft the pilot-in-command and/orthe owner/operator shall:

a. assess the safety risk(s) associated with each EFB function;

b. establish the procedures for the use of, and training requirements for, the deviceand each EFB function; and

c. Ensure that, in the event of an EFB failure, sufficient information is readily availableto the flight crew for the flight to be conducted safely.

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

2.4.17.2.2 The DGCA has established criteria for the specific approval for the operational use of EFB functions to be used for the safe operation of aircraft.

2.4.17.3 EFB specific approval

When issuing a specific approval for theuse of EFBs, the DGCA shallensure that:

a) the EFB equipment and its associated installation hardware, including interaction with aircraft systems if applicable, meet the appropriate airworthiness

certification requirements;

b) the operator/owner has assessed the risks associated with the operations supported by the EFB function(s);

c) the operator/owner has established requirements for redundancy of the information (if appropriate) contained in and displayed by the EFBfunction(s);

d) the operator/owner has established and documented procedures for the management of the EFB function(s) including any databases it may use; and

e) The operator/owner has established and documented the procedures forthe use of, and training requirements for, the EFB function(s).

Note. — Guidance on safety risk assessments is contained in the Safety Management Manual (SMM) (Doc 9859).

2.4.18 Aircraft operated under an Article 83 *bis* agreement

Note. — Guidance concerning the transfer of responsibilities by the State of Registry to the State of the principal location of a general aviation operator inaccordance with Article 83 bis *is contained in the* Manual on the Implementation of Article 83 *bis* of the Convention on International CivilAviation (Doc 10059).

2.4.18.1 An aircraft, when operating under an Article 83 *bis* agreement entered into between the State of Registry and the State of the principal location of a general aviation operator, shall carry a certified true copy of the agreement summary, in either an electronic or hard copy format. When the summary is issued in a language other than English, an English translation shall be included.

Note. — Guidance regarding the agreement summary is contained in Doc 10059.

2.4.18.2 The agreement summary of an Article 83 bis agreement shall be accessibleto a civil aviation safety inspector to determine which functions and duties aretransferred under the agreement by the State of Registry to the State of the principal location of a general aviation operator, when conducting surveillanceactivities such as ramp checks.

Note. — Guidance for the civil aviation safety inspector conducting an inspection of anaircraft operated under an Article 83 bis agreement is contained in the Manual of Procedures for Operations Inspection, Certification and continued Surveillance (Doc 8335).

2.4.18.3 The agreement summary shall be transmitted to ICAO together with the Article83 bis Agreement for registration with the ICAO council by the State of Registry or theState of the Principal location of a General Aviation Operator.

Note. — The agreement summary transmitted with the Article 83 bis agreement registered with the ICAO Council contains the list of all aircraft affected by the agreement. However, the certified true copy to be carried on board as per 2.4.18.1 will need to list only the specific aircraft carrying the copy.

CHAPTER 2.5 AIRCRAFT COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT

2.5.1 Communication equipment

2.5.1.1 An aeroplane aircraft to be operated in accordance with the instrument flight rules or at night shall be provided with radio communication equipment. Such equipment shall be capable of conducting two-way communication with those aeronautical stations and on those frequencies prescribed by the appropriate authority/DGCA.

Note. — The requirements of 2.5.1.1 are considered fulfilled if the ability to conduct the communications specified therein is established during radio propagation conditions which are normal for the route.

2.5.1.2 When compliance with 2.5.1.1 requires that more than one communication equipment unit be provided, each shall be independent of the other or others tothe extent that a failure in any one will not result in failure of any other.

2.5.1.3 An aircraft to be operated in accordance with VFR, but as a controlled flight, shall, unless exempted by the appropriate authority, be provided with radio communication equipment capable of conducting two-way communication at anytime during flight with such aeronautical stations and on such frequencies as may be prescribed by the appropriate authority/DGCA.

2.5.1.4 An aircraft to be operated on a flight to which the provisions of 2.4.4.3.1, 2.4.4.4 or 2.4.5 apply shall, unless exempted by the appropriate authority, beprovided with radio communication equipment capable of conducting two-way communication at any time during flight with such aeronautical stations and onsuch frequencies as may be prescribed by the appropriate authority/DGCA.

2.5.1.5 For aeroplanes, the radio communication equipment required in accordance with 2.5.1.1 to 2.5.1.4 shall provide for communication on the aeronautical emergency frequency 121.5 MHz.

2.5.1.6 Refer to CAR Section 8 Series O Part V

2.5.1.7 For operations where communication equipment is required to meet an RCP specification for *performance-based communication* (PBC), an aircraft shall, in addition to the requirements specified in 2.5.1.1 to 2.5.1.5:

a) be provided with communication equipment which will enable it to operate in accordance with the prescribed RCP specification(s);

b) have information relevant to the aircraft RCP specification capabilities listedin the flight manual or other aircraft documentation approved by the DGCA;and

c) where the aicraft is operated in accordance with a MEL, have information relevant to the aircraft RCP specification capabilities included in the MEL.

Note. — Information on the performance-based communication and surveillance (PBCS) concept and guidance material on its implementation are contained in the Performance Based Communication and Surveillance (PBCS) Manual (Doc 9869).

2.5.1.8 The DGCA shall establish criteria for operations where an RCP specification for PBC has been prescribed.

2.5.1.9 In establishing criteria for operations where an RCP specification for PBC has been prescribed, the DGCA shall require that the operator/owner establish:

a) normal and abnormal procedures, including contingency procedures;

b) flight crew qualification and proficiency requirements, in accordance with the appropriate RCP specifications;

c) a training programme for relevant personnel consistent with the intended operations; and

d) Appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RCP specifications.

2.5.1.10 The DGCA shall ensure that, in respect of those aircraft mentioned in2.5.1.7, adequate provisions exist for:

a) receiving the reports of observed communication performance issued by monitoring programmes established in accordance with Section 9 Series E Part I, Chapter 3, 3.3.5.2; and

b) Taking immediate corrective action for individual aircraft, aircraft types or operators, identified in such reports as not complying with the RCP specification(s).

2.5.2 Navigation equipment

2.5.2.1 An aircraft shall be provided with navigation equipment which will enable it to proceed:

a. in accordance with its flight plan; and

b. in accordance with the requirements of air traffic services; except when, if not so precluded by the DGCA, navigation for flights under VFR is accomplished by visual reference to landmarks.

2.5.2.2 For operations where a navigation specification for performance-based navigation (PBN) has been prescribed, an aircraft shall, in addition to the requirements specified in 2.5.2.1:

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

Note. - Information on performance-based navigation, and guidance concerning the implementation and operational approval process, are contained in the CAR, Section 8, Series‘S’, Part ‘IV’ and OPS circulars 6 to 14 of 2014 related to PBN

b) have information relevant to the aircraft navigation specification capabilities listed in the flight manual or other aircraft documentation approved by the DGCA; and

c) Where the aircraft is operated in accordance with a MEL, have information relevant to the aircraft navigation specification capabilities included in the MEL.

Note. — Guidance on aircraft documentation is contained in the Performance-based Navigation (PBN) Manual (Doc 9613).

2.5.2.3 The DGCA shall establish criteria for operations where a navigation specification for PBN has been prescribed.

2.5.2.4 In establishing criteria for operations where a navigation specification for PBN has been prescribed, the DGCA shall require that the operator/owner establish:

a) normal and abnormal procedures including contingency procedures;

b) flight crew qualification and proficiency requirements, in accordance with the appropriate navigation specifications;

c) training for relevant personnel consistent with the intended operations; and

d) Appropriate maintenance procedures to ensure continued airworthiness, in accordance with the appropriate navigation specifications.

Note 1.— Guidance on safety risks and mitigations for PBN operations, in accordance with Annex 19, are contained in the Performance-based Navigation (PBN) Operational Approval Manual (Doc 9997).

Note 2. — Electronic navigation data management is an integral part of normal and abnormal procedures.

Note. 3— The prescribed minimum navigation performance specifications and the procedures governing their application are given in the CAR, Section 8, Series 'S', Part 'III'.

2.5.2.5 The DGCA shall issue a specific approval for operations based on PBN authorization required (AR) navigation specifications.

Note. — Guidance on specific approvals for PBN authorization required (AR) navigation specifications is contained in the Performance-based Navigation (PBN) Operational Approval Manual (Doc 9997).

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

a) Continuously provides indications to the flight crew of adherence to or departurefrom track to the required degree of accuracy at any point along that track; and

b) has been authorized by the DGCA for the MNPS operations concerned.

Note.1— The prescribed minimum navigation performance specifications and the procedures governing their application are given in the CAR, Section 8, Series 'S',Part 'III'.

Note.2— The prescribed minimum navigation performance specifications and the procedures governing their application are published in the Regional Supplementary Procedures (Doc 7030).

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

a) the aeroplane shall be provided with equipment which is capable of:

   1) indicating to the flight crew the flight level being flown;

   2) automatically maintaining a selected flight level;

   3) Providing an alert to the flight crew when a deviation occurs from the selected flight level. The threshold for the alert shall not exceed ±90 m (300 ft.); and
   4) automatically reporting pressure-altitude;

b) DGCA shall issue a specific approval for RVSM operations

2.5.2.8 Prior to granting the specific RVSM approval required in accordance with 2.5.2.7 b), DGCA shall be satisfied that:

a. the vertical navigation performance capability of the aeroplane satisfies the requirements specified in Appendix 2.2;

b. the owner/operator has instituted appropriate procedures in respect of continued airworthiness (maintenance and repair) practices and programmes; and

c. The owner/operator has instituted appropriate flight crew procedures for operations in RVSM airspace.

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

2.5.2.9 The DGCA shall ensure that, in respect of those aeroplanes mentioned in 2.5.2.7, adequate provisions exist for:

a) receiving the reports of height-keeping performance issued by the monitoring agencies established in accordance with CAR Section 9 Series E Part I, 3.3.5.1; and

b) Taking immediate corrective action for individual aircraft, or aircraft type groups, identified in such reports as not complying with the height keeping requirementsfor operation in airspace where RVSM is applied.

2.5.2.10 The DGCA that has issued an RVSM specific approval to an owner/operator shall establish a requirement which ensures that a minimum of two aeroplanes of each aircraft type grouping of the owner/operator have their height keeping performance monitored, at least once every two years or within intervals of 1 000 flight hours per aeroplane, whichever period is longer. If an owner/operator aircraft type grouping

consists of a single aeroplane, monitoring of that aeroplane shall be accomplished within the specified period.

Note. — Monitoring data from any regional monitoring programme established in accordance with CAR Section 9 Series E Part I, 3.3.5.2, may be used to satisfy the requirement.

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

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

2.5.2.12 The aircraft shall be sufficiently provided with navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage ofthe flight, the remaining equipment will enable the aircraft to navigate in accordance with 2.5.2.1 and where applicable 2.5.2.2, 2.5.2.6 and 2.5.2.7.

Note 1. — This requirement may be met by means other than the duplication of equipment.

Note 2.— Guidance material relating to aircraft equipment necessary for flight in airspace where a 300 m (1 000 ft.) VSM is applied above FL 290 is contained in the Manual on a 300 m (1 000 ft.) Vertical Separation Minimum between FL 290 and FL 410 Inclusive (Doc 9574).

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

2.5.3 Surveillance equipment

2.5.3.1 An aircraft shall be provided with surveillance equipment which will enableit to operate in accordance with the requirements of air traffic services.

2.5.3.2 For operations where surveillance equipment is required to meet an RSP specification for performance-based surveillance (PBS), an aircraft shall, in addition to the requirements specified in 2.5.3.1:

a) be provided with surveillance equipment which will enable it to operate in accordance with the prescribed RSP specification(s);

b) have information relevant to the aircraft RSP specification capabilities listedin the flight manual or other aircraft documentation approved by the State ofDesign or DGCA; and

c) Where the aircraft is operated in accordance with a MEL, have information relevant to the aircraft RSP specification capabilities included in the MEL.

Note 1.— Information on surveillance equipment is contained in the Aeronautical Surveillance Manual *(Doc 9924).*

Note 2.— Information on RSP specifications for performance-based surveillance is contained in the Performance-based Communication and Surveillance (PBCS) Manual *(Doc 9869).*

2.5.3.3 The DGCA shall establish criteria for operations where an RSP specification for PBS has been prescribed.

2.5.3.4 In establishing criteria for operations where an RSP specification for PBS has been prescribed, the DGCA shall require that the operator/owner establish:

a) normal and abnormal procedures, including contingency procedures;

b) flight crew qualification and proficiency requirements, in accordance with appropriate RSP specifications;

c) a training programme for relevant personnel consistent with the intended operations;

d) Appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RSP specifications.

2.5.3.5 The DGCA shall ensure that, in respect of those aircraft mentioned in 2.5.3.2, adequate provisions exist for:

a) receiving the reports of observed surveillance performance issued by monitoring programmes established in accordance with CAR Section 9 Series E Part I, Chapter 3, 3.3.5.2; and

b) Taking immediate corrective action for individual aircraft, aircraft types or operators, identified in such reports as not complying with the RSP specification(s).

CHAPTER 2.6 AIRCRAFT CONTINUING AIRWORTHINESS

Note 1. — For the purpose of this chapter "aeroplane" includes: engines,propellers, components, accessories, instruments, equipment and apparatus including emergency equipment.

Note 2. — Refer to CAR Section 8 Series O Part V

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

Note 4. — DGCA shall conduct a risk assessment when approving a maintenance programme not based on the type certificate holder's maintenance recommendations.

2.6.1 Owner's continuing airworthiness responsibilities

2.6.1.1 The owner of an aircraft, or in the case where it is leased, the lessee, shall ensure that, in accordance with procedures acceptable to the DGCA:

a. the aircraft is maintained in an airworthy condition;
b. the operational and emergency equipment necessary for an intended flight is serviceable; and
c. the certificate of airworthiness of the aircraft remains valid.

2.6.1.2 The owner or the lessee shall not operate an aircraft unless maintenance on the aircraft, including any associated engine, propeller and part, is carried out by an organization approved by DGCA under CAR 145 or is approved by another contracting state and is accepted by DGCA; and there is a maintenance release in relation to the maintenance carried out

2.6.1.3 The owner or the lessee shall ensure that the maintenance of the aircraft is performed in accordance with a maintenance programme acceptable to the DGCA.

2.6.2 Continuing Airworthiness Records

2.6.2.1 The owner of an aircraft, or in the case where it is leased, the lessee, shall ensure that the following records are kept for the periods mentioned in 2.6.2.2:

a. the total time in service (hours, calendar time and cycles, as appropriate) of the aircraft and all life-limited components;
b. the current status of compliance with all applicable mandatory continuing airworthiness information;
c. appropriate details of modifications and repairs;
d. the time in service (hours, calendar time and cycles, as appropriate) since the last overhaul of the aircraft or its components subject to a mandatory overhaul life;
e. the current status of the aircraft compliance with the maintenance programme; and

f. the detailed maintenance records to show that all requirements for the signingof a maintenance release have been met.

2.6.2.2 The records in 2.6.2.1 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 2.6.2.1 f) for a minimum period of one year after the signing of the maintenance release.

2.6.2.3 In the event of a temporary change of owner or lessee, the records shall be made available to the new owner or lessee. In the event of any permanent change of owner or lessee, the records shall be transferred to the new owner or lessee.

Note 1. —Continuing airworthiness records or related documents, other than a valid certificate of airworthiness, need not be carried in the aircraft during international flights.

Note 2. — In the context of 2.6.2.3, a judgment on what should be considered as a temporary change of owner or lessee will need to be made by the DGCA in the light of the need to exercise control over the records, which will depend on accessto them and the opportunity to update them.

2.6.2.4 Records kept and transferred in accordance with 2.6.2shall be maintained in a form and format that ensures readability, security and integrity of the records at all times.

Note 1. — The form and format of the records may include, for example, paper records,film records, electronic records or any combination thereof.

Note 2.— Guidance regarding electronic aircraft continuing airworthiness records is included in the Airworthiness Manual (Doc 9760).

2.6.3 Continuing airworthiness information – for helicopters

Refer to CAR Section 8 Series O Part V

2.6.4 Modifications and repairs

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

2.6.5 Maintenance release

2.6.5.1 When maintenance is carried out by an approved maintenance organization, the maintenance release shall be issued by the approved maintenance organization in accordance with the provisions of CAR 145.

2.6.5.2 When maintenance is not carried out by an approved maintenance organization, the maintenance release shall be completed and signed by a person appropriately licensed in accordance with Rule 61 of Aircraft Rules 1937, to

certify that the maintenance work performed has been completed satisfactorily and in accordance with data and procedures acceptable to the DGCA.

2.6.5.3 When maintenance is not carried out by an approved maintenance organization, the maintenance release shall include the following:

a. basic details of the maintenance performed;

b. the date such maintenance was completed; and

c. The identity of the authorized person or persons signing the release.

CHAPTER 2.7 AIRCRAFT FLIGHT CREW

2.7.1 Composition of the flight crew

The number and composition of the flight crew shall not be less than that specified in the flight manual or other documents associated with the certificate of airworthiness.

2.7.2 Qualifications

2.7.2.1 The pilot-in-command shall:

a. ensure that each flight crew member holds a valid licence issued by the DGCA, or if issued by another Contracting State, rendered valid by the DGCA;

b. ensure that flight crew members are properly rated; and

c. be satisfied that flight crew members have maintained competency.

2.7.2.2 The pilot-in-command of an aeroplane equipped with an airborne collision avoidance system (ACAS II) shall ensure that each flight crew member has been appropriately trained to competency in the use of ACAS II equipment and the avoidance of collision.

Note 1.— Procedures for the use of ACAS II equipment are specified in the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume I —Flight Procedures. ACAS II Training Guidelines for Pilots are provided in PANS-OPS,Volume I, Attachment A to Part III, Section 3, Chapter 3.

Note 2. — Appropriate training, to the satisfaction of the State, to competency in the use of ACAS II equipment and the avoidance of collisions may be evidenced, for example, by:

a. possession of a type rating for an aeroplane equipped with ACAS II, where the operation and use of ACAS II are included in the training syllabus for the type rating; or

b. possession of a document issued by a training organization or person approved by the State to conduct training for pilots in the use of ACAS II, indicating that the holder has been trained in accordance with the guidelines referred to in Note 1; or

c. a comprehensive pre-flight briefing by a pilot who has been trained in the use of ACAS II in accordance with the guidelines referred to in Note 1.

CHAPTER 2.8 MANUALS, LOGS AND RECORDS

Note. — The following documents are associated with this CAR but are not included in this chapter: Maintenance records — see 2.6.2.

2.8.1 Flight manual

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

The flight manual shall be updated by implementing changes mademandatory by the DGCA.

2.8.2 Journey log book

2.8.2.1 A journey log book shall be maintained for every aircraft engaged in international air navigation in which shall be entered particulars of the aircraft, its crew and each journey.

*2.8.2.*2 The aircraft journey log should contain the following items:

a. aircraft nationality and registration;
b. date;
c. crew member names and duty assignments;
d. departure and arrival points and times;
e. purpose of flight;
f. observations regarding the flight; and
g. Signature of the pilot-in-command.

2.8.3 Records of emergency and survival equipment carried

The owner of the aeroplane, or in the case where it is leased, the lessee, shall at all times have available for immediate communication to rescue coordination centers, lists containing information on the emergency and survival equipment carried on board the aeroplane 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.

CHAPTER 2.9 SECURITY

2.9.1 Security of aircraft

The pilot-in-command shall be responsible for the security of the aircraft duringits operation.

2.9.2 Reporting acts of unlawful interference

Following an act of unlawful interference, the pilot-in-command shall submit a report of such an act to the designated local authority.

Note. — In the context of this para, the word “security” is used in the sense of prevention of acts of unlawful interference against civil aviation.

APPENDIX 2.1 LIGHTS TO BE DISPLAYED BY AIRCRAFT

(Section 2, PARA 2.4, 2.4.8, refers)

1. TERMINOLOGY

When the following terms are used in this Appendix, they have the following meanings:

Angles of coverage.

a) Angle of coverage A is formed by two intersecting vertical planes making angles of 70 degrees to the right and 70 degrees to the left respectively, looking aft along the longitudinal axis to a vertical plane passing through the longitudinal axis.

b) Angle of coverage F is formed by two intersecting vertical planes making angles of 110 degrees to the right and 110 degrees to the left respectively, looking forward along the longitudinal axis to a vertical plane passing through the longitudinal axis.

c) Angle of coverage L is formed by two intersecting vertical planes, one parallel to the longitudinal axis of the aircraft, and the other 110 degrees to the left of the first, when looking forward along the longitudinal axis.

d) Angle of coverage R is formed by two intersecting vertical planes, one parallel to the longitudinal axis of the aircraft, and the other 110 degrees to the right of the first, when looking forward along the longitudinal axis.

Horizontal plane*.* The plane containing the longitudinal axis and perpendicular to the plane of symmetry of the aircraft.

Longitudinal axis of the aircraft*.* A selected axis parallel to the direction of flight at a normal cruising speed, and passing through the centre of gravity of the aircraft.

Making way*.* An aeroplane on the surface of the water is “making way” when it is under way and has a velocity relative to the water.

Under command*.* An aircraft on the surface of the water is “under command” whenit is able to execute maneuvers as required by the International *Regulations for Preventing Collisions at Sea* for the purpose of avoiding other vessels.

Under way*.* An aircraft on the surface of the water is “under way” when it is not aground or moored to the ground or to any fixed object on the land or in the water.

Vertical planes*.* Planes perpendicular to the horizontal plane.

Visible*.* Visible on a dark night with a clear atmosphere.

2. NAVIGATION LIGHTS TO BE DISPLAYED IN THE AIR

Note. — The lights specified herein are intended to meet the requirements of CAR Section 9 Series C Part I for navigation lights.

As illustrated in Figure 1, the following unobstructed navigation lights shall be displayed:

a. a red light projected above and below the horizontal plane through angle of coverage L;

b. a green light projected above and below the horizontal plane through angleof coverage R;

c. a white light projected above and below the horizontal plane rearwardthrough angle of coverage A.

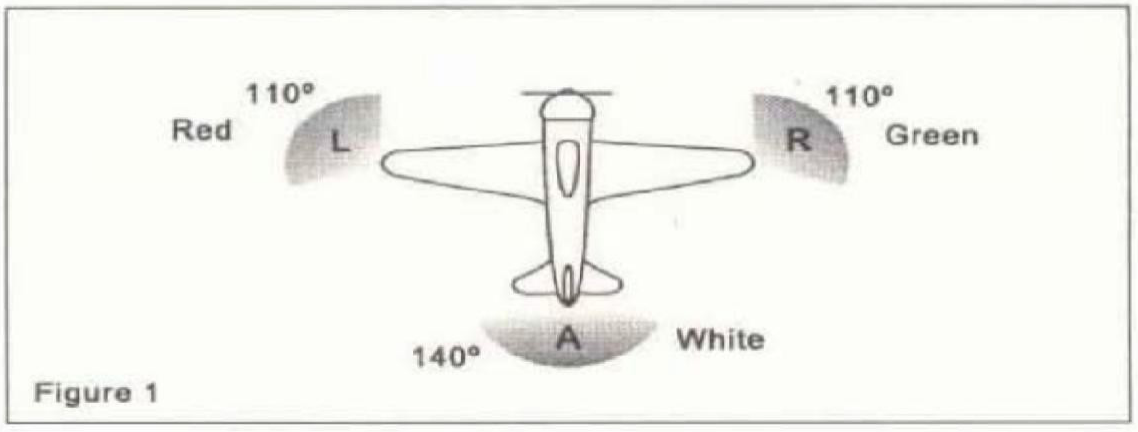


Figure 1

3. LIGHTS TO BE DISPLAYED ON THE WATER

3.1 General

Note. — The lights specified herein are intended to meet the requirements of CAR Section 9 Series C Part I for lights to be displayed by aircraft on the water.

The *International Regulations for Preventing Collisions at Sea* require different lights to be displayed in each of the following circumstances:

a. when under way;

b. when towing another vessel or aeroplane;

c. when being towed;

d. when not under command and not making way;

e. when making way but not under command;

f. when at anchor;

g. When aground.

The lights required by aircraft in each case are described below.

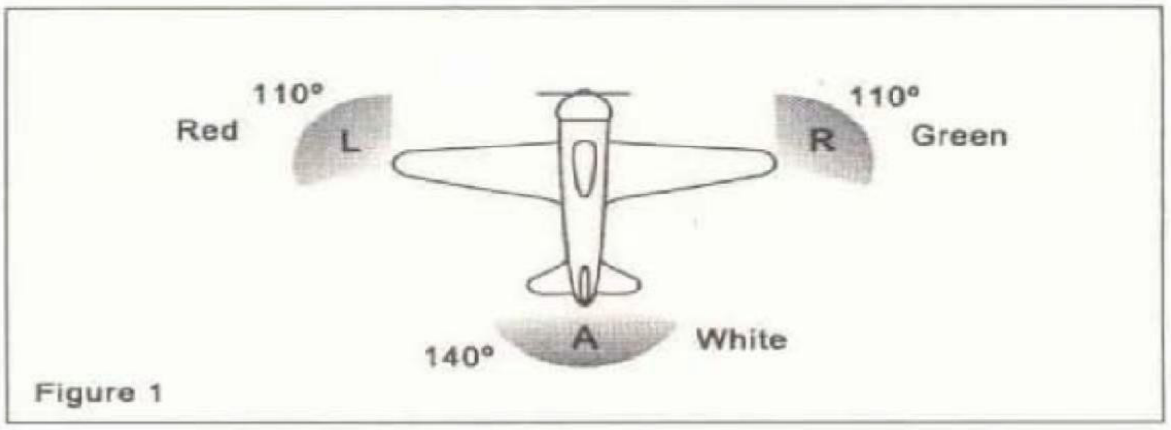


Figure 1

3.2 When under way

As illustrated in Figure 2, the following appearing as steady, unobstructed lights:

a. a red light projected above and below the horizontal through angle ofcoverage L;

b. a green light projected above and below the horizontal through angle ofcoverage R;

c. a white light projected above and below the horizontal through angle ofcoverage A; and

d. a white light projected through angle of coverage F.

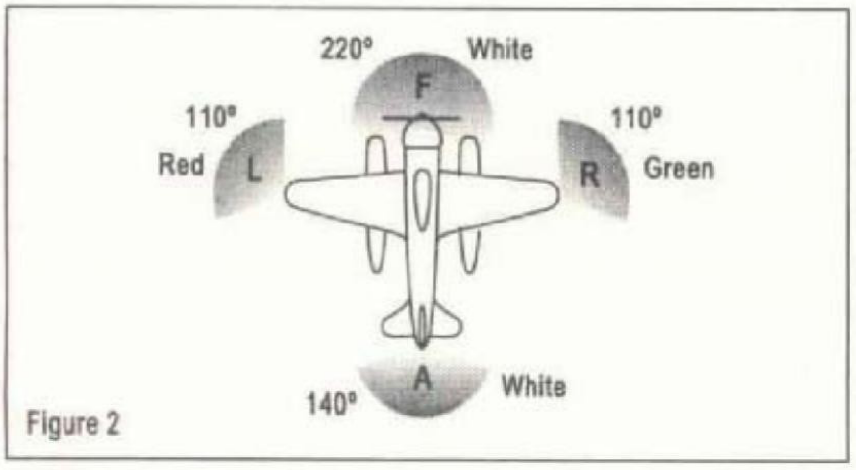


Figure 2

The lights described in a), b) and c) should be visible at a distance of at least 3.7 km (2 NM). The light described in d) should be visible at a distance of 9.3 km (5 NM) whenfitted to an aeroplane of 20 m or more in length or visible at a distance of 5.6 km (3 NM) when fitted to an aeroplane of less than 20 m in length.

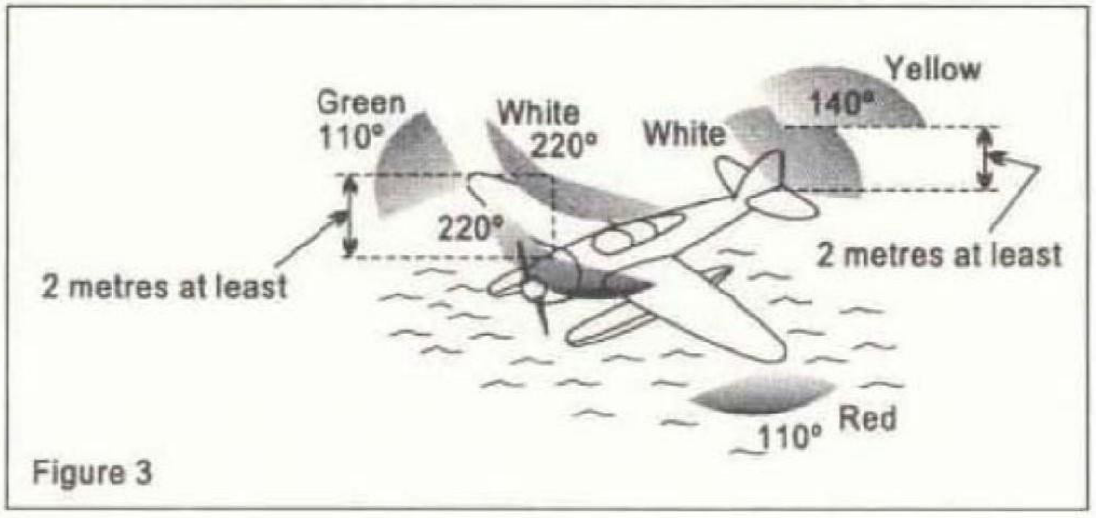


Figure 3

3.3 When towing another vessel or aeroplane

As illustrated in Figure 3, the following appearing as steady, unobstructed lights:

a. the lights described in 3.2;

b. a second light having the same characteristics as the light described in 3.2 d)and mounted in a vertical line at least 2 m above or below it; and

c. a yellow light having otherwise the same characteristics as the light describedin 3.2 c) and mounted in a vertical line at least 2 m above it.

3.4 When being towed

The lights described in 3.2 a), b) and c) appearing as steady, unobstructed lights.

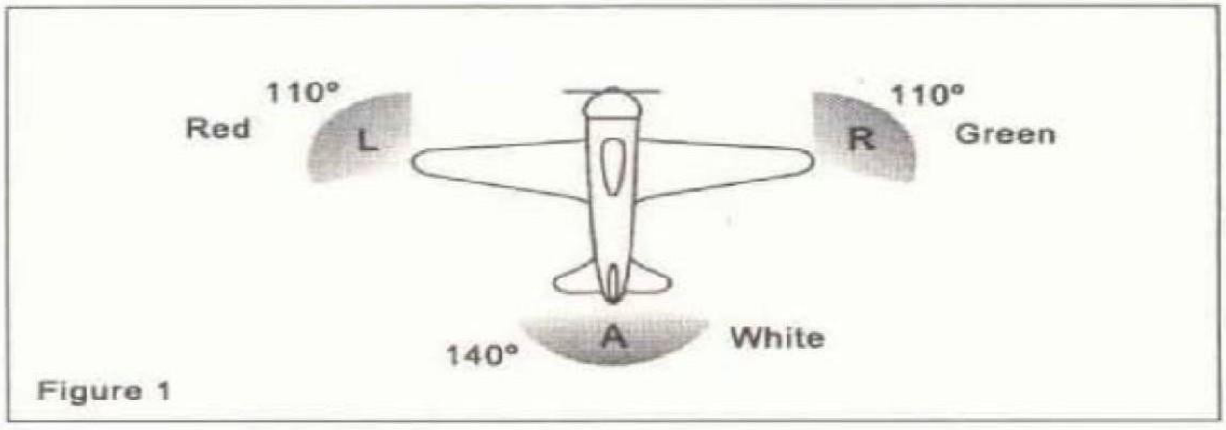


Figure 1

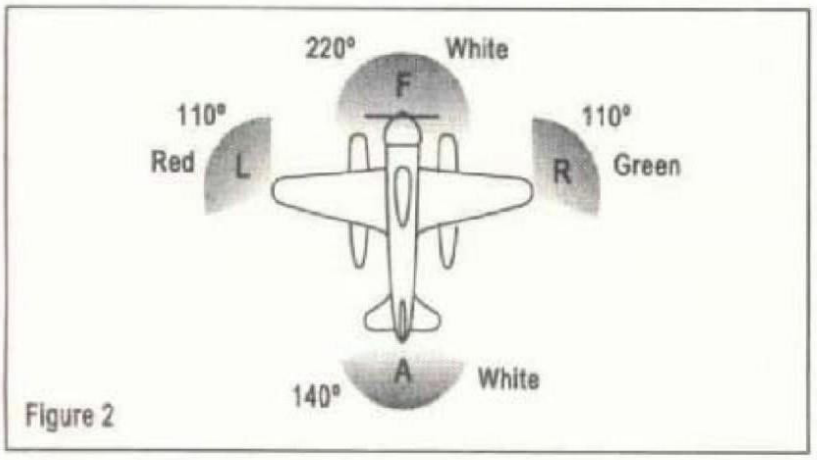


Figure 2

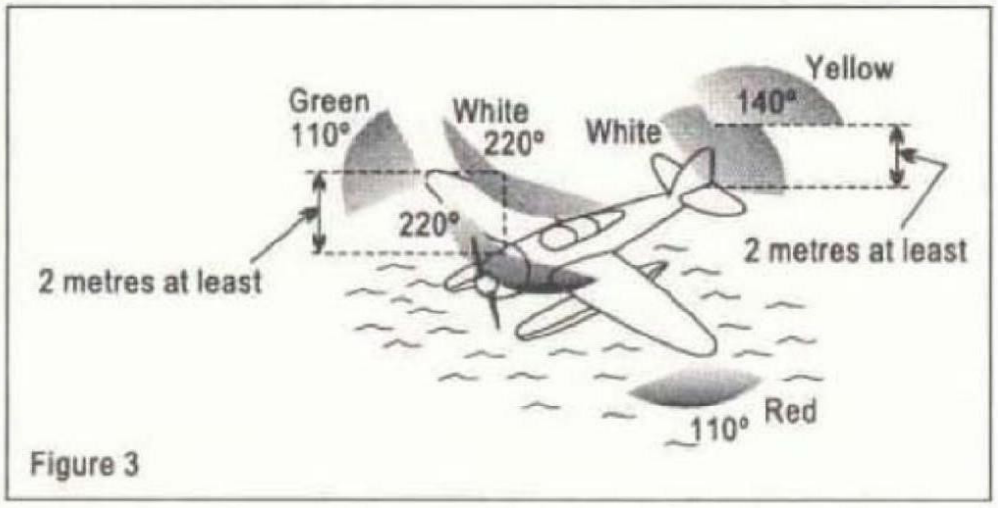


Figure 3

3.5 When not under command and not making way

As illustrated in Figure 4, two steady red lights placed where they can best be seen, one vertically over the other and not less than 1 m apart, and of such a character as to be visible all around the horizon at a distance of at least 3.7 km (2 NM).

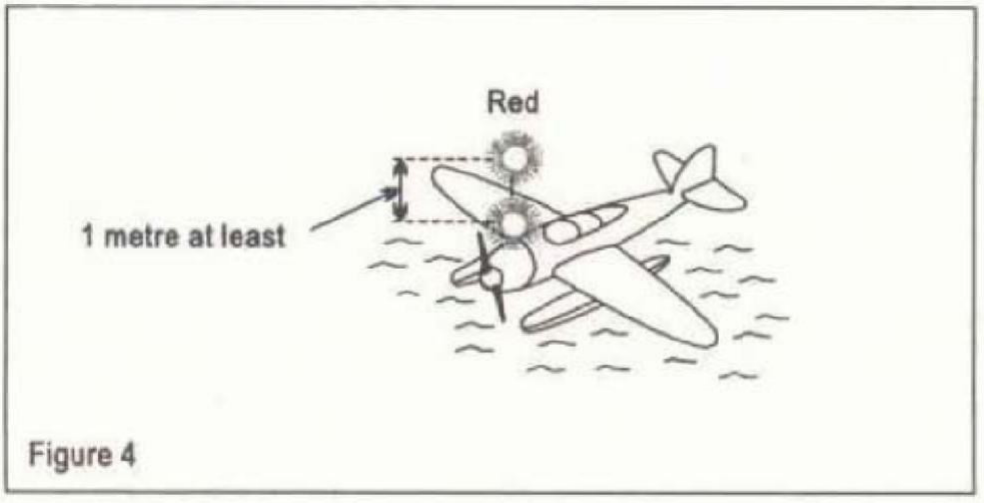


Figure 4

3.6 When making way but not under command

As illustrated in Figure 5, the lights described in 3.5 plus the lights described in 3.2 a), b) and c).

Note. — The display of lights prescribed in 3.5 and 3.6 is to be taken by other aircraft as signals that the aircraft showing them is not under command and cannot therefore get out of the way. They are not signals of aircraft in distress and requiring assistance.

3.7 When at anchor

a) If less than 50 m in length, where it can best be seen, a steady white light (Figure6), visible all around the horizon at a distance of at least 3.7 km (2 NM).

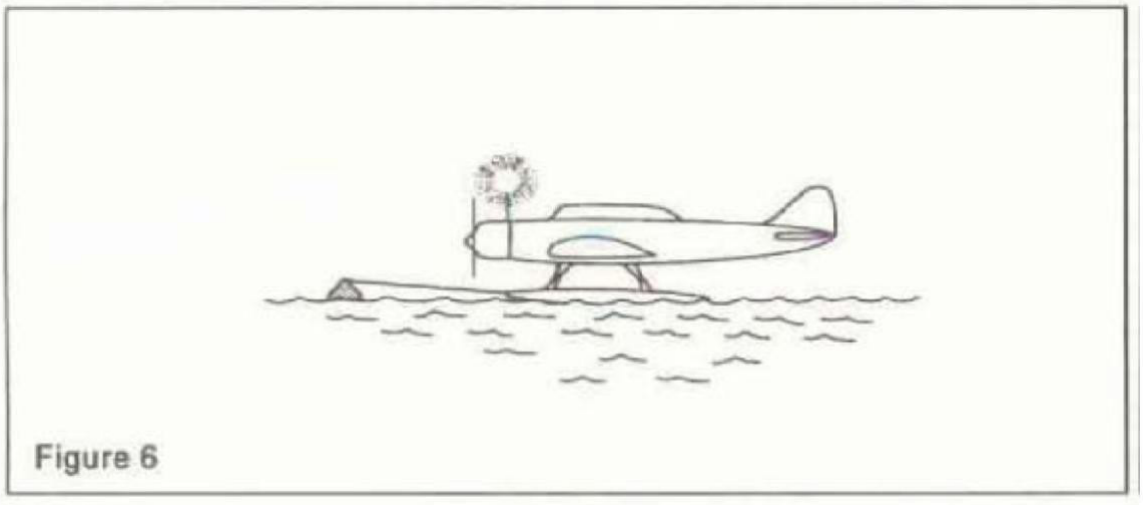


Figure 6

b) If 50 m or more in length, where they can best be seen, a steady white forward light and a steady white rear light

(Figure 7) both visible all around the horizon at a distance of at least 5.6 km (3 NM).

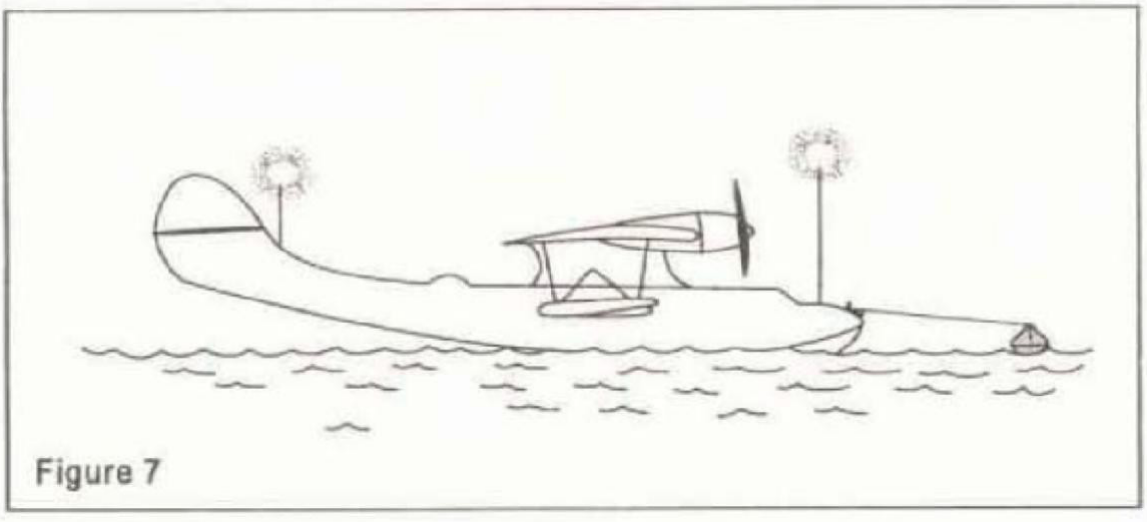
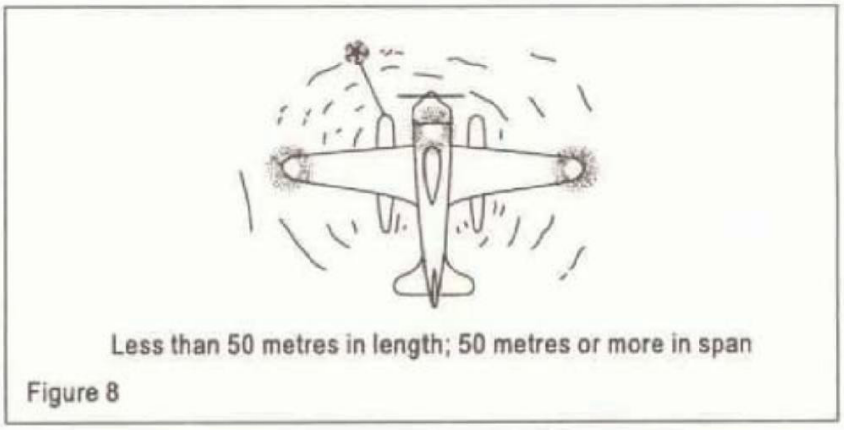


Figure 7

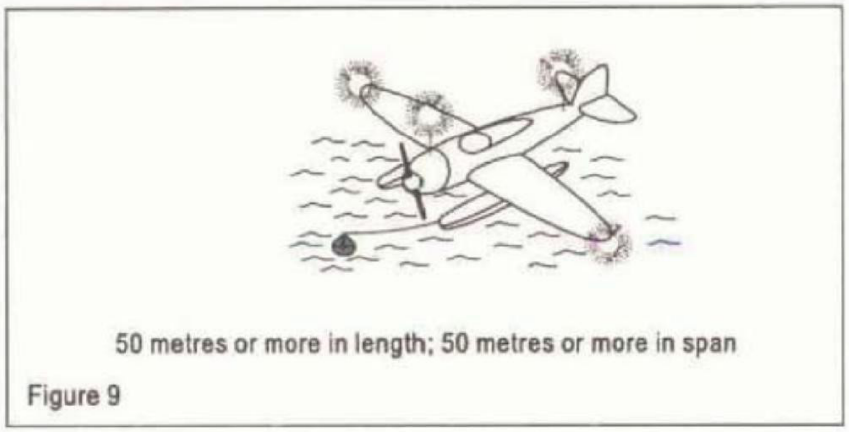
c) If 50 m or more in span a steady white light on each side (Figures 8 and 9) to indicatethe maximum span and visible, so far as practicable, all around the

horizon at a distance of at least 1.9 km (1 NM).



Less than 50 metres in length; 50 metres or more in span

Figure 8

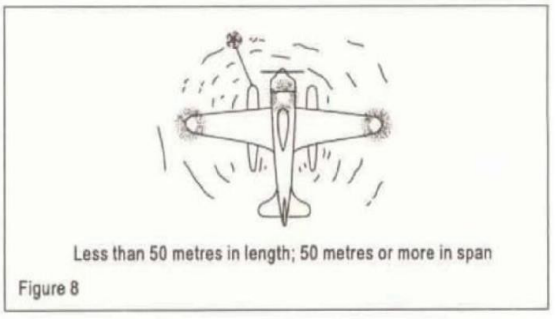


50 metres or more in length; 50 metres or more in span

Figure 9

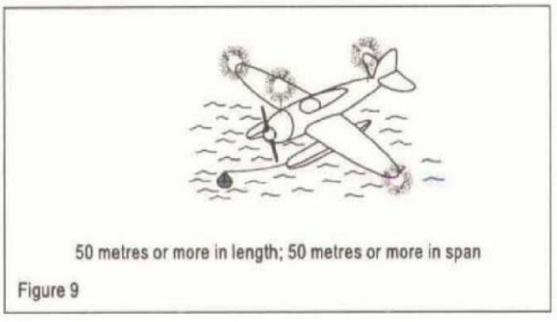
3.8 When aground

The lights prescribed in 3.7 and in addition two steady red lights in vertical line, atleast 1 m apart so placed as to be visible all around the horizon.



Less than 50 metres in length; 50 metres or more in span

Figure 8



50 metres or more in length; 50 metres or more in span

Figure 9

APPENDIX 2.2 ALTIMETRY SYSTEM PERFORMANCE

(Section 2, PARA 2.5, 2.5.2.8, refers)

Requirements for operations in RVSM airspace are placed in CAR Section 8, Series S, Part II

1. In respect of groups of aeroplanes that are nominally of identical design and build with respect to all details that could influence the accuracy of height-keeping performance, the height-keeping performance capability shall be such that the total vertical error (TVE) for the group of aeroplanes shall have a mean no greater than 25 m (80 ft.) in magnitude and shall have a standard deviation no greater than 28 – 0.013z2 for $0 \leq z \leq 25$ when z is the magnitude of the mean TVE in metres, or 92 – 0.004z2 for $0 \leq z \leq 80$ where z is in feet. In addition, the components of TVE shall have the following characteristics:

a. the mean altimetry system error (ASE) of the group shall not exceed 25 m (80 ft) in magnitude;

b. the sum of the absolute value of the mean ASE and of three standard deviations of ASE shall not exceed 75 m (245 ft); and

c. the differences between cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

2. In respect of aeroplanes for which the characteristics of the airframe and altimetry system fit are unique and so cannot be classified as belonging to a group of aeroplanes encompassed by paragraph 1, the height-keeping performance capability shall be such that the components of the TVE of the aeroplane have the following characteristics:

a) the ASE of the aeroplane shall not exceed 60 m (200 ft) in magnitude under allflight conditions; and

b) the differences between the cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

APPENDIX 2.3 FLIGHT RECORDERS

(Section 2, PARA 2.4, 2.4.16, refers)

Requirements are placed in CAR Section 2,Series I, Part V & Part VI

APPENDIX 2.4 GENERAL AVIATION SPECIFIC APPROVALS

(Section 2, Chapter 2.1, 2.1.4, refers)

1. PURPOSE AND SCOPE

1.1 Specific approvals shall have a standardized format which contains the minimum information required in the specific approval template.

Note. — When the operations to be conducted require a specific approval, a copy of the document(s) needs to be carried on board (see 2.4.2.2).

SPECIFIC APPROVAL TEMPLATE

SPECIFIC APPROVAL				
ISSUING AUTHORITY and CONTACT DETAILS[1] Issuing Authority[1] _____ Address _____ Signature:_____ Date[2]: _____ Telephone:_____ Fax:_____ Email:_____				
OWNER/OPERATOR Name[3]:_____ Address: _____ Telephone:_____ Fax:_____ Email:_____				
Aircraft model[4] and registration marks:				
SPECIFIC APPROVAL	**YES**	**NO**	**DESCRIPTION[5]**	**REMARKS**
Low visibility operations				
Approach and landing	☐	☐	CAT[6]:_____RVR: _____m DH:_____ ft	
Take-off	☐	☐	RVR[7]: _____m	
Operational credit(s)	☐	☐	[8]	
RVSM	☐	☐		
AR navigation specifications for PBN operations	☐	☐	[9]	
EFB	☐	☐	[10]	
Other [101]	☐	☐		

Notes. —

1. *Civil Aviation Authority name and contact details, including the telephone country code andemail if available.*
2. *Issuance date of the specific approval (dd-mm-yyyy) and signature of the authorityrepresentative.*
3. *Owner or operator's name and address.*
4. *Insert the aircraft make, model and series, or master series, if a series has been designated. The CAST/ICAO taxonomy is available at: http://www.intlaviationstandards.org/.*
5. *List in this column the most permissive criteria for each specific approval (with appropriatecriteria).*
6. *Insert the applicable precision approach category (CAT II or III). Insert the minimum RVRin metres and decision height in feet. One line is used per listed approach category.*
7. *Insert the approved minimum take-off RVR in metres, or the equivalent horizontal visibility if RVR is not used. One line per approval may be used if different approvals are granted.*
8. *List the airborne capabilities (e.g. automatic landing, HUD, EVS, SVS, CVS) and associatedoperational credit(s) granted.*
9. *Performance-based navigation (PBN): one line is used for each PBN AR navigation specification approval (e.g. RNP AR APCH), with appropriate limitations listed in the "Description" column.*
10. *List the EFB functions used for the safe operation of aircraft and any applicable limitations.*
11. *Other specific approvals or data can be entered here, using one line (or one multi-line block)per approval (e.g. specific approach operations approval).*

APPENDIX 2.5 ARTICLE 83 *bis* AGREEMENT SUMMARY

Note. — Chapter 2.4, 2.4.18.1, requires a certified true copy of the agreement summary to be carried on board.

1. Purpose and scope

Recommendation. — *The Article 83* bis *agreement summary should contain the information in thetemplate at paragraph 2, in a standardized format.*

2. ARTICLE 83 *bis* AGREEMENT SUMMARY

ARTICLE 83 *bis* AGREEMENT SUMMARY		
Title of the Agreement:		
State of Registry:		Focal point:
State of the principal location of a general aviation operator:		Focal point:
Date of signature:	By State of Registry[1]:	
	By State of the principal location of a general aviation operator[1]:	
Duration:	Start Date[1]:	End Date (if applicable)[2]:
Languages of the Agreement		
ICAO Registration No.:		
Umbrella Agreement (if any) with ICAO Registration number:		

Convention on International Civil Aviation	**ICAO Annexes affected by the transfer of responsibility in respect of certain functions and duties to the State of the principal location of a general aviation operator**		
Article 12: Rules of the air	Annex 2, all chapters	Yes ☐ No ☐	
Article 30 a): Aircraft radio equipment	Radio Station Licence	Yes ☐ No ☐	
Articles 30 b) and 32 a): Licenses of personnel	Annex 1, Chapters 1, 2, 3 and 6; and Annex 6, Part I, Radio Operator; or Annex 6, Part II (qualifications and/or flight crew member licensing); or Annex 6, Part III, Section II (composition of the flight crew) (radio operator)	Yes ☐ No ☐	Annex 6: [Specify Part and paragraph][3]
Article 31: Certificates of Airworthiness	Annex 6 Part I or Part III, Section II	Yes ☐ No ☐	[Specify Part and chapters][3]
	Annex 6 Part II	Yes ☐ No ☐	[Specify chapters][3]
	Annex 8 Part II, Chapters 3 and 4	Yes ☐ No ☐	[Specify chapters][3]

Aircraft affected by the transfer of responsibilities to the State of the principal location of a general aviation operator					
Aircraft make, model, series	Nationality and registration marks	Serial No.	AOC No. (Commercial air transport)	Dates of transfer of responsibilities	
				From[1]	To (if applicable)[2]

Notes.—

1. dd/mm/yyyy.

2. dd/mm/yyyy or N/A if not applicable.

3. Square brackets indicate information that needs to be provided

APPENDIX 2.A CARRIAGE AND USE OF OXYGEN

Supplementary to 2.2.3.11

INTRODUCTION

The performance of crew members and the well-being of passengers during flights at such altitudes where a lack of oxygen might result in impairment of faculties are of major concern. Research conducted in altitude chambers or by exposure to mountain elevations indicates that human tolerance could be related to the altitude concerned and the exposure time. The subject is dealt with in detail in the *Manual of Civil Aviation Medicine* (Doc 8984). In light of the above and to further assist the pilot-in-command in providing the oxygen supply intended by 2.2.3.11 of this CAR, the following guidelines, which take into account the requirements already established in CAR Section 8 Series O Part I, are considered relevant.

1. OXYGEN SUPPLY

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

a) all crew members and at least 10 per cent of the passengers for any period in excess of 30 minutes that the pressure in compartments occupied by them will be between 700 hPa and 620 hPa; and

b) all crew members and passengers for any period that the atmospheric pressure in compartments occupied by them will be less than 620 hPa.

1.2 A flight to be operated with a pressurized aircraft should not be commenced unless a sufficient quantity of stored breathing oxygen is carried to supply all crew members and passengers, as is appropriate to the circumstances of the flight being undertaken, in the event of loss of pressurization, for any period that the atmosphericpressure in any compartment occupied by them would be less than 700 hPa. In addition, when an aircraft is operated at flight altitudes at which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa and cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa, thereshall be no less than a 10-minute supply for the occupants of the passenger compartment.

2. USE OF OXYGEN

2.1 All flight crew members, when engaged in performing duties essential to the safe operation of an aircraft in flight, should use breathing oxygen continuously whenever the circumstances prevail for which its supply has been indicated to be necessary in 1.1 or 1.2.

2.2 All flight crew members of pressurized aeroplanes operating above an altitude where the atmospheric pressure is less than 376 hPa should have available at the flight duty station a quick donning type of mask which will readily supply oxygen upon demand.

Note.— Approximate altitudes in the Standard Atmosphere corresponding to the values of absolute pressure used in the text are as follows:

Absolute pressure	*Metres*	*Feet*
700 hPa	*3 000*	*10 000*
620 hPa	*4 000*	*13 000*
376 hPa	*7 600*	*25 000*

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SECTION 3: LARGE AND TURBOJET AEROPLANES

CHAPTER 3.1 APPLICABILITY

3.1.1 The following operations shall be subject to the requirements of Section 2 and those of Section 3: International general aviation operations with:

a) aeroplanes with a maximum certificated take-off mass exceeding 5700 kg; or

b) Aeroplanes equipped with one or more turbojet engines.

3.1.2 An operation involving an aeroplane with a seating configuration of more than 9 passenger seats should be conducted in accordance with Section 3.

Note. —The applicability of 3.1 does not preclude a general aviation operator from satisfying the requirements of Section 3 where it may be to the operator's advantage.

3.2 CORPORATE AVIATION OPERATIONS

A corporate aviation operation involving three or more aircraft that are operatedby pilots employed for the purpose of flying the aircraft should be conducted in accordance with Section 3.

Note. — The term “aircraft” is used to indicate that a corporate aviation operation using a mix of aeroplanes and helicopters is subject to this Recommendation as long as at least one aeroplane is involved.

CHAPTER 3.3 GENERAL

3.3.1 Compliance with laws, regulations and procedures

3.3.1.1 The operator shall ensure that all employees know that they must comply with the laws, regulations and procedures of those States in which operations are conducted.

Note. — Information for pilots on flight procedure parameters and operational procedures is contained in PANS-OPS (Doc 8168), Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS (Doc 8168), 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.

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

3.3.1.3 The pilot-in-command is responsible for operational control. The operator shall describe the operational control system in the operations manual and identify the roles and responsibilities of those involved with the system.

Note. — The rights and obligations of a State in respect to the operation of aeroplanes registered in that State are not affected by this provision.

3.3.1.4 The operator shall ensure that the pilot-in-command has available on board the aeroplane all the essential information concerning the search and rescue services in the area over which the aeroplane will be flown.

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

3.3.1.5 The operator shall ensure that flight crew members demonstrate the ability to speak and understand the language used for aeronautical radiotelephony communications as specified in appropriate CAR of Sec. 7, Series G, Part III.

3.3.2 Safety management

Note— 3.3.2 is applicable from 7th Nov 2019

3.3.2.1 Until 22 November 2028, the use of recordings or transcripts of CVR, CARS, Class A AIR and Class A AIRS for purposes other than the investigation of an accident or incident as per Annex 13 are not allowed except where the recordings or transcripts:

a) are related to a safety-related event identified in the context of a safety management system; are restricted to the relevant portions of a de-identified transcript of the recording; and are subject to the protections accorded by Annex 19;

b) are sought for use in criminal proceedings not related to an event involving an accident or incident investigation and are subject to the protections accorded by Annex 19; or

c) are used for inspections of flight recorder systems as provided.

Note. — Provisions on the protection of safety data, safety information and related sources are contained in Appendix 3 to Annex 19. When an investigation under Annex 13 is instituted, investigation records are subject to the protections accorded by Annex 13.

3.3.2.2 Until 22 November 2028, the use of recordings or transcripts of FDR, ADRS as well as Class B and Class C AIR and AIRS for purposes other than the investigation of an accident or incident as per Annex 13, are not allowed except where the recordings or transcripts are subject to the protections accorded by Annex 19 and:

a) are used by the operator for airworthiness or maintenance purposes;

b) are sought for use in proceedings not related to an event involving an accident or incident investigation;

c) are de-identified; or

d) are disclosed under secure procedures.

Note. — Provisions on the protection of safety data, safety information and related sources are contained in Appendix 3 to Annex 19.

Note. — Annex 19 includes safety management provisions for international general aviation operators of large or turbojet aeroplanes. Further guidance is contained in the Safety Management Manual (SMM) *(Doc 9859).*

3.3.3 PROTECTION OF RECORDINGS AND TRANSCRIPTS
Applicable as of 23 November 2028

3.3.3.1 The use of recordings or transcripts of CVR, CARS, Class A AIR and Class A AIRS, are not allowed except where the recordings or transcripts are:

a) used in the investigation of an accident or incident instituted under Annex 13;

b) used in the assessment of a safety-related event identified in the context of a safety management system, in which case such use is restricted to the relevant portions of a de-identified transcript of the recording; and are subject to the protections accorded by Annex 19;

c) sought for use in criminal proceedings not related to an event involving an Annex 13 accident or incident investigation, in which case such use is restricted to the relevant portions disclosed under authoritative safeguards; or

d) are used for inspections of flight recorder systems as provided.

Note 1. — When an investigation under Annex 13 is instituted, the protection accorded to accident and investigation records, including recordings or transcripts of CVR, CARS, Class A AIR and Class A AIRS, is determined in accordance with Annex 13. Provisions on the protection of safety data~~,~~ and safety information collected for the purposes of maintaining or improving safety, as well as related sources are contained in Annex 19.

Note 2. — Authoritative safeguards include legal limitations or restrictions such as protective orders, closed proceedings, in-camera review, and de-identification of data for the use or disclosure of safety information in criminal proceedings.

3.3.3.2 The use of recordings or transcripts of FDR, ADRS as well as Class B and ClassC AIR and AIRS, are not allowed except where the recordings or transcripts are:

a) used in the investigation of an accident or incident instituted under Annex 13;

b) are used by the operator for airworthiness or maintenance purposes; or

c) are sought for use in proceedings not related to an event involving an accident or incident investigation;

Note. — Provisions on the protection of safety data~~,~~ and safety information collected for purposes of maintaining or improving safety as well as related sources are contained in Annex 19.

CHAPTER 3.4 FLIGHT OPERATIONS

3.4.1 Operating facilities

3.4.1.1 The operator shall ensure that a flight will not be commenced unless it has been ascertained by every reasonable means available that the ground and/or water facilities including communication facilities and navigation aids available and directly required on such flight, for the safe operation of the aeroplane, are adequate for the type of operation under which the flight is to be conducted.

Note. — "Reasonable means" in this Standard is intended to denote the use, atthe point of departure, of information available to the operator either through official information published by the aeronautical information services or readilyobtainable from other sources.

3.4.1.2 The operator, in making a decision on the adequacy of facilities and services available at an aerodrome of intended operation, shall assess the level of safety risk associated with the aircraft type and nature of the operation, in relation to the availability of rescue and firefighting services (RFFS).

3.4.2 Operational management

3.4.2.1 Operator notification

3.4.2.1.1 If the operator has an operating base in a State other than the DGCA, theoperator shall notify the State in which the operating base is located.

3.4.2.1.2 Upon notification in accordance with 3.4.2.1.1, safety and security oversight shall be coordinated between the State in which the operating base is located and the DGCA.

3.4.2.2 Operations manual

The operator shall provide, for the use and guidance of personnel concerned, an operations manual containing all the instructions and information necessaryfor operations personnel to perform their duties. The operations manual shall be amended or revised as is necessary to ensure that the information containedtherein is kept up to date. All such amendments or revisions shall be issued to all personnel that are required to use this manual. The operations manual shallbe approved by FSD DGCA.

Note 1. — States may reference accepted and recognized industry codes of practice as the basis for the development of an operations manual.

Note. 2 — CAR, Section 8, Series 'O', Part 'VII' contains on the content of an operations manual.

3.4.2.3 Operating instructions — General

3.4.2.3.1 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

3.4.2.3.2 The operator should issue operating instructions and provide information on aeroplane climb performance with all engines operating to enable the pilot-in-

command to determine the climb gradient that can be achieved during the departure phase for the existing take-off conditions and intended take-offtechnique. This information should be included in the operations manual.

3.4.2.4 In-flight simulation of emergency situations the operator shall ensure that whenpassengers are being carried, no emergency or abnormal situations shall be simulated.

3.4.2.5 Checklists

Checklists shall be used by flight crews prior to, during and after all phases of operations, and in emergencies, to ensure compliance with the operating procedures contained in the aircraft operating manual and the aeroplane flight manual or other documents associated with the certificate of airworthiness and otherwise in the operations manual. The design and utilization of checklists shall observe Human Factors principles.

Note. — Guidance material on the application of Human Factors principles canbe found in the Human Factors Training Manual (Doc 9683) and CAR Sec 2 Series. B Part II - Preparation and use of Cockpit and emergency check list.

3.4.2.6 Minimum flight altitudes

The operator shall specify, for flights which are to be conducted in accordance with the instrument flight rules, the method of establishing terrain clearance altitudes.

3.4.2.7 Aerodrome operating minima

The operator shall establish aerodrome operating minima, in accordance with criteria specified by the DGCA, for each aerodrome to be used in operations.
When establishing Aerodrome Operating minima any conditions that may be prescribed in the list of specific approvals shall be observed. Such minima shallnot be lower than any that may be established for such aerodromes by the Stateof the Aerodrome, except when specifically approved by that State.

Note. — This Standard does not require the State of the Aerodrome to establish aerodrome operating minima.

3.4.2.8 Fatigue management programme

The operator shall establish and implement a fatigue management programmethat ensures that all operator personnel involved in the operation and maintenance of aircraft do not carry out their duties when fatigued. The programme shall address flight and duty times and be included in the operationsmanual.

Note. – Guidance on fatigue management programmes can be found in the Manual for the oversight of Fatigue Management Approaches (Doc 9966)

3.4.2.9 Passengers

3.4.2.9.1 The 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, includingpassenger emergency briefing cards.

3.4.2.9.2 The operator shall ensure that all persons on board are aware of the locationand general manner of use of the principal emergency equipment carried for collective use.

3.4.2.9.3 The operator shall ensure that in an emergency during flight, passengers are instructed in such emergency action as may be appropriate to the circumstances.

3.4.3.9.4 The operator shall ensure that during take-off and landing and whenever considered necessary, by reason of turbulence or any emergency occurring during flight, all passengers on board an aeroplane are secured in their seats by means of the seat belts or harnesses provided.

3.4.3 Flight preparation

3.4.3.1 The operator shall develop procedures to ensure that a flight is not commenced unless:

a) the aeroplane is airworthy, duly registered and that appropriate certificates with respect thereto are aboard the aeroplane;
b) the instruments and equipment installed in the aeroplane are appropriate, taking into account the expected flight conditions;
c) any necessary maintenance has been performed in accordance withChapter 3.8 of this CAR;
d) the mass of the aeroplane and Centre of gravity location are such that the flight can be conducted safely, taking into account the flight conditions expected;
e) any load carried is properly distributed and safely secured; and
f) the aeroplane operating limitations, contained in the flight manual, or its equivalent, will not be exceeded.

3.4.3.2 The operator should make available sufficient information on climb performance with all engines operating to enable determination of the climb gradient that canbe achieved during the departure phase for the existing take-off conditions andintended take-off technique.

3.4.3.3 Operational flight planning

The operator shall specify flight planning procedures to provide for the safe conduct of the flight based on considerations of aeroplane performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes concerned. These procedures shall be included in the operations manual.

Note 1. — It is the practice in some States to declare, for flight planning purposes, higher minima for an aerodrome nominated as an alternate, than forthe same aerodrome planned as that of intended landing.

Note 2. — The requirements for flight plans are contained in CAR Section 9 Series C part I — Rules of the Air *and the procedures relating to flight plans and associated services are contained in the* Procedures for Air Navigation Services — Air Traffic Management *(PANS-ATM, Doc 4444).*

Note 3.— Detailed guidance on the use of the FF-ICE services, including the use of a preliminary flight plan, can be found in the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (Doc 9965).

3.4.3.4 Alternate aerodromes

3.4.3.4.1 Take-off alternate aerodrome

3.4.3.4.1.1 A take-off alternate aerodrome shall be selected and specified in the flight planif either the meteorological conditions at the aerodrome of departure are below theapplicable aerodrome landing minima for that operation or if it would not be possible to return to the aerodrome of departure for other reasons.

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

a) for aeroplanes with two engines, one hour of flight time at a one-engine-inoperative cruising speed, determined from the aircraft operating manual, calculated in ISA and still-air conditions using the actual take-off mass; or

b) for aeroplanes with three or more engines two hours of flight time at an all engines operating cruising speed, determined from the aircraft operating manual, calculated in ISA and still-air conditions using the actual take-off mass.

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

3.4.3.5 Fuel requirements

3.4.3.5.1 An aeroplane shall carry a sufficient amount of usable fuel to complete theplanned flight safely and to allow for deviations from the planned operation.

3.4.3.5.2 The amount of usable fuel to be carried shall, as a minimum, be based on:

a) fuel consumption data;

1) provided by the aeroplane manufacturer; or

2) if available, current aeroplane-specific data derived from a fuel consumption monitoring system; and

b) the operating conditions for the planned flight including:

1) anticipated aeroplane mass;

2) NOTAMs;

3) current meteorological reports or a combination of current reportsand forecasts;

4) air traffic services procedures, restrictions and anticipated delays; and

5) the effects of deferred maintenance items and/or configuration deviations.

Note. — Where no specific fuel consumption data exist for the precise conditions of the flight, the aircraft may be operated in accordance with estimated fuel consumption data.

3.4.3.5.3 The pre-flight calculation of usable fuel required shall include:

a) *taxi fuel*, which shall be the amount of fuel expected to be consumed before take-off taking into account local conditions at the departure aerodrome and auxiliary power unit (APU) fuel consumption;

b) *trip fuel*, which shall be the amount of fuel required to enable the aeroplane to fly from take-off until landing at the destination aerodrome taking into account the operating conditions of 3.4.3.5.2 b);

c) *Contingency fuel*, which shall be the amount of fuel required to compensate for unforeseen factors. It shall be not less than five per cent of the planned trip fuel;

Note. — Unforeseen factors are those which could have an influence on the fuel consumption to the destination aerodrome, such as deviations of an individual aeroplane from the expected fuel consumption data, deviations from forecast meteorological conditions, extended delays and deviations from planned routings and/or cruising levels.

d) *destination alternate fuel*, which shall be:

1) where a destination alternate aerodrome is required, the amount of fuel required to enable the aeroplane to:

i) perform a missed approach at the destination aerodrome;

ii) climb to the expected cruising altitude;

iii) fly the expected routing;

iv) descend to the point where the expected approach isinitiated; and

v) conduct the approach and landing at the destination alternate aerodrome; or

2) where a flight is operated without a destination alternate aerodrome, the amount of fuel required to enable the aeroplane to fly for 15 minutes at holding speed at 450 m (1 500 ft) above destination aerodrome

elevation in standard conditions; or

3) where the aerodrome of intended landing is an isolated aerodrome:

i) for a reciprocating engine aeroplane, the amount of fuel required to fly for 45 minutes plus 15 per cent of the flight time planned to be spent at cruising level, including final reserve fuel, or two hours, whichever is less; or

ii) for a turbine-engined aeroplane, the amount of fuel required to fly for two hours at normal cruise consumption above the destination aerodrome, including final reserve fuel;

e) *final reserve fuel*, which shall be the amount of fuel on arrival at the destination alternate aerodrome, or the destination aerodrome when no destination alternate aerodrome is required:

1) for a reciprocating engine aeroplane, the amount of fuel required to fly for 45 minutes; or

2) for a turbine-engined aeroplane, the amount of fuel required to fly for 30 minutes at holding speed at 450 m (1 500 ft) above aerodrome elevation in standard conditions;

f) *additional fuel*, which shall be the supplementary amount of fuel required to enable the aircraft to descend as necessary and proceed to land at an alternate aerodrome in the event of engine failure or loss of pressurization based on the assumption that such a failure occurs at the most critical point along the route;

g) *discretionary fuel*, which shall be the extra amount of fuel to be carried atthe discretion of the pilot-in-command.

3.4.3.5.4 Operators should determine one final reserve fuel value for each aeroplane type and variant in their fleet rounded up to an easily recalled figure.

3.4.3.5.5 The use of fuel after flight commencement for purposes other than originallyintended during pre-flight planning shall require a re-analysis and, if applicable,adjustment of the planned operation.

Note. — Nothing in 3.4.3.5 precludes the in-flight amendment of a flight plan to re-plan that flight to another aerodrome, provided that the requirements of can be complied with from the point where the flight is re-planned.

3.4.3.6 In-flight fuel management

3.4.3.6.1 The operator shall establish policies and procedures to ensure that in-flight fuel checks and fuel management are performed.

3.4.3.6.2 The pilot-in-command shall continually ensure that the amount of usable fuelremaining on board is not less than the fuel required to proceed to an aerodrome where a safe landing can be made with the planned final reserve fuel remaining upon landing.

Note. — The protection of final reserve fuel is intended to ensure a safe landing at any aerodrome when unforeseen occurrences may not permit safe completion of an operation as originally planned. Guidance on flight planning including the

circumstances that may require re-analysis, adjustment and/or re-planning of the planned operation before take-off or enroute, is contained in the Flight Management and *Fuel Management (FPFM) Manual (Doc 9976).*

3.4.3.6.3 The pilot-in-command shall request delay information from ATC when unanticipated circumstances may result in landing at the destination aerodrome with less than the final reserve fuel plus any fuel required to proceed to an alternate aerodrome or the fuel required to operate to an isolated aerodrome.

3.4.3.6.4 The pilot-in-command shall advise ATC of a minimum fuel state by declaring MINIMUM FUEL when, having committed to land at a specific aerodrome, the pilot calculates that any change to the existing clearance to that aerodrome mayresult in landing with less than the planned final reserve fuel.

Note. — The declaration of MINIMUM FUEL informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landingand any change to the existing clearance may result in landing with less than the planned final reserve fuel. This is not an emergency situation but an indication thatan emergency situation is possible should any additional delay occur.

3.4.3.6.5 The pilot-in-command shall declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL when the calculated usable fuel estimated to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the planned final reserve fuel.

Note 1. — The planned final reserve fuel refers to the value calculated in 3.4.3.5.3 e) and is the minimum amount of fuel required upon landing at any aerodrome.

Note 2. — The words "MAYDAY FUEL" describe the nature of the distress conditions as required in CAR Section 9 Series D Part III, 5.3.2.1.1, b) 3).

3.4.3.7 Additional requirements for operations beyond 60 minutes to an en-route alternate aerodrome

When conducting operations beyond 60 minutes from a point on a route to an enroute alternate aerodrome operators should ensure that:

a) en-route alternate aerodromes are identified; and

b) the pilot-in-command has access to current information on the identified en-route alternate aerodromes, including operational status and meteorological conditions.

3.4.3.8 Refueling with passengers on board

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

3.4.3.8.2 When refueling with passengers embarking, on board or disembarking,

two- way communication shall be maintained by the aeroplane's intercommunicationsystem or other suitable means between the ground crew supervising the refueling and the qualified personnel on board the aeroplane.

Note 1. — The provisions of 3.4.3.8.1 do not necessarily require the deployment of integral aeroplane stairs or the opening of emergency exits as a prerequisiteto refueling.

Note 2.— Provisions concerning aircraft refueling are contained in CAR Section4 Series B Part I, and guidance on safe refueling practices is contained in the Airport Services Manual *(Doc 9137), Parts 1 and 8.*

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

3.4.3.9 Oxygen supply

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

a) all crew members and 10 per cent of the passengers for any period in excess of 30 minutes that the pressure in compartments 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.

3.4.3.9.2 A flight to be operated with a pressurized aeroplane shall not be commencedunless a sufficient quantity of stored breathing oxygen is carried to supply all the crew members and passengers, as is appropriate to the circumstances of the flight being undertaken, in the event of loss of pressurization, for any periodthat the atmospheric pressure in any compartment occupied by them would beless than 700 hPa. In addition, when an aeroplane is operated at flight altitudesat which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa and cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa, there shall be no less than a 10- minute supply for the occupants of the passenger compartment.

3.4.4 In-flight procedures

3.4.4.1 Instrument approaches

In the aircraft operating manual recommended in 3.6.1.2 the operator should include operating procedures for conducting instrument approaches.

3.4.4.2 Use of oxygen

3.4.4.2.1 All flight crew members, when engaged in performing duties essential to the safe operation of an aeroplane in flight, shall use breathing oxygen continuously Whenever the circumstances prevail for which its supply has been required in 3.4.3.9.1 or 3.4.3.9.2.

3.4.4.2.2 All flight crew members of pressurized aeroplanes operating above an altitude where the atmospheric pressure is less than 376 hPa shall have available at the flight duty station a quick-donning type of oxygen mask which will readily supply oxygen upon demand.

3.4.4.3 Aeroplane operating procedures for noise abatement

3.4.4.3.1 Aeroplane operating procedures for noise abatement should comply with theprovisions of PANS-OPS (Doc 8168), Volume I Section 7, Chapter3.

3.4.4.3.2 Noise abatement procedures specified by the operator for any one aeroplane type should be the same for all aerodromes.

Note. — A single procedure may not satisfy the requirements at some aerodromes.

3.4.4.4 Aeroplane operating procedures for rates of climb and descent

Unless otherwise specified in an air traffic control instruction, to avoid unnecessary airborne collision avoidance system (ACAS II) resolutionadvisories in aircraft at or approaching adjacent altitudes or flight levels, pilots should consider using appropriate procedures to ensure that a rate of climb or descent of less than 8 m/s or 1500 ft/min (depending on the instrumentation available) is achieved throughout the last 300 m (1 000 ft) of climb or descent to the assigned altitude or flight level, when made aware of another aircraft at or approaching an adjacent altitude or flight level.

Note1 Operations Circular 7/2010: Operational Procedures and Training Requirements Of Airborne Collision Avoidance System (ACAS) Equipment.

Note.2— Material concerning the development of these procedures is contained in PANS-OPS (Doc 8168), Volume I, Part III, Section 3, Chapter 3.

3.4.4.5 Aeroplane operating procedures for landing performance

An approach to land shall not be continued below 300 m (1 000 ft) above aerodrome elevation unless the pilot-in-command is satisfied that, with the runway surface condition information available, the aeroplane performance information indicates that a safe landing can be made.

Note 1.— The procedures for using runway surface condition information on board aircraft are contained in the PANS-Aerodromes (Doc 9981) and in the performance section of the aeroplane flight manual, and for aeroplanes certificated in accordance with Annex 8, Part IIIB, the Aeroplane Performance Manual (Doc 10064).

Note 2.— Guidance on development of aeroplane performance information for aeroplanes certificated in accordance with Annex 8, Part IIIB is contained in the Aeroplane Performance Manual (Doc 10064).

3.4.5 Duties of pilot-in-command

3.4.5.1 The pilot-in-command shall ensure that the checklists specified in 3.4.2.5 are complied with in detail.

3.4.5.2 The pilot-in-command shall be responsible for notifying the nearest appropriateauthority by the quickest available means of any accident involving the aeroplane, resulting in serious injury or death of any person or substantial damage to the aeroplane or property. In the event that the pilot-in-command is incapacitated the operator shall take the forgoing action.

Note. — A definition of the term "serious injury" is contained in CAR, Section 5, Series 'C', Part I.

3.4.5.3 The pilot-in-command shall be responsible for reporting all known or suspecteddefects in the aeroplane, to the operator, at the termination of the flight.

3.4.5.4 The pilot-in-command shall be responsible for the journey log book or the general declaration containing the information listed in 2.8.2.

Note.— By virtue of Resolution A10-36 of the Tenth Session of the Assembly (Caracas, June–July 1956) "the General Declaration, [described in Annex 9] when prepared so as to contain all the information required by Article 34 [of the Convention on International Civil Aviation] with respect to the journey log book, may be considered by Contracting States to be an acceptable form of journey log book".

3.4.6 Cabin baggage (take-off and landing)

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

CHAPTER 3.5 AEROPLANE PERFORMANCE OPERATING LIMITATIONS

3.5.1 General

For aeroplanes for which Parts IIIA and IIIB of Annex 8 are not applicable because of the exemption provided for in Article 41 of the Convention, the DGCA should ensure that the level of performance specified in 3.5.2 should be met as far as practicable.

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

3.5.2.1 The requirements contained in 3.5.2.2 to 3.5.2.9 inclusive are applicable to the aeroplanes to which Parts IIIA and IIIB of Annex 8 are applicable.

Note. — The Standards of Annex 8 — Airworthiness of Aircraft*, Parts IIIA and IIIB, apply to all aeroplanes of over 5700 kg maximum certificated take-off mass intended for the carriage of passengers or cargo or mail in international air navigation.*

3.5.2.2 An aeroplane shall be operated in compliance with the terms of its certificate of airworthiness and within the approved operating limitations contained in its flight manual.

3.5.2.3 The Operator shall take such precautions as are reasonably possible to ensure that the general level of safety contemplated by these provisions is maintained under all expected operating conditions, including those not covered specifically, by the provisions of this chapter.

3.5.2.4 A flight shall not be commenced unless the performance information provided in the flight manual indicates that the Standards of 3.5.2.5 to 3.5.2.9can be complied with for the flight to be undertaken.

3.5.2.5 In applying the requirements of this chapter, account shall be taken of all factors that significantly affect the performance of the aeroplane (such as: mass, operating procedures, the pressure altitude appropriate to the elevation of the aerodrome, temperature, wind, runway gradient and condition of runway, i.e. presence of slush, water and/or ice, for landplanes, water surface condition for seaplanes). Such factors shall be taken into account directly as operational parameters or indirectly by means of allowances or margins, which may be provided in the scheduling of performance data or in the comprehensive and detailed code of performance in accordance with which the aeroplane is being operated.

Note. - The term "runway gradient and condition" will be replaced by "and surface condition" and will be applicable on 4th Nov 2021.

Note. — Guidelines for using runway surface condition information on board aircraft in accordance with 2.2.4.43.4.4.5 are contained in the PANS-Aerodromes (Doc 9981) and in the Aeroplane Performance Manual (Doc 10064).

3.5.2.6 Mass limitations

a) The mass of the aeroplane at the start of take-off shall not exceed the mass at which 3.5.2.7 is complied with, or the mass at which 3.5.2.8 and 3.5.2.9 are complied with, allowing for expected reductions in mass as the flight proceeds, and for such fuel jettisoning as is envisaged in applying 3.5.2.8 and 3.5.2.9 and,in respect of alternate aerodromes, 3.5.2.6 c) and 3.5.2.9.

b) In no case shall the mass at the start of take-off exceed the maximum take-off mass specified in the flight manual for the pressure altitude appropriate to the elevation of the aerodrome, and if used as a parameter to determine the maximum take-off mass, any other local atmospheric condition.

c) In no case shall the estimated mass for the expected time of landing at the aerodrome of intended landing and at any destination alternate aerodrome, exceed the maximum landing mass specified in the flight manual for the pressure altitude appropriate to the elevation of those aerodromes, and if used as a parameter to determine the maximum landing mass, any other local atmospheric condition.

d) In no case shall the mass at the start of take-off, or at the expected time of landing at the aerodrome of intended landing and at any destination alternate aerodrome, exceed the relevant maximum masses at which compliance has been demonstrated with the applicable noise certification Standards in CAR Sectio 6 Series C part II, unless otherwise authorized in exceptional circumstances for a certain aerodrome or a runway where there is no noise disturbance problem, by the competent authority of the State in which the aerodrome is situated.

3.5.2.7 *Take-off.* The aeroplane shall be able, in the event of a critical engine failing at any point in the take-off, either to discontinue the take-off and stop within either the accelerate-stop distance available or the runway available, or to continue the take-off and clear all obstacles along the flight path by an adequate margin until the aeroplane is in a position to comply with 3.5.2.8.

Note. — "An adequate margin" referred to in this provision is illustrated by the appropriate examples included in the Aeroplane Performance Manual (*Doc 10064*).

3.5.2.7.1 In determining the length of the runway available, account shall be taken of the loss, if any, of runway length due to alignment of the aeroplane prior to take-off.

3.5.2.8 *En route — one engine inoperative.* The aeroplane shall be able, in the event of the critical engine becoming inoperative at any point along the route or planned diversions therefrom, to continue the flight to an aerodrome at which the Standard of 3.5.2.9 can be met, without flying below the minimum obstacle clearance altitude at any point.

3.5.2.9 *Landing.* The aeroplane shall, at the aerodrome of intended landing and at any alternate aerodrome, after clearing all obstacles in the approach path by a safe margin, be able to land, with assurance that it can come to a stop or, for a seaplane, to a satisfactorily low speed, within the landing distance available. Allowance shall be made for expected variations in the approach and landing

techniques, if such allowance has not been made in the scheduling of performance data.

Note: Guidance on appropriate margins at time of landing assessment are contained in the Aeroplane Performance Manual (Doc 10064).

CHAPTER 3.6 AEROPLANE INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

Note. — Specifications for the provision of aeroplane communication and navigationequipment are contained in Chapter 3.7.

3.6.1 General

3.6.1.1 Where a master minimum equipment list (MMEL) is established for the aircraft type, the operator shall include in the operations manual a minimum equipment list (MEL) approved by the DGCA of the aeroplane 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 systems become inoperative.

Note. — Guidance on the minimum equipment list is contained in CAR Section 2, Series B, Part I

3.6.1.2 The operator should 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 should be consistent with the aircraft flight manual and checklists to be used. The design of the manual should 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)*.

3.6.2 Aeroplanes on all flights

3.6.2.1 In addition to the requirements contained in 2.4.2.2, an aeroplane shall be equipped with:

a) accessible and adequate medical supplies appropriate to the number of passengers the aeroplane is authorized to carry;

b) Medical supplies should comprise one or more first-aid kits.

Note. — Guidance on the types, number, location and contents of the medical supplies is given in CAR, Section 2, Series 'X', Part-III

c) a safety harness for each flight crew seat. The safety harness for each pilot seat shall incorporate a device which will automatically restrain the occupant's torso in the event of rapid deceleration;

d) The safety harness for each pilot seat should incorporate a device to prevent asuddenly incapacitated pilot from interfering with the flight controls.

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

e) 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;

4) location and use of life jackets or equivalent individual flotation devices where their carriage is required;

5) location of emergency equipment; and

6) location and method of opening emergency exits.

3.6.2.2 An aeroplane shall carry:

a) the operations manual prescribed in 3.4.2.2, or those parts of it that pertain to flight operations;

b) the flight manual for the aeroplane, or other documents containing performance data required for the application of Chapter 3.5 and any other information necessary for the operation of the aeroplane within the terms of its certificate of airworthiness, unless these data are available in the operations manual; and

c) the checklists to which 3.4.2.5 refers.

3.6.3 Flight recorders

The requirements of flight data recorders and cockpit voice recorders are contained in CAR, Section 2, Series 'I', Part 'V' and Part 'VI' respectively.

3.6.4 Aeroplanes on long-range over-water flights

3.6.4.1 The operator of an aeroplane operated on an extended flight over water shall determine the risks to survival of the occupants of the aeroplane in the event ofa ditching. The operator shall take into account the operating environment and conditions such as, but not limited to, sea state and sea and air temperatures, the distance from land suitable for making an emergency landing, and the availability of search and rescue facilities. Based upon the assessment of theserisks, the operator shall, in addition to the equipment required in 2.4.4.3, ensurethat the aeroplane is appropriately equipped with:

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

b) equipment for making the distress signals described in CAR Section 9 Series C Part I .

3.6.4.2 Each life jacket and equivalent individual flotation device, when carried in accordance with 2.4.4.3, shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

3.6.5 Aeroplanes for which the individual certificate of airworthiness was first issuedbefore 1 January 1990

3.6.5.1 Pressurized aeroplanes intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa shall be equipped with a deviceto provide positive warning to the flight crew of any dangerous loss of pressurization.

3.6.5.2 An aeroplane intended to be operated at flight 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 3.4.3.9.1.

3.6.5.3 An aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa but which is provided with means of maintaining pressures greater than 700 hPa in personnel compartments shall be provided with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 3.4.3.9.2.

3.6.6 Aeroplanes in icing conditions

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

3.6.7 Aeroplanes operated in accordance with the instrument flight rules

3.6.7.1 In addition to the requirements contained in 2.4.7, aeroplanes when operated in accordance with the instrument flight rules, or when the aeroplane cannot be maintained in a desired attitude without reference to one or more flight instruments, shall be equipped with two independent altitude measuring and display systems.

3.6.7.2 Aeroplanes over 5700 kg — Emergency power supply for electrically operated attitude indicating instruments

3.6.7.2.1 Aeroplanes of a maximum certificated take-off mass of over 5700 kg newly introduced into service after 1 January 1975 shall be fitted with an emergency power supply, independent of the main electrical generating system, for the purpose of operating and illuminating, for a minimum period of 30 minutes, an attitude indicating instrument (artificial horizon), clearly visible to the pilot-in- command. The emergency power supply shall be automatically operative afterthe 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.

3.6.7.2.2 ***Recommendation****. – Aircraft with advanced cockpit automation systems (glass cockpits) should have system redundancy that provides the flight crew with attitude, heading, airspeed and altitude indications in case of failure of the primary system or display.*

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

3.6.8 Pressurized aeroplanes when carrying passengers -- weather-detecting equipment

Pressurized aeroplanes when carrying passengers shall be equipped with operative

weather-detecting equipment capable of detecting thunderstorms whenever such aeroplanes are being operated in areas where such conditionsmay be expected to exist along the route either at night or under instrument meteorological conditions.

3.6.9 Aeroplanes operated above 15 000 m (49 000 ft) —radiation indicator

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

Note. — The equipment is calibrated on the basis of assumptions acceptable to the appropriate national authorities.

3.6.10 Aeroplanes carrying passengers — cabin crew seats

3.6.10.1 Aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 1981

Aeroplanes shall be equipped with a forward or rearward facing seat (within 15 degrees of the longitudinal axis of the aeroplane), fitted witha safety harness for the use of each cabin crew member required to satisfy the intent of 3.12.1 in respect of emergency evacuation.

3.6.10.2 Aeroplanes for which the individual certificate of airworthiness was first issuedbefore 1 January 1981

3.6.10.2.1 Aeroplanes should be equipped with a forward or rearward facing seat (within 15 degrees of the longitudinal axis of the aeroplane), fitted with a safety harnessfor the use of each cabin crew member required to satisfy the intent of 3.12.1 in respect of emergency evacuation.

Note. — Safety harness includes shoulder straps and a seat belt which may beused independently.

3.6.10.2.2 Cabin crew seats provided in accordance with 3.6.10.1 or 3.6.10.2.1 shall be located near floor level and other emergency exits as required by the DGCA for emergency evacuation.

3.6.11 Aeroplanes required to be equipped with an airborne collision avoidance system(ACAS)

Requirements for fitment of ACAS is given in CAR Section 2 Series I Part VIII.

3.6.12 Aeroplanes required to be equipped with a pressure-altitude reporting transponder

Aeroplanes shall be equipped with a pressure-altitude reporting transponder which operates in accordance with the relevant provisions of Section-2, Series'R', Part 'IV'.

Note. — This provision is intended to improve the effectiveness of air traffic services as well as airborne collision avoidance systems.

3.6.13 Turbine aeroplane - Runway overrun awareness and alerting system (ROASS)

All turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg, for which the individual Certificate of Airworthiness is first issued on or after 1 January 2030, should be equipped with a runway overrun awareness and alerting system (ROAAS).

Note 1.— An example of relevant guidance material related to ROAAS may be found in EUROCAE ED-250, Minimum Operation Performance Specification (MOPS) for Runway Overrun Awareness and Alerting System (ROAAS).

Note 2.— Operator requirements for the use of a ROAAS are contained in PANS-OPS, Volume III, Section 11.

3.6.14 **Microphones**

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

CHAPTER 3.7 AEROPLANE COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT

3.7.1 Communication equipment

In addition to the requirements of 2.5.1.1 to 2.5.1.5, an aeroplane shall be providedwith radio communication equipment capable of:

a) conducting two-way communication for aerodrome control purposes;

b) receiving meteorological information at any time during flight; and

c) Conducting two-way communication at any time during flight with at least one aeronautical station and with such other aeronautical stations and on such frequencies as may be prescribed by the appropriate authority.

Note. — The requirements of 3.7.1 are considered fulfilled if the ability to conduct the communications specified therein is established during radio propagation conditions which are normal for the route.

3.7.2 Installation

The equipment installation shall be such that the failure of any single unit required for communications, navigation or surveillance purposes or any combination thereof will not result in the failure of another unit required for communications, navigation or surveillance purposes.

3.7.3 Electronic navigation data management

3.7.3.1 The operator of an aeroplane shall not employ electronic navigation data products that have been processed for application in the air and on the ground unless the DGCA has approved the operator's procedures for ensuring that the process applied and the products delivered have met acceptable standards of integrity and that the products are compatible with the intended function of the existing equipment. The DGCA shall ensure that the operator continues to monitor both the process and products.

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

3.7.3.2 The operator shall implement procedures that ensure the timely distribution and insertion of current and unaltered electronic navigation data to all necessary aeroplanes.

CHAPTER 3.8 AEROPLANE CONTINUING AIRWORTHINESS

3.8.1 Operator's continuing airworthiness responsibilities

3.8.1.1 The operator shall comply with the requirements of 2.6.1.

3.8.1.2 The operator should ensure that all maintenance personnel receive initial and continuation training acceptable to the DGCA and appropriate to their assigned tasks and responsibilities. This should include Human Factors and coordination with other maintenance personnel and flight crew.

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

3.8.2 Operator's maintenance control manual (Continuous Airworthiness Management Exposition)

The *operator should provide a maintenance control manual, as specified in 3.11.1, for the use and guidance of maintenance and operations personnel. Thedesign of the manual should observe Human Factors principles.*

Note 1.— Guidance material on the application of Human Factors principles canbe found in the Human Factors Training Manual *(Doc 9683).*

3.8.3 Maintenance programme

3.8.3.1 The operator shall provide, for the use and guidance of maintenance and operational personnel concerned, a maintenance programme, acceptable to the DGCA, containing the information required by 3.11.2. 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 (Doc 9683).

3.8.3.2 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.

3.8.4 Continuing airworthiness information

The operator of an aeroplane of a maximum certificated take-off mass in excessof 5700 kg shall, as prescribed by the DGCA, ensure that the information resulting from maintenance and operational experience with respect to continuing airworthiness, is transmitted as required by CAR, Section 2, Series 'C', Part 'I'.

3.8.5 Maintenance release

3.8.5.1 A maintenance release shall be completed and signed, as prescribed by the DGCA, to certify that the maintenance work has been performed in accordance with the maintenance programme or other data and procedures acceptable to the DGCA.

3.8.5.2 A maintenance release shall contain a certification including:

a) basic details of the maintenance performed;

b) the date such maintenance was completed;

c) when applicable, the identity of the approved maintenance organization; and

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

CHAPTER 3.9 AEROPLANE FLIGHT CREW

3.9.1 Composition of the flight crew

3.9.1.1 Designation of pilot-in-command

For each flight the operator shall designate a pilot to act as pilot-in-command.

3.9.1.2 Flight engineer

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

3.9.2 Flight crew member emergency duties

The operator shall, for each type of aeroplane, assign to all flight crew members the necessary functions they are to perform in an emergency or in a situation requiring emergency evacuation. Recurrent 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 life-saving equipment required to be carried, and drills in the emergency evacuation of the aeroplane.

3.9.3 Flight crew member training programmes

3.9.3.1 The operator shall establish and maintain a training programme that is designed to ensure that a person who receives training acquires and maintains the competency to perform assigned duties, including skills related to human performance.

3.9.3.2 Ground and flight training programmes shall be established, either through internal programmes or through a training services provider, and shall include or make reference to a syllabus for those training programmes in the company operations manual.

3.9.3.3 The training programme shall include training to competency for all equipment installed.

3.9.3.4 Flight simulators should be used to the maximum extent practicable for initial and annual recurrent training.

3.9.4 Qualifications

3.9.4.1 Flight crew member licensing

3.9.4.1.1 The operator shall:

a) ensure that each flight crew member assigned to duty holds a valid license issued by the DGCA, or if issued by another Contracting State,

rendered valid by the DGCA;

b) ensure that flight crew members are properly rated; and

c) be satisfied that flight crew members are competent to carry out assigned duties.

3.9.4.1.2 The operator of an aeroplane equipped with an airborne collision avoidance system (ACAS II) shall ensure that each flight crew member has been appropriately trained to competency in the use of ACAS II equipment and the avoidance of collisions.

Note 1.— Procedures for the use of ACAS II equipment are specified in the Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS, Doc 8168), Volume I — Flight Procedures. ACAS II Training Guidelines for Pilots are provided in PANS-OPS, Volume I, Attachment A to Part III, Section 3, Chapter 3. Operations Circular 7/2010: Operational Procedures and Training Requirements Of Airborne Collision Avoidance System (ACAS) Equipment.

Note 2.— Appropriate training, to the satisfaction of the DGCA, to competency in the use of ACAS II equipment and the avoidance of collisions may be evidenced, for example, by:

a) possession of a type rating for an aeroplane equipped with ACAS II, where the operation and use of ACAS II are included in the training syllabus for the type rating; or

b) possession of a document issued by a training organization or person approved by the State to conduct training for pilots in the use of ACAS II, indicating that the holder has been trained in accordance with the guidelines referred to in Note 1; or

c) a comprehensive pre-flight briefing by a pilot who has been trained in theuse of ACAS II in accordance with the guidelines referred to in Note 1.

3.9.4.2 Recent experience — pilot-in-command

The operator shall not assign a pilot to act as pilot-in-command of an aeroplane unless that pilot has made at least three takeoffs and landings within the preceding 90 days on the same type of aeroplane or in a flight simulator approved for the purpose.

3.9.4.3 Recent experience – co-pilot

The operator shall not assign a co-pilot to operate at the flight controls of an aeroplane during take-off and landing unless that pilot has made at least three take-offs and landings within the preceding 90 days on the same type of aeroplane or in a flight simulator approved for the purpose.

3.9.4.4 Pilot proficiency checks

The operator shall ensure that piloting technique and the ability to execute emergency procedures is checked periodically in such a way as to demonstrate the pilot's competence. Where the operation may be conducted under the instrument flight rules, the operator shall ensure that the pilot's competence to comply with such rules is demonstrated to either a check pilot of the operator or a representative of the State issuing the pilot licence.

Note. — The periodicity of the checks referred to in 3.9.4.4 is dependent upon the complexity of both the aeroplane and the operation.

CHAPTER 3.10 FLIGHT OPERATIONS OFFICER/FLIGHT DISPATCHER

The operator should ensure that any person assigned as a flight operations officer/flight dispatcher is trained and maintains familiarization with all featuresof the operation which are pertinent to their duties, including knowledge and skills related to Human Factors. CAR, Section 7, Series M, Part II.

CHAPTER 3.11 MANUALS, LOGS AND RECORDS

Note. — The following document is associated with this CAR but is not includedin this chapter:

Operational flight plan — see 3.4.3.3.

3.11.1 Operator's maintenance control manual

The operator's maintenance control manual provided in accordance with 3.8.2, which may be issued in separate parts, should be developed according to industry codes of practice or to the DGCAs guidance material, and should at aminimum contain information about:

a) the means for complying with the procedures required by 3.8.1.1;

b) the means of recording the names and duties of the person or persons required by 3.8.1.1;

c) the maintenance programme required by 3.8.3.1;

d) the methods used for the completion and retention of the operator's maintenance records required by 2.6.2

e) the procedures for complying with the service information reporting requirements of Annex 8, Part II, 4.2.3 f) and 4.2.4;

f) the procedures for implementing action resulting from mandatory continuing airworthiness information;

g) 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;

h) the aircraft types and models to which the manual applies;

i) the procedures for ensuring that unserviceability affecting airworthiness are recorded and rectified; and

j) Procedures for advising the DGCA of significant in-service occurrences.

3.11.2 Maintenance programme

3.11.2.1 A maintenance programme for each aeroplane as required by 3.8.3 shall contain the following information:

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

b) when applicable, a continuing structural integrity programme;

c) procedures for changing or deviating from a) and b) above as approved by the DGCA; and

d) when applicable and approved by the DGCA, condition monitoring and reliability programme descriptions for aircraft systems, components and engines.

3.11.2.2 Maintenance tasks and intervals that have been specified as mandatory in

approval of the type design, or approved changes to the maintenance programme, shall be identified as such.

3.11.2.3 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.

3.11.3 Flight recorder records

The owner of the aeroplane, or in the case where it is leased, the lessee, shall ensure, to the extent possible, in the event the aeroplane becomes involved inan 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 in accordance with Annex 13.

CHAPTER 3.12 CABIN CREW

3.12.1 Assignment of emergency duties

The requirement for cabin crew for each type of aeroplane shall be determined by the operator, based on seating capacity or the number of passengers carried, in order to effect a safe and expeditious evacuation of the aeroplane, and the necessary functions to be performed in an emergency or a situation requiring emergency evacuation. The operator shall assign these functions for each type of aeroplane.

3.12.2 Cabin crew at emergency evacuation stations

When cabin crew are required by a State authority, each cabin crew member assigned to emergency evacuation duties shall occupy a seat provided in accordance with 3.6.10 during take-off and landing and whenever the pilot-in-command so directs.

3.12.3 Protection of cabin crew during flight

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

3.12.4 Training

3.12.4.1 The operator shall ensure that a training programme is completed by all persons before being assigned as a cabin crew member.

3.12.4.2 The operator should establish and maintain a cabin crew training programme that is designed to ensure that persons who receive training acquire the competency to perform their assigned duties and includes or makes reference to a syllabus for the training programme in the company operations manual. The training programme should include Human Factors training.

Note. Details on training programme of cabin crew is available in CAR, Section-7, Series 'M', Part I

CHAPTER 3.13 SECURITY

3.13.1 Security programme

Each entity conducting general aviation operations, including corporate operator aviation operations, using aircraft with a maximum take-off mass greater than 5700 kg shall establish, implement and maintain a written operator security programme that meets the requirements of the “Bureau of Civil Aviation Security” (BCAS).

-sd-

Vir Vikram Yadav
Director General of Civil Aviation

APPENDIX 3.B MINIMUM EQUIPMENT LIST (MEL)

Supplementary to 3.6.1.1

TO BE READ IN CONJUNCTION WITH CAR SECTION 2 SERIES B PART I

1. If deviations from the requirements of States in the certification of aircraft were not permitted, an aircraft could not be flown unless all systems and equipment were operable. Experience has proved that some unserviceability can be accepted in the short term when the remaining operative systems and equipment provide for continued safe operations.

2. The State should indicate through approval of a minimum equipment list those systems and items of equipment that may be inoperative for certain flight conditions with the intent that no flight can be conducted with inoperative systems and equipmentother than those specified.

3. A minimum equipment list, approved by the State of the Operator, is therefore necessary for each aircraft, based on the master minimum equipment list establishedfor the aircraft type by the organization responsible for the type design in conjunction with the State of Design.

4. The State of the Operator should require the operator to prepare a minimum equipment list designed to allow the operation of an aircraft with certain systems or equipment inoperative provided an acceptable level of safety is maintained.

5. The minimum equipment list is not intended to provide for operation of the aircraft for an indefinite period with inoperative systems or equipment. The basic purpose of the minimum equipment list is to permit the safe operation of an aircraft with inoperative systems or equipment within the framework of a controlled and sound programme of repairs and parts replacement.

6. Operators are to ensure that no flight is commenced with multiple minimum equipment list items inoperative without determining that any interrelationship between inoperative systems or components will not result in an unacceptable degradation in the level of safety and/or undue increase in the flight crew workload.

7. The exposure to additional failures during continued operation with inoperative systems or equipment should also be considered in determining that an acceptable level of safety is being maintained. The minimum equipment list may not deviate fromrequirements of the flight manual limitations section, emergency procedures or other airworthiness requirements of the DGCA or of the State of the Operator unless the appropriate airworthiness authority or the flight manual provides otherwise.

8. Systems or equipment accepted as inoperative for a flight should be placarded where appropriate and all such items should be noted in the aircraft technical log to inform the flight crew and maintenance personnel of the inoperative system or equipment.

9. For a particular system or item of equipment to be accepted as inoperative, it may be necessary to establish a maintenance procedure, for completion prior to flight, to deactivate or isolate the system or equipment. It may similarly be necessary to preparean appropriate flight crew operating procedure.

10. The responsibilities of the pilot-in-command in accepting an aeroplane for operation with deficiencies in accordance with a minimum equipment list are specified in 2.2.3.1.

ATTACHMENT 3.D AUTHORIZATIONS

An authorization entitles an operator, owner or pilot-in-command to undertake the authorized operations. Authorizations can take the form of specific approvals, approvals or acceptances.

1. SPECIFIC APPROVAL ACTIONS

1.1 The term “specific approval” indicates a formal action on the part of the Statewhich results in an addition to the specific approval template.

1.2 The following provisions make explicit reference to the need for a specific approval:

a) operational credits for operations with advanced aircraft, when used for low visibility operations HUD, EVS, SVS, CVS, automatic landing systems [2.2.2.3.1.1];
b) Low Visibility Operations [2.2.2.3.5, 2.2.2.3.6];
c) Electronic Flight Bags [2.4.17.2.2];
d) AR navigation specifications for PBN Operations [2.5.2.5];
e) Reduced Vertical Separation Minima [2.5.2.7 (b)].

1.3 The specific approval template is provided in Appendix 2.4

2. APPROVAL ACTIONS

The term “approval” indicates a more formal action on the part of DGCA with respect to a certification matter than does the term “acceptance”. PROVISIONS THAT REQUIRE AN APPROVAL

Approval of DGCA is required in all of the certification actions listed below that are not preceded by an asterisk. Certification actions listed below that are preceded by one or more asterisks require approval by DGCA (single asterisk or “*”), or by the State of Design (double asterisk or “**”). However, DGCA ensures that operators for which it is responsible comply with any applicable approvals issued by the State of Design, in addition to its own requirements.

Note.— Items that require a specific approval are not included here. Refer to 1.2 for a listof these provisions.

a) *Configuration deviation list (CDL) (Definitions);

b) *Master minimum equipment list (MMEL) (Definitions);

c) Aircraft-specific minimum equipment list (MEL) (Section 3, 3.6.1.1);

d) Performance-based navigation operations (other than RNP-AR) (2.5.2.3));

e) MNPS operations (2.5.2.6 (b));

f) Procedures for electronic navigation data management (Section 3, 3.7.3); and

g) **Mandatory maintenance tasks and intervals (Section 3, 3.11.2.2).