

**The Republic of the Union of Myanmar**  
**Ministry of Transport and Communications**  
**Department of Civil Aviation**



**Myanmar Civil Aviation Requirements**  
**Part 8 – Operations of Commercial Air Transport**  
**Aeroplanes**

**Published by**  
**Flight Standards Division**

**Third Edition – August, 2017**

**CIVIL AVIATION REQUIREMENTS**

**MYANMAR**

**MCAR PART - 8 – OPERATIONS OF COMMERCIAL AIR TRANSPORT  
AEROPLANES**

**THIRD EDITION- AUGUST 2017**

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## Foreword

- a) In exercise of the powers conferred by Section 5 (A) (C) of the Myanmar Aircraft Act (Amended 15<sup>th</sup> October, 2013) and the delegated powers from the Ministry of Transport and Communications as per Notification No.118/2009 dated 9 October 2009, the requirements for the MCAR Part –8 Operations of Commercial Air Transport Aeroplanes, Third Edition (August 2017) is prescribed and shall take effect from 1<sup>st</sup> August 2017.

This Third Edition of MCAR Part – 8 superseded the Second Edition of MCAR Part – 8 Operations. This has been issued since 2013.










- b) The content of this MCAR is intended to be harmonized with contents of other related MCARs issued by DCA, Myanmar.
- c) “SAFETY is our top priority” and will never be compromised. Which are hereby strongly encouraged to all safety concerns and sustainable development for all operators.







Min Lwin  
Director General  
Department of Civil Aviation

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## AMENDMENTS

Location	Date	Description	Sign
8.5.1.24	22.6.2018	Deleted text	
8.8.1.15	22.6.2018	Deleted text	
8.8.1.16	22.6.2018	Deleted text	
8.10.1.23	22.6.2018	Deleted subsection (4), renumbered subsection (5) to (4)	
8.10.1.24	22.6.2018	Deleted subsection (4) , renumbered subsection (5) to (4)	
8.10.1.30	22.6.2018	Deleted text	
8.10.1.30	22.6.2018	Deleted paragraph (c), renumbered paragraph (d) to (c)	
IS 8.10.1.8(d)	22.6.2018	Added new text	
8.14	22.6.2018	Added new paragraph	

8.15	22.6.2018	Added new paragraph	
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8.17	22.6.2018	Added new paragraph	
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## AMENDMENT

Location	Date	Description	Sign
8.2.1.3	17.10.2018	Added new paragraph (b)	
8.5.1.10	17.10.2018	Added new paragraph (a)	
8.5.1.21	17.10.2018	Added new paragraph (d)	
8.5.1.27	17.10.2018	Added new paragraph (a)(b)	
8.10.1.1	17.10.2018	Changed “use one pilot up to age 65 provided that the other pilot is less than age 60” to “not use them if they have attained their 65 <sup>th</sup> birthday.”	
8.10.1.1	17.10.2018	Deleted paragraph (c)	

  
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## AMENDMENT







Location	Date	Description	Sign
8.10.1.31	13.12.2018	Added new paragraph, Qualifications of Flight Operations Officer	


  
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## AMENDMENT



Location	Date	Description	Sign
8.1.1.2	5.11.2020	Added new definition (8) (23) (101)(159)	
8.1.1.2(34)	5.11.2020	Added text	
8.1.1.2(122)	5.11.2020	Added text	
8.1.1.2 (177)	5.11.2020	Changed text	
8.5.1.26(b)(4)	5.11.2020	Changed text	
8.5.1.26(c)	5.11.2020	Changed text	
8.5.1.26(c) note	5.11.2020	Changed text	
8.6.1.13.2(a)	5.11.2020	Changed & Added text	
8.6.1.13.2Cb)	5.11.2020	Changed text & Added note	
8.6.1.13.2(c)	5.11.2020	Changed text	
8.6.1.13.2(d)	5.11.2020	Added note	

Location	Date	Description	Sign
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8.8.1.5(b)	5.11.2020	Changed text	
8.8.1.5(c)	5.11.2020	Changed text	
8.8.1.5(c)(1)	5.11.2020	Added text	
8.8.1.5(c)	5.11.2020	Added para (9)(10)	
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8.8.1.5(d)(2)(iii)	5.11.2020	Changed text	
8.8.1.5(d)(2)	5.11.2020	Deleted sub-para (iv)(v)	
8.8.1.17	5.11.2020	Added new paragraph	
8.8.2.13.2(g)	5.11.2020	Deleted text	

Location	Date	Description	Sign
8.8.2.13.2(g)(1)	5.11.2020	Added text	
8.8.2.13.2(g)(1)(iv)	5.11.2020	Added text	
8.8.2.13.2(g)(2)	5.11.2020	Changed text	
8.8.2.13.2(g)	5.11.2020	Deleted para (3)	
8.8.2.13.2(h)(j)(k)	5.11.2020	Added text	
8.14.1.3	5.11.2020	Added note (2)	

  
 AUNG KYAW TUN  
 DIRECTOR GENERAL  
 DEPARTMENT OF CIVIL AVIATION




## AMENDMENT

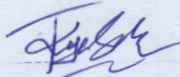
Location	Date	Description	Sign
8.5.1.18	5.11.2021	Added new paragraph (b) and note	
8.8.4.12	5.11.2021	Added new sub-paragraph (3)	

  
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 Department of Civil Aviation



**AMENDMENT**

Location	Date	Description	Sign
8.11.1.3	15.5.2023	Deleted paragraph (8.11.1.3)	
8.12	15.5.2023	Insert Paragraph (8.12)	
IS:8.11.1.3	15.5.2023	Deleted Paragraph (IS: 8.11.1.3)	



**Kyaw Soe**  
**Director General**  
**Department of Civil Aviation**

## **INTRODUCTION**

MCAR Part 8 presents regulatory requirements for the operations of aeroplanes in Myanmar, based upon the requirements of ICAO Annex 6 Part I. Part 8 prescribes the requirements for operations conducted by flight crew, cabin crew and flight operations officer certificated in Myanmar while operating aircraft registered in Myanmar, as well as operations of foreign registered aircraft by Myanmar AOC holders, and operations of aircraft within Myanmar by flight crew, cabin crew and flight operations officer or AOC holders of a foreign State. Part 8 applies to operations outside of Myanmar by all Myanmar pilots and operators unless compliance would result in a violation of the laws of the foreign State in which the operation is conducted. The requirements apply to all aircraft, except where superseded by the more stringent requirements put upon entities engaged on commercial air transport and upon AOC holders.

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**PART 8 OPERATIONS OF COMMERCIAL AIR TRANSPORT AEROPLANES****8.1 GENERAL****8.1.1.1 APPLICABILITY**

- (a) Part 8 prescribes the requirements for:
  - (1) The standards and recommended practices contained in Annex 6 Part I shall be applicable to the operations of aeroplanes by operators authorized to conduct commercial air transport operations (international and domestic).
  - (2) Operations conducted by a flight crew, cabin crew and flight operations officer certified in Myanmar while operating aircraft registered in Myanmar.
  - (3) Operations of foreign aircraft registered in another State by Myanmar AOC holders.
  - (4) Operations of aircraft within Myanmar by flight crew, cabin crew and flight operations officer or AOC holders of another State.
- (b) For operations outside of Myanmar, all Myanmar pilots and operators shall comply with these requirements unless compliance would result in a violation of the laws of the State in which the operation is conducted.

**8.1.1.2 DEFINITIONS**

- (a) For the purpose of AOC certification, operations, Aircraft Accident and Incident Investigation, dangerous goods and safety management system the following definitions shall apply—
  - (1) **Accelerate-stop distance available (ASDA).** The length of the take-off run available plus the length of stop way, if provided.
  - (2) **Acts of unlawful interference.** These are acts or attempted acts such as to jeopardize the safety of civil aviation and air transport, i.e.:
    - unlawful seizure of aircraft in flight,
    - unlawful seizure of aircraft on the ground,
    - hostage-taking on board an aircraft or on aerodromes,
    - forcible intrusion on board an aircraft, at an airport or on the premises of an aeronautical facility,
    - introduction on board an aircraft or at an airport of a weapon or hazardous device or material intended for criminal purposes,
    - communication of false information as to jeopardize the safety of an aircraft in flight or on the ground, of passengers, crew, ground personnel or the general public, at an airport or on the premises of a civil aviation facility.

- (3) **Accident.** An occurrence associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down, in which:
- a) a person is fatally or seriously injured as a result of:
    - being in the aircraft, or
    - direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
    - direct exposure to jet blast, *except* when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or
  - b) the aircraft sustains damage or structural failure which:
    - adversely affects the structural strength, performance or flight characteristics of the aircraft, and
    - would normally require major repair or replacement of the affected component, *except* for engine failure or damage, when the damage is limited to a single engine, (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes), or for minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike (including holes in the radome); or c) the aircraft is missing or is completely inaccessible.

*Note 1. — For statistical uniformity only, an injury resulting in death within thirty days of the date of the accident is classified, by ICAO, as a fatal injury.*

*Note 2. — An aircraft is considered to be missing when the official search has been terminated and the wreckage has not been located.*

*Note 3. — The type of unmanned aircraft system to be investigated is addressed in 5.1 of Annex 13.*

*Note 4. — Guidance for the determination of aircraft damage can be found in Attachment F of Annex 13.*

- (4) **Aerial work.** An aircraft operation in which an aircraft is used for specialized services such as agriculture, construction, photography,

surveying, observation and patrol, search and rescue, aerial advertisement, etc.

- (5) **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.
- (6) **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/or runway 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.
- (7) **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.
- (8) **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 Operator for commercial air transport operations.*
- (9) **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.
- (10) **Aircraft operating manual.** A manual, acceptable to the State of the Operator, 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.*

- (11) **Aircraft tracking.** A process, established by the operator, that maintains and updates, at standardized intervals, a groundbased record of the four dimensional position of individual aircraft in flight.
- (12) **Air operator certificate (AOC).** A certificate authorizing an operator to carry out specified commercial air transport operations.
- (13) **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).
- (14) **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.
- (15) **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:
  - (a) **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.
  - (b) **En-route alternate.** An alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en-route.
  - (c) **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 aerodrome of intended landing.

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

- (16) **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.
- (17) **Alternate heliport.** A heliport to which a helicopter may proceed when it becomes either impossible or inadvisable to proceed to or to land at the heliport 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 heliports include the following:

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

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

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

- (20) Approval.** An authorization granted by an appropriate national authority for:

- a) the transport of dangerous goods forbidden on passenger and/or cargo aircraft where the Technical Instructions state that such goods may be carried with an approval; or
- b) other purposes as provided for in the Technical Instructions.

*Note.* — *In the absence of a specific reference in the Technical Instructions allowing the granting of an approval, an exemption may be sought.*

- (21) Authority.** Authority means Department of Civil Aviation, Myanmar.

- (22) 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.

- (23) Cargo.** Any property carried on an aircraft other than mail and accompanied or mishandled baggage.

*Note 1.* — *This definition differs from the definition of “cargo” given in Annex 9 – Facilitation.*

*Note 2.* — *COMAT that meets the classification criteria of dangerous goods and which is transported in accordance with Part I; 2.2.2 or Part I; 2.2.4 of the Technical Instructions are considered as “cargo” (e.g. aircraft parts such as chemical oxygen generators, fuel control units, fire extinguishers, oils, lubricants, cleaning products).*

- (24) Cargo aircraft.** Any aircraft, other than a passenger aircraft, which is carrying goods or property.



- (25) **CAS (*calibrated airspeed*)**. The calibrated airspeed is equal to the airspeed indicator reading corrected for position and instrument error. (As a result of the sea level adiabatic compressible flow correction to the airspeed instrument dial, CAS is equal to the true airspeed (TAS) in Standard Atmosphere at sea level.)
- (26) **Comat**. Operator material carried on an operator's aircraft for the operator's own purposes.
- (27) **Combined vision system (CVS)**. A system to display images from a combination of an enhanced vision system (EVS) and a synthetic vision system (SVS).
- (28) **Commercial air transport operation**. An aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.
- (29) **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.
- (30) **Congested area**. In relation to a city, town or settlement, any area which is substantially used for residential, commercial or recreational purposes.
- (31) **Congested hostile environment**. A hostile environment within a congested area.
- (32) **Consignment**. One or more packages of dangerous goods accepted by an operator from one shipper at one time and at one address, receipted for in one lot and moving to one consignee at one destination address.
- (33) **Continuing airworthiness**. The set of processes by which an aircraft, engine, propeller or part complies with the applicable airworthiness requirements and remains in a condition for safe operation throughout its operating life.

- (34) **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 manoeuvre altitude/height are reached.
- (35) **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.
- (36) **Crew member.** A person assigned by an operator to duty on an aircraft during a flight duty period.
- (37) **Cruise relief pilot.** A flight crew member who is assigned to perform pilot tasks during cruise flight, to allow the pilot-in command or a co-pilot to obtain planned rest.
- (38) **Cruising level.** A level maintained during a significant portion of a flight.
- (39) **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 Annex 18, Chapter 3.*
- (40) **Dangerous goods accident.** An occurrence associated with and related to the transport of dangerous goods by air which results in fatal or serious injury to a person or major property or environmental damage.
- (41) **Dangerous goods incident.** An occurrence, other than a dangerous goods accident, associated with and related to the transport of dangerous goods by air, not necessarily occurring on board an aircraft, which results in injury to a person, property or environmental damage, fire, breakage, spillage, leakage of fluid or radiation or other evidence that the integrity of the packaging has not been maintained. Any occurrence relating to the transport of dangerous goods.

**(42) 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 visual reference is that specified for the particular procedure and operation.*

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

**(43) Declared temperature.** A temperature selected in such a way that when used for performance purposes, over a series of operations, the average level of safety is not less than would be obtained by using official forecast temperatures.

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

*Note. — Defined points apply to helicopters operating in performance Class 2 only.*

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

*Note. — Defined points apply to helicopters operating in performance Class 2 only. which seriously jeopardizes the aircraft or its occupants is also deemed to constitute a dangerous goods incident.*

**(46) Designated postal operator.** Any governmental or non-governmental entity officially designated by a Universal Postal Union (UPU) member country to operate postal services and to fulfil the related obligations arising from the acts of the UPU Convention on its territory.

**(47) Destination alternate.** An alternate heliport at which a helicopter would be able to land should it become either impossible or inadvisable to land at the heliport of intended landing.

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

- (48) **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 induce fatigue.
- (49) **Duty period.** A period which starts when a flight or cabin crew member is required by an operator to report for or to commence a duty and ends when that person is free from all duties.
- (50) **EDTO critical fuel.** The fuel quantity necessary to fly to an en-route alternate aerodrome considering, at the most critical point on the route, the most limiting system failure.

*Note. — Attachment C contains guidance on EDTO critical fuel scenarios.*

- (51) **EDTO significant system.** An aeroplane system whose failure or degradation could adversely affect the safety particular to an EDTO flight, or whose continued functioning is specifically important to the safe flight and landing of an aeroplane during an EDTO diversion.
- (52) **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.
- (53) **Emergency locator transmitter (ELT).** A generic term describing equipment which broadcast distinctive signals on designated frequencies and, depending on application, may be automatically activated by impact or be manually activated. An ELT may be any of the following:
- Automatic fixed ELT (ELT (AF)).** An automatically activated ELT which is permanently attached to an aircraft.
- Automatic portable ELT (ELT (AP)).** An automatically activated ELT which is rigidly attached to an aircraft but readily removable from the aircraft.
- Automatic deployable ELT (ELT (AD)).** An ELT which is rigidly attached to an aircraft and which is automatically *deployed* and activated by impact, and, in some cases, also by hydrostatic sensors. Manual deployment is also provided.
- Survival ELT (ELT(S)).** An ELT which is removable from an aircraft, stowed so as to facilitate its ready use in an *emergency*, and manually activated by survivors.

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

**(55) 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).*

**(56) En-route alternate.** An alternate heliport at which a helicopter would be able to land in the event that a diversion becomes necessary while en route.

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

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

**(58) Exception.** A provision in this Annex which excludes a specific item of dangerous goods from the requirements normally applicable to that item.

**(59) Exemption.** An authorization, other than an approval, granted by an appropriate national authority providing relief from the provisions of the Technical Instructions.

**(60) Expected.** Used in relation to various aspects of performance (e.g. rate or gradient of climb), this term means the standard performance for the type, in the relevant conditions (e.g. mass, altitude and temperature).

**(61) 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 land suitable for making an emergency landing.

**(62) Extended diversion time operations (EDTO).** Any operation by an aeroplane with two or more turbine engines where the diversion time to an en-route alternate aerodrome is greater than the threshold time established by the State of the Operator.

- (63) **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.
- (64) **Fatigue Risk Management System (FRMS).** A data-driven means of continuously monitoring and managing fatigue-related safety risks, based upon scientific principles and knowledge as well as operational experience that aims to ensure relevant personnel are performing at adequate levels of alertness.
- (65) **Final approach segment (FAS).** That segment of an instrument approach procedure in which alignment and descent for landing are accomplished.
- (66) **Final approach and take-off area (FATO).** A defined area over which the final phase of the approach maneuver to hover or landing is completed and from which the take-off maneuver is commenced. Where the FATO is to be used by helicopters operating in performance Class 1, the defined area includes the rejected take-off area available.
- (67) **Flight crew member.** A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.
- (68) **Flight data analysis.** A process of analyzing recorded flight data in order to improve the safety of flight operations.
- (69) **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 aeroplane 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.
- (70) **Flight manual.** A manual, associated with the certificate of airworthiness, containing limitations within which the aircraft is be considered airworthy, and instructions and information necessary to the flight crew members for the safe operation of the aircraft.
- (71) **Flight operations officer/flight dispatcher.** A person designated by the operator to engage in the control and supervision of flight operations, whether licensed or not, suitably qualified in accordance with Annex 1, who supports, briefs and/or assists the pilot-in-command in the safe conduct of the flight.

- (72) **Flight plan.** Specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft.
- (73) **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.
- (74) **Flight safety documents system.** A set of interrelated documentation established by the operator, compiling and organizing information necessary for flight and ground operations, and comprising, as a minimum, the operations manual and the operator's maintenance control manual.
- (75) **Flight simulation training device.** Any one of the following three types of apparatus in which flight conditions are simulated on the ground:  
*A flight simulator*, which provides an accurate representation of the flight deck of a particular aircraft type to the extent that the mechanical, electrical, electronic, etc. aircraft systems control functions, the normal environment of flight crew members, and the performance and flight characteristics of that type of aircraft are realistically simulated;  
*A flight procedures trainer*, which provides a realistic flight deck environment, and which simulates instrument responses, simple control functions of mechanical, electrical, electronic, etc. aircraft systems, and the performance and flight characteristics of aircraft of a particular class;  
*A basic instrument flight trainer*, which is equipped with appropriate instruments, and which simulates the flight deck environment of an aircraft in flight in instrument flight conditions.
- (76) **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.*
- (77) **Flight time — helicopters.** The total time from the moment a helicopter's rotor blades start turning until the moment the helicopter

finally comes to rest at the end of the flight, and the rotor blades are stopped.

*Note 1. — The State may provide guidance in those cases where the definition of flight time does not describe or permit normal practices. Examples are: crew change without stopping the rotors; and rotors running engine wash procedure following a flight. In any case, the time when rotors are running between sectors of a flight is included within the calculation of flight time.*

*Note 2. — This definition is intended only for the purpose of flight and duty time regulations.*

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

**(79) Grooved or porous friction course runway.** A paved runway that has been prepared with lateral grooving or a porous friction course (PFC) surface to improve braking characteristics when wet.

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

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

**(82) Height.** The vertical distance of a level, a point, or an object considered as a point, measured from a specified datum.

*Note. — For the purposes of this example, the point referred to above is the lowest part of the aeroplane and the specified datum is the take-off or landing surface, whichever is applicable.*

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

*Note. — Some States use the term "rotorcraft" as an alternative to "helicopter".*

**(84) Helideck.** A heliport located on a floating or fixed offshore structure.

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

*Note 1. — Throughout this Part, when the term "heliport" is used, it is intended that the term also applies to aerodromes primarily meant for the use of aeroplanes.*

*Note 2. — Helicopters may be operated to and from areas other than heliports.*



- (86) *Helipport operating minima.*** The limits of usability of a heliport for:
- a) take-off, expressed in terms of runway visual range and/or visibility and, if necessary, cloud conditions;
  - b) landing in 2D instrument approach operations, expressed in terms of visibility and/or runway 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.

- (87) *Hostile environment.*** An environment in which:
- a) a safe forced landing cannot be accomplished because the surface and surrounding environment are inadequate; or
  - b) the helicopter occupants cannot be adequately protected from the elements; or
  - c) search and rescue response/capability is not provided consistent with anticipated exposure; or d) there is an unacceptable risk of endangering persons or property on the ground.

- (88) *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.

- (89) *Human performance.*** Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

- (90) *Incident.*** An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

*Note. — The types of incidents which are of interest for safety-related studies include the incidents listed in Annex 13, Attachment C.*

- (91) *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, other aviation safety requirements and the best practices deemed appropriate.

*Note. — Some States accept and reference industry codes of practice in the development of 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.*

**(92) Instrument approach operations.** An approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for executing instrument approach operations:

- a) a two-dimensional (2D) instrument approach operation, using lateral navigation guidance only; and
- b) 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) a ground-based radio navigation aid; or
- b) computer-generated navigation data from ground-based, space-based, self-contained navigation aids or a combination of these.

**(93) 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 a position 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 Type A.

*Note. — Non-precision approach procedures may be flown using a continuous descent final approach (CDFA) technique. CDFAs with advisory VNAV guidance calculated by on-board equipment (see PANS-OPS (Doc 8168), Volume I, Part I, Section 4, Chapter 1, 1.8.1) are considered 3D instrument approach operations. CDFAs with manual calculation of the required rate of descent are considered 2D instrument approach operations. For more information on CDFAs, refer to PANS-OPS (Doc 8168), Volume I, Part I, Section 4, Chapter 1, 1.7 and 1.8.*

**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.

**(94) Instrument meteorological conditions (IMC).** Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, \* less than the minima specified for visual meteorological conditions.

*Note.* — *The specified minima for visual meteorological conditions are contained in Chapter 4 of Annex 2.*

**(95) Integrated survival suit.** A survival suit which meets the combined requirements of the survival suit and life jacket.

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

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

*Note.* — *LDP applies only to helicopters operating in performance Class 1.*

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

**(99) Landing surface.** That part of the surface of an aerodrome which the aerodrome authority has declared available for the normal ground or water run of aircraft landing in a particular direction.

**(100) Large aeroplane.** An aeroplane of a maximum certificated take-off mass of over 5 700 kg.

**(101) 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.

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

**(103) 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.

**(104) 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.

- (105) Maintenance release.** A document which contains a certification confirming that the maintenance work to which it relates has been completed in a satisfactory manner, either in accordance with the approved data and the procedures described in the maintenance organization's procedures manual or under an equivalent system.
- (106) 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.
- (107) Maximum diversion time.** Maximum allowable range, expressed in time, from a point on a route to an en-route alternate aerodrome.
- (108) Maximum mass.** Maximum certificated take-off mass.
- (109) Meteorological information.** Meteorological report, analysis, forecast, and any other statement relating to existing or expected meteorological conditions.
- (110) 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".*

**(111) Minimum equipment list (MEL).** A list which provides for the operation of aircraft, subject to specified conditions, with particular equipment inoperative, prepared by an operator in conformity with, or more restrictive than, the MMEL established for the aircraft type.

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

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

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

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

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

**(113) Net gradient.** The net gradient of climb throughout these requirements is the expected gradient of climb diminished by the maneuver performance (i.e. that gradient of climb necessary to provide power to maneuver) and by the margin (i.e. that gradient of climb necessary to provide for those variations in performance which are not expected to be taken explicit account of operationally).

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

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

**(115) Non-congested hostile environment.** A hostile environment outside a congested area.

**(116) Non-hostile environment.** An environment in which:

- a) a safe forced landing can be accomplished because the surface and surrounding environment are adequate;
- b) the helicopter occupants can be adequately protected from the elements;
- c) search and rescue response/capability is provided consistent with anticipated exposure; and
- d) the assessed risk of endangering persons or property on the ground is acceptable.

*Note.— Those parts of a congested area satisfying the above requirements are considered non-hostile.*

**(117) 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”.*

**(118) Offshore operations.** Operations which routinely have a substantial proportion of the flight conducted over sea areas to or from offshore locations. Such operations include, but are not limited to, support of offshore oil, gas and mineral exploitation and sea-pilot transfer.

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

**(120) Operational flight plan.** The operator’s plan for the safe conduct of the flight based on considerations of aeroplane performance, other

operating limitations and relevant expected conditions on the route to be followed and at the aerodromes concerned.

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

**(122) Operations specifications.** The authorizations including specific approvals, conditions and limitations associated with the air operator certificate and subject to the conditions in the operations manual.

**(123) Operator.** The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

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

**(125) 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.*

**(126) Operation.** An activity or group of activities which are subject to the same or similar hazards and which require a set of equipment to be specified, or the achievement and maintenance of a set of pilot competencies, to eliminate or mitigate the risk of such hazards.

*Note. — Such activities could include, but would not be limited to, offshore operations, heli-hoist operations or emergency medical service.*

**(127) Operations in performance Class 1.** Operations with performance such that, in the event of a critical engine failure, performance is available to enable the helicopter to safely continue the flight to an appropriate landing area, unless the failure occurs prior to reaching the take-off decision point (TDP) or after passing the landing decision point (LDP), in which cases the helicopter must be able to land within the rejected take-off or landing area.

**(128) Operations in performance Class 2.** Operations with performance such that, in the event of critical engine failure, performance is available to enable the helicopter to safely continue the flight to an appropriate

landing area, except when the failure occurs early during the take-off maneuver or late in the landing maneuver, in which cases a forced landing may be required.

**(129) Operations in performance Class 3.** Operations with performance such that, in the event of an engine failure at any time during the flight, a forced landing will be required.

**(130) Operational personnel.** Personnel involved in aviation activities who are in a position to report safety information.

*Note. — Such personnel include, but are not limited to: flight crews; air traffic controllers; aeronautical station operators; maintenance technicians; personnel of aircraft design and manufacturing organizations; cabin crews; flight dispatchers, apron personnel and ground handling personnel.*

**(131) Overpack.** An enclosure used by a single shipper to contain one or more packages and to form one handling unit for convenience of handling and stowage.

*Note. — A unit load device is not included in this definition.*

**(132) Package.** The complete product of the packing operation consisting of the packaging and its contents prepared for transport.

**(133) Packaging.** Receptacles and any other components or materials necessary for the receptacle to perform its containment function.

*Note. — For radioactive material, see Part 2, paragraph 7.2 of the Technical Instructions.*

**(134) Passenger aircraft.** An aircraft that carries any person other than a crew member, an operator's employee in an official capacity, an authorized representative of an appropriate national authority or a person accompanying a consignment or other cargo.

**(135) 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.*

**(136) 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, availability and functionality needed for the proposed operation in the context of a particular airspace concept.*

**(137) 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.*

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

**(139) 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.

**(140) Pressure-altitude.** An atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the Standard Atmosphere. \*

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

**(142) Reference humidity.** The relationship between temperature and reference humidity is defined as follows:

- at temperatures at and below ISA, 80 per cent relative humidity,
- at temperatures at and above ISA + 28° C, 34 per cent relative humidity,
- at temperatures between ISA and ISA + 28° C, the relative humidity varies linearly between the humidity specified for those temperatures.

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

**(144) 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.

**(145) 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.

**(146) Rest period.** A continuous and defined period of time, subsequent to and/or prior to duty, during which flight or cabin crew members are free of all duties.

**(147) Runway surface condition.** The state of the surface of the runway: either dry, wet, or contaminated:

- a) *Contaminated runway.* A runway is contaminated when more than 25 per cent of the runway surface area (whether in isolated areas or not) within the required length and width being used is covered by:
  - water, or slush more than 3 mm (0.125 in) deep;
  - loose snow more than 20 mm (0.75 in) deep; or
  - compacted snow or ice, including wet ice.
- b) *Dry runway.* A dry runway is one which is clear of contaminants and visible moisture within the required length and the width being used.
- c) *Wet runway.* A runway that is neither dry nor contaminated.

*Note 1. — In certain situations, it may be appropriate to consider the runway contaminated even when it does not meet the above definition. For example, if less than 25 per cent of the runway surface area is covered with water, slush, snow or ice, but it is located where rotation or lift-off will occur, or during the high speed part of the take-off roll, the effect will be far more significant than if it were encountered early in take-off while at low speed. In this situation, the runway should be considered to be contaminated.*

*Note 2. — Similarly, a runway that is dry in the area where braking would occur during a high speed rejected take-off, but damp or wet (without measurable water depth) in the area where acceleration would occur, may be considered to be dry for computing take-off performance. For example, if the first 25 per cent of the runway was damp, but the remaining runway length was dry, the runway would be wet using the definitions above. However, since a wet runway does not affect acceleration, and the braking portion of a rejected take-off would take place on a dry surface, it would be appropriate to use dry runway take-off performance.*

- (148) Runway visual range (RVR).** The range over which the pilot of an aircraft on the center line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.
- (149) Safe forced landing.** Unavoidable landing or ditching with a reasonable expectancy of no injuries to persons in the aircraft or on the surface.
- (150) Safety.** The state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.
- (151) Safety performance.** A State or a service provider's safety achievement as defined by its safety performance targets and safety performance indicators.
- (152) Safety performance indicator.** A data-based parameter used for monitoring and assessing safety performance.
- (153) Safety performance target.** The planned or intended objective for safety performance indicator(s) over a given period.
- (154) Safety risk.** The predicted probability and severity of the consequences or outcomes of a hazard.
- (155) Safety management system (SMS).** A systematic approach to managing safety, including the necessary organizational structures, accountability, responsibilities, policies and procedures.
- (156) 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.
- (157) Serious injury.** An injury which is sustained by a person in an accident and which:
- a) requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received; or
  - b) results in a fracture of any bone (except simple fractures of fingers, toes or nose); or
  - c) involves lacerations which cause severe hemorrhage, nerve, muscle or tendon damage; or
  - d) involves injury to any internal organ; or
  - e) involves second or third degree burns, or any burns affecting more than 5 per cent of the body surface; or
  - f) involves verified exposure to infectious substances or injurious radiation.

**(158) *Small aeroplane.*** An aeroplane of a maximum certificated take-off mass of 5700 kg or less.

**(159) *Specific approval.*** A specific approval is an approval which is documented in the Operations Specifications for commercial air transport operations or in the list of specific approvals for non-commercial operations.

*Note.— The terms authorization, specific approval, approval and acceptance are further described in Annex 6, Part I.*

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

**(161) *State of Design.*** The State having jurisdiction over the organization responsible for the type design.

**(162) *State of Destination.*** The State in the territory of which the consignment is finally to be unloaded from an aircraft.

**(163) *State of Manufacture.*** The State having jurisdiction over the organization responsible for the final assembly of the aircraft.

**(164) *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.

**(165) *State of Origin.*** The State in the territory of which the consignment is first to be loaded on an aircraft.

**(166) *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).*

**(167) *State safety programme (SSP).*** An integrated set of regulations and activities aimed at improving safety.

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

- (169) Take-off alternate.** An alternate heliport at which a helicopter would be able to land should this become necessary shortly after take-off and it is not possible to use the heliport of departure.
- (170) Take-off and initial climb phase.** That part of the flight from the start of take-off to 300 m (1000 ft) above the elevation of the FATO, if the flight is planned to exceed this height, or to the end of the climb in the other cases.
- (171) Take-off decision point (TDP).** The point used in determining take-off performance from which, an engine failure occurring at this point, either a rejected take-off may be made or a take-off safely continued.
- Note. — TDP applies only to helicopters operating in performance Class 1.*
- (172) Take-off distance available (TODA).** The length of the take-off run available plus the length of the clearway, if provided.
- (173) Take-off run available (TORA).** The length of runway declared available and suitable for the ground run of an aeroplane taking off.
- (174) Take-off surface.** That part of the surface of an aerodrome which the aerodrome authority has declared available for the normal ground or water run of aircraft taking off in a particular direction.
- (175) TAS (True airspeed).** The speed of the aeroplane relative to undisturbed air.
- (176) Target level of safety (TLS).** A generic term representing the level of risk which is considered acceptable in particular circumstances.
- (177) Technical Instructions.** The *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284), approved and issued periodically in accordance with the procedure established by the ICAO Council.
- (178) Threshold time.** The range, expressed in time, established by the State of the Operator, to an en-route alternate aerodrome, whereby any time beyond requires an EDTO approval from the State of the Operator.
- (179) Total vertical error (TVE).** The vertical geometric difference between the actual pressure altitude flown by an aircraft and its assigned pressure altitude (flight level).
- (180) UN number.** The four-digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods and on the

Globally Harmonized System of Classification and Labeling of Chemicals to identify an article or substance or a particular group of articles or substances.

**(181) Unit load device.** Any type of freight container, aircraft container, aircraft pallet with a net, or aircraft pallet with a net over an igloo.

*Note.* — *An overpack is not included in this definition.*

**(182) 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 Chapter 4 of Annex 2.*

**(183) VTOSS.** The minimum speed at which climb shall be achieved with the critical engine inoperative, the remaining engines operating within approved operating limits.

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

**(184)  $V_{so}$ .** A stalling speed or minimum steady flight speed in the landing configuration.

**(185)  $V_{st}$ .** A stalling speed or minimum steady flight speed.

*Note 1.* — *See Chapter 1 and Annexes 8 and 14, Volume I, for other definitions.*

*Note 2.* — *The terms “accelerate-stop distance”, “take-off distance”, “ $V_1$ ”, “take-off run”, “net take-off flight path”, “one engine inoperative en-route net flight path”, and “two engines inoperative en-route net flight path”, as relating to the aeroplane, have their meanings defined in the airworthiness requirements under which the aeroplane was certificated. If any of these definitions are found inadequate, then a definition specified by the State of the Operator should be used.*

**8.1.1.3 ABBREVIATIONS**

- (a) The following abbreviations are used in Part 8:
- (1) **AAC**—All Aircraft
  - (2) **AFM**—Aeroplane Flight Manual.
  - (3) **AGL**—Above Ground Level.
  - (4) **AMSL**—Above Mean Sea Level.
  - (5) **AMT**—Aviation Maintenance Technician.
  - (6) **AOC**—Air Operator Certificate.
  - (7) **AOM**—Aircraft Operating Manual.
  - (8) **APU**—Auxiliary Power Unit.
  - (9) **ATC**—Air Traffic Control.
  - (10) **CAT**—Category.
  - (11) **CDL**—Configuration Deviation List.
  - (12) **CP**—Copilot.
  - (13) **CRM**—Crew Resource Management.
  - (14) **CRT**—Cathode Ray Tube
  - (15) **DCA** — Department of Civil Aviation (Authority)
  - (16) **DH**—Decision Height.
  - (17) **ETA**—Estimated Time of Arrival.
  - (18) **EDTO** —Extended Diversion Time Operations.
  - (19) **FAS** – Final Approach Segment.
  - (20) **FL**—Flight Level.
  - (21) **FRMS**—Fatigue Risk Management System
  - (22) **FSTD** – Flight Simulation Training Device
  - (23) **GPS**—Global Positioning System.
  - (24) **IFR**—Instrument Flight Rules.
  - (25) **IMC**—Instrument Meteorological Conditions.
  - (26) **INS**—Inertial Navigation System.
  - (27) **LDA**—Localizer-type Directional Aid.
  - (28) **LOC**—Localizer.
  - (29) **LORAN**—Long-range Navigation.
  - (30) **LVTO**—Low Visibility Take Off.
  - (31) **MCAR**-Myanmar Civil Aviation Requirement
  - (32) **MDA**—Minimum Decent Altitude.
  - (33) **MEA**— Minimum En - Route Altitude.
  - (34) **MEL**—Minimum Equipment List.
  - (35) **MMEL**—Master Minimum Equipment List.
  - (36) **MNPS**—Minimum Navigation Performance Specifications.
  - (37) **MOCA**—Minimum Obstruction Clearance Altitude.
  - (38) **MSL**—Mean Sea Level.
  - (39) **NM**—Nautical Miles.

- (40) **NOTAM**—Notice to Airmen.
- (41) **OCA** – Obstacle Clearance Altitude
- (42) **OCH** – Obstacle Clearance Height
- (43) **OCA/H** – Obstacle Clearance Altitude/Height
- (44) **PIC**—Pilot in Command.
- (45) **PBE**—Protective Breathing Equipment.
- (46) **RFFS**—Rescue and Fire Fighting Service
- (47) **RFM**—Rotorcraft Flight Manual.
- (48) **RPA** – Remotely Piloted Aircraft.
- (49) **RPAS** – Remotely Piloted Aircraft System.
- (50) **RVR**—Runway Visibility Range.
- (51) **RVSM**—Reduced Vertical Separation Minimum.
- (52) **SCCM**—Senior Cabin Crewmember.
- (53) **SDF**—Simplified Directional Facility.
- (54) **SM**—Statute Miles.
- (55) **TACAN**—Tactical Air Navigation System.
- (56) **VFR**—Visual Flight Rules.
- (57) **VLOS** – Visual Line-Of-Sight
- (58) **VMC**—Visual Meteorological Conditions.
- (59) **VSM**—Vertical Separation Minimum.
- (60) **V<sub>1</sub>**—Takeoff decision speed.
- (61) **V<sub>mo</sub>**—Maximum operating speed.
- (62) **V<sub>so</sub>**—Stalling speed or the minimum steady flight speed in the landing configuration.



**8.2 GENERAL OPERATIONS REQUIREMENTS****8.2.1 AIRCRAFT REQUIREMENTS****8.2.1.1 REGISTRATION MARKINGS**

No person may operate a Myanmar-registered aircraft unless it displays the proper markings prescribed in MCAR Part 47.

**8.2.1.2 CIVIL AIRCRAFT AIRWORTHINESS**

- (a) No person may operate a civil aircraft unless it is in an airworthy condition.
- (b) Each PIC shall determine whether an aircraft is in a condition for safe flight.
- (c) The PIC shall discontinue a flight as soon as practicable when an aircraft develops a defect affecting the airworthiness of the aircraft.

**8.2.1.3 AIRCRAFT INSTRUMENTS AND EQUIPMENT**

- (a) No person may operate an aircraft unless it is equipped with the required instruments and navigation equipment appropriate to type of flight operation conducted and the route being flown.
- (b) Any agent used in a built-in fire extinguisher for each lavatory disposal receptacle for towels, paper or waste in an aeroplane for which the individual certificate of airworthiness is first issued on or after 31 December 2011 and any extinguishing agent used in a portable fire extinguisher in an aeroplane for which the individual certificate of airworthiness is first issued on or after 31 December 2018 shall:
  - (i) meet the applicable minimum performance requirements of the State of Registry; and
  - (ii) 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 Layer, Annex A, Group II.

*Note: The instruments and equipment required for specific operations are listed in MCAR Part 7.*

**8.2.1.4 INOPERATIVE INSTRUMENTS AND EQUIPMENT**

- (a) No person may take-off an aircraft with inoperative instruments or equipment installed, except as authorized by the DCA.
- (b) An AOC Holder shall not operate a multi-engine aircraft with inoperative instruments and equipment installed unless the following conditions are met:
  - (1) An approved MEL exists for that aircraft.

- (2) The DCA has issued the AOC Holder operations specifications authorizing operations in accordance with an approved MEL. The flight crew shall have direct access at all times before flight to all of the information contained in the approved MEL through printed or other means approved by the DCA in the AOC Holder specific operating provisions. An approved MEL, as authorized by the specific operating provisions, constitutes an approved change to the type design without requiring recertification.
- (3) The approved MEL must:
  - (i) Be prepared in accordance with the limitations specified in paragraph (c) of this section.
  - (ii) Provide for the operation of the aircraft with certain instruments and equipment in an inoperative condition.
- (4) Records identifying the inoperative instruments and equipment and the information required by paragraph (b)(3)(ii) of this section must be available to the pilot.
- (5) The aircraft is operated under all applicable conditions and limitations contained in the MEL and the operations specifications authorizing use of the MEL.
- (c) The following instruments and equipment may not be included in the MEL:
  - (1) Instruments and equipment that are either specifically or otherwise required by the airworthiness requirements under which the aircraft is type certificated and which are essential for safe operations under all operating conditions.
  - (2) Instruments and equipment required by an airworthiness directive to be in operable condition unless the airworthiness directive provides otherwise.
  - (3) Instruments and equipment required for specific operations under MCAR Part 7, Part 8, and/or Part 1 of these requirements.
- (d) Notwithstanding paragraphs (c)(1) and (c)(3) of this section, an aircraft with inoperative instruments or equipment may be operated under a special flight permit under MCAR Part-21 of these requirements.
- (e) In situations where no master minimum equipment list (MMEL) is available and no MEL is required for the specific aircraft operation under these requirements, flight operations with inoperative instruments and equipment installed may commence provided the following conditions are met.
  - (1) The inoperative instruments and equipment may not be—
    - (i) Part of the VFR-day instruments and equipment prescribed in Part 7;

- (ii) Required on the aircraft's equipment list or the operations equipment list for the kind of flight operation being conducted;
- (iii) Required by MCAR Part 7 for the specific kind of flight operation being conducted; or
- (iv) Required to be operational by an airworthiness directive

*Note: If deactivation of the inoperative instrument or equipment involves maintenance, it must be accomplished and recorded in accordance with MCAR Part 21 and MCAR Part M.*

- (2) To be eligible for these provisions, the inoperative instruments and equipment shall be—
  - (i) Determined by the PIC not to be a hazard to safe operation;
  - (ii) Deactivated and placarded Inoperative; and
  - (iii) Removed from the aircraft, the flight deck control placarded and the maintenance recorded in accordance with MCAR Part 21 and MCAR Part M.

*Note: The required instruments and equipment for specific operations are listed in MCAR Part 7.*

#### **8.2.1.5 CIVIL AIRCRAFT FLIGHT MANUAL, MARKING AND PLACARD REQUIREMENTS**

- (a) No person may operate any state registered civil aircraft unless there is available in the aircraft—
  - (1) A current, approved AFM; or
  - (2) An AOM approved by the Authority for the AOC holder;
  - (3) If no AFM exists, approved manual material, markings and placards, or any combination thereof, which provide the PIC with the necessary limitations for safe operation.
- (b) No person may operate a civil aircraft within or over Myanmar without complying with the operating limitations specified in the approved AFM, markings and placards, or as otherwise prescribed by the certifying authority for the aircraft's State of Registry.
- (c) Each AFM shall be updated by implementing changes made mandatory by the State of Registry.
- (d) Each operator shall display in the aircraft all placards, listings, instrument markings or combination thereof, containing those operating limitations prescribed by the certifying Authority for the aircraft's State of Registry for visual presentation.

**8.2.1.6 REQUIRED AIRCRAFT AND EQUIPMENT INSPECTIONS**

Unless otherwise authorized by the Authority, no person may operate a Myanmar civil aircraft unless it has had the appropriate inspections required by Subpart 8.3.

**8.2.1.7 DOCUMENTS TO BE CARRIED ON AIRCRAFT—ALL OPERATIONS**

- (a) Except as provided in 8.2.1.6, no person may operate a civil aircraft in commercial air transport operations unless it has within it the following current and approved documents:
- (1) Certified True Copy of the AOC and the Operations specification.
  - (2) Certificate of Aircraft Registration issued to the owner and / or operator.
  - (3) Certificate of Airworthiness.
  - (4) Aircraft Journey Log.
  - (5) Aircraft Radio Licence.
  - (6) List of passenger names and points of embarkation and destination, if applicable.
  - (7) Cargo manifest including special loads information.
  - (8) Aircraft Technical Log.
  - (9) Noise Certificate.
  - (10) AFM for aeroplanes.
  - (11) Part(s) of the Operations Manual relevant to operation(s) conducted.
  - (12) MEL.
  - (13) Category II or III Manual, as applicable.
  - (14) Operational Flight Plan, for all international flights.
  - (15) Filed ATC flight plan.
  - (16) NOTAMS briefing documentation.
  - (17) Meteorological information.
  - (18) Mass and balance documentation.
  - (19) Roster of special situation passengers.
  - (20) Maps and charts for routes of proposed flight or possibly diverted flights.
  - (21) Forms for complying with the reporting requirements of the Authority and the AOC holder.
  - (22) For international flights, a general declaration for customs.
  - (23) Any documentation that may be required by the Authority or States concerned with a proposed flight.
  - (24) The appropriate licences for each member of the flight crew.
  - (25) Copy of the release to service, if any, in force with respect to the aircraft.
  - (26) Search and rescue information, for international flights.

- (27) If carrying of dangerous goods, a list of such goods. This list must be specifically brought to the notice of Pilot-in-Command before the flight.
- (28) Emergency response guidance aircraft incidents involving Dangerous Goods (for DG carrier).

**8.3 AIRCRAFT MAINTENANCE AND INSPECTION REQUIREMENTS****8.3.1.1 APPLICABILITY**

- (a) This Subpart prescribes the rules governing the maintenance and inspection of Myanmar registered civil aircraft operating within or outside Myanmar.
- (b) Where any aircraft, not registered in Myanmar and operating under an inspection programme approved or accepted by the State of Registry, does not have the equipment required by MCAR Part 7, for operations within Myanmar, the owner/operator shall ensure that such equipment is installed and inspected in accordance with the requirements of the State of Registry, acceptable to the DCA before operation of that aircraft in Myanmar.
- (c) Annual inspections in 8.3.1.3 and Annual Inspections plus 100 hour inspections in Subsection 8.3.1.4 do not apply to—
  - (1) An aircraft that carries a special flight permit, a current experimental certificate, or a provisional airworthiness certificate;
  - (2) An aircraft subject to the requirements of progressive inspections in Subsection 8.3.1.5;
  - (3) An aircraft subject to the requirements of a continuous airworthiness maintenance inspections in Subsection 8.3.1.6; and
  - (4) A large aeroplane, a turbine-powered multi-engine aeroplane when the operator elects to inspect that rotorcraft in accordance with continuous airworthiness maintenance inspections in Subsection 8.3.1.6.

**8.3.1.2 GENERAL**

- (a) The registered owner or operator of an aircraft is responsible for maintaining that aircraft in an airworthy condition, including compliance with all airworthiness directives.
- (b) No person may perform maintenance, preventive maintenance, or alterations on an aircraft other than as prescribed in this subpart and other applicable regulations, including MCAR Part M and MCAR Part 21.
- (c) No person may operate an aircraft for which a manufacturer's maintenance manual or instructions for continued airworthiness has been issued that contains an airworthiness limitations section unless the mandatory replacement times, inspection intervals and related procedures set forth in operations specifications approved by the DCA MCAR Part 1 for AOC holders, or in accordance with an inspection programme approved under this subsection are complied with.

- (d) The owner or operator shall use one of the following inspection programmes as appropriate for the aircraft and the type operation:
  - (1) Annual inspection;
  - (2) Annual/100-hour inspection;
  - (3) Progressive; or
  - (4) Continuous airworthiness maintenance programme
- (e) No aircraft shall be approved for return to service after inspection unless the replacement times for life-limited parts specified in the aircraft specification-type data sheets are complied with and the aircraft, including airframe, engines, propellers, appliances, and survival and emergency equipment, is inspected in accordance with the selected inspection programme.
- (f) Each person wishing to establish or change an approved inspection programme shall submit the programme for approval by the Authority and shall include in writing—
  - (1) Instructions and procedures for the conduct of inspection for the particular make and model aircraft, including necessary tests and checks. The instructions shall set forth in detail the parts and areas of the aeronautical products, including survival and emergency equipment required to be inspected; and
  - (2) A schedule for the inspections that shall be performed expressed in terms of time in service, calendar time, number of system operations or any combination of these.
- (g) When an operator changes from one inspection programme to another, the operator shall apply the time in service, calendar times, or cycles of operation accumulated under the previous programme, in determining when the inspection is due under the new programme.

### **8.3.1.3 ANNUAL INSPECTIONS**

- (a) An annual inspection programme may be used for non-complex aircraft with a maximum certificated take-off mass of less than 5700 kg (12566 lb) that are not used for compensation or hire.
- (b) An annual inspection under this paragraph may be performed by a certifying staff holding an AME License in accordance with MCAR Part 66 or an AMO.
- (c) No person may operate an aircraft unless, within the preceding 12 calendar-months, the aircraft has had—

- (1) An annual inspection in accordance with MCAR Part M and MCAR Part 21 and has been approved for return to service by a certifying staff holding an AME License issued in accordance with MCAR Part 66 or an AMO certificated in accordance with MCAR Part 145, or.
- (2) An inspection for the issuance of an airworthiness certificate completed by the DCA in accordance with MCAR Part M and MCAR Part 21.

#### **8.3.1.4 ANNUAL/100 HOUR INSPECTIONS**

- (a) No person may operate a non-complex aircraft with a certificated maximum take-off mass less than 5700 kg (12566 lb) carrying any person (other than a crewmember) for compensation or hire, and no person may give flight instruction for compensation or hire in an aircraft which that person provides, unless –
  - (1) Within the preceding 100 hours of time in service the aircraft has received an annual or a 100-hour inspection, and
  - (2) Been approved for return to service in accordance with MCAR Part M and MCAR Part 21 of these regulations
- (b) The 100-hour limitation may be exceeded by not more than 10 hours while en route to reach a place where the inspection can be done. The excess time used to reach a place where the inspection can be done must be included in computing the next 100 hours of time in service.
- (c) An annual inspection under this paragraph may be performed and released to service by a certifying staff holding an AME License issued in accordance with MCAR Part 66 or an AMO certificated in accordance with MCAR Part 145.
- (d) A 100-hour inspection under this paragraph may be performed and released to service by a certifying staff holding an AME License issued in accordance with MCAR Part 66 or an AMO certificated in accordance with MCAR Part 145.

#### **8.3.1.5 PROGRESSIVE INSPECTIONS**

- (a) A progressive inspection programme may be used for aircraft with a maximum certificated take-off mass of less than 5700 kg (12566 lb).
- (b) Aircraft inspected under a progressive inspection programme may be used for aircraft engaged in compensation or hire.
- (c) Progressive inspection. Each registered owner or operator of an aircraft desiring to use a progressive inspection programme shall submit a written request to the DCA, and shall provide—



- (1) A certifying staff holding an AME License in accordance with MCAR Part 66, an AMO appropriately rated in accordance with MCAR Part 145, or the manufacturer of the aircraft to supervise or conduct the progressive inspection;
  - (2) A current inspection procedures manual available and readily understandable to pilot and maintenance personnel containing, in detail—
    - (i) An explanation of the progressive inspection, including the continuity of inspection responsibility, the making of reports, and the keeping of records and technical reference material;
    - (ii) An inspection schedule, specifying the intervals in hours or days when routine and detailed inspections will be performed and including instructions for exceeding an inspection interval by not more than 10 hours while en-route and for changing an inspection interval because of service experience;
    - (iii) Sample routine and detailed inspection forms and instructions for their use; and
    - (iv) Sample reports and records and instructions for their use;
  - (3) Enough housing and equipment for necessary disassembly and proper inspection of the aircraft; and
  - (4) Appropriate current technical information for the aircraft.
- (d) The frequency and detail of the progressive inspection shall provide for the complete inspection of the aircraft within each 12 calendar-months and be consistent with the current manufacturer's recommendations, field service experience, and the kind of operation in which the aircraft is engaged.
- (e) The progressive inspection schedule shall ensure that the aircraft, at all times, will be airworthy and will conform to all applicable aircraft specifications, type certificate data sheets, airworthiness directives, and other approved data acceptable to the DCA.
- (f) Each owner/operator shall include in the inspection programme the name and address of the person responsible for the scheduling of the inspections required by the programme and provide a copy of the programme to the person performing inspection on the aircraft.
- (g) If the progressive inspection is discontinued, the owner or operator shall immediately notify the DCA, in writing, of the discontinuance.

- (1) After the discontinuance, the first annual inspection under Part 8 is due within 12 calendar-months after the last complete inspection of the aircraft under the progressive inspection.
- (2) The 100-hour inspection is due within 100 hours after that complete inspection.
- (3) A complete inspection of the aircraft, for the purpose of determining when the annual and 100 hour inspections are due, requires a detailed inspection of the aircraft and all its components in accordance with the progressive inspection.
- (4) A routine inspection of the aircraft and a detailed inspection of several components are not considered to be a complete inspection.

#### **8.3.1.6 CONTINUOUS AIRWORTHINESS MAINTENANCE INSPECTION**

- (a) The registered owner or operator of each large aeroplane certificated with a maximum take-off mass of over 5700 kg (12566 lb) and turbine-powered multi-engine aeroplane identify in the aircraft maintenance records, and use one of the following continuous airworthiness maintenance inspection programmes for the inspection of the aircraft—
  - (1) A current inspection programme recommended by the manufacturer;
  - (2) A continuous airworthiness maintenance programme for that make and model of aircraft currently approved by the DCA for use by an AOC holder; or
  - (3) Any other inspection programme established by the registered owner or operator of that aircraft and approved by the DCA.
- (b) Each owner/operator shall include in the selected inspection programme the name and address of the person responsible for the scheduling of the inspections required by the programme and provide a copy of the programme to the person performing inspection on the aircraft.

*Note: The aircraft manufacturer's inspection programme, and any other inspection programme approved by the DCA, will specify who can perform aircraft maintenance, inspections and return of the aircraft to service.*

#### **8.3.1.7 CHANGES TO AIRCRAFT MAINTENANCE INSPECTION PROGRAMMES**

- (a) Whenever the DCA finds that revisions to an approved inspection programme are necessary for the continued adequacy of the programme, the owner or operator shall, after notification by the Authority, make any changes in the programme found to be necessary.

- (b) The owner or operator may petition the DCA to reconsider the notice, within 30 days after receiving that notice.
- (c) Except in the case of an emergency requiring immediate action in the interest of safety, the filing of the petition stays the notice pending a decision by the DCA.

### **8.3.1.8 REQUIRED MAINTENANCE**

- (a) Each owner or operator of an aircraft shall—
  - (1) Have that aircraft inspected as prescribed in Part 8.3 and discrepancies repaired as prescribed in the Performance Rules of MCAR Part M and MCAR Part 21;
  - (2) Repair, replace, remove, or inspect any inoperative instruments or items of equipment at the next required inspection, except when permitted to be deferred under the provisions of a Minimum Equipment List (MEL);
  - (3) Ensure that a placard has been installed on the aircraft when listed discrepancies include inoperative instruments or equipment; and
  - (4) Ensure that maintenance personnel make appropriate entries in the aircraft maintenance records indicating the aircraft has been approved for return to service.

### **8.3.1.9 MAINTENANCE AND INSPECTION RECORDS RETENTION**

- (a) Except for records maintained by an AOC holder, each registered owner or operator shall retain the following records until the work is repeated or superseded by other work of equivalent scope and detail—
  - (1) Records of the maintenance, preventive maintenance, minor modifications, and records of the 100-hour, annual, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft to include—
    - (i) A description (or reference to data acceptable to the DCA) of the work performed,
    - (ii) The date of completion of the work performed; and
    - (iii) The signature and certificate number of the person approving the aircraft for return to service.
  - (2) Records containing the following information—
    - (i) The total time-in-service of the airframe, each engine and each propeller.
    - (ii) The current status of all life-limited aeronautical products;

- (iii) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis;
  - (iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection programme under which the aircraft and its appliances are maintained.
  - (v) The current status of applicable Airworthiness Directives including, for each, the method of compliance, the Airworthiness Directive number, and revision date. If the Airworthiness Directive involves a recurring action, include the time and date when the next action is required.
  - (vi) Copies of the forms prescribed by this chapter for each major modification to the airframe and currently installed engines, rotors, propellers, and appliances.
- (b) The records specified in paragraph (a) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold or leased.
  - (c) A list of defects shall be retained until the defects are repaired and the aircraft is approved for return to service.
  - (d) The owner or operator shall make all maintenance records required by this subsection available for inspection by the DCA.

*Note: Maintenance records for an AOC holder are in MCAR Part 1.*

#### **8.3.1.10 LEASE OR SALE OF AIRCRAFT—TRANSFER OF MAINTENANCE RECORDS**

Any owner or operator who sells or leases any state registered aircraft shall transfer to the purchaser/lessee, at the time of sale or lease, the records identified in 8.3.1.9 of that aircraft, in plain language form or in coded form at the election of the purchaser/lessee if the coded form provides for the preservation and retrieval of information in a manner acceptable to the DCA.

**8.4 FLIGHT CREW REQUIREMENTS****8.4.1.1 COMPOSITION OF THE FLIGHT CREW**

- (a) The number and composition of the flight crew may not be less than that specified in the flight manual or other documents associated with the airworthiness certificate.
- (b) Where radio equipment is installed in the aircraft, the flight crew shall include at least one member who holds a valid radio licence authorizing operation of the type of radio transmitting equipment to be used.
- (c) A co-pilot (CP) is required for IFR commercial air transport operations, unless the Authority has issued an exemption in accordance with the exemption process in DCA Departmental Exposition Manual 3.9, for the use of an autopilot in lieu of a co-pilot. This exemption shall be for domestic operations only and aeroplanes weighting less than 5700 kg (12566 lb).

**8.4.1.2 FLIGHT CREW QUALIFICATIONS**

- (a) The PIC shall ensure that the licences of each flight crewmember have been issued or rendered valid by the State of Registry, contain the proper ratings, and that all that the flight crewmembers have maintained recency of experience.
- (b) No person may operate a civil aircraft in commercial air transport unless that person is qualified for the specific operation and in the specific type of aircraft used.
- (c) The owner or operator of an aircraft shall ensure that the flight crewmembers demonstrate the ability to speak and understand the language used for radiotelephony communications and for international operations English.

**8.4.1.3 LICENCES REQUIRED**

- (a) No person may act as PIC or in any other capacity as a required flight crewmember of a civil aircraft of:
  - (1) Myanmar registry, unless he or she carries in his or her personal possession the appropriate and current licence for that flight crew position for that type of aircraft and a valid medical certificate
  - (2) Foreign registry, unless he or she carries in his or her personal possession a valid and current licence for that type of aircraft issued or validated by the State in which the aircraft is registered.

#### **8.4.1.4 RATING REQUIRED FOR IFR OPERATIONS**

- (a) No person may act as pilot of a civil aircraft under IFR or in weather conditions less than the minimums prescribed for VFR flight unless—
  - (1) The pilot holds an instrument rating or an ATP Licence with an appropriate aircraft category, class, and type (if required) rating for the aircraft being flown;

#### **8.4.1.5 PILOT RECENCY TAKE-OFF AND LANDINGS, COMMERCIAL AIR TRANSPORT OPERATIONS**

- (a) No person may act as PIC or co-pilot of an aircraft carrying passengers unless, within the preceding 90 days that pilot has:
  - (1) Made 3 take-offs and landings as the sole manipulator of the flight controls in an aircraft of the same category and class and if a type rating is required, of the same type or in a flight simulation training device approved for the purpose.
  - (2) For a tailwheel aeroplane, made the 3 take-offs and landings in a tailwheel aeroplane with each take-off and landing to a full stop.
  - (3) For night operations, made the 3 take-offs and landings required by paragraph (a)(1) at night with each take-off and landing to a full stop.
- (b) A pilot who has not met the recency of experience for take-offs and landings shall satisfactorily complete a requalification curriculum acceptable to the Authority.
- (c) Requirements of paragraphs (a) and (b) may be satisfied in a flight simulator approved by the Authority.

#### **8.4.1.6 PILOT RECENCY- IFR OPERATIONS**

- (a) No person may act as a pilot under IFR, nor in IMC, unless he or she has, within the past 6 calendar-months—
  - (1) Logged at least 6 hours of instrument flight time including at least 3 hours in flight in the category of aircraft; and
  - (2) Completed at least 6 instrument approaches.
- (b) A pilot who has completed an instrument proficiency check with an authorized representative of the Authority retains currency for IFR operations for 6 calendar-months following that check.

**8.4.1.7 PILOT REGENCY CRUISE RELIEF PILOT**

- (a) No person may act as a cruise relief pilot in commercial air transport unless within the preceding 90 days, that pilot has either:
  - (1) Operated as pilot-in-command, co-pilot or cruise relief pilot on the same type of aircraft; or
  - (2) Carried out flying skill refresher training including normal, abnormal and emergency procedures specific to cruise flight on the same type of aircraft or in a flight simulator approved for the purpose, and has practiced approach and landing procedures, where the approach and landing procedure practice may be performed as the pilot who is not flying the aircraft.
- (b) When a cruise relief pilot is flying several variants of the same type of aircraft or different types of aircraft with similar characteristics in terms of operating procedures, systems, and handling, the recency or refreshing training may be combined, if approved by the Authority.

**8.4.1.8 PILOT PROFICIENCY - COMMERCIAL AIR TRANSPORT OPERATIONS**

- (a) The qualification, training and proficiency checking requirements for flight crewmembers engaged in commercial air transport are listed in Subsection 8.10. Additionally, the following requirements in (b) – (c) shall be met, as applicable.
- (b) **All pilots.** No person shall act as a pilot of an aircraft unless he or she has successfully passed two proficiency checks within the 12 months, conducted by an authorized representative of Authority. The proficiency check requirement –
  - (1) Shall ensure that piloting technique and the ability to execute emergency procedures is checked in such a way as to demonstrate the pilot's competence on each type or variant of a type of aircraft, including where the operations may be conducted under IFR;
  - (2) Shall not be satisfied by the conduct of two checks that are similar and which occur within a period of four consecutive months.
  - (3) May be combined for several variants of the same type of aircraft or different types of aircraft with similar characteristics in terms of operating procedures, systems and handling, if approved by the Authority.
- (c) **Single pilot operations.** No person shall act as PIC of an aircraft unless he or she has completed the following proficiency requirement in the class of aeroplane in an environment representative of the operation:

- (1) For operations under the IFR or at night, have accumulated at least 50 hours flight time on the class of aeroplane, of which at least 10 hours shall be as PIC;
  - (2) For operations under the IFR, have accumulated at least 25 hours flight time under the IFR on the class of aeroplane, which may form part of the 50 hours flight time in (1) above;
  - (3) For operations at night, have accumulated at least 15 hours flight time at night, which may form part of the 50 hours flight time in (1) above; and
  - (4) Have successfully completed training programmes that include, in addition to the operator's training programme, passenger briefing with respect to emergency evacuation, autopilot management, and the use of simplified in-flight documentation.
- (d) The aircraft pilot proficiency check and the instrument proficiency check must be accomplished by the Authority or an authorized representative of the Authority in the category, class and type of aircraft to be operated, or in a flight simulation training device approved for the purpose, to the requirements in Part 8: 8.10.1.19 and IS: 8.10.1.19 and the applicable skill test in MCAR Part 2.

#### **8.4.1.9 PILOT PRIVILEGES AND LIMITATIONS**

A pilot may conduct operations only within the general privileges and limitations of each licence, rating or authorization as specified in MCAR Part-2 of these requirements.



**8.5 CREWMEMBER DUTIES AND RESPONSIBILITIES****8.5.1.1 DUTIES OF PILOT-IN-COMMAND**

- (a) The pilot-in-command shall be responsible for the safety of all crew members, passengers and cargo on board when the doors are closed. The pilot-in-command shall also be responsible for the operation and safety of the aeroplane from the moment the aeroplane is ready to move for the purpose of taking off until the moment it finally comes to rest at the end of the flight and the engine(s) used as primary propulsion units are shut down.
- (b) The pilot-in-command shall ensure that the checklists specified in 8.5.1.10 are complied with in detail.
- (c) The pilot-in-command shall be responsible for notifying the nearest appropriate authority by the quickest available means of any accident involving the aeroplane, resulting in serious injury or death of any person or substantial damage to the aeroplane or property.
- (d) The pilot-in-command shall be responsible for reporting all known or suspected defects in the aeroplane, to the operator, at the termination of the flight.
- (e) The pilot-in-command shall be responsible for the journey log book or the general declaration containing the information listed in MCAR Part-1.
- (f) The pilot-in-command shall be responsible for reporting to the Aviation Police Office and First Information Report (FIR) to Myanmar Police Force (within 24 hours) in case of smoking on board in aircraft.

**8.5.1.2 DUTIES OF FLIGHT OPERATIONS OFFICER/FLIGHT DISPATCHER**

- (a) A flight operations officer/flight dispatcher in conjunction with a method of control and supervision of flight operations in accordance with MCAR Part-1 shall:
  - (1) assist the pilot-in-command in flight preparation and provide the relevant information;
  - (2) assist the pilot-in-command in preparing the operational and ATS flight plans, sign when applicable and file the ATS flight plan with the appropriate ATS unit;
  - (3) furnish the pilot-in-command while in flight, by appropriate means, with information which may be necessary for the safe conduct of the flight; and

- (4) notify the appropriate ATS unit when the position of the aeroplane cannot be determined by an aircraft tracking capability, and attempts to establish communication are unsuccessful.
- (b) In the event of an emergency, a flight operations officer/flight dispatcher shall:
  - (1) initiate such procedures as outlined in the operations manual while avoiding taking any action that would conflict with ATC procedures; and
  - (2) convey safety-related information to the pilot-in-command that may be necessary for the safe conduct of the flight, including information related to any amendments to the flight plan that become necessary in the course of the flight.

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

### **8.5.1.3 COMPLIANCE WITH LOCAL LAW AND REQUIREMENTS**

- (a) The PIC shall comply with the relevant laws, requirements and procedures of the States in which the aircraft is operated.
- (b) If an emergency situation which endangers the safety of the aircraft or persons necessitates the taking of action which involves a violation of local requirements or procedures, the PIC shall—
  - (1) Notify the appropriate local Authority without delay;
  - (2) Submit a report of the circumstances, if required by the State in which the incident occurs; and
  - (3) Submit a copy of this report to the State of Operator or State of Register.
- (c) Each PIC shall submit reports specified in paragraph (b) to the Authority within 10 days in the form (C.A Form 165) prescribed.

### **8.5.1.4 NEGLIGENCE OR RECKLESS OPERATIONS OF THE AIRCRAFT**

No person may operate an aircraft in a negligent or reckless manner so as to endanger life or property of others.

### **8.5.1.5 FITNESS OF FLIGHT CREWMEMBERS**

- (a) No person may act as PIC or in any other capacity as a required flight crew member when he or she is aware of any decrease in his or her medical fitness which might render the crewmember unable to safely exercise the privileges of his or her licence.

- (b) The PIC shall be responsible for ensuring that a flight is not—
  - (1) Commenced if any flight crewmember is incapacitated from performing duties by any cause such as injury, sickness, fatigue, the effects of alcohol or drugs; or
  - (2) Continued beyond the nearest suitable aerodrome if a flight crewmember's capacity to perform functions is significantly reduced by impairment of faculties from causes such as fatigue, sickness or lack of oxygen.

#### **8.5.1.6 PROHIBITION ON USE OF PSYCHOACTIVE SUBSTANCES, INCLUDING NARCOTICS, DRUGS OR ALCOHOL**

- (a) No person may act or attempt to act as a crewmember of a civil aircraft—
  - (1) Within 8 hours after the consumption of any alcoholic beverage;
  - (2) While under the influence of alcohol; or
  - (3) While using any psychoactive substance that affects the person's faculties in any way contrary to safety.
- (b) A crewmember shall, up to 8 hours before or immediately after acting or attempting to act as a crewmember, on the request of a FOI or the Authority, submit to a test to indicate the presence of alcohol or other psychoactive substances in the blood.
- (c) Whenever there is a reasonable basis to believe that a person may not be in compliance with this paragraph and upon the request of the Authority, that person shall furnish the Authority or authorize any clinic, doctor, or other person to release to the Authority, the results of each blood test taken for presence of alcohol or narcotic substances up to 8 hours before or immediately after acting or attempting to act as a crewmember.
- (d) Any test information provided to the Authority under the provisions of this section may be used as evidence in any legal proceeding.

#### **8.5.1.7 FLIGHT CREWMEMBER USE OF SEAT BELTS AND SHOULDER HARNESSSES**

- (a) Each flight crewmember shall have his or her seat belts fastened during take-off and landing and all other times when seated at his or her station.
- (b) Each flight crewmember occupying a station equipped with a shoulder harness shall fasten that harness during take-off and landing, except that the shoulder harness may be unfastened if the crewmember cannot perform the required duties with the shoulder harness fastened.

- (c) Each occupant of a seat equipped with a combined safety belt and shoulder harness shall have the combined safety belt and shoulder harness properly secured about that occupant during take-off and landing and be able to properly perform assigned duties.
- (d) At each unoccupied seat, the safety belt and shoulder harness, if installed, shall be secured so as not to interfere with crewmembers in the performance of their duties or with the rapid egress of occupants in an emergency.

#### **8.5.1.8 FLIGHT CREWMEMBERS AT DUTY STATIONS**

- (a) Each required flight crewmember shall remain at the assigned duty station during take-off and landing and critical phases of flight.
- (b) Each flight crewmember shall remain at his or her station during all phases of flight unless—
  - (1) Absence is necessary for the performance of his or her duties in connection with the operation;
  - (2) Absence is necessary for physiological needs, provided one qualified pilot remains at the controls at all times; or
  - (3) The crewmember is taking a rest period and a qualified relief crewmember replaces him or her at the duty station.
    - (i) For the assigned PIC during the en-route cruise portion of the flight by a pilot who holds an airline transport pilot licence and an appropriate type rating, and who is currently qualified as PIC or CP, and is qualified as PIC of that aircraft during the en-route cruise portion of the flight; and
    - (ii) In the case of the assigned CP, by a pilot qualified to act as PIC or Co-Pilot of that aircraft during en - route operations.

#### **8.5.1.9 REQUIRED CREWMEMBER EQUIPMENT**

- (a) Each crewmember involved in night operations shall have a flashlight at his or her station.
- (b) Each pilot crewmember shall have at his or her station an aircraft checklist containing the normal, abnormal and emergency procedures relating to the operation of the aircraft for that type aircraft.
- (c) Each pilot crew member shall have at his or her station current and suitable charts to cover the route of the proposed flight and any route along which it is reasonable to expect that the flight may be diverted.

- (d) Each flight crewmember assessed as fit to exercise the privileges of a licence subject to the use of suitable correcting lenses, shall have a spare set of the correcting lenses readily available when performing as a required crewmember in commercial air transport.

#### **8.5.1.10 COMPLIANCE WITH CHECKLISTS**

- (a) An AOC holder shall establish the use of checklists as an integral part of the organization's standard operating procedures (SOPs). Flight crew shall be instructed on the use of these checklists. Emergency equipment checklists and instructions on their use should also be provided. The design of the checklists shall observe human factors principles.
- (b) The PIC shall ensure that the flight crew follows the approved checklist procedures when operating the aircraft.

#### **8.5.1.11 SEARCH AND RESCUE INFORMATION**

For all international flights, the PIC shall have on board the aircraft essential information concerning the search and rescue services in the areas over which he or she intends to operate the aircraft.

#### **8.5.1.12 SECURITY OF THE FLIGHT CREW COMPARTMENT**

- (a) In all aeroplanes which are equipped with a flight crew compartment door, this door shall be capable of being locked, and means shall be provided by which cabin crew can discreetly notify the flight crew in the event of suspicious activity or security breaches in the cabin.
- (b) All passenger-carrying aeroplanes of a maximum certificated take-off mass in excess of 45 500 kg or with a passenger seating capacity greater than 60 shall be equipped with an approved flight crew compartment door that is designed to resist penetration by small arms fire and grenade shrapnel, and to resist forcible intrusions by unauthorized persons. This door shall be capable of being locked and unlocked from either pilot's station.
- (c) In all aeroplanes which are equipped with a flight crew compartment door in accordance with;
  - (1) this door shall be closed and locked from the time all external doors are closed following embarkation until any such door is opened for disembarkation, except when necessary to permit access and egress by authorized persons; and
  - (2) means shall be provided for monitoring from either pilot's station the entire door area outside the flight crew compartment to identify persons requesting entry and to detect suspicious behavior or potential threat.

**8.5.1.13      ADMISSION TO THE FLIGHT DECK—COMMERCIAL AIR TRANSPORT**

- (a) No person may admit any person to the flight deck of an aircraft engaged in commercial air transport operations unless the person being admitted is—
  - (1) An operating crewmember of own operator.
  - (2) A representative of the Authority responsible for certification, licensing or inspection, if this is required for the performance of his or her official duties; or
  - (3) Permitted by and carried out in accordance with instructions contained in the Operations Manual.
- (b) The PIC shall ensure that—
  - (1) In the interest of safety, admission on the flight deck does not cause distraction and/or interference with the flight's operations; and
  - (2) All persons carried on the flight deck are made familiar with the relevant safety procedures.

**8.5.1.14      ADMISSION OF FLIGHT OPERATIONS INSPECTOR TO THE FLIGHT DECK**

Whenever, in performing the duties of conducting an inspection, a safety inspector (flight operations) from the Authority presents [Inspector's Credential Card] to the PIC, the PIC shall give the safety inspector (flight operations) free and uninterrupted access to the flight deck of the aircraft.

**8.5.1.15      SIMULATED ABNORMAL SITUATIONS IN FLIGHT: COMMERCIAL AIR TRANSPORT**

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

**8.5.1.16      COMPLETION OF THE TECHNICAL LOG — COMMERCIAL AIR TRANSPORT**

- (a) The PIC shall ensure that all portions of the technical log are completed at the appropriate points before, during and after flight operations, including:
  - (1) The journey logbook and
  - (2) The aircraft maintenance records section.

**8.5.1.17      REPORTING OF FACILITY AND NAVIGATION AID INADEQUACIES**

Each crewmember shall report, without delay, any inadequacy or irregularity of a facility or navigational aid observed in the course of operations to the person responsible for that facility or navigational aid.

**8.5.1.18 REPORTING OF HAZARDOUS CONDITIONS**

- (a) The PIC shall report to the appropriate ATC facility, without delay and with enough detail to be pertinent to the safety of other aircraft, adverse weather information, any hazardous routine meteorological observation during en- route and climb-out phases of the flight, special and other non-routine observations during any phase of the flight and volcanic activity.
- (b) The PIC shall report the runway braking action special air-report 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 ICAO Doc 4444, Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM), Chapter 4 and Appendix 1.*

**8.5.1.19 REPORTING OF INCIDENTS**

- (a) **Air traffic incident report.** The PIC shall submit, without delay, an air traffic incident report whenever an aircraft in flight has been endangered by—
  - (1) A near collision with another aircraft or object;
  - (2) Faulty air traffic procedures or lack of compliance with applicable procedures by ATC or by the flight crew; or
  - (3) A failure of ATC facilities.
- (b) **Birds.** In the event a bird constitutes an in-flight hazard or an actual bird strike occurs, the PIC shall, without delay—
  - (1) Inform the appropriate ground station whenever a potential bird hazard is observed; and
  - (2) Submit a written bird strike report after landing.
- (c) **Dangerous Goods.** The PIC shall inform the appropriate ATC facility, if the situation permits, when an in-flight emergency occurs involving dangerous goods on board.
- (d) **Unlawful Interference.** The PIC shall submit a report to the local authorities and to the Authority, without delay, following an act of unlawful interference with the crewmembers on board an aircraft.

**8.5.1.20 ACCIDENT NOTIFICATION**

- (a) The PIC shall notify the nearest appropriate Authority, by the quickest available means, of any accident involving his or her aircraft that results in serious injury or death of any person, or substantial damage to the aircraft or property.
- (b) The PIC shall submit a report to the Authority of any accident which occurred while he or she was responsible for the flight.

### **8.5.1.21 OPERATION OF COCKPIT VOICE AND FLIGHT DATA RECORDERS**

- (a) The PIC shall ensure that whenever an aircraft has flight recorders installed, those recorders are operationally checked and operated continuously from the instant—
  - (1) For a flight data recorder, the aircraft begins its take-off roll until it has completed the landing roll, and
  - (2) For a cockpit voice recorder, the initiation of the pre-start checklist until the end of the securing aircraft checklist.
- (b) The PIC may not permit a flight data recorder or cockpit voice recorder to be disabled, switched off or erased during flight, unless necessary to preserve the data for an accident or incident investigation.
- (c) In event of an accident or incident, the PIC shall act to preserve the recorded data for subsequent investigation upon completion of flight.
- (d) The operator shall ensure, to the extent possible, in the event the aeroplanes becomes involved in an accident or incident, the preservation of all related flight recorder records and, if necessary, the associated flight recorders, and their retention in safe custody pending their disposition as determined in accordance with Annex-13.

### **8.5.1.22 CARRIAGE OF DANGEROUS GOODS**

- (a) No person shall carry dangerous goods in an aircraft registered in Myanmar or operated in Myanmar except:
  - (1) With the written permission of the Authority and subject to any condition the Authority may impose in granting such permission; and
  - (2) In accordance with the Technical Instructions for the Safe Transport of Dangerous Goods by Air issued by the Council of International Civil Aviation Organization and with any variations to those instructions that the Authority may from time to time mandate and provide notification of to ICAO.

### **8.5.1.23 MICROPHONES**

For AOC holders operating aircraft, a required flight crewmember shall use a boom or throat microphone to communicate with another flight crewmember and air traffic service below the transition level or altitude.



**8.5.1.24 ALL AEROPLANES OPERATED BY A SINGLE PILOT UNDER THE INSTRUMENT FLIGHT RULES (IFR)**

- (a) All aeroplanes operated by a single pilot under the IFR shall be equipped with:
- (1) A serviceable autopilot that has at least altitude hold and heading select modes;
  - (2) A headset with a boom microphone or equivalent; and
  - (3) Means of displaying charts that enables them to be readable in all ambient light conditions.

**8.5.1.25 AEROPLANES 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)**

- (a) Where aeroplanes 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, the use of such systems for the safe operation of an aeroplane shall be approved by the Authority.

*Note. — 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).*

- (b) In approving the operational use of automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS, the Authority shall ensure that:
- (1) the equipment meets the appropriate airworthiness certification requirements;
  - (2) the operator has carried out a safety risk assessment of the operations supported by the automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS;
- (c) The operator has established and documented the procedures for the use of, and training requirements for, automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS.

*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 ICAO Annex 6 Part 1 Attachment H.*

**8.5.1.26 ELECTRONIC FLIGHT BAGS (EFBS)****(a) EFB equipment**

Where portable EFBs are used on board an aeroplane, the operator shall ensure that they do not affect the performance of the aeroplane systems, equipment or the ability to operate the aeroplane.

**(b) EFB functions**

Where EFBs are used on board an aeroplane the operator shall:

- (1) assess the safety risk(s) associated with each EFB function;
- (2) establish and document the procedures for the use of, and training requirements for, the device and each EFB function; and
- (3) ensure that, in the event of an EFB failure, sufficient information is readily available to the flight crew for the flight to be conducted safely.
- (4) The Authority shall issue a specific approval for the operational use of EFB functions to be used for the safe operation of aeroplanes.

**(c) EFB specific approval**

When issuing a specific approval for the use of EFBs, the Authority shall ensure that:

- (1) the EFB equipment and its associated installation hardware, including interaction with aeroplane systems if applicable, meet the appropriate airworthiness certification requirements;
- (2) the operator has assessed the safety risks associated with the operations supported by the EFB function(s);
- (3) the operator has established requirements for redundancy of the information (if appropriate) contained in and displayed by the EFB function(s);
- (4) the operator has established and documented procedures for the management of the EFB function(s) including any database it may use; and
- (5) the operator has established and documented the procedures for the use of, and training requirements for, the EFB and the EFB function(s).

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

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

**8.5.1.27 Implementation of international health regulations and related provisions**

- (a) The pilot-in-command of an aircraft shall ensure that a suspected communicable disease is reported promptly to air traffic control, in order to facilitate provision for the presence of any special medical personnel and equipment necessary for the management of public health risks on arrival.

*Note (1) A communicable disease could be suspected and require further evaluation if a person has a fever (temperature 38°C/100°F or greater) that is associated with certain signs or symptoms: eg. appearing obviously unwell; persistent coughing; impaired breathing; persistent diarrhea; persistent vomiting; skin rash; bruising or bleeding without previous injury; or, confusion of recent onset.*

*Note (2) In the event of a case of suspected communicable disease on board an aircraft, the pilot-in-command may need to follow his operator's protocols and procedures, in addition to health-related legal requirements of the countries of departure and/ or destination. The latter would normally be found in the Aeronautical Information Publications (AIPs) of the States concerned.*

- (b) The operator shall establish procedures for the pilot-in-command to report promptly to air traffic control (ATC) a suspected communicable disease, with transmission of the following information:
- a) Aircraft identification;
  - b) Departure aerodrome;
  - c) Destination aerodrome;
  - d) Estimated time of arrival;
  - e) Number of persons on board;
  - f) Number of suspected case(s) on board; and
  - g) Nature of the public health risk, if known

**8.6 FLIGHT PLANNING AND SUPERVISION****8.6.1.1 FLIGHT PREPARATION**

- (a) A flight shall not be commenced until flight preparation forms have been completed certifying that the pilot-in command is satisfied that:
  - (1) the aeroplane is airworthy and the appropriate certificates (i.e. airworthiness, registration) are on board the aeroplane;
  - (2) the instruments and equipment prescribed in MCAR Part-7, for the particular type of operation to be undertaken, are installed and are sufficient for the flight;
  - (3) a maintenance release as prescribed in MCAR Part M has been issued in respect of the aeroplane;
  - (4) the mass of the aeroplane and center of gravity location are such that the flight can be conducted safely, taking into account the flight conditions expected;
  - (5) any load carried is properly distributed and safely secured;
  - (6) a check has been completed indicating that the operating limitations of 8.7 can be complied with for the flight to be undertaken; and
  - (7) the Standards of 8.6.1.2 relating to operational flight planning have been complied with.
- (8) completed flight preparation forms shall be kept by the operator for a period of three months.

**8.6.1.2 OPERATIONAL FLIGHT PLANNING**

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

**8.6.1.3 ALTERNATE AERODROMES****(a) TAKE-OFF ALTERNATE AERODROME**

- (1) A take-off alternate aerodrome shall be selected and specified in the operational flight plan if either the meteorological conditions at the aerodrome of departure are below the operator's established aerodrome landing minima for that operation or if it would not be possible to return to the aerodrome of departure for other reasons.

- (2) The take-off alternate aerodrome shall be located within the following flight time from the aerodrome of departure:
  - (i) 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
  - (ii) 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; or
  - (iii) for aeroplanes engaged in extended diversion time operations (EDTO) where an alternate aerodrome meeting the distance criteria of ( 1 or 2 ) is not available, the first available alternate aerodrome located within the distance of the operator's specified maximum diversion time considering the actual take-off mass.
  - (iv) 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 operator's established aerodrome operating minima for that operation.

**(b) EN-ROUTE ALTERNATE AERODROMES**

En-route alternate aerodromes, required by 8.6.12 for extended diversion time operations by aeroplanes with two turbine engines, shall be selected and specified in the operational and air traffic services (ATS) flight plans.

**(c) DESTINATION ALTERNATE AERODROMES**

- (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 the operational and ATS flight plans, unless:
  - (i) 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:
    - (AA) the approach and landing may be made under visual meteorological conditions; and
    - (BB) 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

- (ii) the aerodrome is isolated. Operations into isolated aerodromes do not require the selection of a destination alternate aerodrome(s) and shall be planned in accordance with 8.6.1.5 (c), (4), (iv).
  - (AA) for each flight into an isolated aerodrome a point of no return shall be determined; and
  - (BB) a flight to be conducted to an isolated aerodrome shall not be continued past the point of no return unless a current assessment of meteorological conditions, traffic and other operational conditions indicate that a safe landing can be made at the estimated time of use.

*Note 1. — 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.*

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

- (2) Two destination alternate aerodromes shall be selected and specified in the operational and ATS flight plans when, for the destination aerodrome:
  - (i) meteorological conditions at the estimated time of use will be below the operator's established aerodrome operating minima for that operation; or
  - (ii) meteorological information is not available.
- (3) Notwithstanding the provisions in 8.6.2.1, 8.6.2.2, 8.6.2.3 the Authority may, based on the results of a specific safety risk assessment conducted by the operator which demonstrates how an equivalent level of safety will be maintained, approve operational variations to alternate aerodrome selection criteria. The specific safety risk assessment shall include at least the:
  - (i) capabilities of the operator;
  - (ii) overall capability of the aeroplane and its systems;
  - (iii) available aerodrome technologies, capabilities and infrastructure;
  - (iv) quality and reliability of meteorological information;
  - (v) identified hazards and safety risks associated with each alternate aerodrome variation; and
  - (vi) specific mitigation measures.

**8.6.1.4 METEOROLOGICAL CONDITIONS**

- (a) 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 part of the route to be flown under VFR will, at the appropriate time, be such as to enable compliance with these rules.
- (b) A flight to be conducted in accordance with the instrument flight rules shall not:
  - (1) take-off from the departure aerodrome unless the meteorological conditions, at the time of use, are at or above the operator's established aerodrome operating minima for that operation; and
  - (2) take-off 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 8.6.1.3, 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 operator's established aerodrome operating minima for that operation.
- (c) To ensure that an adequate margin of safety is observed in determining whether or not an approach and landing can be safely carried out at each alternate aerodrome, the operator shall specify appropriate incremental values for height of cloud base and visibility, acceptable to the Authority, to be added to the operator's established aerodrome operating minima.

*Note. — Guidance on the selection of these incremental values is contained in the Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).*

- (d) The Authority shall approve a margin of time established by the operator for the estimated time of use of an aerodrome.

*Note. — Guidance on establishing an appropriate margin of time for the estimated time of use of an aerodrome is contained in the Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).*

- (e) A flight to be operated in known or expected icing conditions shall not be commenced unless the aeroplane is certificated and equipped to cope with such conditions.
- (f) A flight to be planned or expected to operate in suspected or known ground icing conditions shall not take-off unless the aeroplane has been inspected for icing and, if necessary, has been given appropriate de-icing/anti-icing treatment.

- (g) Accumulation of ice or other naturally occurring contaminants shall be removed so that the aeroplane is kept in an airworthy condition prior to take-off.

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

#### **8.6.1.5 FUEL REQUIREMENTS**

- (a) An aeroplane shall carry a sufficient amount of usable fuel to complete the planned flight safely and to allow for deviations from the planned operation.
- (b) The amount of usable fuel to be carried shall, as a minimum, be based on:
  - (1) the following data:
    - (i) current aeroplane-specific data derived from a fuel consumption monitoring system, if available; or
    - (ii) if current aeroplane-specific data are not available, data provided by the aeroplane manufacturer; and
  - (2) the operating conditions for the planned flight including:
    - (i) anticipated aeroplane mass;
    - (ii) Notices to Airmen;
    - (iii) current meteorological reports or a combination of current reports and forecasts;
    - (iv) air traffic services procedures, restrictions and anticipated delays; and
    - (v) the effects of deferred maintenance items and/or configuration deviations.
- (c) The pre-flight calculation of usable fuel required shall include:
  - (1) **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;
  - (2) **trip fuel**, which shall be the amount of fuel required to enable the aeroplane to fly from take-off, or the point of in-flight re-planning, until landing at the destination aerodrome taking into account the operating conditions of 8.6.4(b).
  - (3) **contingency fuel**, which shall be the amount of fuel required to compensate for unforeseen factors. It shall be five per cent of the planned trip fuel or of the fuel required from the point of in-flight replanning based on the consumption rate used to plan the trip fuel but, in any case, shall not be lower than the amount required to fly for five minutes at holding speed at 450 m (1500 ft) above the destination aerodrome in standard conditions;



*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.*

- (4) **destination alternate fuel**, which shall be:
- (i) where a destination alternate aerodrome is required, the amount of fuel required to enable the aeroplane to:
    - perform a missed approach at the destination aerodrome;
    - climb to the expected cruising altitude;
    - fly the expected routing;
    - descend to the point where the expected approach is initiated;
    - and
    - conduct the approach and landing at the destination alternate aerodrome; or
  - (ii) where two destination alternate aerodromes are required, the amount of fuel, as calculated in 8.6.4 (c) (4) (i) required to enable the aeroplane to proceed to the destination alternate aerodrome which requires the greater amount of alternate fuel; or
  - (iii) 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
  - (iv) where the aerodrome of intended landing is an isolated aerodrome:
    - 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
    - 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;
- (5) **final reserve fuel**, which shall be the amount of fuel calculated using the estimated mass on arrival at the destination alternate aerodrome, or the destination aerodrome when no destination alternate aerodrome is required:

- (i) for a reciprocating engine aeroplane, the amount of fuel required to fly for 45 minutes, under speed and altitude conditions specified by the Authority; or
  - (ii) 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;
- (6) **additional fuel**, which shall be the supplementary amount of fuel required if the minimum fuel calculated in accordance with 8.6.4(c) 2,3,4,5,6 is not sufficient to:
- (i) allow the aeroplane to descend as necessary and proceed to an alternate aerodrome in the event of engine failure or loss of pressurization, whichever requires the greater amount of fuel based on the assumption that such a failure occurs at the most critical point along the route;
    - fly for 15 minutes at holding speed at 450 m (1500 ft) above aerodrome elevation in standard conditions; and
    - make an approach and landing;
  - (ii) allow an aeroplane engaged in EDTO to comply with the EDTO critical fuel scenario as established by the Authority;
  - (iii) meet additional requirements not covered above;

*Note 1. — Fuel planning for a failure that occurs at the most critical point along a route 8.6.4 (c) 6 (i) may place the aeroplane in a fuel emergency situation based on 8.6.5(b).*

*Note 2. — Guidance on EDTO critical fuel scenarios is contained in ICAO Annex 6 Part 1 Attachment C;*

- (7) **discretionary fuel**, which shall be the extra amount of fuel to be carried at the discretion of the pilot-in-command.
- (i) A flight shall not commence unless the usable fuel on board meets the requirements in 8.6.4 (c) 1,2,3,4,5 and 6 if required and shall not continue from the point of in-flight re-planning unless the usable fuel on board meets the requirements in 8.6.4 (c) 2,3,4,5 and 6 if required.
  - (ii) Notwithstanding the provisions in 8.6.4 (c) 1,2,3,4 and 6, the Authority may, based on the results of a specific safety risk assessment conducted by the operator which demonstrates how an equivalent level of safety will be maintained, approve variations to the pre-flight fuel calculation of taxi fuel, trip fuel, contingency fuel, destination alternate fuel, and additional fuel. The specific safety risk assessment shall include at least the:

- flight fuel calculations;
- capabilities of the operator to include:
  - a data-driven method that includes a fuel consumption monitoring programme ; and/or
  - the advanced use of alternate aerodromes; and
  - specific mitigation measures.

*Note. — Guidance on the specific safety risk assessment, fuel consumption monitoring programmes and the advanced use of alternate aerodromes is contained in the Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).*

- (d) 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.

*Note. — Guidance on procedures for in-flight fuel management including re-analysis, adjustment and/or re-planning considerations when a flight begins to consume contingency fuel before take-off is contained in the Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).*

#### **8.6.1.6 IN-FLIGHT FUEL MANAGEMENT**

- (a) Each AOC holder shall establish policies and procedures, approved by the Authority, to ensure that inflight fuel checks and fuel management are performed.
- (b) The pilot-in-command shall continually ensure that the amount of usable fuel remaining 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 en-route, is contained in the Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).*

- (c) 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.

- (d) 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 may result in landing with less than the planned final reserve fuel.

*Note 1. — The declaration of MINIMUM FUEL informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landing and 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 that an emergency situation is possible should any additional delay occur.*

*Note 2. — Guidance on declaring minimum fuel is contained in the Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).*

- (e) The pilot-in-command shall declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL, when the calculated usable fuel predicted 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 8.6.2.5 (5) (i) or (ii) 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 ICAO Annex 10, Volume II, 5.3.2.1.1 (b) 3.*

*Note 3. — Guidance on procedures for in-flight fuel management is contained in the Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).*

#### **8.6.1.7 REFUELING WITH PASSENGERS ONBOARD**

- (a) An aeroplane shall not be refueled when passengers are embarking, on board or disembarking unless it is properly attended by qualified personnel ready to initiate and direct an evacuation of the aeroplane by the most practical and expeditious means available.
- (b) When refueling with passengers embarking, on board or disembarking, two-way communication shall be maintained by the aeroplane’s inter-communication system or other suitable means between the ground crew supervising the refueling and the qualified personnel on board the aeroplane.

*Note 1. — Provisions concerning aircraft refueling are contained in ICAO Annex 14, Volume I, and guidance on safe refueling practices is contained in the Airport Services Manual, (Doc 9137), Parts 1 and 8.*

**8.6.1.8 OXYGEN SUPPLY**

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

- (a) 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 commenced unless sufficient stored breathing oxygen is carried to supply:
  - (1) 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
  - (2) the crew and passengers for any period that the atmospheric pressure in compartments occupied by them will be less than 620 hPa.
- (b) A flight to be operated with a pressurized aeroplane shall not be commenced unless a sufficient quantity of stored breathing oxygen is carried to supply all the crew members and passengers, as is appropriate to the circumstances of the flight being undertaken, in the event of loss of pressurization, for any period that the atmospheric pressure in any compartment occupied by them would be less than 700 hPa. In addition, when an aeroplane is operated at flight altitudes at which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes at 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.

**8.6.1.9 AIRCRAFT LOADING, MASS AND BALANCE**

- (a) No person may operate an aircraft unless all loads carried are properly distributed and safely secured.
- (b) No person may operate an aircraft unless the calculations for the mass of the aeroplane and center of gravity location indicate that the flight can be conducted safely, taking into account the flight conditions expected.
- (c) For commercial air transport operations, no PIC may commence a flight unless the PIC is satisfied that the loading and mass and balance calculations contained in the load manifest are accurate and comply with the aircraft limitations.

**8.6.1.10 MAXIMUM ALLOWABLE MASS TO BE CONSIDERED ON ALL LOAD MANIFESTS**

- (a) The PIC shall ensure that the maximum allowable mass for a flight does not exceed the maximum allowable take-off mass—
  - (1) For the specific runway and conditions existing at the take-off time; and
  - (2) Considering anticipated fuel and oil consumption that allows compliance with applicable en route performance, landing mass, and landing distance limitations for destination and alternate aerodromes.

**8.6.1.11 FLIGHT RELEASE REQUIRED—COMMERCIAL AIR TRANSPORT**

- (a) No person may start a flight under a flight following system without specific authority from the person authorized by the AOC holder to exercise operational control over the flight.
- (b) No person may commence a passenger-carrying flight in commercial air transport unless a qualified person authorized by the AOC holder to perform operational control functions has issued a flight release for that specific operation or series of operations.

**8.6.1.12 IN-FLIGHT PROCEDURES**

**(a) Aerodrome operating minima**

- (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 8.8.1.5(a).
- (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 (Doc 8168), Volume II.*

- (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 aeroplane shall not continue its approach-to-land at any aerodrome beyond a point at

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

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

**8.6.1.13      ADDITIONAL REQUIREMENTS FOR OPERATIONS BY AEROPLANES WITH TURBINE ENGINES BEYOND 60 MINUTES TO AN EN-ROUTE ALTERNATE AERODROME INCLUDING EXTENDED DIVERSION TIME OPERATIONS (EDTO)**

**8.6.1.13.1    REQUIREMENTS FOR OPERATIONS BEYOND 60 MINUTES TO AN EN-ROUTE ALTERNATE AERODROME**

- (a) Operators conducting operations beyond 60 minutes from a point on a route to an en-route alternate aerodrome shall ensure that:
  - (1) for all aeroplanes:
    - (i) en-route alternate aerodromes are identified; and
    - (ii) the most up-to-date information is provided to the flight crew on identified en-route alternate aerodromes, including operational status and meteorological conditions;
  - (2) for aeroplanes with two turbine engines, the most up-to-date information provided to the flight crew indicates that conditions at identified en-route alternate aerodromes will be at or above the operator's established aerodrome operating minima for the operation at the estimated time of use.

*Note. — Guidance on compliance with the requirements of these provisions is contained in Annex 6 Part I Attachment C.*

- (b) In addition to the requirements in above paragraph, all operators shall ensure that the following are taken into account and provide the overall level of safety intended by the provisions of Annex 6, Part I:
  - (1) operational control and flight dispatch procedures;
  - (2) operating procedures; and
  - (3) training programmes.

### 8.6.1.13.2 REQUIREMENTS FOR EXTENDED DIVERSION TIME OPERATIONS (EDTO)

- (a) Unless the Authority has issued a specific approval for EDTO, an aeroplane with two or more turbine engines shall not be operated on a route where the diversion time to an en-route alternate aerodrome from any point on the route, calculated in ISA and still-air conditions at the one-engine-inoperative cruise speed for aeroplanes with two turbine engines and at the all engines operating cruise speed for aeroplanes with more than two turbine engines, exceeds a threshold time established for such operations by that Authority. The specific approval shall identify the applicable threshold time established for each particular aeroplane and engine combination.

*Note 1. — When the diversion time exceeds the threshold time, the operation is considered to be an extended diversion time operation (EDTO).*

*Note 2. — Guidance on the establishment of an appropriate threshold time and on specific approval of extended diversion time operations is contained in Annex 6 Part I Attachment C and in the Extended Diversion Time Operations Manual (Doc 10085).*

*Note 3. — For the purpose of EDTO, the take-off and/or destination aerodromes may be considered en-route alternate aerodromes.*

- (b) On issuing the specific approval for extended diversion time operations, the State of the Operator shall specify the maximum diversion time granted to the operator for each particular aeroplane and engine combination.

*Note. — Guidance on the conditions to be used when converting diversion times to distances is contained in Annex 6 Part I Attachment C and in the Extended Diversion Time Operations Manual (Doc 10085).*

- (c) When specifying the appropriate maximum diversion time for the operator of a particular aeroplane type engaged in extended diversion time operations, the Authority shall ensure that:
- (1) *for all aeroplanes:* the most limiting EDTO significant system time limitation, if any, indicated in the aeroplane flight manual (directly or by reference) and relevant to that particular operation is not exceeded; and
  - (2) *for aeroplanes with two turbine engines:* the aeroplane is EDTO certified.

*Note 1. — EDTO may be referred to as ETOPS in some documents.*

*Note 2. — Guidance on compliance with the requirements of this provision is contained in Attachment C.*

- (i) Notwithstanding the provisions in 8.6.12 (2) (c) (i), the Authority may, based on the results of a specific safety risk assessment conducted by the operator which demonstrates how an equivalent level of safety will be maintained, approve operations



beyond the time limits of the most time-limited system. The specific safety risk assessment shall include at least the:

- (aa) capabilities of the operator;
- (bb) overall reliability of the aeroplane;
- (cc) reliability of each time-limited system;
- (dd) relevant information from the aeroplane manufacturer;  
and
- (ee) specific mitigation measures.

*Note. — Guidance on the specific safety risk assessment is contained in Annex 6 Part I Attachment C and in the Extended Diversion Time Operations Manual (Doc 10085).*

- (d) For aeroplanes engaged in EDTO, the additional fuel required by 8.6.4 (c) (6) (ii) shall include the fuel necessary to comply with the EDTO critical fuel scenario as established by the Authority.

*Note. — Guidance on compliance with the requirements of this provision is in Annex 6 Part I Attachment C and in the Extended Diversion Time Operations Manual (Doc 10085).*

- (e) A flight shall not proceed beyond the threshold time in accordance with 8.6.12.2 (a) unless the identified en-route alternate aerodromes have been reevaluated for availability and the most up-to-date information indicates that, during the estimated time of use, conditions at those aerodromes will be at or above the operator's established aerodrome operating minima for the operation. If any conditions are identified that would preclude a safe approach and landing at that aerodrome during the estimated time of use, an alternative course of action shall be determined.
- (f) The Authority shall, when specifying maximum diversion times for aeroplanes with two turbine engines, ensure that the following are taken into account in providing the overall level of safety intended by the provisions of Annex 8:
  - (1) reliability of the propulsion system;
  - (2) airworthiness certification for EDTO of the aeroplane type; and
  - (3) EDTO maintenance programme.

#### **8.6.1.13.3 GENERAL REQUIREMENTS FOR GROUND HANDLING FUNCTIONS**

- (a) Each AOC holder has established an organizational structure which include responsibilities and authority for the management of all ground handling functions prior to the issuance of an AOC.

- (b) Each AOC holder has established aircraft ground handling training requirements, subcontracting policies, handling processes, procedures and practices for all ground handling operations.
- (c) Each AOC holder shall maintain permanently its ground handling responsibility if all or part of the functions and tasks related to ground handling services have been contracted to a service provider.

**8.7 AEROPLANE PERFORMANCE OPERATING LIMITATIONS****8.7.1.1 GENERAL**

- (a) The provisions of 8.7.1.2 to 8.7.3 should be complied with, unless deviations therefrom are specifically authorized by the State of the Operator on the grounds that the special circumstances of a particular case make a literal observance of these provisions unnecessary for safety.
- (b) Compliance with 8.7.1.2 to 8.7.3 should be established using performance data in the flight manual and in accordance with other applicable operating requirements. In no case should the limitations in the flight manual be exceeded. However, additional limitations may be applied when operational conditions not included in the flight manual are encountered. The performance data contained in the flight manual may be supplemented with other data acceptable to the Authority if necessary to show compliance with 8.7.1.2 to 8.7.3. When applying the factors prescribed in this 8.7, account may be taken of any operational factors already incorporated in the flight manual data to avoid double application of factors.
- (c) The procedures scheduled in the flight manual should be followed except where operational circumstances require the use of modified procedures in order to maintain the intended level of safety.

**8.7.1.2 AEROPLANE TAKE-OFF PERFORMANCE LIMITATIONS**

- (a) No aeroplane should commence a take-off at a mass which exceeds the take-off mass specified in the flight manual for the altitude of the aerodrome and for the ambient temperature existing at the time of the take-off.
- (b) No aeroplane should commence a take-off at a mass such that, allowing for normal consumption of fuel and oil in flight to the aerodrome of destination and to the destination alternate aerodromes, the mass on arrival will exceed the landing mass specified in the flight manual for the altitude of each of the aerodromes involved and for the ambient temperatures anticipated at the time of landing.
- (c) No aeroplane should commence a take-off at a mass which exceeds the mass at which, in accordance with the minimum distances for take-off scheduled in the flight manual, compliance with the following sub paragraph inclusive is shown.
  - (1) The take-off run required should not exceed the take-off run available.
  - (2) The accelerate-stop distance required should not exceed the accelerate stop distance available.
  - (3) The take-off distance required should not exceed the take-off distance available.

- (d) When showing compliance with paragraph (c) the same value of  $V_1$  for the continued and discontinued take-off phases should be used.
- (e) When showing compliance with paragraph (c) the following parameters should be taken into account:
  - (1) the pressure altitude at the aerodrome;
  - (2) the ambient temperature at the aerodrome;
  - (3) the runway surface condition and the type of the runway surface;
  - (4) the runway slope in the direction of the take-off;
  - (5) the runway slope;
  - (6) not more than 50 per cent of the reported headwind component or not less than 150 per cent of the reported tailwind component; and
  - (7) the loss, if any, of runway length due to alignment of the aeroplane prior to take-off.
- (f) Credit is not taken for the length of the stop way or the length of the clearway unless they comply with the relevant specifications in Annex 14, Volume I.

#### **8.7.1.3 TAKE-OFF OBSTACLE CLEARANCE LIMITATIONS**

- (a) No aeroplane should commence a take-off at a mass in excess of that shown in the flight manual to correspond with a net take-off flight path which clears all obstacles either by at least a height of 10.7 m (35 ft) vertically or at least 90 m (300 ft) plus  $0.125D$  laterally, where  $D$  is the horizontal distance the aeroplane has travelled from the end of take-off distance available, except as provided in below paragraph (b,c and d) inclusive. For aeroplanes with a wingspan of less than 60 m (200 ft) a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m (200 ft), plus  $0.125D$  may be used. In determining the allowable deviation of the net take-off flight path in order to avoid obstacles by at least the distances specified, it is assumed that the aeroplane is not banked before the clearance of the net take-off flight path above obstacles is at least one half of the wingspan but not less than 15.2 m (50 ft) height and that the bank thereafter does not exceed  $15^\circ$ , except as provided in paragraph (e). The net take-off flight path considered is for the altitude of the aerodrome and for the ambient temperature and not more than 50 per cent of the reported headwind component or not less than 150 per cent of the reported tailwind component existing at the time of take-off. The take-off obstacle accountability area defined above is considered to include the effect of crosswinds.
- (b) Where the intended track does not include any change of heading greater than  $15^\circ$ ,
  - (1) for operations conducted in VMC by day, or

- (2) for operations conducted with navigation aids such that the pilot can maintain the aeroplane on the intended track with the same precision as for operations specified in above (1), obstacles at a distance greater than 300 m (1 000 ft) on either side of the intended track need not be cleared.
- (c) Where the intended track does not include any change of heading greater than 15° for operations conducted in IMC, or in VMC by night, except as provided in paragraph (b) (2); and where the intended track includes changes of heading greater than 15° for operations conducted in VMC by day, obstacles at a distance greater than 600 m (2 000 ft) on either side of the intended track need not be cleared.
- (d) Where the intended track includes changes of heading greater than 15° for operations conducted in IMC, or in VMC by night, obstacles at a distance greater than 900 m (3000 ft) on either side of the intended track need not be cleared.
- (e) An aeroplane may be operated with bank angles of more than 15° below 120 m (400 ft) above the elevation of the end of the take-off run available, provided special procedures are used that allow the pilot to fly the desired bank angles safely under all circumstances. Bank angles should be limited to not more than 20° between 30 m (100 ft) and 120 m (400 ft), and not more than 25° above 120 m (400 ft). Methods approved by the Authority should be used to account for the effect of bank angle on operating speeds and flight path including the distance increments resulting from increased operating speeds. The net take-off flight path in which the aeroplane is banked by more than 15° should clear all obstacles by a vertical distance of at least 10.7 m (35 ft) relative to the lowest part of the banked aeroplane within the horizontal distance specified in paragraph (a). The use of bank angles greater than those mentioned above should be subject to the approval from the Authority.

#### **8.7.1.4 EN-ROUTE LIMITATIONS**

##### **8.7.1.4.1 General**

More than 90 minutes at normal cruising speed away from an aerodrome at which the distance specifications for alternate aerodromes (see 8.7.3.3) are complied with and where it is expected that a safe landing can be made, unless it complies with 8.7.2.3(b).

##### **8.7.1.4.2 One engine inoperative**

- (a) No aeroplane should commence a take-off at a mass in excess of that which, in accordance with the one-engine inoperative en-route net flight path data shown in the flight manual, permits compliance either with below paragraph (b) or (c)

at all points along the route. The net flight path has a positive slope at 450 m (1 500 ft) above the aerodrome where the landing is assumed to be made after engine failure. The net flight path used is for the ambient temperatures anticipated along the route. In meteorological conditions where icing protection systems are to be operable, the effect of their use on the net flight path data is taken into account.

- (b) The slope of the net flight path is positive at an altitude of at least 300 m (1 000 ft) above all terrain and obstructions along the route within 9.3 km (5 NM) on either side of the intended track.
- (c) The net flight path is such as to permit the aeroplane to continue flight from the cruising altitude to an aerodrome where a landing can be made in accordance with 8.7.3.3, the net flight path clearing vertically, by at least 600 m (2000 ft), all terrain and obstructions along the route within 9.3 km (5 NM) on either side of the intended track. The provisions of below paragraph (d) to (h) inclusive are applied.
- (d) The engine is assumed to fail at the most critical point along the route, allowance being made for indecision and navigational error.
- (e) Account is taken of the effects of winds on the flight path.
- (f) Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with satisfactory fuel reserves, if a safe procedure is used.
- (g) The aerodrome, where the aeroplane is assumed to land after engine failure, is specified in the operational flight plan, and it meets the appropriate aerodrome operating minima at the expected time of use.
- (h) The consumption of fuel and oil after the engine becomes inoperative is that which is accounted for in the net flight path data shown in the flight manual.

#### **8.7.1.4.3 Two engines inoperative — aeroplanes with three or more engines**

- (a) Aeroplanes which do not comply with 8.7.2.1 should comply with below paragraph (b).
- (b) No aeroplane should commence a take-off at a mass in excess of that which, according to the two-engine inoperative en-route net flight path data shown in the flight manual, permits the aeroplane to continue the flight from the point where two engines are assumed to fail simultaneously, to an aerodrome at which the landing distance specification for alternate aerodromes (see 7.3) is complied with and where it is expected that a safe landing can be made. The net flight path clears vertically, by at least 600 m (2 000 ft) all terrain and obstructions along the route within 9.3 km (5 NM) on either side of the

intended track. The net flight path considered is for the ambient temperatures anticipated along the route. In altitudes and meteorological conditions where icing protection systems are to be operable, the effect of their use on the net flight path data is taken into account. The provisions of paragraph (b) to (g) inclusive apply.

- (c) The two engines are assumed to fail at the most critical point of that portion of the route where the aeroplane is at more than 90 minutes at normal cruising speed away from an aerodrome at which the landing distance specification for alternate aerodromes (see 8.7.3.3) is complied with and where it is expected that a safe landing can be made.
- (d) The net flight path has a positive slope at 450 m (1 500 ft) above the aerodrome where the landing is assumed to be made after the failure of two engines.
- (e) Fuel jettisoning is permitted to an extent consistent with below paragraph (f), if a safe procedure is used.
- (f) The aeroplane mass at the point where the two engines are assumed to fail is considered to be not less than that which would include sufficient fuel to proceed to the aerodrome and to arrive there at an altitude of at least 450 m (1 500 ft) directly over the landing area and thereafter to fly for 15 minutes at cruise power and/or thrust.
- (g) The consumption of fuel and oil after the engines become inoperative is that which is accounted for in the net flight path data shown in the flight manual.

#### **8.7.1.5 LANDING LIMITATIONS**

##### **8.7.1.5.1 Aerodrome of destination — dry runways**

- (a) No aeroplane should commence a take-off at a mass in excess of that which permits the aeroplane to be brought to a full stop landing at the aerodrome of intended destination from 15.2 m (50 ft) above the threshold:
  - (1) for turbo jet powered aeroplanes, within 60 per cent of the landing distance available; and
  - (2) for turbo-propeller aeroplanes, within 70 per cent of the landing distance available.
- (b) The mass of the aeroplane is assumed to be reduced by the mass of the fuel and oil expected to be consumed in flight to the aerodrome of intended destination. Compliance is shown with (a) and with either (d) or (e).
- (c) It is assumed that the aeroplane is landed on the most favourable runway and in the most favorable direction in still air.

- (d) It is assumed that the aeroplane is landed on the runway which is the most suitable for the wind conditions anticipated at the aerodrome at the time of landing, taking due account of the probable wind speed and direction, of the ground handling characteristics of the aeroplane, and of other conditions (i.e. landing aids, terrain).
- (e) If full compliance with (d) is not shown, the aeroplane may be taken off if a destination alternate aerodrome is designated which permits compliance with 8.7.3.3.
- (f) When showing compliance with (a) at least the following factors should be taken into account:
  - a) the pressure altitude of the aerodrome;
  - b) the runway slope in the direction of the landing if greater than  $\pm 2.0$  per cent; and
  - c) not more than 50 per cent of the headwind component or not less than 150 per cent of the tailwind component.

#### **8.7.1.5.2 Aerodrome of destination — wet or contaminated runways**

- (a) When the appropriate weather reports or forecasts or a combination thereof indicate that the runway at the estimated time of arrival may be wet, the landing distance available should be at least 115 per cent of the required landing distance determined in accordance with 8.7.3.1.
- (b) A landing distance on a wet runway shorter than that required by (a) but not less than that required by 8.7.3.1 may be used if the flight manual includes specific additional information about landing distance on wet runways.
- (c) When the appropriate weather reports or forecasts or a combination thereof indicate that the runway at the estimated time of arrival may be contaminated, the landing distance available should be the greater of:
  - a) the landing distance determined in accordance with (a); or
  - b) the landing distance determined in accordance with contaminated landing distance data with a safety margin acceptable to the Authority.
- (d) If compliance with (c) is not shown, the aeroplane may take off if a destination alternate aerodrome is designated for which compliance is shown with (c) and 8.7.3.3.
- (e) When showing compliance with (b) and (c), the criteria of 8.7.3.1 should be applied accordingly. However, 8.7.3.1 (a) (1) and (2) need not be applied to the wet and contaminated runway landing distance determination required by (b) and (c).



**8.7.1.5.3 Destination alternate aerodrome**

No aerodrome should be designated as a destination alternate aerodrome unless the aeroplane, at the mass anticipated at the time of arrival at such aerodrome, can comply with 8.7.3.1 and either 8.7.3.2 (a) or (b), in accordance with the landing distance required for the altitude of the alternate aerodrome and in accordance with other applicable operating requirements for the alternate aerodrome.

**8.7.1.5.4 Performance considerations before landing**

The operator should provide the flight crew with a method to ensure that a full stop landing, with a safety margin acceptable to the Authority, that is at least the minimum specified in the Type Certificate holder's aircraft flight manual (AFM), or equivalent, can be made on the runway to be used in the conditions existing at the time of landing and with the deceleration means that will be used.

**8.8 FLIGHT RULES (ALL OPERATIONS)****8.8.1.1 OPERATION OF AIRCRAFT ON THE GROUND**

- (a) No person may taxi an aircraft on the movement area of an aerodrome unless the person at the controls—
  - (1) Has been authorized by the owner, the lessee, or a designated agent;
  - (2) Is fully competent to taxi the aircraft;
  - (3) Is qualified to use the radio if radio communications are required; and
  - (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 aircraft movement at the aerodrome.
- (b) No person shall taxi an aircraft under the guidance of a signalman unless—
  - (1) The standard marshalling signals to the aircraft are provided in a clear and precise manner using the signals as prescribed by the Authority in IS: 8.8.2.11(a).
  - (2) The signalman is wearing a distinctive fluorescent identification vest to allow the flight crew to identify that he or she is the person responsible for the marshalling operation; and
  - (3) The signalman and all participating ground staff are using daylight-fluorescent wands, table-tennis bats or gloves for all signaling during daylight hours and illuminated wands at night or in low visibility.

**8.8.1.2 TAKE-OFF CONDITIONS**

- (a) Before commencing take-off, a PIC shall ensure that—
  - (1) According to the available information, the weather at the aerodrome and the condition of the runway intended to be used will allow for a safe take-off and departure; and
  - (2) The RVR or visibility in the takeoff direction of the aircraft is equal to or better than the applicable minimum.

**8.8.1.3 FLIGHT INTO KNOWN OR EXPECTED ICING**

- (a) No person may take-off an aircraft or continue to operate an aircraft en-route when icing conditions are expected or encountered, without ensuring that the aircraft is certified for icing operations and has sufficient operational de-icing or anti-icing equipment.

- (b) No person may take- off an aircraft when frost, ice or snow is adhering to the wings, control surfaces, propellers, engine inlets or other critical surfaces of the aircraft which might adversely affect the performance or controllability of the aircraft.
- (c) For commercial air transport operations, no person may take- off an aircraft when conditions are such that frost, ice or snow may reasonably be expected to adhere to the aircraft, unless the aircraft has been inspected for icing, and the procedures approved for the AOC holder by the Authority are followed to ensure ground de-icing and anti-icing is accomplished.

#### **8.8.1.4 MINIMUM FLIGHT ALTITUDES**

- (a) The operator shall be permitted to establish minimum flight altitudes for those routes flown for which minimum flight altitudes have been established by the State flown over or the responsible State, provided that they shall not be less than those established by that State.
- (b) The operator shall specify the method by which it is intended to determine minimum flight altitudes for operations conducted over routes for which minimum flight altitudes have not been established by the State flown over or the responsible State, and shall include this method in the operations manual. The minimum flight altitudes determined in accordance with the above method shall not be lower than specified in ICAO Annex 2.

#### **8.8.1.5 AERODROME OPERATING MINIMA**

- (a) The Authority shall require that the operator establish aerodrome operating minima for each aerodrome to be used in operations and shall approve the method of determination of such minima. Such minima shall not be lower than any that may be established for such aerodromes by the Authority, except when specifically approved by that Authority.
- (b) The Authority shall authorize operational credit(s) for operations with aeroplanes equipped with automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS. Where the operational credit relates to low visibility operations, the State of the Operator 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 (8.6.2.12), minima below the aerodrome operating minima;*
- b) reducing or satisfying the visibility requirements; or*

- c) *requiring fewer ground facilities as compensated for by airborne capabilities.*

*Note 2. — Guidance on operational credit for aircraft equipped with automatic landing systems, a HUD or equivalent displays, EVS, SVS and CVS is contained in Attachment H and in the Manual of All-Weather Operations (Doc 9365).*

*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).*

- (c) The Authority shall require that in establishing the aerodrome operating minima which will apply to any particular operation, the operator shall take full account of:
- (1) the type, performance and handling characteristics of the aeroplane and any conditions or limitations stated in the flight manual;
  - (2) the composition of the flight crew, their competence and experience;
  - (3) the dimensions and characteristics of the runways which may be selected for use;
  - (4) the adequacy and performance of the available visual and non-visual ground aids;
  - (5) the equipment available on the aeroplane for the purpose of navigation, acquisition of visual references and/or control of the flight path during the approach, landing and the missed approach;
  - (6) the obstacles in the approach and missed approach areas and the obstacle clearance altitude/height for the instrument approach procedures;
  - (7) the means used to determine and report meteorological conditions;
  - (8) the obstacles in the climb-out areas and necessary clearance margins;
  - (9) the conditions prescribed in the operations specifications; and
  - (10) any minima that may be promulgated by the State of the Aerodrome.

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

- (d) 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:
- (1) **Type A:** a minimum descent height or decision height at or above 75 m (250 ft); and
  - (2) **Type B:** a decision height below 75 m (250 ft). Type B instrument approach operations are categorized as:

- (i) **Category I (CAT I):** a decision height not lower than 60 m (200 ft) and with either a visibility not less than 800m or a runway visual range not less than 550 m;
- (ii) **Category II (CAT II):** a decision height lower than 60 m (200 ft) but not lower than 30 m (100 ft) and a runway visual range not less than 300 m; and
- (iii) **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 (e.g. an operation with a DH in the range of CAT IIIA but with an RVR in the range of CAT III would be considered a CATIII operation or an operation with a DH in the range of CAT II but with an RVR in the range of CAT I would be considered a CAT II operation). 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 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 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 contained in the Manual of All-Weather Operations (Doc 9365).*

- (iv) Authority 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).*

- (v) For take-off in low visibility, the State of the Operator 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.*

- (e) 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), minimum visibility 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, 1.7.*

- (f) 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.

#### **8.8.1.6 OPERATING NEAR OTHER AIRCRAFT—INCLUDING FORMATION FLIGHTS**

- (a) No person may operate an aircraft so close to another aircraft as to create a collision hazard.
- (b) No person may operate an aircraft, carrying passengers for hire, in formation flight.

#### **8.8.1.7 RIGHT-OF-WAY RULES—EXCEPT WATER OPERATIONS**

(a) **General.**

- (1) Each pilot shall maintain vigilance so as to see and avoid other aircraft; and
- (2) When a rule of this subsection gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear and taking into account the effect of aircraft wake turbulence.
- (3) Each pilot who has the right-of-way shall maintain his or her heading and speed but is still responsible for taking such action, including collision avoidance maneuvers based on resolution advisories provided by ACAS equipment, as will best avert collision.

- (b) **In distress.** An aircraft in distress has the right-of-way over all other air traffic.

(c) **Converging.**

- (1) When aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way.
- (2) If the converging aircraft are of different categories—
  - (i) A balloon has the right-of-way over any other category of aircraft;
  - (ii) A glider has the right-of-way over an airship, and power driven heavier than air aircraft; and

- (iii) An airship has the right-of-way over a power driven heavier than air aircraft
- (d) **Towing or refueling.** An aircraft towing or refueling other aircraft has the right-of- way over all other engine-driven aircraft, except aircraft in distress.
- (e) **Approaching head-on.** When aircraft are approaching each other head-on, or nearly so, each pilot of each aircraft shall alter course to the right.
- (f) **Overtaking.** Each aircraft that is being overtaken has the right-of-way and each pilot of an overtaking aircraft, whether climbing, descending or in horizontal flight, shall alter course to the right to pass well clear.
- (g) **Landing.** Aircraft, while on final approach to land or while landing, have the right-of-way over other aircraft in flight or operating on the surface.
- (h) **More than one landing aircraft.** When two or more aircraft are approaching an aerodrome for the purpose of landing, the aircraft at the lower altitude has the right-of-way.
- (i) The PIC shall not take advantage of the right of way landing rules in items (g) and (h) in this paragraph to cut in front of another aircraft that is on final approach to land or to overtake that aircraft.
- (j) **Emergency landing.** Aircraft that are compelled to land have the right-of-way over other aircraft.
- (k) **Taking off.** Aircraft taking off have the right-of-way over aircraft taxiing on the maneuvering area of an aerodrome.
- (l) **Surface movement of aircraft.**
  - (1) **Approaching head-on.** When aircraft are approaching each other head-on, or approximately so, each pilot of each aircraft shall stop, or wherever practicable alter course to the right so as to keep well clear
  - (2) **Converging.** When aircraft are converging on a course, the pilot who has the other aircraft on his right shall give way.
  - (3) **Overtaking.** Each aircraft that is being overtaken has the right-of-way and each pilot of an overtaking aircraft shall keep well clear.
- (m) Aircraft taxiing on the maneuvering area of an aerodrome.
  - (1) The pilot of an aircraft taxiing on the maneuvering area shall stop and hold at all runway-holding positions unless otherwise authorized by the aerodrome control tower.
  - (2) The pilot of an aircraft taxiing on the maneuvering area shall stop and hold at all lighted stop bars and may proceed further when the lights are switched off.

- (3) The pilot of an aircraft taxiing on the maneuvering area of an aerodrome shall give way to aircraft –
  - (i) taking off or about to take- off;
  - (ii) landing or in the final stages of an approach to landing.

#### **8.8.1.8 RIGHT-OF-WAY RULES—WATER OPERATIONS**

- (a) **General.** Each person operating an aircraft on the water shall, insofar as possible, keep clear of all vessels and avoid impeding their navigation, and shall give way to any vessel or other aircraft that is given the right-of-way by any rule of this subsection.
- (b) **Converging or Crossing.** When aircraft, or an aircraft and a vessel, are on crossing courses, the aircraft or vessel to the other's right has the right-of-way.
- (c) **Approaching head-on.** When aircraft, or an aircraft and a vessel, are approaching head-on, or nearly so, each shall alter its course to the right to keep well clear.
- (d) **Overtaking.** Each aircraft or vessel that is being overtaken has the right-of-way, and the one overtaking shall alter course to keep well clear.
- (e) **Special circumstances.** When aircraft, or an aircraft and a vessel, approach so as to involve risk of collision, each aircraft or vessel shall proceed with careful regard to existing circumstances, including the limitations of the respective aircraft.
- (f) **Landing and taking off.** When aircraft, on landing or taking off from the water, shall keep well clear of all vessels and avoid impeding their navigation.

#### **8.8.1.9 USE OF AIRCRAFT LIGHTS**

- (a) If an aircraft has red rotating beacon lights, or other lights installed to show that the engine is running, the pilot shall switch those lights on before starting engines and display those lights at all times the engines are running.
- (b) No person may operate an aircraft between the periods from sunset to sunrise unless—
  - (1) It has lighted navigation lights; and
  - (2) If anti-collision lights are installed, those lights are lighted.
- (c) No person may park or move an aircraft between the period from sunset to sunrise in, or in a dangerous proximity to, a movement area of an aerodrome, unless the aircraft—
  - (1) Is clearly illuminated;
  - (2) Has lighted navigation lights; or
  - (3) Is in an area that is marked by obstruction lights; or



- (4) Have lights to indicate when the engine is running.
- (d) No person may anchor an aircraft unless that aircraft—
  - (1) Has lighted anchor lights; or
  - (2) Is in an area where anchor lights are not required on vessels.
- (e) No person may operate an aircraft on water during the period from sunset to sunrise unless—
  - (1) It displays lights as required by the International Regulations for Preventing Collisions at Sea (most recent edition); or
  - (2) It shall display lights as similar as possible in characteristics and position to those required by the International Regulations for Preventing Collisions at Sea if it is not practical to display the lights exactly as required.
- (f) A pilot is permitted to switch off or reduce the intensity of any flashing lights fitted to meet the requirements of this paragraph if they do or are likely to—
  - (1) Adversely affect the satisfactory performance of duties; or
  - (2) Subject an outside observer to harmful dazzle.

#### **8.8.1.10 SIMULATED INSTRUMENT FLIGHT**

No person may engage in simulated instrument flight conditions during commercial air transport operations.

#### **8.8.1.11 IN-FLIGHT SIMULATION OF ABNORMAL SITUATIONS**

No person may simulate an abnormal or emergency situation during commercial air transport operations.

#### **8.8.1.12 PROHIBITED AREAS AND RESTRICTED AREAS**

No person may operate an aircraft in a prohibited area, or in restricted areas, the particulars of which have been duly published, except in accordance with the conditions of the restrictions or by permission of the State over whose territory the areas are established.

#### **8.8.1.13 CONTINUATION OF FLIGHT WHEN DESTINATION AERODROME IS TEMPORARILY RESTRICTED—COMMERCIAL AIR TRANSPORT**

- (a) No PIC may allow a flight to continue toward any aerodrome of intended landing where commercial air transport operations have been restricted or suspended, unless:
  - (1) In the opinion of the PIC, the conditions that are a hazard to safe operations may reasonably be expected to be corrected by the ETA; or
  - (2) There is no safer procedure.

**8.8.1.14 INTERCEPTION**

- (a) When intercepted by a military or government aircraft, each PIC shall comply with the international standards when interpreting and responding to visual signals and communication as specified in IS: 8.8.1.14(a).
- (b) No pilot may conduct an international flight unless the procedures and signals relating to interception of aircraft, as specified in IS: 8.8.2.11(a), are readily available on the flight deck.

**8.8.1.15 ADDITIONAL REQUIREMENTS FOR SINGLE PILOT OPERATIONS UNDER THE INSTRUMENT FLIGHT RULES (IFR)**

- (a) An aeroplane shall not be operated under the IFR by a single pilot unless approved by the Authority.
- (b) An aeroplane shall not be operated under the IFR by a single pilot unless:
  - (1) the flight manual does not require a flight crew of more than one;
  - (2) the aeroplane is propeller-driven;
  - (3) the maximum approved passenger seating configuration is not more than nine;
  - (4) the maximum certificated take-off mass does not exceed 5 700 kg;
  - (5) the aeroplane is equipped as described in MCAR Part -7 and
  - (6) the pilot-in-command has satisfied requirements of experience, training, checking and recency described in MCAR Part -2.

**8.8.1.16 ADDITIONAL REQUIREMENTS FOR OPERATIONS OF SINGLE-ENGINE TURBINE-POWERED AEROPLANES AT INSTRUMENT METEOROLOGICAL CONDITIONS (IMC)**

- (a) In approving operations by single-engine turbine-powered aeroplanes in IMC, the Authority shall ensure that the airworthiness certification of the aeroplane is appropriate and that the overall level of safety intended by the provisions of MCAR Part-8 and Part-21 is provided by:
  - (1) the reliability of the turbine engine;
  - (2) the operator's maintenance procedures, operating practices, flight dispatch procedures and crew training programmes; and
  - (3) equipment and other requirements provided in accordance with ICAO Annex 6 Part 1 Appendix 3.
- (b) All single-engine turbine-powered aeroplanes operated in IMC shall have an engine trend monitoring system, and those aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2005 shall have an automatic trend monitoring system.

**8.8.1.17 OPERATING CONSIDERATIONS AND FACILITIES**

The operator shall ensure that a flight will not commence or continue as planned unless it has been ascertained by every reasonable means available that the airspace containing the intended route from aerodrome of departure to aerodrome of arrival, including the intended take-off, destination and en-route alternate aerodromes, can be safely used for the planned operation. When intending to operate over or near conflict zones, a risk assessment shall be conducted and appropriate risk mitigation measures taken to ensure a safe flight.

*Note 1.— “Reasonable means” in this Standard is intended to denote the use, at the point of departure or while the aircraft is in flight, of information available to the operator either through official information published by the aeronautical information services or readily obtainable from other sources.*

*Note 2.— Guidance on safety risk assessments is contained in the Safety Management Manual (SMM) (Doc 9859).*

*Note 3.— The Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones (Doc 10084) contains further guidance on risk assessment for air operators when flying over or near conflict zones.*

**8.8.2 CONTROL OF AIR TRAFFIC**  
**8.8.2.1 ATC CLEARANCES**

- (a) Each PIC shall obtain an ATC clearance before operating a controlled flight, or a portion of a flight as a controlled flight.
- (b) Each PIC shall request an ATC clearance through the submission of a flight plan to an ATC unit, including potential re-clearance in flight.
- (c) Whenever an aircraft has requested a clearance involving priority, each PIC shall submit a report explaining the necessity for such priority, if requested by the appropriate ATC unit.
- (d) No person operating an aircraft on a controlled aerodrome may taxi on the maneuvering area or any runway without clearance from the aerodrome control tower.

**8.8.2.2 ADHERENCE TO ATC CLEARANCES**

- (a) When an ATC clearance has been obtained, no PIC may deviate from the clearance, except in an emergency, unless he or she obtains an amended clearance.
- (b) When operating in airspace requiring controlled flight, no PIC may operate contrary to ATC instructions, except in an emergency.

- (c) Each PIC who deviates from an ATC clearance or instructions in an emergency, shall notify ATC of that deviation as soon as possible.

#### **8.8.2.3 COMMUNICATIONS**

- (a) Each person operating an aircraft on a controlled flight shall maintain a continuous listening watch on the appropriate radio frequency of, and establish two-way communication as required with, the appropriate ATS unit.
- (b) Each person operating an aircraft on a controlled flight shall, except when landing at a controlled aerodrome, advise the appropriate ATS authority as soon as it ceases to be subject to ATS unit.

#### **8.8.2.4 ROUTE TO BE FLOWN**

- (a) Unless otherwise authorized or directed by the appropriate ATS unit, the PIC of a controlled flight shall, insofar as practicable—
  - (1) When on an established ATS route, operate along the defined centre line of that route; or
  - (2) When on any other route, operate directly between the navigation facilities and/or points defining that route.
- (b) The PIC of a controlled flight operating along an ATS route defined by reference to VORs shall change over for primary navigation guidance from the facility behind the aircraft to that ahead of it at, or as close as operationally feasible to, the change-over point, where established.

#### **8.8.2.5 INADVERTENT CHANGES**

- (a) A PIC shall take the following action in the event that a controlled flight inadvertently deviates from its current flight plan:
  - (1) **Deviation from track.** If the aircraft is off track, the PIC shall adjust the heading of the aircraft to regain track as soon as practicable.
  - (2) **Variation in true airspeed.** Each PIC shall inform the appropriate ATC facility if the average true airspeed at cruising level between reporting points varies from that given in the flight plan or is expected to vary by plus or minus 5 per cent of the true airspeed.
  - (3) **Change in time estimate.** Each PIC shall notify the appropriate ATC facility and give a revised estimated time as soon as possible if the time estimate for a reporting point, flight information region boundary, or destination aerodrome, whichever comes first, is found to be in excess of three minutes from that notified to ATC, or such other period of time as is prescribed by the appropriate ATC Authority or on the basis of air navigation regional agreements.

- (b) When an ADS agreement is in place, the air traffic services unit shall be informed automatically via data link whenever changes occur beyond the threshold values stipulated by the ADS event contract.

#### **8.8.2.6 ATC CLEARANCE—INTENDED CHANGES**

- (a) Requests for flight plan changes shall include the following information:
  - (1) **Change of cruising level.** Aircraft identification, requested new cruising level and cruising speed at this level, and revised time estimates, when applicable, at subsequent flight information region boundaries.
  - (2) **Change of route:**
    - (i) **Destination unchanged.** Aircraft identification, flight rules; description of new route of flight including related flight plan data beginning with the position from which requested change of route is to commence; revised time estimates, and any other pertinent information.
    - (ii) **Destination change.** Aircraft identification; flight rules; description of revised route of flight to revised destination aerodrome including related flight plan data, beginning with the position from which requested change of route is to commence; revised time estimates; alternate aerodrome(s); any other pertinent information.

#### **8.8.2.7 POSITION REPORTS**

- (a) Each pilot of a controlled flight shall report to the appropriate ATS authority, as soon as possible, the time and level of passing each designated compulsory reporting point, together with any other required information, unless exempted from this requirement by the appropriate ATS Authority.
- (b) Each pilot of a controlled flight shall make position reports in relation to additional points or intervals when requested by the appropriate ATS unit.
- (c) When operating via data link communications providing position information to the appropriate air traffic services unit, each pilot of a controlled flight shall only provide voice position reports when requested by the appropriate ATS unit.

#### **8.8.2.8 OPERATIONS ON OR IN THE VICINITY OF A CONTROLLED AERODROME**

- (a) No person may operate an aircraft to, from, through, or on an aerodrome having an operational control tower unless two-way communications are maintained between that aircraft and the control tower.

- (b) On arrival, each PIC shall establish communications required by (a) prior to 7.4 km (4 nautical miles) from the aerodrome when operating from the surface up to and including 760 m (2500 ft).
- (c) On departure, each PIC shall establish communications with the control tower before taxi.
- (d) Take-off, landing, taxi clearance. No person may, at any aerodrome with an operating control tower, operate an aircraft on a runway or taxiway or take-off or land an aircraft, unless an appropriate clearance has been received by ATC.
- (e) Communications failure. If the radio fails or two-way communication is lost, a PIC may continue a VFR flight operation and land if:
  - (1) The weather conditions are at or above basic VFR minimums; and
  - (2) Clearance to land from the ATC tower is given in accordance with the universal light signals and acknowledged by the PIC as contained in IS: 8.8.2.11(a) for light signals and acknowledgement.

#### **8.8.2.9 UNLAWFUL INTERFERENCE**

- (a) A PIC shall, when and if possible, notify the appropriate ATC facility / ATS unit when an aircraft is being subjected to unlawful interference, including—
  - (1) Any significant circumstances associated with the unlawful interference, and
  - (2) Any deviation from the current flight plan necessitated by the circumstances.
- (b) A PIC shall attempt to land as soon as practicable when an aircraft is subjected to unlawful interference at:
  - (1) The nearest suitable aerodrome, or
  - (2) A dedicated aerodrome assigned by the appropriate Authority unless considerations aboard the aircraft dictate otherwise.

#### **8.8.2.10 TIME CHECKS**

- (a) Each PIC shall use Co-Ordinated Universal Time (UTC), expressed in hours and minutes of the 24-hour day beginning at midnight, in flight operations.
- (b) Each PIC shall obtain a time check before operating a controlled flight and at such other times during the flight as may be necessary.
- (c) Whenever time is used in the application of data link communications, it shall be accurate to within one second of UTC.

**8.8.2.11 UNIVERSAL SIGNALS**

- (a) Upon observing or receiving any of the designated universal aviation signals as contained in IS: 8.8.2.11(a), each person operating an aircraft shall take such action as may be required by the interpretation of the signal.
- (b) The universal aviation signals shall have only the meaning indicated in the implementing standard.
- (c) Each person using universal signals in the movement of aircraft shall only use them for the purpose indicated.
- (d) No person may use signals likely to cause confusion with universal aviation signals.

**8.8.2.12 SIGNALMAN**

- (a) No person shall guide an aircraft unless trained, qualified and approved by the appropriate authority to carry out the functions of a signalman.
- (b) The signalman shall wear a distinctive fluorescent identification vest to allow the flight crew to identify that he or she is the person responsible for the marshalling operation.
- (c) The signalman shall use the marshalling equipment as specified in paragraph 8.8.1.1(b).

**8.8.2.13 AEROPLANE COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT****8.8.2.13.1 COMMUNICATION EQUIPMENT**

- (a) An aeroplane shall be provided with radio communication equipment capable of:
  - (1) conducting two-way communication for aerodrome control purposes;
  - (2) receiving meteorological information at any time during flight; and
  - (3) 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 8.8.2.13.1 (a) are considered fulfilled if the ability to conduct the communications specified therein is established during radio propagation conditions which are normal for the route.*

- (b) The radio communication equipment required in accordance with 8.8.2.13.1 (a) shall provide for communications on the aeronautical emergency frequency 121.5 MHz.

- (c) For operations where communication equipment is required to meet an RCP specification for performance-based communication (PBC), an aeroplane shall, in addition to the requirements specified in 8.8.2.13.1 (a):
  - (1) be provided with communication equipment which will enable it to operate in accordance with the prescribed RCP specification(s);
  - (2) have information relevant to the aeroplane RCP specification capabilities listed in the flight manual or other aeroplane documentation approved by the State of Design or State of Registry; and
  - (3) have information relevant to the aeroplane 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).*

- (d) The Authority shall, for operations where an RCP specification for PBC has been prescribed, ensure that the operator has established and documented:
  - (1) normal and abnormal procedures, including contingency procedures;
  - (2) flight crew qualification and proficiency requirements, in accordance with appropriate RCP specifications;
  - (3) a training programme for relevant personnel consistent with the intended operations; and
  - (4) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RCP specifications.
- (e) The Authority shall ensure that, in respect of those aeroplanes mentioned in 8.8.2.13.1 (c), adequate provisions exist for:
  - (1) receiving the reports of observed communication performance issued by monitoring programmes established in accordance with ICAO Annex 11, Chapter 3, 3.3.5.2; and
  - (2) taking immediate corrective action for individual aircraft, aircraft types or operators, identified in such reports as not complying with the RCP specification(s).

#### **8.8.2.13.2 NAVIGATION EQUIPMENT**

- (a) An aeroplane shall be provided with navigation equipment which will enable it to proceed:
  - (1) in accordance with its operational flight plan; and
  - (2) in accordance with the requirements of air traffic services; except when, if not so precluded by the appropriate authority, navigation for flights under VFR is accomplished by visual reference to landmarks.



- (b) For operations where a navigation specification for performance-based navigation (PBN) has been prescribed, an aeroplane shall, in addition to the requirements specified in 8.8.2.13.2 (a):
  - (1) be provided with navigation equipment which will enable it to operate in accordance with the prescribed navigation specification(s);
  - (2) have information relevant to the aeroplane navigation specification capabilities listed in the flight manual or other aeroplane documentation approved by the State of the Design or State of Registry; and
  - (3) have information relevant to the aeroplane navigation specification capabilities included in the MEL.

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

- (c) The Authority shall, for operations where a navigation specification for PBN has been prescribed, ensure that the operator has established and documented:
  - (1) normal and abnormal procedures including contingency procedures;
  - (2) flight crew qualification and proficiency requirements in accordance with the appropriate navigation specifications;
  - (3) a training programme 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 ICAO 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.*

- (e) The Authority 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).*

- (f) 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:
  - (1) continuously provides indications to the flight crew of adherence to or departure from track to the required degree of accuracy at any point along that track; and

- (2) has been authorized by the Authority for the MNPS operations concerned.

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

- (g) For flights in defined portions of airspace where, based on Regional Air Navigation Agreement, a reduced vertical separation minimum (RVSM) of 300 m (1000 ft) is applied between FL 290 and FL 410 inclusive,
  - (1) the aeroplane shall be provided with equipment which is capable of:
    - (i) indicating to the flight crew the flight level being flown;
    - (ii) automatically maintaining a selected flight level;
    - (iii) providing an alert to the flight crew when a deviation occurs from the selected flight level. The threshold for the alert shall not exceed  $\pm 90$  m (300 ft); and
    - (iv) automatically reporting pressure-altitude; and
  - (2) shall be authorized by the Authority shall issue a specific for RVSM Operations
- (h) Prior to granting the RVSM specific approval required in accordance with 8.8.2.13.2(g) (2), the Authority shall be satisfied that:
  - (1) the vertical navigation performance capability of the aeroplane satisfies the requirements specified in ICAO Annex 6 Part 1 Appendix 4;
  - (2) the operator has instituted appropriate procedures in respect of continued airworthiness (maintenance and repair) practices and programmes; and
  - (3) the operator has instituted appropriate flight crew procedures for operations in RVSM airspace.

*Note. — An RVSM specific 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.*

- (i) The Authority, in consultation with the State of Registry if appropriate, shall ensure that, in respect of those aeroplanes mentioned in 8.8.2.13.2(g), adequate provisions exist for:
  - (1) receiving the reports of height-keeping performance issued by the monitoring agencies established in accordance with ICAO Annex 11, 3.3.5.1; and
  - (2) taking immediate corrective action for individual aircraft, or aircraft type groups, identified in such reports as not complying with the height-keeping requirements for operation in airspace where RVSM is applied.

- (j) The Authority that has issued an RVSM specific approval to the operator shall establish a requirement which ensures that a minimum of two aeroplanes of each aircraft type grouping of the operator have their height-keeping performance monitored, at least once every two years or within intervals of 1 000 flight hours per aeroplane, whichever period is longer. If the 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 ICAO Annex 11, 3.3.5.2, may be used to satisfy the requirement.*

- (k) All States that are responsible for airspace where RVSM has been implemented, or that have issued RVSM specific approvals to operators within their State, shall establish provisions and procedures which ensure that appropriate action will be taken in respect of aircraft and operators found to be operating in RVSM airspace without a valid RVSM specific approval.

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

*Note 2. — 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).*

- (l) The aeroplane shall be sufficiently provided with navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment will enable the aeroplane to navigate in accordance with 8.8.2.13.2(a) and, where applicable, 8.8.2.13.2(b), 8.8.2.13.2(f) and 8.8.2.13.2(g).

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

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

**8.8.2.13.3 SURVEILLANCE EQUIPMENT**

- (a) An aeroplane shall be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services.
- (b) For operations where surveillance equipment is required to meet an RSP specification for performance-based surveillance (PBS), an aeroplane shall, in addition to the requirements specified in 8.8.2.13.3(a):
  - (1) be provided with surveillance equipment which will enable it to operate in accordance with the prescribed RSP specification(s);
  - (2) have information relevant to the aeroplane RSP specification capabilities listed in the flight manual or other aeroplane documentation approved by the State of Design or State of Registry; and
  - (3) have information relevant to the aeroplane 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).*

- (c) The Authority shall, for operations where an RSP specification for PBS has been prescribed, ensure that the operator has established and documented:
  - (1) normal and abnormal procedures, including contingency procedures;
  - (2) flight crew qualification and proficiency requirements, in accordance with appropriate RSP specifications;
  - (3) a training programme for relevant personnel consistent with the intended operations; and
  - (4) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RSP specifications.
- (d) The Authority shall ensure that, in respect of those aeroplanes mentioned in 8.8.2.13.3(b), adequate provisions exist for:
  - (1) receiving the reports of observed surveillance performance issued by monitoring programmes established in accordance with ICAO Annex 11, Chapter 3, 3.3.5.2; and
  - (2) taking immediate corrective action for individual aircraft, aircraft types or operators, identified in such reports as not complying with the RSP specification(s).

**8.8.2.13.4 INSTALLATION**

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

**8.8.2.13.5 ELECTRONIC NAVIGATION DATA MANAGEMENT**

- (a) Each AOC holder shall not employ electronic navigation data products that have been processed for application in the air and on the ground unless the Authority 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 Authority 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.*

- (b) Each AOC holder shall implement procedures that ensure the timely distribution and insertion of current and unaltered electronic navigation data to all necessary aircraft.

**8.8.3 VFR FLIGHT RULES****8.8.3.1 VISUAL METEOROLOGICAL CONDITIONS**

No person may operate an aircraft under VFR when the flight visibility is less than, or at a distance from the clouds that is less than that prescribed, or the corresponding altitude and class of airspace in the following table-

<b>Airspace and VMC Minimums*</b>			
<b>Airspace Class</b>	<b>A***B C D E</b>	<b>F G</b>	
		Above 900 m (3000 ft) AMSL or above 300 m (1000 ft) above terrain, whichever is the higher	At and below 900 m (3000 ft) AMSL or 300 m (1000 ft) above terrain, whichever is the higher
<b>Distance from cloud</b>	1500 m (4920 ft) horizontally 300 m (1000 ft) vertically		Clear of cloud and in sight of the surface

<b>Flight visibility</b>	8 km (5 statute miles) at and above 3050 m (10000 ft) AMSL 5 km (3 statute miles) below 3050 m (10000 ft) AMSL	5 km (3 statute miles) **
*When the height of the transition altitude is lower than 3050 m (10000 ft) AMSL, FL 100 should be used in lieu of 10000 ft.		
** When so prescribed by the appropriate ATC Authority lower flight visibilities to 1500 m (4920 ft) may be permitted for flights operating: <ol style="list-style-type: none"> <li>at speeds that, in the prevailing visibility, will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision; or</li> <li>in circumstances in which the probability of encounters with other traffic would normally be low, e.g., in areas of low volume traffic and for aerial work at low levels.</li> </ol>		
***The VMC minima in Class A airspace are included for guidance to pilots and do not imply acceptance of VFR flights in Class A airspace.		

### 8.8.3.2 VFR WEATHER MINIMUMS FOR TAKE-OFF AND LANDING

- (a) No person may land or take-off an aircraft under VFR from an aerodrome located within a control zone, or enter the aerodrome traffic zone or traffic pattern airspace unless the—
  - (1) Reported ceiling is at least 450 m (1500 ft); and
  - (2) Reported ground visibility is at least 5 km (3 statute miles); or, except when a clearance is obtained from ATC.
- (b) No person may land or take-off an aircraft or enter the traffic pattern under VFR from an aerodrome located outside a control zone, unless VMC conditions are at or above those indicated in Subsection 8.8.3.1.
- (c) The only exception to the required weather minimums of this subsection is during a Special VFR operation.

### 8.8.3.3 SPECIAL VFR OPERATIONS

- (a) No person may conduct a Special VFR flight operation to enter the traffic pattern, land or take-off an aircraft under Special VFR from an aerodrome located in Class B, Class C, Class D or Class E airspace unless:
  - (1) Authorized by an ATC clearance;
  - (2) The aircraft remains clear of clouds; and
  - (3) The flight visibility is at least 1.5 km (1 statute mile).
- (b) No person may conduct a Special VFR flight operation in an aircraft between sunset and sunrise unless
  - (1) The PIC is current and qualified for IFR operations; and
  - (2) The aircraft is qualified to be operated for IFR flight.

**8.8.3.4 VFR CRUISING ALTITUDES**

- (a) Each person operating an aircraft in level cruising flight under VFR at altitudes above 900 m (3000 ft) from the ground or water, shall maintain a flight level appropriate to the track as specified in the table of cruising levels in IS: 8.8.3.4.
- (b) Paragraph (a) does not apply when otherwise authorized by ATC, when operating in a holding pattern, or during maneuvering in turns.

**8.8.3.5 ATC CLEARANCES FOR VFR FLIGHTS**

- (a) Each pilot of a VFR flight shall obtain and comply with ATC clearances and maintain a listening watch before and during operations:
  - (1) Within Classes B, C and D airspace;
  - (2) As part of aerodrome traffic at controlled aerodromes; and
  - (3) Under Special VFR.

**8.8.3.6 VFR FLIGHTS REQUIRING ATC AUTHORIZATION**

- (a) Unless authorized by the appropriate ATS Authority, no pilot may operate in VFR flight—
  - (1) Above FL 200; or
  - (2) At transonic and supersonic speeds.
- (b) ATC authorization for VFR flights may not be granted in areas where a VSM of only 300m (1,000 ft) is applied above FL 290.
- (c) No person may operate in VFR flight between sunset and sunrise unless:
  - (1) Authorized by the appropriate ATS Authority, and
  - (2) Operating in accordance with any conditions prescribed by the Authority.

**8.8.3.7 WEATHER DETERIORATION BELOW VMC**

- (a) Each pilot of a VFR flight operated as a controlled flight shall, when he or she finds it is not practical or possible to maintain flight in VMC in accordance with the ATC flight plan—
  - (1) Request an amended clearance enabling the aircraft to continue in VMC to its destination or to an alternative aerodrome, or to leave the airspace within which an ATC clearance is required; (or)
  - (2) If no clearance can be obtained, continue to operate in VMC and notify the appropriate ATC unit of the action being taken either to leave the airspace concerned or to land at the nearest suitable aerodrome;(or)
  - (3) Operating within a control zone, request authorization to operate as a special VFR flight; (or)

- (4) Request clearance to operate in IFR, if currently rated for IFR operations.

#### **8.8.3.8 CHANGING FROM VFR TO IFR**

- (a) Each pilot operating in VFR who wishes to change to IFR shall—
  - (1) If a flight plan was submitted, communicate the necessary changes to be effected to its current flight plan; or
  - (2) Submit a flight plan to the appropriate ATC facility and obtain a clearance before proceeding IFR when in controlled airspace.

#### **8.8.3.9 TWO-WAY RADIO COMMUNICATION FAILURE IN VFR**

- (a) Communications Failure: General
  - (1) In the event of communications failure, the pilot shall attempt to establish communications with the appropriate air traffic control unit using all other available means.
  - (2) In addition, the pilot shall, when forming part of the aerodrome traffic at a controlled aerodrome, shall keep a watch for such instructions as may be issued by visual signals.
- (b) If radio failure occurs in VMC while under ATC control, or if VMC conditions are encountered after the failure, each pilot shall—
  - (1) Continue the flight under VMC;
  - (2) Land at the nearest suitable aerodrome; and
  - (3) Report arrival to the appropriate air traffic services unit by the most expeditious means possible.

### **8.8.4 IFR FLIGHT RULES**

#### **8.8.4.1 APPLICABILITY**

- (a) All aircraft operated in accordance with instrument flight procedures shall comply with the instrument flight rules, and the aerodrome instrument approach procedures approved by the Authority where the operation will take place.

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



**8.8.4.2 IFR IN CONTROLLED AIRSPACE**

- (a) No person may operate an aircraft in controlled airspace under IFR unless that person has—
- (b) Filed an IFR flight plan; and
- (c) Received an appropriate ATC clearance.

**8.8.4.3 IFR FLIGHTS OUTSIDE CONTROLLED AIRSPACE**

- (a) Each PIC of an IFR flight operating outside controlled airspace but within or into areas, or along routes, designated by the appropriate ATS Authority, shall maintain a listening watch on the appropriate radio frequency and establish two-way communication, as necessary, with the air traffic services unit providing flight information service.
- (b) Each PIC of an IFR flight operating outside controlled airspace for which the appropriate ATC Authority requires a flight plan, a listening watch on the appropriate radio frequency and establishment of two-way communication, as necessary, with the air traffic services unit providing flight information service, shall report position as specified for controlled flights.

**8.8.4.4 MINIMUM ALTITUDES FOR IFR OPERATIONS**

- (a) **Operation of aircraft at minimum altitudes.** Except when necessary for take-off or landing, no person may operate an aircraft under IFR below—
  - (1) The applicable minimum altitudes prescribed by the authorities having jurisdiction over the airspace being overflown; or
  - (2) If no applicable minimum altitude is prescribed by the authorities—
    - (i) Over high terrain or in mountainous areas, at a level which is at least 600 m (2000 ft) above the highest obstacle located within 8 km (5 statute miles) of the estimated position of the aircraft; and
    - (ii) Elsewhere than as specified in paragraph (i), at a level which is at least 300 m (1000 ft) above the highest obstacle located within 8 km (5 statute miles) of the estimated position of the aircraft.
  - (3) If an MEA and a MOCA are prescribed for a particular route or route segment, a person may operate an aircraft below the MEA down to, but not below, the MOCA, when within 40.7 km (22 nautical miles) of the VOR concerned.
- (b) **Climb for obstacle clearance.**
  - (1) If unable to communicate with ATC, each pilot shall climb to a higher minimum IFR altitude immediately after passing the point beyond which that minimum altitude applies

- (2) If ground obstructions intervene, each pilot shall climb to a point beyond which that higher minimum altitude applies, at or above the applicable Minimum Crossing Altitude.

#### **8.8.4.5 MINIMUM ALTITUDES FOR USE OF AN AUTOPILOT**

- (a) For en-route operations, no person may use an autopilot at an altitude above the terrain that is less than 152 m (500 ft).

*Note: If the maximum altitude loss specified in the AFM for a malfunction under cruise conditions when multiplied by two is more than 152 m (500 ft), then it becomes the controlling minimum altitude for use of the autopilot.*

- (b) For instrument approach operations, no person may use an autopilot at an altitude above the terrain that is less than 15 m (50 ft) below the MDA or DH.

*Note: If the maximum altitude loss specified in the AFM for a malfunction under approach conditions when multiplied by two is more than 15 m (50 ft), then it becomes the controlling minimum altitude for use of the autopilot.*

- (c) For CAT III approaches, the Authority may approve the use of a flight control guidance system with automatic capability to touchdown.

#### **8.8.4.6 IFR CRUISING ALTITUDE OR FLIGHT LEVEL IN CONTROLLED AIRSPACE**

- (a) Each person operating an aircraft under IFR in level cruising flight in controlled airspace shall maintain the altitude or flight level assigned that aircraft by ATC clearances.
- (b) Each person operating an aircraft in level cruising flight under IFR, or if authorized to employ cruise climb techniques between two levels, shall maintain a flight level appropriate to the track as specified in the table of cruising levels in IS: 8.8.3.4 or according to a modified table of cruising levels when so prescribed in accordance with IS: 8.8.3.4 for flight above FL 410.
- (c) Paragraph (b) above does not apply whenever otherwise indicated ATC clearance or specified by the appropriate ATS Authority in Aeronautical Information Publications.

**8.8.4.7 IFR CRUISING ALTITUDE OR FLIGHT LEVEL IN UNCONTROLLED AIRSPACE**

- (a) Each person operating an aircraft in level cruising flight under IFR, outside of controlled airspace, shall maintain a flight level appropriate to the track as specified in the table of cruising levels in IS: 8.8.3.4 or according to a modified table of cruising levels when so prescribed in accordance with IS: 8.8.3.4 for flight above FL 410.
- (b) A person may deviate from the cruising altitudes specified in paragraph (a) only when—
  - (1) Authorized by ATS for flight at or below 900 m (3000 ft) above MSL; or
  - (2) When otherwise authorized by ATS.

**8.8.4.8 IFR RADIO COMMUNICATIONS**

- (a) Each PIC of an aircraft operated under IFR in controlled airspace shall have a continuous watch maintained on the appropriate frequency and shall report by radio as soon as possible—
  - (1) The time and altitude of passing each designated reporting point, or the reporting points specified by ATC, except that while the aircraft is under radar control, only the passing of those reporting points specifically requested by ATC need be reported;
  - (2) Any unforecast weather conditions encountered; and
  - (3) Any other information relating to the safety of flight, such as hazardous weather or abnormal radio station indications.

**8.8.4.9 OPERATION UNDER IFR IN CONTROLLED AIRSPACE—MALFUNCTION REPORTS**

- (a) The PIC of each aircraft operated in controlled airspace under IFR shall report as soon as practical to ATC any malfunctions of navigational, approach, or communication equipment occurring in flight.
- (b) In each report specified in paragraph (a), the PIC shall include the—
  - (1) Aircraft identification;
  - (2) Equipment affected;
  - (3) Degree to which the capability of the pilot to operate under IFR in the ATC system is impaired; and
  - (4) Nature and extent of assistance desired from ATC.

**8.8.4.10 CONTINUATION OF IFR FLIGHT TOWARD A DESTINATION**

No pilot may continue an IFR flight toward an aerodrome of intended landing, unless the latest available meteorological information indicates that the conditions at that aerodrome, or at least one destination alternate aerodrome will, at the expected time of arrival, be at or above the specified instrument approach minima.

**8.8.4.11 INSTRUMENT APPROACH PROCEDURES AND IFR LANDING MINIMUMS**

- (a) No person may make an instrument approach at an aerodrome except in accordance with IFR weather minimums and instrument approach procedures established for that aerodrome as set forth by the Authority.
- (b) No AOC holder may make an instrument approach at an aerodrome except as set forth in the AOC holder's operations specifications.

**8.8.4.12 COMMENCING AN INSTRUMENT APPROACH**

- (a) No pilot may continue an approach below 300 m (1000 ft.) above the aerodrome elevation or into the final approach segment unless --
  - (1) A source approved by the Authority issues a weather report for that aerodrome; and
  - (2) The latest weather report for that aerodrome reports the visibility or controlling RVR to be equal to or more than the minimums prescribed for that procedure.
  - (3) The given available runway surface condition information and the aeroplane performance information indicates that a safe landing can be made.
- (b) If a pilot begins the final approach segment of an instrument approach procedure and subsequently receives a weather report indicating below-minimum conditions, the pilot may continue the approach to DH or MDA.

**8.8.4.13 INSTRUMENT APPROACHES TO CIVIL AERODROMES**

- (a) Each person operating a civil aircraft shall use a standard instrument approach procedure prescribed by the authorities having jurisdiction over the aerodrome, unless otherwise authorized by the Authority.
- (b) Authorized DH or MDA. For the purpose of this section, when the approach procedure being used provides for and requires the use of a DH or MDA, the authorized DH or MDA is the highest of the following:
  - (1) The DH or MDA prescribed by the approach procedure.
  - (2) The DH or MDA prescribed for the PIC.
  - (3) The DH or MDA for which the aircraft is equipped.

**8.8.4.14 OPERATION BELOW DH OR MDA**

- (a) Where a DH or MDA is applicable, no pilot may operate a civil aircraft at any aerodrome below the authorized MDA, or continue an approach below the authorized DH unless—
- (1) The aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal maneuvers;
  - (2) For commercial air transport operations, a descent rate will allow touchdown to occur within the touchdown zone of the runway of intended landing;
  - (3) The reported flight visibility is not less than the visibility prescribed in the standard instrument approach being used or the controlling RVR is above the specified minimum; and
  - (4) At least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot—
    - (i) The approach light system, except that the pilot may not descend below 30 m (100 ft) above the touchdown zone elevation using the approach lights as a reference unless the red terminating bars or the red side row bars are also distinctly visible and identifiable.
    - (ii) The threshold;
    - (iii) The threshold markings;
    - (iv) Threshold lights;
    - (v) The runway end identifier lights;
    - (vi) The visual approach slope indicator;
    - (vii) The touchdown zone or touchdown zone markings;
    - (viii) The touchdown zone lights;
    - (ix) The runway or runway markings; or
    - (x) The runway lights.

**8.8.4.15 LANDING DURING INSTRUMENT METEOROLOGICAL CONDITIONS**

No pilot operating a civil aircraft may land that aircraft when the flight visibility is less than the visibility prescribed in the standard instrument approach procedure being used.

**8.8.4.16 EXECUTION OF A MISSED APPROACH PROCEDURE**

- (a) Each pilot operating a civil aircraft shall immediately execute an appropriate missed approach procedure when either of the following conditions exists:

- (1) Whenever the required visual reference criteria is not met in the following situations:
  - (i) When the aircraft is being operated below MDA; or
  - (ii) Upon arrival at the missed approach point, including a DH where a DH is specified and its use is required, and at any time after that until touchdown.
- (2) Whenever an identifiable part of the aerodrome is not distinctly visible to the pilot during a circling maneuver at or above MDA, unless the inability to see an identifiable part of the aerodrome results only from a normal bank of the aircraft during the circling approach.

#### **8.8.4.17 CHANGE FROM IFR FLIGHT TO VFR FLIGHT**

- (a) A pilot electing to change from IFR flight to VFR flight shall notify the appropriate air traffic services unit specifically that the IFR flight is cancelled and then communicate the changes to be made to his or her current flight plan.
- (b) When a pilot operating under IFR encounters VMC, he or she may not cancel the IFR flight unless it is anticipated, and intended, that the flight will be continued for a reasonable period of time in uninterrupted VMC.

#### **8.8.4.18 TWO-WAY RADIO COMMUNICATIONS FAILURE IN IFR**

- (a) Communications Failure: General
  - (1) In the event of communications failure, the pilot shall attempt to establish communications with the appropriate air traffic control unit using all other available means.
  - (2) In addition, the pilot shall, when forming part of the aerodrome traffic at a controlled aerodrome, shall keep a watch for such instructions as may be issued by visual signals.
- (b) If radio failure occurs in VMC while under ATC control, or if VMC conditions are encountered after the failure, each pilot shall—
  - (1) Continue the flight under VMC;
  - (2) Land at the nearest suitable aerodrome; and
  - (3) Report arrival to the appropriate ATC services unit by the most expeditious means possible.
- (c) If two-way radio communication failure occurs in IMC, or when the pilot of an IFR flight considers it inadvisable to continue the flight in VMC, the PIC shall:

- (1) unless otherwise prescribed on the basis of regional air navigation agreement, in airspace where radar is not used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes following the aircraft's failure to report its position over a compulsory reporting point and thereafter adjust level and speed in accordance with the filed flight plan;
- (2) in airspace where radar is used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 7 minutes following -
  - (i) The time the last assigned level or minimum flight altitude is reached; or
  - (ii) The time the transponder is set to Code 7600; or
  - (iii) The aircraft's failure to report its position over a compulsory reporting point; whichever is later, and thereafter adjust level and speed in accordance with the filed flight plan;
- (3) when being radar vectored or having been directed by ATC to proceed offset using area navigation (RNAV) without a specified limit, rejoin the current flight plan route no later than the next significant point, taking into consideration the applicable minimum flight altitude;
- (4) proceed according to the current flight plan route to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with (5) below, hold over this aid or fix until commencement of descent;
- (5) commence descent from the navigation aid or fix specified in (4) at, or as close as possible to, the expected approach time last received and acknowledged; or, if no expected approach time has been received and acknowledged, at, or as close as possible to the estimated time of arrival resulting from the current flight plan;
- (6) complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and
- (7) land, if possible, within 30 minutes after the estimated time of arrival specified in (5) or the last acknowledged expected approach time, whichever is later.

**8.8.4.19 THRESHOLD CROSSING HEIGHT FOR 3D INSTRUMENT APPROACH OPERATIONS**

An operator shall establish operational procedures designed to ensure that an aeroplane being used to conduct 3D approach operations crosses the threshold by a safe margin with the aeroplane in the landing configuration and attitude.



**8.9 PASSENGERS AND PASSENGER HANDLING**

**8.9.1 ALL PASSENGER CARRYING OPERATIONS**

**8.9.1.1 UNACCEPTABLE CONDUCT**

- (a) No person on board may interfere with a crewmember in the performance of his or her duties.
- (b) Each passenger shall fasten his or her seat belt and keep it fastened while the seat belt sign is lighted.
- (c) No person on board an aircraft shall recklessly or negligently act or omit to act in such a manner as to endanger the aircraft or persons and property therein.
- (d) No person may secrete himself or herself nor secrete cargo on board an aircraft.
- (e) No person shall smoke on board in aircraft.
- (f) No person may tamper with, disable or destroy any smoke detector installed in any aeroplane lavatory.

**8.9.1.2 PASSENGER SEATS, SAFETY BELTS, AND SHOULDER HARNESES**

- (a) The PIC shall ensure that each person on onboard occupies an approved seat or berth with their own individual safety belt and shoulder harness (if installed) properly secured about them during take-off and landing.
- (b) Each passenger shall have his or her seatbelt securely fastened at any other time the PIC determines it is necessary for safety.
- (c) A safety belt provided for the occupant of a seat may not be used during take-off and landing by more than one person who has reached his or her second birthday.

*Note: When cabin crewmembers are required in a commercial air transport operation, the PIC may delegate this responsibility, but shall ascertain that the proper briefing has been conducted before take-off.*

**8.9.1.3 PASSENGER BRIEFING**

- (a) The PIC shall ensure that crewmembers and passengers are made familiar, by means of an oral briefing or by other means, with the location and use of the following items, if appropriate—
  - (1) Seat belts;
  - (2) Emergency exits;
  - (3) Life jackets;
  - (4) Oxygen dispensing equipment; and

- (5) Other emergency equipment provided for individual use, including passenger emergency briefing cards.
- (b) The PIC shall ensure that all persons on board are aware of the locations and general manner of use of the principal emergency equipment carried for collective use.

*Note 1: When cabin crewmembers are required in a commercial air transport operation, the PIC may delegate this responsibility, but shall ascertain that the proper briefing has been conducted before take-off.*

- (c) During take-off and landing, and whenever by reason of turbulence or any emergency occurring during flight the precaution is considered necessary, cabin crewmembers shall ensure that all passengers aboard the aircraft fasten their seat belts so as to be secured in their seats.

#### **8.9.1.4 IN-FLIGHT EMERGENCY INSTRUCTION**

- (a) In an emergency during flight, the PIC shall ensure that all persons on board are instructed in such emergency action as may be appropriate to the circumstances.
- (b) When cabin crewmembers are required in a commercial air transport operation, the PIC may delegate this responsibility, but shall ascertain that the proper briefing has been conducted.

### **8.9.2 COMMERCIAL AIR TRANSPORT PASSENGER CARRYING OPERATIONS**

#### **8.9.2.1 CARRIAGE OF PERSONS WITHOUT COMPLIANCE WITH THESE PASSENGER-CARRYING REQUIREMENTS**

- (a) The passenger-carrying requirements of paragraph (b) do not apply when carrying—
  - (1) A crewmember not required for the flight;
  - (2) A representative of the Authority on official duty;
  - (3) A person necessary to the safety or security of cargo or animals; or
  - (4) Any person authorized by the AOC holder's Operations Manual procedures, as approved by the Authority.
- (b) No person may be carried without compliance to the passenger carrying requirements unless—
  - (1) There is an approved seat with an approved seat belt for that person;
  - (2) That seat is located so that the occupant is not in any position to interfere with the flight crewmembers performing their duties;

- (3) There is unobstructed access from their seat to the flight deck or a regular or emergency exit;
- (4) There is a means for notifying that person when smoking is prohibited and when seat belts shall be fastened; and
- (5) That person has been orally briefed by a crewmember on the use of emergency equipment and exits.

#### **8.9.2.2 CABIN CREW AT DUTY STATIONS**

- (a) During taxi, cabin crewmembers shall remain at their duty stations with safety belts and shoulder harness fastened except to perform duties related to the safety of the aircraft and its occupants.
- (b) During take-off and landing, cabin crewmembers shall be located as near as practicable to required floor level exits and shall be uniformly distributed throughout the aircraft to provide the most effective egress of passengers in event of an emergency evacuation.
- (c) When passengers are on board a parked aircraft, cabin crewmembers (or another person qualified in emergency evacuation procedures for the aircraft) will be placed in the following manner:
  - (1) If only one qualified person is required, that person shall be located in accordance with the AOC holder's Operations Manual procedures.
  - (2) If more than one qualified person is required, those persons shall be spaced throughout the cabin to provide the most effective assistance for the evacuation in case of an emergency.

#### **8.9.2.3 EVACUATION CAPABILITY**

The PIC, SCCM and other person assigned by the AOC holder shall ensure that, when passengers are on board the aircraft before movement on the surface, at least one floor-level exit provides for egress of passengers through normal or emergency means.

#### **8.9.2.4 ACCESSIBILITY OF EMERGENCY EXITS AND EQUIPMENT**

No person may allow carry-on baggage or other items to block access to the emergency exits when the aircraft is moving on the surface, during take-off or landing, or while passengers remain on board on the ground.

#### **8.9.2.5 STOPS WHERE PASSENGERS REMAIN ONBOARD**

- (a) At stops where passengers remain on board the aircraft, the PIC, the co-pilot, or both shall ensure that—

- (1) All engines are shut down (except hotel mode on or APU on is applicable);
  - (2) At least one floor level exit remains open to provide for the deplaning of passengers; and
  - (3) There is at least one person immediately available who is qualified in the emergency evacuation of the aircraft and who has been identified to the passengers on board as responsible for the passenger safety.
- (b) If refueling with passengers on board all engines must be shutdown, the PIC or a designated company representative shall ensure that the AOC holder's Operations Manual procedures are followed.

#### **8.9.2.6 EXIT ROW SEATING**

- (a) No AOC holder shall allow a passenger to sit in an emergency exit row if the PIC or SCCM determine that it is likely that the passenger would be unable to understand and perform the functions necessary to open an exit and to exit rapidly.
- (b) No cabin crewmember may seat a person in a passenger exit seat if it is likely that the person would be unable to perform one or more of the applicable functions listed below—
- (1) The person lacks sufficient mobility, strength, or dexterity in both arms and hands, and both legs—
    - (i) To reach upward, sideways, and downward to the location of emergency exit and exit-slide operating mechanisms;
    - (ii) To grasp and push, pull, turn, or otherwise manipulate those mechanisms;
    - (iii) To push, shove, pull, or otherwise open emergency exits;
    - (iv) To lift out, hold, deposit on nearby seats, or maneuver over the seatbacks to the next row objects the size and mass of over-wing window exit doors;
    - (v) To remove obstructions of size and mass similar to over-wing exit doors;
    - (vi) To reach the emergency exit expeditiously;
    - (vii) To maintain balance while removing obstructions;
    - (viii) To exit expeditiously;
    - (ix) To stabilize an escape slide after deployment; or
    - (x) To assist others in getting off an escape slide.
  - (2) The person is less than 18 years of age or lacks the capacity to perform one or more of the applicable functions listed above without the assistance of an adult companion, parent, or other relative.

- (3) The person lacks the ability to read and understand instructions required by this section and related to emergency evacuation provided by the AOC holder in printed or graphic form or the ability to understand oral crew commands.
  - (4) The person lacks sufficient visual capacity to perform one or more of the above functions without the assistance of visual aids beyond contact lenses or eyeglasses.
  - (5) The person lacks sufficient aural capacity to hear and understand instructions shouted by cabin crewmembers, without assistance beyond a hearing aid.
  - (6) The person lacks the ability to adequately impart information orally to other passengers.
  - (7) The person has a condition or responsibilities, such as caring for small children, that might prevent the person from performing one or more of the functions listed above; or a condition that might cause the person harm if he or she performs one or more of the functions listed above.
- (c) Determinations as to the suitability of each person permitted to occupy an exit seat shall be made by the cabin crewmembers or other persons designated in the AOC holder's Operations Manual.
  - (d) In the event a cabin crewmember determines that a passenger assigned to an exit seat would be unable to perform the emergency exit functions, or if a passenger requests a non-exit seat, the cabin crewmember shall expeditiously relocate the passenger to a non-exit seat.
  - (e) In the event of full booking in the non-exit seats, and if necessary to accommodate a passenger being relocated from an exit seat, the cabin crewmember shall move a passenger who is willing and able to assume the evacuation functions, to an exit seat.
  - (f) Each AOC traffic agent shall, before boarding, assign seats consistent with the passenger selection criteria and the emergency exit functions, to the maximum extent feasible.
  - (g) Each AOC traffic agent shall make available for inspection by the public at all passenger loading gates and check-in counters at each aerodrome where the AOC holder conducts passenger operations, written procedures established for making determinations in regard to exit row seating.
  - (h) Each cabin crewmember shall include in his or her passenger briefings a request that a passenger identify himself or herself to allow reseating if he or she—

- (1) Cannot meet the selection criteria;
  - (2) Has a no discernible condition that will prevent him or her from performing the evacuation functions;
  - (3) May suffer bodily harm as the result of performing one or more of those functions; or
  - (4) Does not wish to perform emergency exit functions.
- (i) Each cabin crewmember shall include in his or her passenger briefings a reference to the passenger information cards and the functions to be performed in an emergency exit.
  - (j) Each passenger shall comply with instructions given by a crewmember or other authorized employee of the AOC holder implementing exit seating restrictions.
  - (k) No PIC may allow taxi or pushback unless at least one required crewmember has verified that all exit rows and escape paths are unobstructed and that no exit seat is occupied by a person the crewmember determines is likely to be unable to perform the applicable evacuation functions.
  - (l) The procedures required by this standard will not become effective until final approval is granted by the Authority. Approval will be based solely upon the safety aspects of the AOC holder's procedures. In order to comply with these standard AOC holders shall—
    - (1) Establish procedures that address the requirements of this standard; and
    - (2) Submit their procedures for preliminary review and approval to the Authority.

#### **8.9.2.7 PROHIBITION AGAINST CARRIAGE OF WEAPONS**

- (a) No person may, while on board an aircraft being operated in commercial air transport, carry on or about their person a deadly or dangerous weapon, either concealed or unconcealed. An AOC holder may permit a person to transport a weapon, in accordance with the AOC holder's approved security programme,
  - (1) If the weapon is unloaded; and
  - (2) Both the weapon and ammunition are securely stowed in a place inaccessible to any person during the flight.
- (b) Officials or employees of the State, or crewmembers, who are authorized to carry weapons on board the aircraft in domestic flights, shall do so in accordance with the AOC holders approved security programme. The PIC shall be notified by the AOC holder as to the number of armed persons and the location of their seats.

- (c) The persons identified in item (b) above may not carry weapons aboard an international flight unless there is prior agreement between relevant state and all States in which the operation will be either conducted or over flown.

#### **8.9.2.8 CARRY-ON BAGGAGE**

- (a) No person may allow the boarding of carry-on baggage unless it can be adequately and securely stowed in accordance with the AOC holder's approved Operations Manual procedures.
- (b) No person may allow aircraft passenger entry doors to be closed in preparation for taxi or pushback unless at least one required crewmember has verified that each article of baggage has been properly stowed in overhead racks with approved restraining devices or doors, or in approved locations.
- (c) No person may allow carry-on baggage to be stowed in a location that would cause that location to be loaded beyond its maximum placard mass limitation.

#### **8.9.2.9 PASSENGER INFORMATION SIGNS**

The PIC shall turn on required passenger information signs during any movement on the surface, for each take-off and each landing, and when otherwise considered to be necessary.

#### **8.9.2.10 REQUIRED PASSENGER BRIEFINGS**

- (a) No person may commence a take-off unless the passengers are briefed before take-off in accordance with the AOC holder's Operations Manual procedures on—
  - (1) Smoking prohibitions and penalty for smoking on board in aircraft;
  - (2) Emergency exit location and use;
  - (3) Use of safety belts;
  - (4) Emergency floatation means location and use;
  - (5) Placement of seat backs;
  - (6) The normal and emergency use of oxygen; and
  - (7) The passenger briefing card.
  - (8) Use of other specialized equipment as required by the Authority.
- (b) Immediately before or immediately after turning the seat belt sign off, the PIC or co-pilot shall ensure that the passengers are briefed to keep their seat belts fastened while seated, even when the seat belt sign is off.
- (c) Before each take-off, the PIC or co-pilot shall ensure that any persons of reduced mobility are personally briefed on—

- (1) The route to the most appropriate exit; and
- (2) The time to begin moving to the exit in event of an emergency.

#### **8.9.2.11 PASSENGER BRIEFING—EXTENDED OVERWATER OPERATIONS**

No person may commence extended overwater operations unless all passengers have been orally briefed on the location and operations of life preservers, life rafts and other flotation means, including a demonstration of the method of donning and inflating a life preserver.

#### **8.9.2.12 PASSENGER SEAT BELTS**

- (a) Each passenger occupying a seat or berth shall fasten his or her safety belt and keep it fastened while the "Fasten Seat Belt" sign is lighted or, in aircraft not equipped with such a sign, whenever instructed by the PIC.
- (b) No passenger safety belt may be used by more than one occupant during take-off and landing.
- (c) At each unoccupied seat, the safety belt and shoulder harness, if installed, shall be secured so as not to interfere with crewmembers in the performance of their duties or with the rapid egress of occupants in an emergency.

*Note 1: A person who has not reached his or her second birthday may be held by an adult who is occupying a seat or berth.*

*Note 2: A berth, such as a multiple lounge or divan seat, may be occupied by two persons provided it is equipped with an approved safety belt for each person and is used during en-route flight only.*

#### **8.9.2.13 PASSENGER SEAT BACKS**

No PIC or co-pilot may allow the take-off or landing of an aircraft unless each passenger seat back is in the upright position.

#### **8.9.2.14 STOWAGE OF FOOD, BEVERAGE AND PASSENGER SERVICE**

- (a) No PIC, co-pilot or SCCM may allow the movement of an aircraft on the surface, or the take-off or landing of an aircraft —
  - (1) When any food, beverage or tableware furnished by the AOC holder is located at any passenger seat; and
  - (2) Unless each food and beverage tray and seat back tray table is in the stowed position.



**8.9.2.15      SECURING OF ITEMS OF MASS IN PASSENGER COMPARTMENT**

- (a)      No person may allow the take-off or landing of an aircraft unless each item of mass in the passenger cabin is properly secured to prevent it from becoming a hazard during taxi, take-off and landing and during turbulent weather conditions.
- (b)      No person may allow an aircraft to move on the surface, take-off or land unless each passenger serving cart is secured in its stowed position.

**8.10 CREWMEMBER AND FLIGHT OPERATIONS OFFICER QUALIFICATIONS:  
COMMERCIAL AIR TRANSPORT****8.10.1.1 LIMITATION OF PRIVILEGES OF PILOTS WHO HAVE ATTAINED THEIR  
60<sup>th</sup> BIRTHDAY AND CURTAILMENT OF PRIVILEGES OF PILOTS WHO  
HAVE ATTAINED THEIR 65<sup>th</sup> BIRTHDAY**

- (a) No person shall serve nor shall any AOC holder use a person as a required PIC in single pilot operations on aircraft with engaged in commercial air transport operations if that person has reached his or her 60th birthday.
- (b) For aircraft engaged in commercial air transport operations requiring more than one pilot to act as flight crewmembers, the AOC holder shall not use them if they have attained their 65<sup>th</sup> birthday.

**8.10.1.2 USE OF FLIGHT SIMULATION TRAINING DEVICES**

- (a) Each flight simulation training device that is used for flight crewmember qualification shall—
  - (1) Be specifically approved by the Authority for—
    - (i) Each AOC holder;
    - (ii) The type aircraft, including type variations, for which the training or check is being conducted; and
    - (iii) The particular maneuver, procedure, or crewmember function involved.
  - (2) Maintain the performance, functional, and other characteristics that are required for approval.
  - (3) Be modified to conform with any modification to the aeroplane being simulated that results in changes to performance, functional, or other characteristics required for approval.
  - (4) Be given a daily functional pre-flight check before use.
  - (5) Have a daily discrepancy log completed by the appropriate instructor or check pilot at the end of each training or check flight.
- (b) The simulation device shall have the same technology for the basic flight instruments (attitude indicator, airspeed, altimeter, heading reference) as those of the aircraft used by the operator.
  - (1) Operators that have electronic/glass displays shall use simulators that have electronic/glass displays.
  - (2) Operators that have standard instruments shall use simulators that have standard instruments.

**8.10.1.3 APPROVAL OF A FLIGHT SIMULATION TRAINING DEVICE FOR CREDIT IN TRAINING AND CHECKING**

- (a) No AOC holder may use a flight simulation training device for training or checking unless that simulator has been specifically approved for the AOC holder in writing by the Authority.
- (b) No AOC holder may use a simulator for credit in training, recency and checking other than that specified in the Authority's approval.

**8.10.1.4 LICENCE REQUIREMENTS FOR PIC**

- (a) No pilot may act as a PIC of an aircraft, certificated for operation with more than one pilot, in commercial air transportation operations unless he or she holds an Airline Transport Pilot Licence with applicable category, class and type rating for that aircraft.
- (b) For Myanmar Licence holder, no pilot may act as a PIC of an aircraft in commercial air transportation operations unless he or she has been evaluated or has been satisfied through Pilot Proficiency Check (Base Check) with simulator and En-route (Line check) with specific aircraft type by FOI.
- (c) No pilot may act as a PIC of an aircraft, certificated for operation for one pilot, in commercial air transportation operations unless he or she holds an Airline Transport Pilot Licence with applicable category, class and type rating for that aircraft.
- (d) If instrument privileges are to be exercised, the PIC shall hold an Instrument Rating.

**8.10.1.5 LICENCE REQUIREMENTS FOR CO-PILOT AND CRUISE RELIEF PILOT**

- (a) No pilot may act as a co-pilot of an aircraft in commercial air transport operations unless he or she holds either a Commercial Pilot Licence/Instrument Rating or an Airline Transport Pilot Licence, each with category, class and type ratings, as applicable, for the aircraft operated.
- (b) No pilot may act as a cruise relief pilot in commercial air transport operations unless he or she holds an Airline Transport Pilot Licence with category, and if applicable, class and type ratings, and has completed all training to serve as PIC with the exception of initial operating experience.
- (c) Cruise relief pilot must be qualified left and right seat qualification.

**8.10.1.6 PERSONS QUALIFIED TO FLIGHT RELEASE**

- (a) No person may act as a flight operations officer in releasing a scheduled passenger-carrying commercial air transport operation unless that person—
  - (1) Certifies a flight operations officer or PIC; and
  - (2) Is currently qualified with the AOC holder for the operation and type of aircraft used.

**8.10.1.7 COMPANY PROCEDURES INDOCTRINATION**

- (a) No person may serve nor may any AOC holder use a person as a crewmember or flight operations officer/flight dispatcher unless that person has completed the company procedures indoctrination curriculum approved by the Authority, which shall include a complete review of the applicable regulations, requirements and Operations Manual procedures pertinent to the crewmember or flight operation officer's duties and responsibilities.
- (b) Each AOC holder shall provide a minimum of 40 programmed hours of instruction for company procedures indoctrination training unless a reduction is determined appropriate by the Authority.
- (c) The knowledge area topics to be covered are contained in IS: 8.10.1.7(c).

**8.10.1.8 INITIAL DANGEROUS GOODS TRAINING**

- (a) No person may serve nor may any AOC holder use operational personnel unless he or she has completed the appropriate initial dangerous goods curriculum approved by the Authority.
- (b) Specific course curriculum requirements are contained in IS: 8.10.1.8.

**8.10.1.9 INITIAL SECURITY TRAINING**

No person may serve nor may any AOC holder use operational personnel unless they have completed the initial security curriculum approved by the Authority.

**8.10.1.10 INITIAL SAFETY MANAGEMENT SYSTEM (SMS) TRAINING**

No person may serve nor may any AOC holder use operational personnel unless they have completed the initial safety management system (SMS) according to ICAO document (9859) Safety Management Manual (SMM).

**8.10.1.11 INITIAL CREW RESOURCE MANAGEMENT**

- (a) No person may serve nor may any AOC holder use a person as a flight operations officer or crewmember unless that person has completed the initial CRM curriculum approved by the Authority.
- (b) Course curriculum topics are contained in IS: 8.10.1.11.

**8.10.1.12 INITIAL EMERGENCY EQUIPMENT DRILLS**

- (a) No person may serve nor may any AOC holder use a person as a crewmember unless that person has completed the appropriate initial emergency equipment curriculum and drills for the crewmember position approved by the Authority for the emergency equipment available on the aircraft to be operated.
- (b) Course curriculum requirements are contained in IS: 8.10.1.12.

**8.10.1.13 INITIAL AIRCRAFT GROUND TRAINING**

- (a) No person may serve nor may any AOC holder use a person as a crewmember or flight operations officer unless he or she has completed the initial ground training approved by the Authority for the aircraft type.
- (b) Initial aircraft ground training for flight crewmembers shall include the pertinent portions of the Operations Manual relating to aircraft-specific performance, mass and balance, operational policies, systems, limitations, normal, abnormal and emergency procedures on the aircraft type to be used. Specific course curriculum requirements for flight crewmembers are contained in IS: 8.10.1.13(b).
- (c) For cabin crewmembers, initial aircraft ground training shall include the pertinent portions of the Operations Manual relating to aircraft-specific configuration, equipment, normal and emergency procedures for the aircraft types within the fleet. Specific course curriculum requirements for cabin crewmembers are contained in IS: 8.10.1.13 (c).
- (d) For flight operations officers, aircraft initial ground training shall include the pertinent portions of the Operations Manual relating to aircraft-specific flight preparation procedures, performance, mass and balance, systems, limitations for the aircraft types within the fleet. Specific course curriculum requirements for flight operations officers are contained in IS: 8.10.1.13(d).

#### **8.10.1.14 INITIAL AIRCRAFT FLIGHT TRAINING**

- (a) No person may serve nor may any AOC holder use a person as a flight crewmember unless he or she has completed the initial flight training approved by the Authority for the aircraft type.
- (b) Initial flight training shall focus on the maneuvering and safe operation of the aircraft in accordance with AOC holder's normal, abnormal and emergency procedures.
- (c) An AOC holder may have separate initial flight training curricula, which recognize the experience levels of flight crewmembers, approved by the Authority.
- (d) Specific flight training curriculum requirements are contained in IS: 8.10.1.14(d) for pilots.

#### **8.10.1.15 INITIAL SPECIALIZED OPERATIONS TRAINING**

- (a) No person may serve nor may any AOC holder use a person as a flight crewmember unless he or she has completed the appropriate initial specialized operations training curriculum approved by the Authority.
- (b) Specialized operations for which initial training curricula shall be developed include—
  - (1) Low minimums operations, including low visibility take-offs and Category II and III operations;
  - (2) EDTO operations;
  - (3) Specialized navigation;
  - (4) PIC right seat qualification;
  - (5) RVSM; and
  - (6) PBN.
- (c) Specific initial specialized operations training curriculum requirements are contained in IS: 8.10.1.15(c).

#### **8.10.1.16 AIRCRAFT DIFFERENCES**

- (a) No person may serve nor may any AOC holder use a person as a flight operations officer or crewmember on an aircraft of a type for which a differences curriculum is included in the AOC holder's approved training programme, unless that person has satisfactorily completed that curriculum, with respect to both the crewmember position and the particular variant of that aircraft.

- (b) A general listing of subjects to be covered in aircraft differences training is contained in IS: 8.10.1.16.

**8.10.1.17      RESERVED**

**8.10.1.18      INTRODUCTION OF NEW EQUIPMENT OR PROCEDURES**

No person may serve nor may any AOC holder use a person as a flight crewmember when that service would require expertise in the use of new equipment or procedures for which a curriculum is included in the AOC holder's approved training programme, unless that person has satisfactorily completed that curriculum, with respect to both the crewmember position and the particular variant of that aircraft.

**8.10.1.19      PILOT PROFICIENCY – AIRCRAFT AND INSTRUMENT PROFICIENCY CHECKS**

- (a) No person may serve nor may any AOC holder use a person as a pilot flight crewmember unless, since the beginning of the 12th calendar month before that service, that person has passed the aircraft pilot proficiency check prescribed by Authority in the make, and model aircraft on which their services are required.
- (b) No person may serve nor may any AOC holder use a person as a pilot in IFR operations unless, since the beginning of the 6th calendar month before that service, that pilot has passed the instrument proficiency check prescribed by the Authority.
- (c) A pilot may complete the requirements of paragraphs (a) and (b) simultaneously in a specific aircraft type.
- (d) The maneuvers for aircraft pilot proficiency and instrument proficiency checks conducted under this part are contained in IS 8.10.1.19(d) and in MCAR Part 2 under the appropriate skill test.

**8.10.1.20      RE-ESTABLISHING RECENCY OF EXPERIENCE—FLIGHTCREW**

**(a)      Pilots:**

- (1) In addition to meeting all applicable training and checking requirements, a required pilot flight crewmember who, in the preceding 90 days has not made at least three take-offs and landings in the aircraft in which that person is to serve, shall, under the supervision of a check pilot, re-establish recency of experience as follows:
  - (i) Make at least three take-offs and landings in the aircraft in which that person is to serve or in a qualified simulator.

- (ii) Make at least one take-off with a simulated failure of the most critical power plant, one landing from the minimum ILS authorized for the AOC holder, and one landing to a full stop.
- (2) When using a simulator to accomplish any of the take-off and landing training requirements necessary to re-establish recency of experience, each required flight crewmember position shall be occupied by an appropriately qualified person and the simulator shall be operated as if in a normal in-flight environment without use of the repositioning features of the simulator.
- (3) A check pilot who observes the take-offs and landings of a pilot flight crewmember shall certify that the person being observed is proficient and qualified to perform flight duty in operations and may require any additional maneuvers that are determined necessary to make this certifying statement.

#### **8.10.1.21 LINE CHECKS—PILOT QUALIFICATION**

- (a) No person may serve nor may any AOC holder use a person as a pilot unless, within the preceding 12 calendar-months, that person has passed a line check in which he or she satisfactorily performed his or her assigned duties in one of the types of aircraft he or she is to fly.
- (b) No person may perform PIC duties over a designated special operational area that requires a special navigation system or procedures or in EDTO operations unless his or her competency with the system and procedures has been demonstrated to the AOC holder within the past 12 calendar-months.
- (c) Each PIC shall demonstrate operational competency by navigation over the route and area to be flown and the aerodromes to be used as PIC under the supervision of a check pilot and, on a continuing basis, by flights performing PIC duties. This, at a minimum, shall include a PIC demonstration of knowledge in the following:
  - (1) The terrain and minimum safe altitudes.
  - (2) The seasonal meteorological conditions.
  - (3) The search and rescue procedures.
  - (4) The navigational facilities and procedures, including any long-range navigation procedures, associated with the route along which the flight is to take place.
  - (5) Procedures applicable to—
    - (i) Flight paths over heavily populated areas or high air traffic density;



- (ii) Obstructions;
- (iii) Physical layout;
- (iv) Lighting, approach aids;
- (v) Arrival, departure, holding and instrument approach procedures;  
and
- (vi) Applicable operating minima;
- (vii) Notices to Airmen.

#### **8.10.1.22 DESIGNATED SPECIAL AERODROMES PIC QUALIFICATION**

- (a) The Authority may determine that certain airports, due to items such as surrounding terrain, obstructions, or complex approach or departure procedures, are special aerodromes requiring special aerodrome qualifications and that certain areas or routes, or both, require a special type of navigation qualifications.
- (b) No person may serve nor may any AOC holder use a person as PIC for operations at designated special aerodromes unless within the preceding 12 calendar-months—
- (c) The PIC has been qualified by the AOC holder through a pictorial means acceptable to the Authority for that aerodrome; or
  - (1) The PIC or the assigned CP has made a take-off and landing at that aerodrome while serving as a flight crewmember for the AOC holder.
  - (2) If the 12 months qualification period required in item (b) has expired, the PIC must re-qualify in accordance with the requirements in item (b).
- (d) Designated special aerodrome limitations are not applicable if the operation will occur—
  - (1) During daylight hours;
  - (2) When the visibility is at least 5 km (3 miles); and
  - (3) When the ceiling at that aerodrome is at least 300 m (1000 ft) above the lowest initial approach altitude prescribed for an instrument approach procedure.

#### **8.10.1.23 RECURRENT TRAINING—FLIGHT CREWMEMBERS**

- (a) No person may serve nor may any AOC holder use a person as a flight crewmember unless within the preceding 12 calendar-months that person has completed the recurrent ground and flight training curricula approved by with the Authority.
- (b) The recurrent ground training shall include training on—

- (1) Aircraft systems and limitations and normal, abnormal and emergency procedures;
  - (2) Emergency equipment and drills;
  - (3) Crew resource management; and
  - (4) Security training.
- (c) The recurrent flight training curriculum shall include—
  - (1) Maneuvering and safe operation of the aircraft in accordance with AOC holder's normal, abnormal and emergency procedures;
  - (2) Maneuvers and procedures necessary for avoidance of in-flight hazards; and
  - (3) For authorized pilots, at least one low visibility take-off to the lowest applicable minimum LVTO and two approaches to the lowest approved minimums for the AOC holder, one of which is to be a missed approach.
- (d) Satisfactory completion of a proficiency check with the AOC holder for the type aircraft and operation to be conducted may be used in lieu of recurrent flight training.
- (e) Detailed recurrent training requirements for pilots are contained in IS: 8.10.1.23(e).

**8.10.1.24 RECURRENT TRAINING AND RE-ESTABLISHMENT OF QUALIFICATIONS—CABIN CREWMEMBERS**

- (a) No person may serve nor may any AOC holder use a person as a cabin crewmember unless within the preceding 12 calendar-months that person has completed the recurrent ground curricula approved by the Authority relevant to the type(s) and/or variant(s) of aircraft and operations to which he or she is assigned.
- (b) The recurrent ground training shall include training on—
  - (1) Aircraft-specific configuration, equipment and procedures;
  - (2) Emergency and first aid equipment and drills;
  - (3) Crew resource management; and
  - (4) Security training.
- (c) Specific normal and emergency programme training requirements for cabin crewmembers are contained in IS: 8.10.1.24(c).

- (d) A required cabin crewmember who, due to a period of inactivity, has not met the recurrent training requirements in paragraphs (a) through (c) shall complete the initial AOC training programme.

**8.10.1.25 RECURRENT AND RE-ESTABLISHMENT OF QUALIFICATIONS –FLIGHT OPERATIONS OFFICERS**

- (a) No person may serve nor may any AOC holder use a person as a flight operations officer unless within the preceding 12 calendar-months that person has completed the recurrent ground curricula approved by the Authority relevant to the type(s) and/or variant(s) of aircraft and positions to which he or she is assigned.
- (b) Specific requirements for flight operations officers recurrent training are contained in IS: 8.10.1.25(b). A required flight operations officer who, due to a period of inactivity, has not met the recurrent training requirements in paragraphs (a) through (b) shall complete the initial AOC training programme.

**8.10.1.26 INSTRUCTOR QUALIFICATIONS –FLIGHT CREW, CABIN CREW, FLIGHT OPERATIONS OFFICER AND DANGEROUS GOODS**

- (a) **Flight Crew.** No AOC holder may use a person nor may any person serve as a flight instructor in an established flight training programme unless, with respect to the aircraft type involved, that person—
  - (1) Holds the personnel licences and ratings required to serve as a PIC;
  - (2) Has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training and differences training, that are required to serve as a PIC;
  - (3) Has satisfactorily completed the appropriate proficiency, competency and recency of experience checks that are required to serve as a PIC;
  - (4) Has satisfactorily completed the applicable initial or transitional training requirements and the Authority-observed in-flight competency check; and
  - (5) Holds the appropriate medical certificate for service as a required crewmember.
- (b) **Flight Instructor - Flight Simulation Training.** No person may serve nor may any AOC holder use a person as a Flight Instructor in a flight simulation training device, unless, since the beginning of the 12th calendar month before that service, that person has—
  - (1) Flown at least 5 flights as a required crewmember for the type of aircraft involved; or

- (2) Observed, on the flight deck, the conduct of 2 complete flights in the aircraft type to which the person is assigned.
- (c) **Cabin Crew.** No AOC holder shall use a person nor shall any person serve as an instructor in an established cabin crew training programme unless, with respect to the aircraft type or position involved, that person—
  - (1) Holds the qualification required to serve as a cabin crewmember; (Cabin Crew CRM, Aviation Security, Dangerous Goods, Specific Aircraft Type Rating SEP nor more than two types, SMS and Aviation First Aids)
  - (2) Has satisfactorily completed the appropriate training phases for the aircraft and position involved, including recurrent training and differences training, that are required to serve as a cabin crewmember;
  - (3) Has satisfactorily completed the appropriate competency and recency of experience checks that are required to service as a cabin crewmember;
  - (4) Has satisfactorily completed the applicable initial or transitional training requirements and the Authority-observed competency check;
  - (5) Essential completion of Train the trainer/ instructor basic course;
  - (6) Minimum 5 years of relevant experiences. (including experience of senior cabin crew at least 18 months);
  - (7) Has been approved by the Authority for the Cabin Crew Instructor for cabin crew member duties involved;
  - (8) Shall be knowledgeable about applicable regulations and operator's standard operating procedures and
  - (9) Shall have had experience in instructional and training skills.
- (d) **Flight Operations Officer.** No AOC holder may use a person nor may any person serve as an instructor in an established flight operations officer training programme unless, with respect to the aircraft type and position involved, that person--
  - (1) Holds the certificate required to serve as a flight operations officer;
  - (2) Has satisfactorily completed the appropriate training phases for the aircraft or position involved, including recurrent training and differences training, that are required to serve as a flight operations officer;
  - (3) Has satisfactorily completed the appropriate competency and recency of experience checks that are required to serve as a flight operations officer; and

- (4) Has satisfactorily completed the applicable initial or transitional training requirements and the Authority-observed competency check.
- (e) **Dangerous Goods Instructor.** No AOC holder may use a person nor may any person serve as an instructor unless otherwise provided for by the appropriate Authority, instructors of initial and recurrent dangerous goods training programmes must have adequate instructional skills and have successfully completed a dangerous goods training programme in the applicable category, or Category 6, prior to delivering such a dangerous goods training programme.
  - (1) Instructors delivering initial and recurrent dangerous goods training programme must attend recurrent training at least every 24 months.

#### **8.10.1.27 INSTRUCTOR TRAINING**

- (a) No person may serve nor may any AOC holder use a person as an instructor for flight crew, cabin crew, flight operations officers and dangerous goods unless he or she has completed the curricula approved by the Authority for those functions for which they are to serve.
- (b) Specific training programme requirements for flight crew instructors are contained in IS: 8.10.1.27.

#### **8.10.1.28 DESIGNATED EXAMINER QUALIFICATIONS**

- (a) **Designated Examiner for flight crew.**
  - (1) No AOC holder may use a person, nor may any person serve as a Designated Examiner in an established flight crew training programme unless, with respect to the aircraft type involved, that person—
    - (i) Holds the personnel licences and ratings required to serve as a PIC;
    - (ii) Has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training and differences training, that are required to serve as a PIC;
    - (iii) Has satisfactorily completed the appropriate proficiency, competency and recency of experience checks that are required to serve as a PIC;
    - (iv) Has satisfactorily completed the applicable initial or transitional training requirements and the Authority-observed in-flight competency check for Designated Examiner duties;
    - (v) Holds the appropriate medical certificate if serving as a required flight crewmember; and

- (vi) Has been approved by the Authority for the Designated Examiner duties involved.
- (2) Designated Examiner - Simulator. Additional requirements. No person may serve nor may any AOC holder use a person as check personnel in a flight simulation training device, unless, since the beginning of the 12th calendar month before that service, that person has—
- (3) Flown at least 5 flights as a required crewmember for the type of aircraft involved; or
- (4) Observed, on the flight deck, the conduct of 2 complete flights in the aircraft type to which the person is assigned.
- (b) **Designated Examiner for Cabin Crew.**
  - (1) No AOC holder shall use a person, nor shall any person serve as Designated Examiner for cabin crewmember in an established cabin crew training programme unless, with respect to the aircraft type or position involved, that person—
    - (i) Holds the qualifications required to serve as a cabin crewmember;
    - (ii) Has satisfactorily completed the appropriate training phases for the aircraft and or position, including recurrent training and differences training, that are required to serve as a Designated Examiner for cabin crewmember;
    - (iii) Has satisfactorily completed the appropriate competency and recency of experience checks that are required to serve as a cabin crewmember;
    - (iv) Has satisfactorily completed the applicable initial or transitional training requirements and the Authority-observed competency check for the Designated Examiner duties;
    - (v) Has been approved by the Authority for the Designated Examiner for cabin crewmember duties involved;
    - (vi) Minimum 6 years of relevant experiences. (Including experience of cabin crew instructor at least 1 year);
    - (vii) Shall be knowledgeable about applicable regulations and operator's standard operating procedures and
    - (viii) Shall have had experience in instructional and checking skills.

(c) **Designated Examiner for Flight Operations Officers.**

- (1) No AOC holder may use a person, nor may any person serve as a Designated Examiner for flight operations officer in an established flight operations officer training programme unless, with respect to the aircraft type or position involved, that person—
  - (i) Holds the qualification required to serve as a flight operations officer;
  - (ii) Has satisfactorily completed the appropriate training phases for the aircraft and or position, including recurrent training and differences training, that is required to serve as Designated Examiner for flight operations officer;
  - (iii) Has satisfactorily completed the appropriate competency and recency of experience checks that are required to serve as Designated Examiner for flight operations officer;
  - (iv) Has satisfactorily completed the applicable initial or transitional training requirements and the Authority-observed competency check for the Designated Examiner flight operations officer duties involved.
  - (v) Has been approved by the Authority for the Designated Examiner for flight operations officer duties involved.

**8.10.1.29 DESIGNATED EXAMINER TRAINING**

- (a) No person may serve nor may any AOC holder use a Designated Examiner for checks unless he or she has completed the curricula approved by the Authority for those functions for which they are to serve.
- (b) Specific training programme requirements for Designated Examiner are contained in IS: 8.10.1.29.

**8.10.1.30 SINGLE – PILOT OPERATIONS UNDER IFR QUALIFICATIONS, TRAINING, CHECKING**

- (a) No person may conduct single-pilot-operations under IFR ~~or at night~~ in commercial air transportation, in accordance with Subpart 8.8.1.30, unless the operation is approved by the Authority and the pilot has at least 50 hours flight time in the aircraft class in which he or she is to serve and of those 50 hours, not less than 10 hours shall be as pilot in command.

- (b) For single-pilot-operations conducted under IFR:
  - (1) The pilot shall have at least 25 hours flight time under IFR in the type and class of aircraft in which he or she is to serve.
  - (2) The 25 hours flight time under IFR referenced in b. (1) may form part of the required 50 hours flight time in aircraft class.
  - (3) The pilot shall have performed in single-pilot-operations, at least 5 IFR flights including 3 instrument approaches in the class of aircraft in which he or she is to serve within 90 days preceding the flight, or
  - (4) Within 90 days preceding the flight, the pilot has satisfactorily completed the single-pilot-operation instrument competency check, as prescribed by the Authority, in the class of aircraft in which he or she is to serve.
  
- (c) No pilot may serve nor may any AOC holder assign a person to operate an aircraft in single-pilot-operations in commercial air transport unless the pilot has:
  - (1) Successfully completed the relevant training requirements of Subpart 8.10.1.30 applicable to flight crewmembers engaged in commercial air transport;
  - (2) Successfully completed the approved single-pilot operations training programme prescribed by the Authority, and
  - (3) Satisfactorily completed the single-pilot operations checking requirements, as prescribed by the Authority, in the type and class of aircraft in which he or she is to serve.

#### **8.10.1.31 QUALIFICATIONS OF FLIGHT OPERATIONS OFFICER**

- (a) Minimum 21 years of age
- (b) Universal Education
- (c) A functional knowledge of English Language
- (d) Successfully completed the initial flight dispatcher training

#### **8.10.1.32 RECORDING OF CREWMEMBER AND FLIGHT OPERATIONS OFFICER QUALIFICATIONS**

- (a) The AOC holder shall record in its records maintained for each crewmember and flight operations officer, the completion of each of the qualifications required by MCAR Part-1.



- (b) A crewmember or flight operations officer may complete the curricula required by this Part concurrently or intermixed with other required curricula, but completion of each of these curricula shall be recorded separately.

**8.10.1.33 ELIGIBILITY PERIOD**

- (a) Crewmembers required to take a proficiency check, test or competency check, or recurrent training to maintain qualification for commercial air transport operations may complete those requirements at any time during the eligibility period.
- (b) The eligibility period is defined as the three calendar month period including the month prior, the month-due, and the month-after any due date specified by this subsection.
- (c) Completion of the requirement at any time during the period shall be considered as completed in the month-due for calculation of the next due date.

**8.11 FATIGUE MANAGEMENT****8.11.1.1 APPLICABILITY**

This section is applicable to the management of fatigue-related safety risks of crewmembers and flight operations officers/flight dispatchers engaged in commercial air transport flight operations.

**8.11.1.2 MANAGING FATIGUE-RELATED SAFETY RISKS**

- (a) For the purpose of managing fatigue-related safety risks, an AOC holder shall establish either:
  - (1) flight time, flight duty period, duty period and rest period limitations that are within the prescriptive fatigue management regulations in Section 8.12; or
  - (2) a Fatigue Risk Management System (FRMS) in compliance with Subsection 8.11.1.2(e); or
  - (3) a FRMS in compliance with Subsection 8.11.1.2(e) for part of its operations and the requirements of Section 8.12 for the remainder of its operations.
- (b) Where the operator adopts prescriptive fatigue management regulations for part or all of its operations, the Authority may approve, in exceptional circumstances, variations to these regulations on the basis of a risk assessment provided by the operator. Approved variations shall provide a level of safety equivalent to, or better than that achieved through the prescriptive fatigue management regulations.
- (c) The Authority shall approve an operator's FRMS before it may take the place of any or all of the prescriptive fatigue management regulations. An approved FRMS shall provide a level of safety equivalent to, or better than, the prescriptive fatigue management regulations.
- (d) Operators using an FRMS must adhere to the following provisions of the FRMS approval process that allows the Authority to ensure that the approved FRMS meets the requirements of Subsection 8.11.1.2(c).
  - (1) Establish maximum values for flight times and/or flight duty period(s) and duty period(s), and minimum values for rest periods that shall be based upon scientific principles and knowledge, subject to safety assurance processes

*Note: ICAO Doc 9966, Fatigue Risk Management Systems Manual, provides a definition for Safety Assurance Processes.*

- (2) Adhere to Authority mandates to decrease maximum values and increase in minimum values in the event that the operator's data indicates these values are too high to too low, respectively; and
  - (3) Provide justification to the Authority for any increase in maximum values or decrease in minimum values based on accumulated FRMS experience and fatigue-related data before such changes will be approved by the Authority.
- (e) Operators implementing an FRMS to manage fatigue-related safety risks shall, as a minimum:
  - (1) Incorporate scientific principles and knowledge within the FRMS;
  - (2) Identify fatigue-related safety hazards and the resulting risks on an ongoing basis;
  - (3) Ensure that the remedial actions, necessary to effectively mitigate the risks associated with the hazards, are implemented promptly;
  - (4) Provide for continuous monitoring and regular assessment of the mitigation of fatigue risks achieved by such actions; and
  - (5) Provide for continuous improvement to the overall performance of the FRMS.

## **8.12 FLIGHT TIME, FLIGHT DUTY PERIODS, DUTY PERIODS, AND REST PERIODS FOR FATIGUE MANAGEMENT**

### **8.12.1.1 APPLICABILITY**

This section is applicable to the rest, duty and flight time limitations of crewmembers and flight operations officers/flight dispatchers engaged in commercial air transport flight operations.

### **8.12.1.2 FLIGHT TIME AND FLIGHT DUTY PERIOD LIMITS: TWO PILOT OPERATION**

**8.12.1.2.1** The maximum flight time and maximum flight duty period during any 24 hours are indicated in the following table:

<b>Maximum flight time</b>	<b>Maximum flight duty period (in hours)</b>	<b>Maximum number of landing(s)</b>
8 hrs	14:00	7
9 hrs	14:00	2
10 hrs	14:00	1

### **8.12.1.3 FLIGHT TIME AND FLIGHT DUTY PERIOD LIMITS : AUGMENTED CREW**

**8.12.1.3.1** The maximum flight time and maximum flight duty period during any 24 hours are indicated in the following table:

<b>Maximum flight time</b>	<b>Maximum flight duty period (in hours)</b>	<b>Maximum number of landing</b>
12 hrs (for 3 crew operations)	14:00	1
14 hrs (Long Range- 4 crew operations)	18:00	1

**8.12.1.4 AUGMENTATION OF FLIGHT CREW AND INFLIGHT REST**

- (a) The operator shall ensure that a Rated Captain is always on duty during the in-flight rest of the other Flight crew.
- (b) The scheme shall specify that Flight Time will be counted only when the crew is 'On Controls'.
- (c) The minimum in-flight rest period shall be a consecutive 90 minute period for each crew member and 2 consecutive hours for the flight crew members at control during landing. Flight Crew shall be allowed to return to controls only after 30 minutes of waking after bunk/seat rest which may be part of the rest.
- (d) The conditions of rest should be such that a flight crew member can obtain recuperative rest in a comfortable seat, or in a bunk, separated and screened from the passengers, and reasonably free from disturbance.
- (e) In case of augmented flight crew, the division of duty and rest between the flight crew members being relieved will be kept in balance, which would be spelt out in detail in the scheme of the operator.

**8.12.1.5 FLIGHT CREW- MAXIMUM CUMULATIVE FLIGHT TIME AND DUTY PERIOD LIMITATIONS**

<b>Maximum cumulative flight time limitations</b>	<b>Maximum flight time limitation (in hours)</b>	<b>Maximum cumulative duty period</b>
In 7 consecutive days	35	60
In 14 consecutive days	65	100
In 28 consecutive days	100	190
In 90 consecutive days	300	600
In 365 consecutive days	1000	1800

**8.12.1.6 SPLIT DUTY FOR ALL CREWMEMBERS**

(a) Split duty shall be as follows:

Consecutive hours of break	Maximum extension of the flight duty time
Less than 3 hours	Nil
Between 3 and 10 hours	A period equal to half the consecutive hours break taken
>10 hours	No extension permitted

(b) Post-flight and pre-flight duties/ transport time will not be counted as part of rest.

(c) The break on the ground shall count in full as flight duty period.

**8.12.1.7 MINIMUM REST PERIODS FOR ALL CREWMEMBERS****8.12.1.7.1 Rest Period (Before the flight)**

The minimum rest, which must be provided before undertaking a flight duty period, shall be:

- a) At least as long as the preceding duty period, OR
- b) 1) 10 hours
- 2) 18 hours for crossing more than 3, up to 7 time zones
- 3) 36 hours for crossing more than 7 time zones
- whichever is greater.

*Note 1: When a crew is positioned within the 'acclimatized' zone to operate a flight (not within the purview of Para 12), the rest after the positioning and before the flight will be 12 h, provided that rest stipulated at Para 8.12.1.7.1 above has been availed prior to the positioning.*

*Note 2: For a Flight Crew operating between 3 to 7 Time Zones, and proceeding to farther Time Zones, the crew shall be provided a minimum rest, at lay over station, as per para 8.12.1.7.1, before proceeding beyond on the next Flight Duty Period. The Time Zone difference for subsequent flight will be calculated from the place where the crew is acclimatized.*

**8.12.1.7.2** For all other duties, apart from Flight Duty, a minimum rest period of 10 hours shall be given. Operators to define the same in their FDTL Scheme.

**8.12.1.7.3 REST PERIOD AFTER STANDBY**

- (a) When any period of standby finishes, 12 hrs rest shall be given.
- (b) When standby culminates in to a duty, then the rest period shall be decided based on total period of duty i.e. the duty plus the percentage of standby counted for duty.
- (c) If the preceding duty period, which includes any time spent on positioning, exceeds 18 hours, then the ensuing rest period shall include a local night.
- (d) Period of transportation to and from an airport shall neither be counted towards duty time nor rest period. The operator shall include in the 'Scheme' the optimum time of transportation after taking into account various factors and on ensuring that the rest period does not get reduced below the minimum rest requirements.

**8.12.1.7.4 WEEKLY REST FOR ALL CREWMEMBERS**

An operator shall ensure that the minimum weekly rest of continuous 36 hours including two local night is provided such that there shall never be more than 168 hours between the end of one weekly rest period and the start of the next.

*Note: The operator shall provide weekly rest Home Base/ Temporary Base.*

**8.12.1.7.5 REST AFTER RETURN TO HOME BASE FOR ALL CREWMEMBERS**

- (a) An operator shall ensure that effects on flight crew members of time zone differences will be compensated by additional rest as specified below.
- (b) Minimum rest including local nights shall be given, according to the table given below, to any flight crew member when coming back to home base, who has been away from the home base.

<b>Time Zone difference</b>	<b>Rest (in hours)</b>	<b>Local nights</b>
More than 3 and up to 7	36	2
More than 7	72	3

**8.12.1.8 STANDBY PERIOD FOR ALL CREWMEMBERS**

- (a) Standby period shall not extend beyond 12 hours. However, a maximum standby at airport (with or without sleeping quarters) shall not exceed 8 hours.
- (b) If the standby period is at the airport and
  - (1) Standby culminates into a flight duty then the total period (i.e. 100%) shall be counted towards the flight duty period and also towards cumulative duty period.
  - (2) Standby does not culminate into a flight duty then the total period (i.e. 100%) shall be counted towards cumulative duty period.
- (c) Standby does not culminate into a flight duty then the total period (i.e. 100%) shall be counted towards cumulative duty period.
- (d) If the standby period is at home or in a hotel and culminates into duty
  - (1) Within first 6 hours then no part of standby shall be considered as part of flight duty period or cumulative duty period.
  - (2) At 6 hours or later then flight duty period shall be reduced by 50% of the standby time.
- (e) If standby period is at home or in a hotel and does not culminate into a duty then, 25% of its time shall be considered under cumulative duty.

**8.12.1.9 POSITIONING FOR ALL CREWMEMBERS**

- (a) All the time spent on positioning on the behest of the operator shall be counted as duty.
- (b) Positioning time should be a part of a flight duty period when it immediately precedes (i.e. without an intervening rest period) a flight duty period in which that person participates as a flight crew member.
- (c) Positioning after operating a flight duty period without an intervening rest period shall be counted as duty period for determining the rest period.
- (d) Positioning should not count as an operating sector when planning or calculating a flight duty period.
- (e) Positioning shall be counted as a landing, if after a positioning journey, the crew spends less than the minimum rest period at suitable accommodation provided by the operator, and then extends FDP using Split Duty.



### **8.12.1.10 UNFORESEEN OPERATIONAL CIRCUMSTANCES FOR ALL CREWMEMBERS**

- (a) Flight Time', 'Flight Duty Period', landing may be extended due to unforeseen operational circumstances as follows:
- (1) Flight Time by maximum of 1.5 hours.
  - (2) FDP by maximum of 3 hours.
  - (3) Only one extra landing may be carried out in the event of a diversion to complete the flight, including a consecutive night for completion of the flight.
  - (4) The above is subject to a cumulative limit of maximum of 4.5 hours (Flight Time), maximum of 9 hours (FDP) and 2 landings during any period of 28 consecutive days.
  - (5) Whenever the Flight duty period or flight time gets extended, the rest period shall be pro-rata increased by twice the amount of extended time of Flight duty period.
  - (6) Extension of the maximum basic FDP shall not be combined with split duty in the same duty period.

### **8.12.2 CABIN CREW- MAXIMUM FLIGHT TIME LIMITATIONS, FLIGHT DUTY PERIOD AND LANDING DURING ANY 24 HOURS**

- 8.12.2.1** The maximum flight time and maximum flight duty period for cabin crew are indicated in the following table:

Maximum flight time	Maximum flight duty period (in hours)	Maximum number of landings
Up to 8 hours	14	7
Above 8 and up to 11 hours	15	3
Above 11 and up to 14 hours	18	1

**8.12.2.2 CABIN CREW- MAXIMUM CUMULATIVE FLIGHT TIME LIMITATIONS**

<b>Maximum cumulative flight time limitations</b>	<b>Maximum flight time limitation (in hours)</b>
In 7 consecutive days	40
In 28 consecutive days	115
In 90 consecutive days	300
In 365 consecutive days	1000

**8.12.2.3 CABIN CREW- MAXIMUM CUMULATIVE FLIGHT DUTY PERIOD**

- (a) No operator shall assign and no cabin crew member shall accept any duty to exceed:
- (1) 210 duty hours in any 28 consecutive days, spread as evenly as practicable throughout this flight duty period;
  - (2) 65 duty hours in any 7 consecutive days.

**8.12.3 DUTY AND REST PERIODS FOR FLIGHT OPERATIONS OFFICERS**

- (a) With respect to duty periods, no AOC holder may schedule a flight operations officer/aircraft dispatcher for more than 10 consecutive hours of duty within a 24 consecutive hour period, unless that person is given an intervening rest period of at least 8 hours at or before the end of the 10 hours duty, except in cases where circumstances or emergency conditions beyond the control of the AOC holder require otherwise:
- (1) Each AOC holder shall establish the daily duty period for a flight operations officer/ flight dispatcher so that it begins at a time that allows him or her to become thoroughly familiar with existing and anticipated weather conditions along the route before he or she dispatches any aircraft.
  - (2) He or she shall remain on duty until each aircraft dispatched by him or her has completed its flight or has gone beyond his or her jurisdiction or until he or she is relieved by another qualified dispatcher.

- (b) With respect to rest periods, minimum 8 consecutive hours shall be given and each AOC holder shall relieve the flight operations officers/ flight dispatcher from all duties for 24 consecutive hours during any 7 consecutive day period.

#### **8.12.4 MAINTENANCE OF RECORDS AND MONITORING SYSTEM**

- (a) An operator shall maintain records for each crew member and flight operations officer/flight dispatcher of flight time, flight duty periods, duty periods, and rest periods for a period of 24 months.
- (b) An operator should ensure that these records include for each crew member, at least:
  - (1) Start, duration and end of each flight duty period
  - (2) Start, duration and end of each duty period
  - (3) Rest periods
  - (4) Flight time
  - (5) Cumulative flight time
- (c) An operator shall also keep records of occasions when flight time and duty were extended.
- (d) In addition, DCA Myanmar may require submission of copies and analysis of records in the manner deemed fit.

**8.13 FLIGHT RELEASE—COMMERCIAL AIR TRANSPORT****8.13.1.1 APPLICABILITY**

This Subpart is applicable to an AOC holder and the person designated by the AOC holder to issue a flight release.

**8.13.1.2 QUALIFIED PERSONS REQUIRED FOR OPERATIONAL CONTROL FUNCTIONS**

- (a) A qualified person shall be designated by the AOC holder to exercise the functions and responsibilities for operational control of each flight in commercial air transport.
- (b) For passenger-carrying flights conducted on a published schedule, a qualified flight operations officer shall be on-duty at an operations base to perform the operational control functions.
- (c) For all other flights, the Nominated post holder (Head of Operations) and the PIC are the qualified persons exercising operational control responsibilities, and shall be available for consultation before, during and immediately following the flight operation.
  - (1) The Nominated post holder (Head of Operations) may delegate the functions for initiating, continuation, diversion and termination of a flight to other employees. However, the Nominated post holder (Head of Operations) shall retain full responsibility for these functions.
- (d) For all flights, the PIC shares in the responsibility for operational control of the aircraft and has the situational authority to make decisions regarding operational control issues in-flight.
  - (1) Where a decision of the PIC differs from that recommended, the person making the recommendation shall make a record of the associated facts.

**8.13.1.3 FUNCTIONS ASSOCIATED WITH OPERATIONAL CONTROL**

- (a) The person exercising responsibility for operational control for an AOC holder shall—
  - (1) Authorize the specific flight operation;
  - (2) Ensure that only those operations authorized by the AOC operations specifications are conducted;
  - (3) Ensure that an airworthy aircraft properly equipped for the flight is available;

- (4) Specify the conditions under which a flight may be dispatched or released (weather minimums, flight planning, aircraft loading, and fuel requirements);
- (5) Ensure that qualified personnel and adequate facilities are available to support and conduct the flight;
- (6) Ensure that crewmembers are in compliance with the flight and duty time requirements when departing on a flight;
- (7) Provide the PIC and other personnel who perform operational control functions with access to the necessary information for the safe conduct of a flight (such as weather, NOTAMS, Aeronautical Information Publication(AIP), Aeronautical Information Circular (AIC),Aeronautical Information Regulation and Control(AIRAC) and aerodrome analysis);
- (8) Ensure that proper flight planning and preparation is made;
- (9) Ensure that flight locating and flight following procedures are followed;
- (10) Ensure that each flight has complied with the conditions specified for release before it is allowed to depart;
- (11) Ensure that when the conditions specified for a release cannot be met, the flight is either cancelled, delayed, re-routed, or diverted, and
- (12) For all flights, ensure the monitoring of the progress of the flight and the provision of information that may be necessary to safety.

#### **8.13.1.4 OPERATIONAL CONTROL DUTIES**

- (a) For all flights, the qualified person performing the duties of a flight operations officer shall—
  - (1) Assist the PIC in flight preparation and provide the relevant information required;
  - (2) Assist the PIC in preparing the operational and ATC flight plans;
  - (3) Sign the dispatch copy of the flight release;
  - (4) Furnish the PIC while in flight, by appropriate means, with information which may be necessary for the safe conduct of the flight; and
  - (5) In the event of an emergency situation which endangers the safety of the aeroplane or persons becomes known first to the flight operations officer/flight dispatcher, action by that persons shall be in accordance with such procedures as outlined in the AOC holder's operations manual. Where necessary, immediately notify the appropriate authorities on the nature of the situation, and if required, a request for assistance.

- (b) A qualified person performing the operational control duties shall avoid taking any action that would conflict with the procedures established by—
  - (1) ATC;
  - (2) The meteorological service;
  - (3) The communications service; or
  - (4) AOC holder.

#### **8.13.1.5 CONTENTS OF A FLIGHT RELEASE/OPERATIONAL FLIGHT PLAN**

- (a) The dispatch or flight release/operational flight plan shall contain or have attached at least the following information concerning each flight:
  - (1) Company or organization name.
  - (2) Make, model, and registration number of the aircraft being used.
  - (3) Flight or trip number, and date of flight.
  - (4) Name of each flight crewmember, cabin crewmember, and PIC.
  - (5) Departure aerodrome, destination aerodromes, alternate aerodromes, and route.
  - (6) Minimum fuel supply (in gallons or pounds).
  - (7) A statement of the type of operation (e.g., IFR, VFR).
  - (8) The latest available weather reports and forecasts for the destination aerodrome and alternate aerodromes.
  - (9) Any additional available weather information that the PIC considers necessary.
- (b) The dispatch or flight release/operational flight plan shall be signed by the PIC and, when applicable, the flight operations officer, and a copy shall be filed with operator or a designated agent. If these procedures are not possible, it shall be left with the aerodrome authority or on record at a suitable place at the point of departure.

#### **8.13.1.6 FLIGHT RELEASE—AIRCRAFT REQUIREMENTS**

- (a) No person may issue a flight release for a commercial air transport operation unless the aircraft is airworthy and properly equipped for the intended flight operation.
- (b) No person may issue a flight release for a commercial air transport operation using an aircraft with inoperative instruments and equipment installed, except as specified in the MEL approved for the AOC holder for that type aircraft.
- (c) No person may issue a flight release for a commercial air transport operation using an aircraft unless a maintenance release has been issued for that aircraft.

- (d) No person may issue a flight release for a commercial air transport operation unless the requirements of Subsection 8.13.1.5 for operational flight planning have been met.
- (e) Completed flight preparation forms shall be kept by an operator for a period of 3 months.

**8.13.1.7 FLIGHT RELEASE—FACILITIES AND NOTAMS**

- (a) No person may release an aircraft over any route or route segment unless there are adequate communications and navigational facilities in satisfactory operating condition as necessary to conduct the flight safely.
- (b) The flight operations officer shall ensure that the PIC is provided all available current reports or information on aerodrome conditions and irregularities of navigation facilities that may affect the safety of the flight.
- (c) No person may issue a flight release for a commercial air transport operation unless the requirements of Subsection 8.13.1.5 for operational flight planning have been complied met.
- (d) Completed flight preparation forms shall be kept by an operator for a period of 3 months.

**8.13.1.8 FLIGHT RELEASE—WEATHER REPORTS AND FORECASTS**

- (a) No person may release a flight unless he or she is thoroughly familiar with reported and forecast weather conditions on the route to be flown.
- (b) No person may release a flight unless he or she has communicated all information and reservations they may have regarding weather reports and forecasts to the PIC.
- (c) No person may issue a flight release for a commercial air transport operation unless the requirements of 8.13.1.5 for operational flight planning have been complied met.
- (d) Completed flight preparation forms shall be kept by an operator for a period of 3 months.

**8.13.1.9 FLIGHT RELEASE — IN ICING CONDITIONS**

- (a) No person may release an aircraft, when in their opinion or that of the PIC, the icing conditions that may be expected or are met exceed that for which the aircraft is certified and has sufficient operational de-icing or anti-icing equipment.

- (b) No person may release an aircraft any time conditions are such that frost, ice or snow may reasonably be expected to adhere to the aircraft, unless there is available to the PIC at the aerodrome of departure adequate facilities and equipment to accomplish the procedures approved for the AOC holder by the Authority for ground de-icing and anti-icing.
- (c) No person may issue a flight release for a commercial air transport operation unless the requirements of Subsection 8.13.1.5 for operational flight planning have been complied met.
- (d) Completed flight preparation forms shall be kept by an operator for a period of 3 months.

**8.13.1.10 FLIGHT RELEASE — UNDER VFR OR IFR**

No person may release a flight under VFR or IFR unless the weather reports and forecasts indicated that the flight can reasonably be expected to be completed as specified in the release.

**8.13.1.11 FLIGHT RELEASE—MINIMUM FUEL SUPPLY**

- (a) No person may issue a flight release for a commercial air transport operation unless the fuel supply specified in the release is equivalent to or greater than the minimum flight planning requirements of this Part, including anticipated contingencies.
- (b) No person may issue a flight release for a commercial air transport operation unless the requirements of 8.13.1.5 for operational flight planning have been met.
- (c) Completed flight preparation forms shall be kept by an operator for a period of 3 months.

**8.13.1.12 FLIGHT RELEASE—AIRCRAFT LOADING AND PERFORMANCE**

- (a) No person may issue a flight release unless he or she is familiar with the anticipated loading of the aircraft and is reasonably certain that the proposed operation will not exceed the—
  - (1) Centre of gravity limits;
  - (2) Aircraft operating limitations; and
  - (3) Minimum performance requirements.
- (b) No person may issue a flight release for a commercial air transport operation unless any load carried is properly distributed and safely secured.



- (c) No person may issue a flight release for a commercial air transport operation unless the requirements of 8.13.1.5 for operational flight planning have been met.
- (d) Completed flight preparation forms shall be kept by an operator for a period of 3 months.

**8.13.1.13 FLIGHT RELEASE—AMENDMENT OR RE-RELEASE EN-ROUTE**

- (a) Each person who amends a flight release while the flight is en-route shall record that amendment.
- (b) No person may amend the original flight release to change the destination or alternate aerodrome while the aircraft is en-route unless the flight preparation requirements for routing, aerodrome selection and minimum fuel supply are met at the time of amendment or re-release.
- (c) No person may allow a flight to continue to an aerodrome to which it has been released if the weather reports and forecasts indicate changes that would render that aerodrome unsuitable for the original flight release.
- (d) No person may issue a flight release for a commercial air transport operation unless the requirements of Subsection 8.13.1.5 for operational flight planning have been met.
- (e) Completed flight preparation forms shall be kept by an operator for a period of 3 months.

**8.13.1.14 FLIGHT RELEASE—WITH AIRBORNE WEATHER RADAR EQUIPMENT**

- (a) No person may release a large aircraft carrying passengers under IFR or night VFR conditions when current weather reports indicate that thunderstorms, or other potentially hazardous weather conditions that can be detected with airborne weather radar, may reasonably be expected along the route to be flown, unless the airborne weather radar equipment is in satisfactory operating condition.
- (b) No person may issue a flight release for a commercial air transport operation unless the requirements of 8.13.1.5 for operational flight planning have been met.
- (c) Completed flight preparation forms shall be kept by an operator for a period of 3 months.

**8.14 ALL AEROPLANES ON FLIGHTS OVER WATER****8.14.1.1 SEAPLANES**

All seaplanes for all flights shall be equipped with:

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

*Note.— “Seaplanes” includes amphibians operated as seaplanes.*

**8.14.1.2 Landplanes**

Landplanes shall carry the equipment prescribed in 8.14.1.1:

- (a) when flying over water and at a distance of more than 93 km (50 NM) away from the shore, in the case of landplanes operated in accordance with 8.7.1.4.2 or 8.7.1.4.3;
- (b) when flying en route over water beyond gliding distance from the shore, in the case of all other landplanes; and
- (c) when taking off or landing at an aerodrome where, in the opinion of the DCA Myanmar, the take-off or approach path is so disposed over water that in the event of a mishap there would be a likelihood of a ditching.

**8.14.1.3** The equipment referred to in 8.14.1.2 shall comprise one life jacket or equivalent individual flotation device for each person on board, stowed in a position easily accessible from the seat or berth of the person for whose use it is provided.

*Note 1.— “Landplanes” includes amphibians operated as landplanes.*

*Note 2.— Life jackets accessible from seats or berths located in crew rest compartments are required only if the seats or berths concerned are certified to be occupied during take-off and landing.*

**8.15 SINGLE PILOT AND ENGINE AEROPLANE OPERATIONS**

**8.15.1.1 SINGLE PILOT AEROPLANE OPERATIONS**

- (a) No person may operate a single-engine aircraft or an aircraft type certificated for operation by a single-pilot used for revenue passenger carrying operations unless that aircraft is continually operated in daylight, VFR, excluding over the top, and over routes and diversions there that do not permit a safe forced landing to be executed in the event of an engine failure.
- (b) Notwithstanding above paragraph, the Authority may approve single-pilot operations in propeller driven, turbine powered aircraft under IFR, at night, or under IMC for aircraft certificated for a maximum take-off weight of 5,700 kg (12566 lb) or less and a maximum approved passenger seating configuration of 9 or less, provided it meets the equipment requirements of 8.5.1.24 and 8.8.1.15.
- (c) AOC holder shall not be operated single pilot aeroplane operations at night.

**8.15.1.2 SINGLE-ENGINE AEROPLANE OPERATIONS**

- (a) No person may operate a single-engine aeroplane in revenue passenger carrying operations unless that aircraft is continually operated in daylight, VFR over such routes and diversions there from that permit a safe forced landing to be executed in the event of an engine failure.
- (b) Except as provided in 8.8.1.16, single-engine aeroplanes shall only be operated in conditions of weather and light, and over such routes and diversions therefrom, that permit a safe forced landing to be executed in the event of engine failure.
- (c) AOC holder shall not be operated single - engine aeroplane operations at night.

**8.16****AIRCRAFT TRACKING**

- (a) Each AOC holder shall establish an aircraft tracking capability to track aeroplanes throughout its area of operations.

*Note.— Guidance on aircraft tracking capabilities is contained in the Normal Aircraft Tracking Implementation Guidelines (Cir 347).*

- (b) The operator should track the position of an aeroplane through automated reporting at least every 15 minutes for the portion(s) of the in-flight operation(s) under the following conditions:

- (1) the aeroplane has a maximum certificated take-off mass of over 27 000 kg and a seating capacity greater than 19; and
- (2) where an ATS unit obtains aeroplane position information at greater than 15 minute intervals.

*Note.— See Annex 11, Chapter 2, for coordination between the operator and air traffic services providers regarding position report messages.*

- (c) The operator shall track the position of an aeroplane through automated reporting at least every 15 minutes for the portion(s) of the in-flight operation(s) that is planned in an oceanic area(s) under the following conditions:

- (1) the aeroplane has a maximum certificated take-off mass of over 45 500 kg and a seating capacity greater than 19; and
- (2) where an ATS unit obtains aeroplane position information at greater than 15 minute intervals.

*Note 1.— Oceanic area, for the purpose of aircraft tracking, is the airspace which overlies waters outside the territory of a State.*

*Note 2.— See Annex 11, Chapter 2, for coordination between the operator and air traffic services providers regarding position report messages.*

- (d) The operator shall establish procedures, approved by the Authority, for the retention of aircraft tracking data to assist SAR in determining the last known position of the aircraft.

*Note.— Refer to MCAR Part-1 1.1.1.4 (f) for operator responsibilities when using third parties for the conduct of aircraft tracking under 8.15.1.3.*

**8.17****GENERAL REQUIREMENTS FOR GROUND INSTRUCTORS**

- (a) A suitably qualified person should be appointed to manage respective training. Such appointment should be subject to acceptance by the Authority.
- (b) An applicant applying for appointment as a training instructor shall have a minimum 5 years of experience as a crewmember or previous experience as a safety training instructor. The experience should be acquired within the last 5 years from the date of application.
- (c) An applicant without the experience requirement in as stipulated in (b) but with other relevant aviation experience or appropriate qualifications may still be considered for appointment subject to the Authority's approval.
- (d) All applicants for appointment as a training instructor must complete instructor course in relevant subject or Train the Trainer course. Detail content and duration of such training must be contained in the Operator's Training Manual (Part D).
- (e) All applications for appointment should be submitted by the operator to the Authority for approval. The application should include the qualifications, experience requirements and the proposed training programme as specified in the Operator's Training Manual (Part D).
- (f) The training personnel conducting the instructor training must have current knowledge, ability and recent experience as an instructor. The appointment of these training personnel shall be subjected to the approval of the Authority.
- (g) For newly appointed instructor with less than 5 years of experience, he/she is required to be checked by a DCA Myanmar competent official.
- (h) Instructor approval shall be valid for one year.
- (i) An operator is required to maintain the following records of their instructors;
  - (1) training records
  - (2) training classes conducted
  - (3) examinations conducted
- (j) The conduct of training and tests carried out by the operator's instructors may be observed by Authority.
- (k) All instructors shall receive a recurrent training according to their specific training requirements.

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**8.18 PBN OPERATIONS APPROVAL****8.18.1.1 APPLICATION FOR A SPECIFIC APPROVAL**

The operational approval process for RNAV 5 is generally straightforward, given that most aircraft are equipped with area navigation systems which exceed the minimum requirements for RNAV 5. In most cases the AFM will document RNAV 5 capability; failing that, many OEMs have issued statements of compliance and only occasionally will it be necessary to conduct an evaluation of aircraft capability. With the exception of an amendment to the operations manual, DCA Myanmar may decide that there is no further requirement for any additional documentation of RNAV 5 approval.

- (a) An applicant for the initial issue of a specific approval shall provide the DCA with the documentation required, as detailed on the application form, and the following information:
  - 1. the official name, address and mailing address of the applicant; and
  - 2. a description of the intended operation.
- (b) An applicant for a specific approval shall provide evidence to the DCA that:
  - 1. the applicant complies with the requirements;
  - 2. the aircraft and required equipment fulfill the applicable airworthiness requirements, are maintained according to the approved maintenance programme and are approved when required;
  - 3. a training programme has been established for flight crew and, as applicable, personnel involved in these operations; and
  - 4. operating procedures in accordance with the requirements have been documented. Operating procedures should be documented in the operations manual. If an operations manual is not required, operating procedures may be described in a procedures manual.
- (c) An operator shall retain records relating to the requirements of a) and b) above at least for the duration of the operation requiring the specific approval.

**8.18.1.2 PRIVILEGES OF AN OPERATOR HOLDING A SPECIFIC APPROVAL**

The scope of the activity that the operator is approved to conduct shall be documented and specified:

- (a) for commercial operators, in the operations specifications associated to the air operator certificate; and
- (b) for non-commercial operators, in the list of specific approvals.

**8.18.1.3 CHANGES TO OPERATIONS SUBJECT TO A SPECIFIC APPROVAL**

In case of a change that affects the conditions of a specific approval, the operator shall provide the relevant documentation to the DCA and obtain prior approval for the change to operation, documented by an amendment to the approval document.

**8.18.1.4 CONTINUED VALIDITY OF A SPECIFIC APPROVAL**

Specific approvals shall be issued for an unlimited duration. They shall remain valid subject to the operator remaining in compliance.

**8.18.1.5 PBN OPERATIONS**

- (a) An aircraft shall be operated only in designated airspace, on routes or in accordance with procedures where compliance with performance-based navigation (PBN) specifications is required if the operator has been approved by the DCA.
- (b) Guidance material for the global performance specifications, approval process, aircraft requirement (e.g. generic system performances, accuracy, integrity, continuity, signal-in-space, RNP specifications required for the on-board performance monitoring and alerting system), requirements for specific sensor technologies, functional requirements, operating procedures, flight crew knowledge and training and navigation database integrity requirements can be found in ICAO Doc 9613, Performance-based Navigation (PBN) Manual and the applicable documents listed in the table below;

**Application of navigation specification by flight phase**

Navigation Specification	Flight Phase							DEP
	En-route Oceanic/remote	En-route Continental	Arrival	Approach				
				Initial	Intermediate	Final	Missed <sup>1</sup>	
RNAV 10	10							
RNAV 5 <sup>2</sup>		5	5					
RNAV 2		2	2					2
RNAV 1		1	1	1	1		1	1
RNP 4	4							
RNP 2	2	2						
RNP 1 <sup>3</sup>			1	1	1		1	1
Advanced RNP (A-RNP) <sup>4</sup>	2 <sup>5</sup>	2 or 1	1	1	1	0.3	1	1
RNP APCH <sup>6</sup>				1	1	0.3 <sup>7</sup>	1	
RNP AR APCH				1-0.1	1-0.1	0.3- 0.1	1-0.1	
RNP 0.3 <sup>8</sup>		0.3	0.3	0.3	0.3		0.3	0.3

**Notes:**

1. *Only applies once 50 m (40 m, Cat H) obstacle clearance has been achieved after the start of climb.*
2. *RNAV 5 is an en-route navigation specification which may be used for the initial part of a STAR outside 30 NM and above MSA.*
3. *The RNP 1 specification is limited to use on STARs, SIDs, the initial and intermediate segments of IAPs and the missed approach after the initial climb phase. Beyond 30 NM from the ARP, the accuracy value for alerting becomes 2 NM.*
4. *A-RNP also permits a range of scalable RNP lateral navigation accuracies — see Part C, Chapter 4, 4.3.3.7.4.*
5. *Optional — requires higher continuity.*
6. *There are two sections to the RNP APCH specification: Section A is enabled by GNSS and baro-VNAV, Section B is enabled by SBAS.*
7. *RNP 0.3 is applicable to RNP APCH Section A. Different angular performance requirements are applicable to RNP APCH Section B only.*
8. *The RNP 0.3 specification is primarily intended for helicopter operations.*

**8.18.1.6 PBN APPLICATION**

To be issued a PBN operational approval by the DCA, the operator shall provide evidence that:

- (a) the relevant airworthiness approval of the RNAV system has been obtained;
- (b) a training programme for the flight crew involved in these operations has been established; and
- (c) operating procedures have been established specifying:
  1. the equipment to be carried, including its operating limitations and appropriate entries in the minimum equipment list (MEL);
  2. flight crew composition and experience requirements;
  3. normal procedures;
  4. contingency procedures;
  5. monitoring and incident reporting; and
  6. electronic navigation data management.



**MCAR PART - 8 — OPERATIONS OF COMMERCIAL AIR TRANSPORT AEROPLANES**

**IMPLEMENTING STANDARDS**

**DCA, MYANMAR**

**THIRD EDITION – JULY 2017**

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**PART 8—IMPLEMENTING STANDARDS****IS: 8.8.1.14(a) INTERCEPTION OF CIVIL AIRCRAFT**

- (a) Myanmar shall observe the following principles regarding the interception of civil aircraft.
  - (1) Interception of civil aircraft will be undertaken only as a last resort.
  - (2) If undertaken, an interception will be limited to determining the identity of the aircraft, unless it is necessary to return the aircraft to its planned track, direct it beyond the boundaries of national airspace, guide it away from a prohibited, restricted or danger area or instruct it to effect a landing at a designated aerodrome.
  - (3) Practice interception of civil aircraft will not be undertaken.
  - (4) Navigational guidance and related information will be given to an intercepted aircraft by radiotelephony, whenever radio contact can be established.
  - (5) In the case where an intercepted civil aircraft is required to land in the territory overflown, the aerodrome designated for the landing is to be suitable for the safe landing of the aircraft type concerned.
- (b) Myanmar shall ensure that:
  - (1) A standard method has been established and made available to the public for the maneuvering of aircraft intercepting a civil aircraft that is designed to avoid any hazard for the intercepted aircraft.
  - (2) Provision is made for the use of secondary surveillance radar or ADS-B, where available, to identify civil aircraft in areas where they may be subject to interception.
- (c) The PIC of an aircraft that is intercepted by another aircraft shall immediately:
  - (1) Follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with the specifications in item (e) below.
  - (2) Notify, if possible, the appropriate air traffic services unit.
  - (3) Attempt to establish radio communication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 121.5 MHz, giving the identity of the intercepted aircraft and the nature of the flight; and if no contact has been established and if practicable, repeating this call on the emergency frequency 243 MHz.

- (4) If equipped with SSR transponder, select Mode A, Code 7700, unless otherwise instructed by the appropriate air traffic services unit.
- (5) If equipped with ADS-B or ADS-C, select the appropriate emergency functionality, if available, unless otherwise instructed by the appropriate air traffic services unit.
- (d) If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the PIC of the intercepted aircraft shall request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft.
- (e) If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by radio, the PIC of the intercepted aircraft shall request immediate clarification while continuing to comply with the radio instructions given by the intercepting aircraft.
- (f) Radio communication during interception. If radio contact is established during interception but communication in a common language is not possible, the PIC of each involved aircraft shall attempt to convey instructions, acknowledgement of instructions and essential information by using the phrases and pronunciations in Table 1 below and transmitting each phrase twice:

**Table 1**

Phrases for use by INTERCEPTING aircraft			Phrases for use by INTERCEPTED aircraft		
Phrase	Pronunciation 1	Meaning	Phrase	Pronunciation 1	Meaning
CALL SIGN	KOL SA-IN	What is your call sign?	CALL SIGN (call sign) <sup>2</sup>	KOL SA-IN (call sign)	My call sign is (call sign)
FOLLOW	FOL-LO	Follow me	WILCO	VILL-KO	Understood Will comply
DESCEND	DEE-SEND	Descend for landing	CAN NOT	KANN NOTT	Unable to comply
YOU LAND	YOU LAAND	Land at this aerodrome	REPEAT	REE-PEET	Repeat your instruction
Phrases for use by INTERCEPTING aircraft			Phrases for use by INTERCEPTED aircraft		
Phrase	Pronunciation 1	Meaning	Phrase	Pronunciation 1	Meaning
PROCEED	PRO-SEED	You may proceed	AM LOST	AM LOSST	Position unknown

			MAYDAY	MAYDAY	I am in distress
			HIJACK <sub>3</sub>	HI-JACK	I have been hijacked
			LAND. (place name)	LAAND (place name)	I request to land at (place name)
			DESCEND	DEE-SEND	I require descent
<ol style="list-style-type: none"> <li>1. In the second column, syllables to be emphasised are underlined.</li> <li>2. The call sign required to be given is that used in radiotelephone, communications with air traffic services units and corresponding to the aircraft identification in the flight plan.</li> <li>3. Circumstances may not always permit, nor make desirable, the use of the phrase "HIJACK".</li> </ol>					

- (g) The signals in Table 2 shall be used by the pilots of each involved aircraft in the event of interception. Signals initiated by intercepting aircraft and responses by intercepted aircraft.

**Table 2**

Series	INTERCEPTING Aircraft Signals	Meaning	INTERCEPTED Aircraft Responds	Meaning
<b>1</b>	DAY or NIGHT — Rocking aircraft and flashing navigational lights at irregular intervals (and landing lights in the case of a helicopter) from a position slightly above and ahead of, and normally to the left of, the intercepted aircraft (or to the right if the intercepted aircraft is a helicopter) and, after acknowledgement, a slow level turn, normally to the left, (or to the right in the case of a helicopter) on the desired heading.	You have been intercepted. Follow me.	DAY or NIGHT —Rocking aircraft. flashing navigational lights at irregular intervals and following.	Understood, will comply.

Series	INTERCEPTING Aircraft Signals	Meaning	INTERCEPTED Aircraft Responds	Meaning
	<p><i>Note: Meteorological conditions or terrain may require the intercepting aircraft to reverse the positions and direction of turn given above in Series 1.</i></p> <p><i>Note: If the intercepting aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of race-track patterns and to rock the aircraft each time it passes the intercepted aircraft.</i></p>			
<b>2</b>	DAY or NIGHT — An abrupt break-away maneuver from the intercepted aircraft consisting of a climbing turn of 90 degrees or more without crossing the line of flight of the intercepted aircraft.	You may proceed.	DAY or NIGHT —Rocking the aircraft.	Understood, will comply.
<b>3</b>	DAY or NIGHT — Lowering landing gear (if fitted), showing steady landing lights and overflying runway in use or, if the intercepted aircraft is a helicopter, overflying the helicopter landing	Land at this aerodrome.	DAY or NIGHT —Lowering landing gear (if fitted), showing steady landing lights and following the intercepting aircraft and, if, after overflying the runway in use or helicopter landing	Understood, will comply.

Series	INTERCEPTING Aircraft Signals	Meaning	INTERCEPTED Aircraft Responds	Meaning
	area. In the case of helicopters, the intercepting helicopter makes a landing approach, coming to hover near to the landing area.		area, landing is considered safe, proceeding to land.	
4	DAY or NIGHT — Raising landing gear (if fitted) and flashing landing lights while passing over runway in use or helicopter landing area at a height exceeding 300 m (1000 ft) but not exceeding 600 m (2000 ft) (in the case of a helicopter, at a height exceeding 50 m (170 ft) but not exceeding 100 m (330 ft) above the aerodrome level, and continuing to circle runway in use or helicopter landing area. If unable to flash landing lights, flash any other lights available.	Aerodrome you have designated is inadequate.	DAY or NIGHT — If it is desired that the intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear (if fitted) and uses the Series 1 signals prescribed for intercepting aircraft. If it is decided to release the intercepted aircraft, the intercepting aircraft uses the Series 2 signals prescribed for intercepting aircraft.	Understood, follow me. Understood, you may proceed.
5	DAY or NIGHT — Regular switching on and off of all available lights but in such a manner as to be distinct from flashing lights.	Cannot comply.	DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.	

<b>Series</b>	<b>INTERCEPTING Aircraft Signals</b>	<b>Meaning</b>	<b>INTERCEPTED Aircraft Responds</b>	<b>Meaning</b>
<b>6</b>	DAY or NIGHT — Irregular flashing of all available lights.	In distress.	DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.	Understood



**IS: 8.8.2.11(a)****UNIVERSAL AVIATION SIGNALS**

- (a) **Distress signals.** The following signals, used either together or separately, mean that grave and imminent danger threatens, and immediate assistance is requested:

*Note 1: None of the provisions in this section shall prevent the use, by an aircraft in distress, of any means at its disposal to attract attention, make known its position and obtain help.*

*Note 2: For full details of telecommunication transmission procedures for the distress and urgency signals, see ICAO Annex 10, Volume II, Chapter 5.*

*Note 3: For details of the search and rescue visual signals, see ICAO Annex 12.*

- (1) A signal made by radiotelegraphy or by any other signaling method consisting of the group SOS (• • • — — — • • •) in the Morse Code.
- (2) A signal sent by radiotelephony consisting of the spoken word MAYDAY.
- (3) Rockets or shells throwing red lights, fired one at a time at short intervals.
- (4) A parachute flare showing a red light.

*Note: Article 41 of the ITU Radio Regulations (Nos. 3268, 3270 and 3271 refer) provides information on the alarm signals for actuating radiotelegraph and radiotelephone auto-alarm systems: 3268 The radiotelegraph alarm signal consists of a series of twelve dashes sent in one minute, the duration of each dash being four seconds and the duration of the interval between consecutive dashes one second. It may be transmitted by hand but its transmission by means of an automatic instrument is recommended. 3270 The radiotelephone alarm signal consists of two substantially sinusoidal audio frequency tones transmitted alternately. One tone shall have a frequency of 2200 Hz and the other a frequency of 1300 Hz, the duration of each tone being 250 milliseconds. 3271 The radiotelephone alarm signal, when generated by automatic means, shall be sent continuously for a period of at least thirty seconds but not exceeding one minute; when generated by other means, the signal shall be sent as continuously as practicable over a period of approximately one minute.*

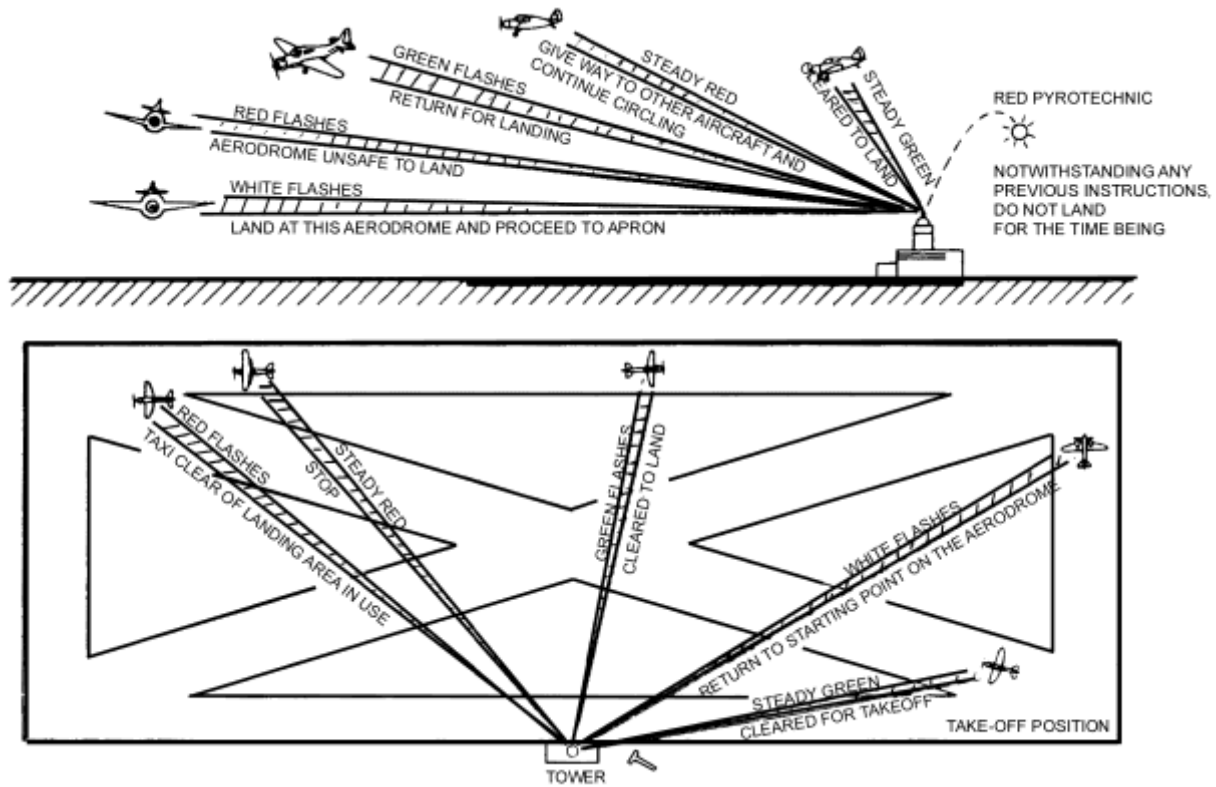
- (b) The following signals, used either together or separately, mean that an aircraft wishes to give notice of difficulties which compel it to land without requiring immediate assistance:
- (1) The repeated switching on and off of the landing lights; or
  - (2) The repeated switching on and off of the navigation lights in such manner as to be distinct from flashing navigation lights.

- (c) The following signals, used either together or separately, mean that an aircraft has a very urgent message to transmit concerning the safety of a ship, aircraft or other vehicle, or of some person on board or within sight:
- (1) A signal made by radiotelegraphy or by any other signaling method consisting of the group XXX.
  - (2) A signal sent by radiotelephony consisting of the spoken words PAN, PAN.
- (d) Visual signals used to warn an unauthorized aircraft. By day and by night, a series of projectiles discharged from the ground at intervals of 10 seconds, each showing, on bursting, red and green lights or stars will indicate to an unauthorized aircraft that it is flying in or about to enter a restricted, prohibited, or danger area, and that the aircraft is to take such remedial action as may be necessary.
- (e) Signals for aerodrome traffic. Aerodrome controllers shall use and pilots shall obey the following light and pyrotechnic signals:

<b>Light</b>		<b>From Aerodrome Control to:</b>	
		<b>Aircraft in flight</b>	<b>Aircraft on the ground</b>
Directed towards aircraft concerned (See Figure 1.1)	Steady green.	Cleared to land.	Cleared for takeoff.
	Steady red.	Give way to other aircraft and continue circling.	Stop
	Series of green flashes.	Return for landing.*	Cleared to taxi.
	Series of red flashes.	Aerodrome unsafe, do not land.	Taxi clear of landing area in use.
	Series of white flashes	Land at this aerodrome and proceed to apron*.	Return to starting point on the aerodrome
	Red pyrotechnic	Notwithstanding any previous instructions, do not land for the time being	

\* Clearances to land and to taxi will be given in due course.

Figure 8.1

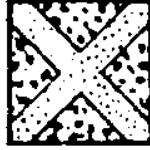


- (f) Pilots shall acknowledge aerodrome controller signals as follows:
- (1) When in flight—
    - (i) During the hours of daylight by rocking the aircraft's wings.

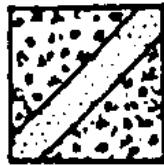
*Note: This signal should not be expected on the base and final legs of the approach.*

    - (ii) During the hours of darkness by flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.
  - (g) When on the ground—
    - (1) During the hours of daylight by moving the aircraft's ailerons or rudder.
    - (2) During the hours of darkness by flashing on and off twice the aircraft's landing lights or, if not so equipped, by switching on and off twice its navigation lights.
  - (h) Aerodrome authorities shall use the following visual ground signals during the following situations:

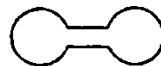
- (1) *Prohibition of landing.* A horizontal red square panel with yellow diagonals (Figure 8.2) when displayed in a signal area indicates that landings are prohibited and that the prohibition is liable to be prolonged.

**Figure 8.2**

- (2) Need for special precautions while approaching or landing. A horizontal red square panel with one yellow diagonal (Figure 8.3) when displayed in a signal area indicates that owing to the bad state of the maneuvering area, or for any other reason, special precautions must be observed in approaching to land or in landing.

**Figure 8.3**

- (3) Use of runways and taxiways.
  - (i) A horizontal white dumb-bell (Figure 8.4) when displayed in a signal area indicates that aircraft are required to land, take off and taxi on runways and taxiways only.

**Figure 8.4**

- (ii) The same horizontal white dumb-bell as in Figure 8.4, but with a black bar placed perpendicular to the shaft across each circular portion of the dumb-bell (Figure 8.5) when displayed in a signal area indicates that aircraft are required to land and take off on runways only, but other maneuvers need not be confined to runways and taxiways.

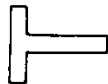
**Figure 8.5**

- (4) Closed runways or taxiways. Crosses of a single contrasting colour, yellow or white (Figure 8.6), displayed horizontally on runways and taxiways or parts thereof indicate an area unfit for movement of aircraft.

**Figure 8.6**

- (5) Directions for landing or takeoff.
- (i) A horizontal white or orange landing T (Figure 8.7) indicates the direction to be used by aircraft for landing and rake-off, which shall be in a direction parallel to the shaft of the T towards the cross arm.

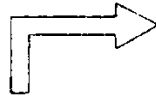
*Note: When used at night, the landing T is either illuminated or outlined in white coloured lights.*

**Figure 8.7**

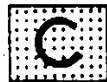
- (ii) A set of two digits (Figure 8.8) displayed vertically at or near the aerodrome control tower indicates to aircraft on the maneuvering area the direction for takeoff, expressed in units of 10 degrees to the nearest 10 degrees of the magnetic compass.

**Figure 8.8**

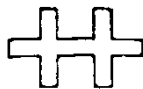
- (6) Right-hand traffic. When displayed in a signal area, or horizontally at the end of the runway or strip in use, a right-hand arrow of conspicuous colour (Figure 8.9) indicates that turns are to be made to the right before landing and after takeoff.

**Figure 8.9**

- (7) Air traffic services reporting office. The letter C displayed vertically in black against a yellow background (Figure 8.10) indicates the location of the air traffic services reporting office.

**Figure 8.10**

- (8) Glider flights in operation. A double white cross displayed horizontally (Figure 8.11) in the signal area indicates that the aerodrome is being used by gliders and that glider flights are being performed.

**Figure 8.11**

- (9) The following marshalling signals shall be used from a signalman to an aircraft.

*Note: These signals are designed for use by the signalman, with hands illuminated as necessary to facilitate observation by the pilot, and facing the aircraft in a position.*

- (10) For fixed-wing aircraft, the signalman shall be positioned forward of the left-wing tip within view of the pilot and, for helicopters, where the signalman can best be seen by the pilot.

*Note 1: The meaning of the relevant signals remains the same if bats, illuminated wands or torchlights are held.*

*Note 2: The aircraft engines are numbered, for the signalman facing the aircraft, from right to left (i.e. No. 1 engine being the port outer engine).*

*Note 3: Signals marked with an asterisk are designed for use to hovering helicopters.*

- (11) Prior to using the following signals, the signalman shall ascertain that the area within which an aircraft is to be guided is clear of objects which the aircraft might otherwise strike.

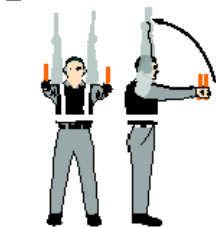
*Note: The design of many aircraft is such that the path of the wing tips, engines and other extremities cannot always be monitored visually from the flight deck while the aircraft is being manoeuvred on the ground.*



**1. Wing walker/guide.**

Raise right hand above head level with wand pointing up; move left-hand wand pointing down toward body.

*Note: This signal provides an indication by a person positioned at the aircraft wing tip to the pilot/ marshaller/ push-back operator that the aircraft movement on/off a parking position would be unobstructed.*



**2. Identify gate**

Raise fully extended arms straight above head with wands pointing up.



**3. Proceed to next signalman or as directed by tower/ground control**

Point both arms upward; move and extend arms outward to sides of body and point with wands to direction of next signalman or taxi area.



**4. Straight ahead**

Bend extended arms at elbows and move wands up and down from chest height to head.



**5 a). Turn left (from pilot's point of view)**

With right arm and wand extended at a 90-degree angle to body, make "come ahead" signal with left hand. The rate of signal motion indicates to pilot the rate of aircraft turn.

**5 b). Turn right (from pilot's point of view)**

With left arm and wand extended at a 90-degree angle to body, make "come ahead" signal with right hand. The rate of signal motion indicates to pilot the rate of aircraft turn.

**6 a). Normal stop**

Fully extend arms and wands at a 90-degree angle to sides and slowly move to above head until wands cross.

**6 b). Emergency stop**

Abruptly extend arms and wands to top of head, crossing wands.

**7 a). Set brakes**

Raise hand just above shoulder height with open palm. Ensuring eye contact with flight crew, close hand into a fist. Do not move until receipt of "thumbs up" acknowledgement from flight crew.

**7 b). Release brakes**

Raise hand just above shoulder height with hand closed in a fist. Ensuring eye contact with flight crew, open palm. Do not move until receipt of "thumbs up" acknowledgement from flight crew

**8 a). Chocks inserted**

With arms and wands fully extended above head, move wands inward in a "jabbing" motion until wands touch. Ensure acknowledgement is received from flight crew.

**8 b). Chocks removed**

With arms and wands fully extended above head, move wands outward in a "jabbing" motion. Do not remove chocks until authorised by flight crew.



**9. Start engine(s)**

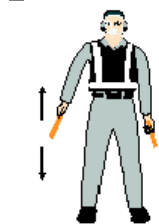
Raise right arm to head level with wand pointing up and start a circular motion with hand; at the same time, with left arm raised above head level, point to engine to be started.

**10. Cut engines**

Extend arm with wand forward of body at shoulder level; move hand and wand to top of left shoulder and draw wand to top of right shoulder in a slicing motion across throat.

**11. Slow down**

Move extended arms downwards in a "patting" gesture, moving wands up and down from waist to knees.

**12. Slow down engine(s) on indicated side**

With arms down and wands toward ground, wave either right or left wand up and down indicating engine(s) on left or right side respectively should be slowed down.

**13. Move back**

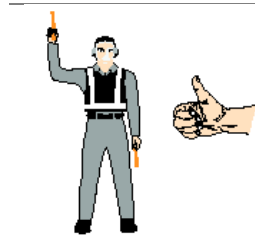
With arms in front of body at waist height, rotate arms in a forward motion. To stop rearward movement, use signal 6 a) or 6 b).

**14 a). Turns while backing (for tail to starboard)**

Point left arm with wand down and bring right arm from overhead vertical position to horizontal forward position, repeating right-arm movement.

**14 b). Turns while backing (for tail to port)**

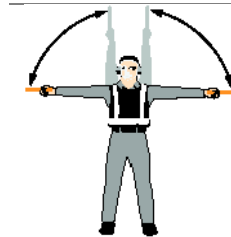
Point right arm with wand down and bring left arm from overhead vertical position to horizontal forward position, repeating left-arm movement.

**15. Affirmative/all clear**

Raise right arm to head level with wand pointing up or display hand with “thumbs up”; left arm remains at side by knee.

**16. Hover**

Fully extend arms and wands at a 90-degree angle to sides.

**17. Move upwards**

Fully extend arms and wands at a 90-degree angle to sides and, with palms turned up, move hands upwards. Speed of movement indicates rate of ascent.

**18. Move downwards**

Fully extend arms and wands at a 90-degree angle to sides and, with palms turned down, move hands downwards. Speed of movement indicates rate of descent.

**19 a). Move horizontally left (from pilot's point of view)**

Extend arm horizontally at a 90-degree angle to right side of body. Move other arm in same direction in a sweeping motion.

**19 b). Move horizontally right (from pilot's point of view)**

Extend arm horizontally at a 90-degree angle to left side of body. Move other arm in same direction in a sweeping motion.

**20. Land**

Cross arms with wands downwards and in front of body.

**21. Fire**

Move right-hand wand in a “fanning” motion from shoulder to knee, while at the same time pointing with left-hand wand to area of fire.

**22. Hold position/stand by**

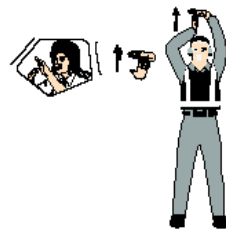
Fully extend arms and wands downwards at a 45-degree angle to sides. Hold position until aircraft is clear for next manoeuvre.

**23. Dispatch aircraft**

Perform a standard salute with right hand and/or wand to dispatch the aircraft. Maintain eye contact with flight crew until aircraft has begun to taxi.

**24. Do not touch controls (technical/servicing communication signal)**

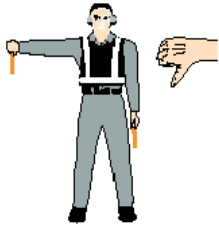
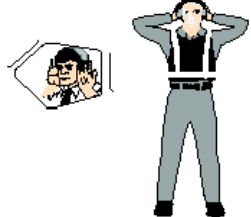

Extend right arm fully above head and close fist or hold wand in horizontal position; left arm remains at side by knee.

**25. Connect ground power (technical/servicing communication signal)**

Hold arms fully extended above head; open left hand horizontally and move finger tips of right hand into and touch open palm of left hand (forming a “T”). At night, illuminated wands can also be used to form the “T” above head.

**26. Disconnect power (technical/servicing communication signal)**

Hold arms fully extended above head with finger tips of right hand touching open horizontal palm of left hand (forming a “T”); then move right hand away from the left. Do not disconnect power until authorized by flight crew. At night, illuminated wands can also be used to form the “T” above head.

	<p><b>27. Negative (technical/servicing communication signal)</b></p> <p>Hold right arm straight out at 90 degrees from shoulder and point wand down to ground or display hand with “thumbs down”; left hand remains at side by knee.</p>
	<p><b>28. Establish communication via interphone (technical/servicing communication signal)</b></p> <p>Extend both arms at 90 degrees from body and move hands to cup both ears.</p>
	<p><b>29. Open/close stairs (technical/servicing communication signal)</b></p> <p>With right arm at side and left arm raised above head at a 45-degree angle, move right arm in a sweeping motion towards top of left shoulder.</p> <p><i>Note: This signal is intended mainly for aircraft with the set of integral stairs at the front.</i></p>

(i) Signals from the pilot of an aircraft to a signalman.

- (1) The PIC or CP shall use the following signals when communicating with a signalman:

*Note 1: These signals are designed for use by a pilot in the cockpit with hands plainly visible to the signalman, and illuminated as necessary to facilitate observation by the signalman.*

*Note 2: The aircraft engines are numbered in relation to the signalman facing the aircraft, from right to left (i.e. No. 1 engine being the port outer engine).*

- (2) Brakes engaged: Raise arm and hand, with fingers extended, horizontally in front of face, then clench fist.
- (3) Brakes released. Raise arm, with fist clenched, horizontally in front of face, then extend fingers.

*Note: The moment the fist is clenched or the fingers are extended indicates, respectively, the moment of brake engagement or release.*

- (4) Insert chocks: Arms extended, palms outwards, move hands inwards to cross in front of face.
- (5) Remove chocks: Hands crossed in front of face, palms outwards, move arms outwards.
- (6) Ready to start engine(s). Raise the appropriate number of fingers on one hand indicating the number of the engine to be started.

**IS: 8.8.3.4****Table of Cruising Levels (RVSM-FEET and Non-RVSM-FEET)**

- (a) The cruising levels at which a flight or a portion of a flight is to be conducted shall be in terms of:
- (1) Flight levels, for flights at or above the lowest usable flight level or, where applicable, above the transition altitude;
  - (2) Altitudes, for flights below the lowest usable flight level or, where applicable, at or below the transition altitude.
- (b) The PIC shall observe the following cruising levels in areas where, on the basis of regional air navigation agreement and in accordance with conditions specified therein, a vertical separation minimum (VSM) of 300 m (1000 ft) is applied between FL 290 and FL 410 inclusive:\*

**(RVSM-FEET)**

<b>TRACK**</b>											
<b>From 000 Degrees to 179 Degrees***</b>						<b>From 180 Degrees to 359 Degrees***</b>					
<b>IFR Flights</b>			<b>VFR Flights</b>			<b>IFR Flights</b>			<b>VFR Flights</b>		
<b>Altitude</b>			<b>Altitude</b>			<b>Altitude</b>			<b>Altitude</b>		
<b>FL</b>	<b>Meters</b>	<b>Feet</b>	<b>FL</b>	<b>Meters</b>	<b>Feet</b>	<b>FL</b>	<b>Meters</b>	<b>Feet</b>	<b>FL</b>	<b>Meters</b>	<b>Feet</b>
010	300	1000	—	—	—	020	600	2000	—	—	—
030	900	3000	035	1050	3500	040	1200	4000	045	1350	4500
050	1500	5000	055	1700	5500	060	1850	6000	065	2000	6500
070	2150	7000	075	2300	7500	080	2450	8000	085	2600	8500
090	2750	9000	095	2900	9500	100	3050	10000	105	3200	10500
110	3350	11000	115	3500	11500	120	3650	12000	125	3800	12500
130	3950	13000	135	4100	13500	140	4250	14000	145	4400	14500
150	4550	15000	155	4700	15500	160	4900	16000	165	5050	16500
170	5200	17000	175	5350	17500	180	5500	18000	185	5650	18500
190	5800	19000	195	5950	19500	200	6100	20000	205	6250	20500

210	6400	21000	215	6550	21500	220	6700	22000	225	6850	22500
230	7000	23000	235	7150	23500	240	7300	24000	245	7450	24500
250	7600	25000	255	7750	25500	260	7900	26000	265	8100	26500
270	8250	27000	275	8400	27500	280	8550	28000	285	8700	28500
290	8850	29000				300	9150	30000			
310	9450	31000				320	9750	32000			
330	1005	33000				340	10350	34000			
350	1065	35000				360	10950	36000			
370	1130	37000				380	11600	38000			
390	1190	39000				400	12200	40000			
410	1250	41000				430	13100	43000			
450	1370	45000				470	14350	47000			
490	1495	49000				510	15550	51000			
etc.	etc.	etc.				etc.	etc.	etc.			

- \* Except when, on the basis of regional air navigation agreements, a modified table of cruising levels based on a nominal vertical separation minimum of 300 m (1000 ft) is prescribed for use, under specified conditions, by aircraft operating above FL 410 within designated portions of the airspace.
- \*\* Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the appropriate ATS authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.
- \*\*\* Except where, on the basis of regional air navigation agreements, from 090 to 269 degrees and from 270 to 089 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

- (c) The PIC shall observe the following cruising levels in other areas not specified in item (a) above.

**(Non-RVSM-FEET)**

<b>TRACK**</b>											
<b>From 000 Degrees to 179 Degrees***</b>						<b>From 180 Degrees to 359 Degrees***</b>					
<b>IFR Flights</b>			<b>VFR Flights</b>			<b>IFR Flights</b>			<b>VFR Flights</b>		
<b>Altitude</b>			<b>Altitude</b>			<b>Altitude</b>			<b>Altitude</b>		
<b>FL</b>	<b>Meters</b>	<b>Feet</b>	<b>FL</b>	<b>Meters</b>	<b>Feet</b>	<b>FL</b>	<b>Meters</b>	<b>Feet</b>	<b>FL</b>	<b>Meters</b>	<b>Feet</b>
010	300	1000	—	—	—	020	600	2000	—	—	—
030	900	3000	035	1050	3500	040	1200	4000	045	1350	4500
050	1500	5000	055	1700	5500	060	1850	6000	065	2000	6500
070	2150	7000	075	2300	7500	050	2450	8000	085	2600	8500
090	2750	9000	095	2900	9500	100	3050	10000	105	3200	10500
110	3350	11000	115	3500	11500	120	3650	12000	125	3800	12500
130	3950	13000	135	4100	13500	140	4250	14000	145	4400	14500
150	4550	15000	155	4700	15500	160	4900	16000	165	5050	16500
170	5200	17000	175	5300	17500	180	5500	18000	185	5650	18500
190	5800	19000	195	5900	19500	200	6100	20000	205	6250	20500
210	6400	21000	210	6550	21500	220	6700	22000	225	6850	22500
230	7000	23000	230	7150	23500	240	7300	24000	245	7450	24500
250	7600	25000	250	7750	25500	260	7900	26000	265	8100	26500
270	8250	27000	270	8100	27500	280	8550	28000	285	8700	28500
290	8850	29000	300	9150	30000	310	9450	31000	320	9750	32000
330	10050	33000	340	10350	34000	350	10650	35000	360	10950	36000

370	11300	37000	380	11600	38000	390	11900	39000	400	12200	40000
410	12500	41000	420	12500	42000	430	13100	43000	440	13400	44000
450	13700	45000	460	14000	46000	470	14350	47000	480	14650	48000
490	14950	49000	500	15250	50000	510	15550	51000	520	15850	52000
etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.	etc.

**\*\***Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the appropriate ATS authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

**\*\*\***.Except where, on the basis of regional air navigation agreements, from 090 to 269 degrees and from 270 to 089 degrees is prescribed to accommodate predominant traffic directions and appropriate transition procedures to be associated therewith are specified.

*Note 1: ICAO Doc 9574, Manual on the Implementation of a 300 m (1000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive, contains guidance material relating to vertical separation.*



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**IS: 8.10.1.7 (c)      COMPANY PROCEDURES INDOCTRINATION**

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- (a) Each AOC holder shall ensure that all operations personnel are provided company indoctrination training that covers the following areas:
- (1) AOC holder's organization, scope of operation, and administrative practices as applicable to their assignments and duties.
  - (2) Appropriate provisions of these requirements and other applicable requirements and guidance materials.
  - (3) Contents of the AOC holder's certificate and operations specifications (not required for cabin crew).
  - (4) AOC holder policies and procedures.
  - (5) Crew member and flight operations officer duties and responsibilities.
  - (6) AOC holder testing programme for alcohol and narcotic psychoactive substances.
  - (7) Applicable crew member manuals.
  - (8) Appropriate portions of the AOC holder's Operations Manual.

**IS: 8.10.1.8****INITIAL DANGEROUS GOODS TRAINING**

- (a) Each AOC holder shall establish, maintain, and have approved by the Authority, staff training programmes, as required by the Technical Instructions.
- (b) Each AOC holder not holding a permanent approval to carry dangerous goods shall ensure that—
  - (1) established a dangerous goods training programme that meets the requirements of Annex 18, the applicable requirements of the Technical Instructions, Table 1 below, and the requirements of the Myanmar's regulations, as appropriate. Details of the dangerous goods training programme shall be included in the operator's operation manuals;
  - (2) established dangerous goods policies and procedures in its operations manual to meet, at a minimum, the requirements of Annex 18, the Technical Instructions and the Myanmar's regulations to allow operator personnel to:
    - (i) identify and reject undeclared dangerous goods, including COMAT classified as dangerous goods; and
    - (ii) report to the appropriate authorities of the State of the Operator and the State in which it occurred any:
      - (aa) occasions when undeclared dangerous goods are discovered in cargo or mail; and
      - (bb) dangerous goods accidents and incidents.

**Table1: Content of training courses for operators not carry dangerous goods as cargo or mail**

Contents	Categories of staff				
	13	14	15	16	17
General philosophy	X	X	X	X	X
Limitations	X	X	X	X	X
Labeling and making	X	X	X	X	X
Dangerous goods transport document And other relevant documentation	X				
Recognition of undeclared dangerous goods	X	X	X	X	X
Provision for passengers and crew	X	X	X	X	X
Emergency procedures	X	X	X	X	X

**Categories**

- 13- Operator's and ground handling agent's staff accepting cargo or mail (other than dangerous goods)
  - 14- Operator's and ground handling agent's staff involved in the handling, storage and loading of cargo or mail (other than dangerous goods )and baggage
  - 15- Passenger handling staff
  - 16- Flight crew members, loadmasters, load planners and flight operations officers/flight dispatchers
  - 17- Crew members (other than flight crew members)
- (c) Each AOC holder holding a permanent approval to carry dangerous goods shall ensure that:
- (1) establishes a dangerous goods training programme that meets the requirements in the Technical Instructions, Table 2, and the requirements of the Myanmar requirements, as appropriate. Details of the dangerous goods training programme shall be included in the operator's operations manuals;
  - (2) establishes dangerous goods policies and procedures in its operations manual to meet, at a minimum, the requirement of Annex 18, the Technical Instructions and Myanmar's requirements to enable operator personnel to:
    - (i) identify and reject undeclared or misdeclared dangerous goods, including COMAT classified as dangerous goods;.
    - (ii) report to the appropriate authorities of the State of the Operator and the State in which it occurred any:
      - (aa) occasions when undeclared or misdeclared dangerous goods are discovered in cargo or mail; and
      - (bb) dangerous goods accidents and incidents;
    - (iii) report to the appropriate authorities of the State of the Operator and the State of Origin any occasions when dangerous goods are discovered to have been carried;
      - (aa) when not loaded, segregated, separated or secured in accordance with the Technical Instructions, Part 7, Chapter 2; and
      - (bb) without information having been provided to the pilot-in-command;

- (iv) accept, handle, store, transport, load and unload dangerous goods, including COMAT classified as dangerous goods as cargo on board an aircraft; and
  - (v) provide the pilot-in-command with accurate and legible written or printed information concerning dangerous goods that are to be carried as cargo.
- (d) Each AOC holder shall ensure that all staff who requires dangerous goods training receives recurrent training at intervals of no longer than 2 years. Cabin crew shall be trained annually aware of the types of Dangerous Goods.
- (e) Each AOC holder shall ensure that records of dangerous goods training are maintained for all staff trained in accordance with MCAR Part-1.
- (f) Each AOC holder shall ensure that its handling agent's staff are trained in accordance with the table below:

**Table 2: content of training courses for operators carry dangerous goods as cargo or mail**

Aspect of transport of dangerous goods by air with which they should be familiar, as a minimum	Shipper And packers	Freight forwarders				Operators And ground Handling agents						Security staff
	Categories of staff											
	1	2	3	4	5	6	7	8	9	10	11	12
General Philosophy	X	X	X	X	X	X	X	X	X	X	X	X
Limitations	X		X	X	X	X	X	X	X	X	X	X
General requirements for shippers	X		X			X						
Classification	X	X	X			X						X
List of dangerous goods	X	X	X			X				X		
Packing requirements	X	X	X			X						
Labeling and marking	X	X	X	X	X	X	X	X	X	X	X	X
Dangerous goods transport document and other relevant documentation	X		X	X		X	X					
Acceptance procedures						X						
Recognition of undeclared dangerous goods	X	X	X	X	X	X	X	X	X	X	X	X
Storage and loading procedures					X	X		X		X		
Pilots' notification						X		X		X		
Provisions for passengers and crew	X	X	X	X	X	X	X	X	X	X	X	X
Emergency procedures	X	X	X	X	X	X	X	X	X	X	X	X

### Categories

- 1- Shipper and persons undertaking the responsibilities of shippers

- 
- 2- Packers
  - 3- Staff of freight forwarders involved in processing dangerous goods
  - 4- Staff of freight forwarders involved in processing cargo or mail (other than dangerous goods)
  - 5- Staff of freight forwarders involved in the handling storage and loading of cargo or mail
  - 6- Operator's and ground handling agent's staff accepting dangerous goods
  - 7- Operator's and ground handling agent's staff accepting cargo or mail (other than dangerous goods)
  - 8- Operator's and ground handling agent's staff involved in the handling, storage and loading of cargo or mail and baggage
  - 9- Passenger handling staff
  - 10- Flight crew members, loadmasters, load planners and flight operations officers/flight dispatchers
  - 11- Crew members, (other than flight crew members)
  - 12- Security staff who are involved with the screening of passengers and crew and their baggage and cargo or mail, e.g. security screeners, their supervisors and staff involved in implementing security procedures.

- (g) An AOC holder shall provide dangerous goods training manuals which contain adequate procedures and information to assist personnel in identifying packages marked or labeled as containing hazardous materials including—
  - (1) Instructions on the acceptance, handling, and carriage of hazardous materials.
  - (2) Instructions governing the determination of proper shipping names and hazard classes.
  - (3) Packaging, labeling, and marking requirements.
  - (4) Requirements for shipping papers, compatibility requirements, loading, storage, and handling requirements.
  - (5) Restrictions.

**IS: 8.10.1.11****INITIAL CREW RESOURCE MANAGEMENT TRAINING**

- (a) Each AOC holder shall ensure that the flight operations officers and all aircraft crew members have CRM training as part of their initial and recurrent training requirements. A CRM training programme shall include—
  - (1) An initial indoctrination/awareness segment;
  - (2) A method to provide recurrent practice and feedback; and
- (b) A method of providing continuing reinforcement. Curriculum topics to be contained in an initial CRM training course include—
  - (1) Communications processes and decision behavior.
  - (2) Internal and external influences on interpersonal communications.
  - (3) Barriers to communication.
  - (4) Listening skills.
  - (5) Decision-making skills.
  - (6) Effective briefings.
  - (7) Developing open communications.
  - (8) Inquiry, advocacy, and assertion training.
  - (9) Crew self-critique.
  - (10) Conflict resolution.
  - (11) Team building and maintenance.
  - (12) Leadership and fellowship training.
  - (13) Interpersonal relationships.
  - (14) Workload management.
  - (15) Situational awareness.
  - (16) How to prepare, plan and monitor task completions.
  - (17) Workload distribution.
  - (18) Distraction avoidance.
  - (19) Individual factors.
  - (20) Stress reduction.

**IS: 8.10.1.12****INITIAL EMERGENCY EQUIPMENT DRILLS**

- (a) Each aircraft crew member shall accomplish emergency training during the specified training periods, using those items of installed emergency equipment for each type of aircraft in which he or she is to serve.
- (b) During initial training, each aircraft crew member shall perform the following one-time emergency drills—
  - (1) **Protective Breathing Equipment (PBE)/Firefighting Drill.**
    - (i) Locate source of fire or smoke (actual or simulated fire).
    - (ii) Implement procedures for effective crew co-ordination and communication, including notification of flight crew members about fire situation.
    - (iii) Don and activate installed PBE or approved PBE simulation device.
    - (iv) Maneuver in limited space with reduced visibility.
    - (v) Effectively use the aircraft's communication system.
    - (vi) Identify class of fire.
    - (vii) Select the appropriate extinguisher.
    - (viii) Properly remove extinguisher from securing device.
    - (ix) Prepare, operate and discharge extinguisher properly.
    - (x) Utilize correct firefighting techniques for type of fire.
  - (2) **Emergency Evacuation Drill.**
    - (i) Recognize and evaluate an emergency.
    - (ii) Assume appropriate protective position.
    - (iii) Command passengers to assume protective position.
    - (iv) Implement crew co-ordination procedures.
    - (v) Ensure activation of emergency lights.
    - (vi) Assess aircraft conditions.
    - (vii) Initiate evacuation (dependent on signal or decision).
    - (viii) Command passengers to release seatbelts and evacuate.
    - (ix) Assess exit and redirect, if necessary; to open exit, including deploying slides and commanding helpers to assist.
    - (x) Command passengers to evacuate at exit and run away from aircraft.
    - (xi) Assist special need passengers, such as handicapped, elderly, and persons in a state of panic.
    - (xii) Actually exit aircraft or training device using at least one of the installed emergency evacuation slides.

- (c) Each aircraft crew member shall accomplish additional emergency drills during initial and recurrent training, including actual performance of the following emergency drills—
- (1) **Emergency Exit Drill.**
    - (i) Correctly preflight each type of emergency exit and evacuation slide or slideraft (if part of cabin crew member's assigned duties).
    - (ii) Disarm and open each type of door exit in normal mode.
    - (iii) Close each type of door exit in normal mode.
    - (iv) Arm each type of door exit in emergency mode.
    - (v) Open each type of door exit in emergency mode.
    - (vi) Use manual slide inflation system to accomplish or ensure slide or slideraft inflation.
    - (vii) Open each type of window exit.
    - (viii) Remove escape rope and position for use.
  - (2) **Hand Fire Extinguisher Drill.**
    - (i) Preflight each type of hand fire extinguisher.
    - (ii) Locate source of fire or smoke and identify class of fire.
    - (iii) Select appropriate extinguisher and remove from securing device.
    - (iv) Prepare extinguisher for use.
    - (v) Actually operate and discharge each type of installed hand fire extinguisher.
    - (vi) Utilize correct firefighting techniques for type of fire.
    - (vii) Implement procedures for effective crew co-ordination and communication, including notification of flight crew members about the type of fire situation.
  - (3) **Emergency Oxygen System Drill.**
    - (i) Preflight and operation of portable oxygen devices.
    - (ii) Actually operate portable oxygen bottles, including masks and tubing.
    - (iii) Verbally demonstrate operation of chemical oxygen generators or installed oxygen supply system.
    - (iv) Prepare for use and operate oxygen device properly, including donning and activation.
    - (v) Administer oxygen to self, passengers, and to those persons with special oxygen needs.
    - (vi) Utilize proper procedures for effective crew co-ordination and communication.
    - (vii) Manually open each type of oxygen mask compartment and deploy oxygen masks.
    - (viii) Identify compartments with extra oxygen masks.
    - (ix) Implement immediate action decompression procedures.
    - (x) Reset oxygen system, if applicable.
    - (xi) Preflight and operation of PBE.
    - (xii) Activate PBE.



- (4) **Flotation Device Drill.**
  - (i) Preflight flotation device, if appropriate.
  - (ii) Don and inflate life vests.
  - (iii) Remove and use flotation seat cushions, as installed.
  - (iv) Demonstrate swimming techniques using a seat cushion, as installed.
- (5) **Ditching Drill, if applicable.**
  - (i) Implement crew co-ordination procedures, including briefing with captain to obtain pertinent ditching information and briefing cabin crew members.
  - (ii) Co-ordinate time frame for cabin and passenger preparation.
  - (iii) Adequately brief passengers on ditching procedures.
  - (iv) Ensure cabin is prepared, including the securing of carry-on baggage, lavatories, and galleys.
  - (v) Demonstrate how to properly deploy and inflate slide raft.
  - (vi) Demonstrate how to properly deploy and inflate life rafts, if applicable.
  - (vii) Remove position and attach slide rafts to aircraft.
  - (viii) Inflate rafts.
  - (ix) Use escape ropes at over wing exits.
  - (x) Command helpers to assist.
  - (xi) Use slides and life vests or seat cushions as flotation devices.
  - (xii) Remove appropriate emergency equipment from aircraft.
  - (xiii) Board rafts properly.
  - (xiv) Initiate raft management procedures (i.e., disconnecting rafts from aircraft, applying immediate first aid, rescuing persons in water, salvaging floating rations and equipment, deploying sea anchor, tying rafts together, activating or ensuring operation of emergency locator transmitter).
  - (xv) Initiate basic survival procedures (i.e., removing and utilizing survival kit items, repairing and maintaining raft, ensuring protection from exposure, erecting canopy, communicating location, providing continued first aid, providing sustenance).
  - (xvi) Use heaving line to rescue persons in water.
  - (xvii) Tie slide rafts or rafts together.
  - (xviii) Use life line on edge of slide raft or life raft as a handhold.
  - (xix) Secure survival kit items.
- (d) Each aircraft crew member shall accomplish additional emergency drill requirements during initial and recurrent training including observing the following emergency drills—
  - (1) **Life raft Removal and Inflation Drill, if applicable.**

- (i) Removal of a life raft from the aircraft or training device.
  - (ii) Inflation of a life raft.
- (2) **Slide raft Transfer Drill.**
  - (i) Transfer of each type of slide raft pack from an unusable door to a usable door.
  - (ii) Disconnect slide raft at unusable door.
  - (iii) Redirect passengers to usable slide raft.
  - (iv) Installation and deployment of slide raft at usable door.
- (3) **Slide and Slide raft Deployment, Inflation, and Detachment Drill.**
  - (i) Engage slide girt bar in floor brackets, if applicable.
  - (ii) Arm slide for automatic inflation.
  - (iii) Inflate slides with and without quick-release handle (manually and automatically).
  - (iv) Disconnecting slide from the aircraft for use as a flotation device.
  - (v) Arm slide rafts for automatic inflation.
  - (vi) Disconnecting slide raft from the aircraft.
- (4) **Emergency Evacuation Slide Drill:**
  - (i) Open armed exit with slide or slide raft deployment and inflation.
  - (ii) Egress from aircraft via the evacuation slide and run away to a safe distance.

**IS: 8.10.1.13(b) INITIAL AIRCRAFT GROUND TRAINING—FLIGHT CREW**

- (a) Each AOC holder shall have an initial aircraft ground training curriculum for the flight crew applicable to their duties, the type of operations conducted and aircraft flown. Instructions shall include at least the following general subjects:
  - (1) AOC holder's dispatch, flight release, or flight locating procedures.
  - (2) Principles and methods for determining mass and balance, and runway limitations for take-off.
  - (3) AOC holder's operations specifications, authorizations and limitations.
  - (4) Adverse weather recognition and avoidance, and flight procedures which shall be followed when operating in the following conditions:
    - (i) Icing.
    - (ii) Fog.
    - (iii) Turbulence.
    - (iv) Heavy precipitation.
    - (v) Thunderstorms.
    - (vi) Low-level wind shear and microburst.
    - (vii) Low visibility.
    - (viii) Contaminated runways.
  - (5) Normal and emergency communications procedures and navigation equipment including the AOC holder's communications procedures and ATC clearance requirements.
  - (6) Navigation procedures used in area departure, en route, area arrival, approach and landing phases, to include visual cues prior to and during descent below DH or MDA.
  - (7) Approved crew resource management training.
  - (8) Air traffic control systems, procedures, and phraseology.
  - (9) Aircraft performance characteristics during all flight regimes, including:
    - (i) The use of charts, tables, tabulated data and other related manual information.
    - (ii) Normal, abnormal, and emergency performance problems.
    - (iii) Meteorological and mass limiting performance factors (such as temperature, pressure, contaminated runways, precipitation, climb/runway limits).
    - (iv) Inoperative equipment performance limiting factors (such as MEL/CDL, inoperative antiskid).

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- (v) Special operational conditions (such as unpaved runways, high altitude aerodromes and drift down requirements).
  - (10) Normal, abnormal and emergency procedures on the aircraft type to be used.
  - (b) Each AOC holder shall have an initial aircraft ground training curriculum for the flight crew applicable to their duties, the type of operations conducted and aircraft flown, including at least the following aircraft systems (if applicable):
    - (1) Airframe.
      - (i) Aircraft
      - (ii) Aircraft dimensions, turning radius, panel layouts, cockpit and cabin configurations.
      - (iii) Other major systems and components or appliances of the aircraft.
      - (iv) Operating limitations.
      - (v) Approved aircraft flight manual.
    - (2) Power plants.
      - (i) Basic engine description.
      - (ii) Engine thrust ratings.
      - (iii) Engine components such as accessory drives, ignition, oil, fuel control, hydraulic, and bleed air features.
    - (3) Electrical.
      - (i) Sources of aircraft electrical power (such as engine driven generators, APU generator, external power, etc.).
      - (ii) Electrical buses.
      - (iii) Circuit breakers.
      - (iv) Aircraft battery.
      - (v) Standby power systems.
    - (4) Hydraulic.
      - (i) Hydraulic reservoirs, pumps, accumulators; filters, check valves, interconnects and actuators.
      - (ii) Other hydraulically operated components.
    - (5) Fuel.
      - (i) Fuel tanks (location and quantities).
      - (ii) Engine driven pumps.
      - (iii) Boost pumps.
      - (iv) System valves and cross feeds.
      - (v) Quantity indicators.
      - (vi) Provisions for fuel jettisoning.
    - (6) Pneumatic.
      - (i) Bleed air sources (APU, engine or external ground air).

- (ii) Means of routing, venting and controlling bleed air via valves, ducts, chambers, and temperature and pressure limiting devices.
- (7) Air conditioning and pressurization.
  - (i) Heaters, air conditioning packs, fans, and other environmental control devices.
  - (ii) Pressurization system components such as outflow and negative pressure relief valves.
  - (iii) Automatic, standby, and manual pressurization controls and annunciators.
- (8) Flight controls.
  - (i) Primary controls (yaw, pitch, and roll devices).
  - (ii) Secondary controls (leading/trailing edge devices, flaps, trim, and damping mechanisms).
  - (iii) Means of actuation (direct/indirect or fly by wire).
  - (iv) Redundancy devices.
- (9) Landing gear and brakes.
  - (i) Landing gear extension and retraction mechanism including the operating sequence of struts, doors, and locking devices, and brake and antiskid systems, if applicable.
  - (ii) Steering (nose or body steering gear).
  - (iii) Bogie arrangements.
  - (iv) Air/ground sensor relays.
  - (v) Visual down lock indicators.
- (10) Ice and rain protection.
  - (i) Rain removal systems.
  - (ii) Anti-icing and/or deicing system(s) affecting flight controls, engines, pitot static and other probes, fluid outlets, cockpit windows, and aircraft structures.
- (11) Equipment and furnishings.
  - (i) Exits.
  - (ii) Galleys.
  - (iii) Water and waste systems.
  - (iv) Lavatories.
  - (v) Cargo areas.
  - (vi) Crew member and passenger seats.
  - (vii) Bulkheads.
  - (viii) Seating and/or cargo configurations.
  - (ix) Non-emergency equipment and furnishings.
- (12) Navigation equipment.
  - (i) Flight directors.
  - (ii) Horizontal situation indicator.
  - (iii) Radio magnetic indicator.

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- (iv) Navigation receivers (GPS, ADF, SDF/LDA, VOR, TACAN, LORAN-C, RNAV, Marker Beacon, DME) as required for the flight operations to be conducted.
  - (v) Inertial systems (INS, IRS).
  - (vi) Functional displays.
  - (vii) Fault indications and comparator systems.
  - (viii) Aircraft transponders.
  - (ix) Radio altimeters.
  - (x) Weather radar.
  - (xi) Cathode ray tube or computer generated displays of aircraft position and navigation information.
- (13) Auto flight system.
- (i) Autopilot.
  - (ii) Autothrottles.
  - (iii) Flight director and navigation systems.
  - (iv) Automatic approach tracking.
  - (v) Autoland.
  - (vi) Automatic fuel and performance management systems.
- (14) Flight instruments.
- (i) Panel arrangement.
  - (ii) Flight instruments (attitude indicator, directional gyro, magnetic compass, airspeed indicator, vertical speed indicator, altimeters, standby instruments).
  - (iii) Instrument power sources, and instrument sensory sources (e.g., pitot static pressure).
- (15) Display systems.
- (i) Weather radar.
  - (ii) Other cathode ray tube (CRT) or computer generated displays (e.g., checklist, vertical navigation or longitudinal navigation displays).
- (16) Communication equipment.
- (i) VHF/HF/SAT COM radios.
  - (ii) Audio panels.
  - (iii) Inflight interphone and passenger address systems.
  - (iv) Voice recorder.
  - (v) Air/ground passive communications systems (ACARS).
- (17) Warning systems.
- (i) Aural, visual, and tactile warning systems (including the character and degree of urgency related to each signal).
  - (ii) Warning and caution annunciator systems (including airborne collision avoidance, ground proximity and takeoff configuration warning systems).

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- (18) Fire protection.
    - (i) Fire and overheat sensors, loops, modules, or other means of providing visual and/or aural indications of fire or overheat detection.
    - (ii) Procedures for the use of fire handles, automatic extinguishing systems and extinguishing agents.
    - (iii) Power sources necessary to provide protection for fire and overheat conditions in engines, APU, cargo bay/wheel well, cockpit, cabin and lavatories.
  - (19) Oxygen.
    - (i) Passenger, crew, and portable oxygen supply systems.
    - (ii) Sources of oxygen (gaseous or solid).
    - (iii) Flow and distribution networks.
    - (iv) Automatic deployment systems.
    - (v) Regulators, pressure levels and gauges.
    - (vi) Servicing requirements.
  - (20) Lighting.
    - (i) Cockpit, cabin, and external lighting systems.
    - (ii) Power sources.
    - (iii) Switch positions.
    - (iv) Spare light bulb locations.
  - (21) Emergency equipment.
    - (i) Fire and oxygen bottles.
    - (ii) First aid and medical kits.
    - (iii) Life rafts and life preservers.
    - (iv) Crash axes.
    - (v) Emergency exits and lights.
    - (vi) Slides and slide rafts.
    - (vii) Escape straps or handles.
    - (viii) Hatches, ladders and movable stairs.
    - (ix) Survival suits, if applicable to the operation.
  - (22) Auxiliary Power Unit (APU).
    - (i) Electric and bleed air capabilities.
    - (ii) Interfaces with electrical and pneumatic systems.
    - (iii) Inlet doors and exhaust ducts.
    - (iv) Fuel supply.
  - (23) Performance.
- (c) Each AOC holder shall have an initial aircraft ground training curriculum for the flight crew applicable to their duties, the type of operations conducted and aircraft flown, including at least the following aircraft systems integration items:
- (1) Use of checklist.
    - (i) Safety checks.
    - (ii) Cockpit preparation (switch position and checklist flows).

- (iii) Checklist callouts and responses.
  - (iv) Checklist sequence.
- (2) Flight planning.
  - (i) Preflight and in-flight planning.
  - (ii) Performance limitations (meteorological, mass, and MEL/CDL items).
  - (iii) Required fuel loads.
  - (iv) Weather planning (lower than standard takeoff minimums or alternate requirements).
- (3) Display systems.
  - (i) Weather radar.
  - (ii) CRT displays (checklists, vertical navigation or longitudinal navigation displays).
- (4) Navigation and Communications systems.
  - (i) Preflight and operation of applicable receivers.
  - (ii) Onboard navigation systems.
  - (iii) Flight plan information input and retrieval.
- (5) Autoflight/flight directors.
  - (i) Autopilot.
  - (ii) Autothrust.
  - (iii) Flight director systems, including the appropriate procedures, normal and abnormal indications, and annunciators.
- (6) Cockpit familiarization.
  - (i) Activation of aircraft system controls and switches to include normal, abnormal and emergency switches.
  - (ii) Control positions and relevant annunciators, lights, or other caution and warning systems.
- (d) Each AOC holder shall ensure that initial ground training for flight crew consists of at least the following programmed hours of instruction based on the aircraft to be used, unless a reduction is determined appropriate by the Authority:
  - (1) For pilots—
    - (i) Piston-engined aeroplane—64 hours.
    - (ii) Turbo propeller-powered aeroplane—80 hours.
    - (iii) Turbo-jet aeroplane—120 hours.
    - (vi) Powered-lift—80 hours.
    - (v) Other aircraft—64 hours.



**IS: 8.10.1.13 (c) INITIAL AIRCRAFT GROUND TRAINING—CABIN CREW MEMBERS**

- (a) Each AOC holder shall have an initial ground training curriculum for cabin crew members applicable to the type of operations conducted and aircraft flown, including at least the following general subjects, if applicable:
  - (1) Aircraft familiarization.
    - (i) Aircraft characteristics and description.
    - (ii) Flight deck configuration.
    - (iii) Cabin configuration.
    - (iv) Galleys.
    - (v) Lavatories.
    - (vi) Stowage areas.
  - (2) Aircraft equipment and furnishings.
    - (i) Cabin crew member stations.
    - (ii) Cabin crew member panels.
    - (iii) Passenger seats.
    - (iv) Passenger service units and convenience panels.
    - (v) Passenger information signs.
    - (vi) Aircraft markings.
    - (vii) Aircraft placards.
    - (viii) Bassinets and bayonet tables.
  - (3) Aircraft systems.
    - (i) Air conditioning and pressurization system.
    - (ii) Aircraft communication systems (call, interphone and passenger address).
    - (iii) Lighting and electrical systems.
    - (iv) Oxygen systems (flight crew, observer and passenger).
    - (v) Water system.
    - (vi) Entertainment and convenience systems.
  - (4) Aircraft exits.
    - (i) General information.
    - (ii) Exits with slides or sliderafts (preflight and normal operation).
    - (iii) Exits without slides (preflight and normal operations).
    - (iv) Window exits (preflight).
  - (5) Crew member communication and co-ordination.
    - (i) Authority of PIC.
    - (ii) Routine communication signals and procedures.
    - (iii) Crew member briefing.
  - (6) Routine crew member duties and procedures.

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- (i) Crew member general responsibilities.
  - (ii) Reporting duties and procedures for specific aircraft.
  - (iii) Pre-departure duties and procedures prior to passenger boarding.
  - (iv) Passenger boarding duties and procedures.
  - (v) Prior to movement on the surface duties and procedures.
  - (vi) Prior to takeoff duties and procedures applicable to specific aircraft.
  - (vii) Inflight duties and procedures.
  - (viii) Prior to landing duties and procedures.
  - (ix) Movement on the surface and arrival duties and procedures.
  - (x) After arrival duties and procedures.
  - (xi) Intermediate stops.
- (7) Passenger handling responsibilities.
- (i) Crew member general responsibilities.
  - (ii) Infants, children, and unaccompanied minors.
  - (iii) Passengers needing special assistance.
  - (iv) Passengers needing special accommodation.
  - (v) Carry-on stowage requirements.
  - (vi) Passenger seating requirements.
  - (vii) Smoking and no smoking requirements.
- (8) Approved Crew Resource Management (CRM) training for cabin crew members.
- (b) Each AOC holder shall have an initial ground training curriculum for cabin crew members applicable to the type of operations conducted and aircraft flown, including at least the following aircraft specific emergency subjects, if applicable:
- (1) Emergency equipment.
- (i) Emergency communication and notification systems.
  - (ii) Aircraft exits.
  - (iii) Exits with slides or slide rafts (emergency operation).
  - (iv) Slides and slide rafts in a ditching.
  - (v) Exits without slides (emergency operation).
  - (vi) Window exits (emergency operation).
  - (vii) Exits with tailcones (emergency operation).
  - (viii) Cockpit exits (emergency operation).
  - (ix) Ground evacuation and ditching equipment.
  - (x) First aid equipment.
  - (xi) Portable oxygen systems (oxygen bottles, chemical oxygen generators, protective breathing equipment (PBE)).
  - (xii) Firefighting equipment.

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- (xiii) Emergency lighting systems.
  - (xiv) Universal precaution kits
  - (xv) Automated external defibrillators
  - (xvi) Survival suits, if applicable to the operation.
  - (xvii) Additional emergency equipment.
- (2) Emergency assignments and procedures.
- (i) General types of emergencies specific to aircraft, including crew coordination and communication.
  - (ii) Emergency communication signals and procedures.
  - (iii) Rapid decompression.
  - (iv) Insidious decompression and cracked window and pressure seal leaks.
  - (v) Fires.
  - (vi) Ditching.
  - (vii) Ground evacuation.
  - (viii) Unwarranted evacuation (i.e., passenger initiated).
  - (ix) Illness or injury.
  - (x) Abnormal situations involving passengers or crew members.
  - (xi) Hijacking and acts of unlawful interference.
  - (xii) Bomb threat.
  - (xiii) Turbulence.
  - (xiv) Other unusual situations including an awareness of other crew members' assignments and functions as they pertain to the cabin crew member's own duties.
  - (xv) Previous aircraft accidents and incidents.
- (3) Aircraft specific emergency drills.
- (i) Emergency exit drill.
  - (ii) Hand fire extinguisher drill.
  - (iii) Emergency oxygen system drill.
  - (iv) Flotation device drill.
  - (v) Ditching drill, if applicable.
  - (vi) Life raft removal and inflation drill, if applicable.
  - (vii) Slide raft pack transfer drill, if applicable.
  - (viii) Slide or slide raft deployment, inflation, and detachment drill, if applicable.
  - (ix) Emergency evacuation slide drill, if applicable.
- (c) Each AOC holder shall ensure that initial ground training for a cabin crew member includes a competency check given by the appropriate supervisor or ground instructor to determine his or her ability to perform assigned duties and responsibilities.

- (d) Each AOC holder shall ensure that initial ground training for cabin crew members consists of at least the following programmed hours of instruction based on the aircraft to be used, unless a reduction is determined appropriate by the Authority:
- (1) Piston-engined - 8 hours.
  - (2) Turbopropeller-powered - 8 hours.
  - (3) Turbo-jet – 16 hours.
  - (4) Other aircraft, including, if applicable, powered lift – 8 hours.

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**IS: 8.10.1.13(d) INITIAL AIRCRAFT GROUND TRAINING — FLIGHT OPERATIONS OFFICER**

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- (a) Each AOC holder shall provide initial aircraft ground training for flight operations officers that include instruction in at least the following subjects:
- (1) General dispatch subjects:
    - (i) Civil air law and regulations.
    - (ii) Aviation indoctrination.
    - (iii) Aircraft mass (weight) and performance.
    - (iv) Navigation.
    - (v) Air traffic management.
    - (vi) Meteorology.
    - (vii) Mass (weight) and balance control.
    - (viii) Transportation of dangerous goods by air.
    - (ix) Flight Planning.
    - (x) Flight monitoring.
    - (xi) Communication radio.
    - (xii) Human factors.
    - (xiii) Security (emergencies and abnormal situations).
    - (xiv) Applied practical training.
  - (2) Aircraft characteristics:
    - (i) Aircraft specific flight preparation.
    - (ii) Aircraft operating and performance characteristics.
    - (iii) Navigation equipment, including peculiarities and limitations.
    - (iv) Instrument approach and communication equipment.
    - (v) Emergency equipment.
    - (vi) AFM or RFM provisions applicable to the aircraft duties.
    - (vii) MEL/CDL.
    - (viii) Applicable equipment training.
  - (3) Operations procedures:
    - (i) Adverse weather phenomena (wind-shear, clear air turbulence and thunderstorms).
    - (ii) Mass and balance computations and load control procedures.
    - (iii) Aircraft performance computations, to include takeoff weight limitations based on departure runway, arrival runway, and en route limitations, and also engine-out limitations.

- (iv) Flight planning procedures, to include route selection, flight time, and fuel requirements analysis.
  - (v) Dispatch release preparation.
  - (vi) Crew briefings.
  - (vii) Flight monitoring procedures.
  - (viii) MEL and CDL procedures.
  - (ix) Manual performance of all required procedures in case of the loss of automated capabilities.
  - (x) Training in appropriate geographic areas.
  - (xi) ATC and instrument procedures, ground hold and central flow control procedures.
  - (xii) Radio/telephone procedures.
- (4) Abnormal and emergency procedures.
  - (i) Assisting flight crew in an emergency.
  - (ii) Alerting of appropriate governmental, company and private agencies.
- (5) Crew resource management.
- (6) Dangerous goods.
- (7) Security.
- (8) Differences training.
- (b) Each AOC holder shall ensure that initial ground training for flight operations officers includes a competency check given by an appropriately qualified dispatch supervisor or ground instructor that demonstrates the required knowledge and abilities.
- (c) Each AOC holder shall ensure that initial ground training for flight operations officers consists of at least the following programmed hours of instruction based on the aircraft to be used, unless a reduction is determined appropriate by the Authority:
  - (1) Piston-engined aircraft – 30 hours.
  - (2) Turbopropeller-powered aircraft – 40 hours.
  - (3) Turbo-jet aircraft – 40 hours.

**IS: 8.10.1.14(d) INITIAL AIRCRAFT FLIGHT TRAINING**

- (a) Each AOC holder shall ensure that pilot initial flight training includes at least the following training and practice in procedures related to the carrying out of pilot duties and functions. This training and practice may be accomplished either in flight or in a flight simulation training device (FSTD), as appropriate to the category and class of aircraft, and as approved by the Authority.

*Note: The flight training events for pilots listed in this IS are generic in nature for a type-rated aeroplane training curriculum conducted in a FSTD. All of the events may not apply to all aircraft (e.g., one engine inoperative landing for mutli-engine versus single engine aeroplanes) or may differ in the requirements for a similar event (e.g. Taxi for aeroplane and seaplane). Additional training events may need to be added, changed or deleted for aircraft based on aircraft category or class.*

- (1) Preparation.
  - (i) Aircraft pre-flight done by external walk around, unless the use of pictorial display is authorized by the Authority.
  - (ii) Pre-taxi procedures
  - (iii) Performance limitations.
  - (iv) Surface operation.
  - (v) Pushback.
  - (vi) Powerback taxi, if applicable to the type of operation to be conducted.
  - (vii) Starting.
  - (viii) Taxi
  - (ix) Pre-takeoff checks.
- (2) Takeoff.
  - (i) Normal.
  - (ii) Crosswind.
  - (iii) Rejected.
  - (iv) Power failure after V1.
  - (v) Lower than standard minimum, if applicable to the type of operation to be conducted.
- (3) Climb.
  - (i) Normal.
  - (ii) One-engine inoperative during climb to en route altitude.
- (4) En route.
  - (i) Steep turns.

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- (ii) Approaches to stalls (takeoff, en route, and landing configurations).
    - (iii) In-flight powerplant shutdown.
    - (iv) In-flight powerplant restart.
    - (v) High speed handling characteristics.
  - (5) Descent.
    - (i) Normal.
    - (ii) Maximum rate.
  - (6) Approaches.
    - (i) VFR procedures.
    - (ii) Visual approach with 50% loss of power of available powerplants.
    - (iii) Visual approach with slat/flap malfunction.
    - (iv) IFR precision approaches (ILS normal and ILS with one-engine inoperative).
    - (v) IFR non-precision approaches (NDB normal and VOR normal).
    - (vi) Note: Simulator shall be qualified for training/checking on the circling maneuver.
    - (vii) Missed approach from precision approach.
    - (viii) Missed approach from non-precision approach.
    - (ix) Missed approach with powerplant failure.
  - (7) Landings.
    - (i) Normal with a pitch mistrim (small aircraft only).
    - (ii) Normal from precision instrument approach.
    - (iii) Normal from precision instrument approach with most critical engine inoperative.
    - (iv) Normal with 50% loss of power of available power plants.
    - (v) Normal with flap/slat malfunction.
    - (vi) Rejected landings.
    - (vii) Crosswind.
    - (viii) Manual reversion/degraded control augmentation.
    - (ix) Short/soft field (small aircraft only).
    - (x) Glassy/rough water (seaplanes only).
    - (xi) Auto-rotation (helicopter only)
  - (8) After landing.
    - (i) Parking.
    - (ii) Emergency evacuation.
    - (iii) Docking, mooring, and ramping (seaplanes only).
  - (9) Other flight procedures during any airborne phase.



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- (i) Airborne Collision Avoidance System: use and avoidance maneuvers
    - (ii) Holding.
    - (iii) Ice accumulation on airframe.
    - (iv) Air hazard avoidance.
    - (v) Windshear/microburst.
    - (vi) Upset prevention and recovery training (UPRT).
  - (10) Normal, abnormal and alternate systems procedures during any phase.
    - (i) Pneumatic/pressurization.
    - (ii) Air conditioning.
    - (iii) Fuel and oil.
    - (iv) Electrical.
    - (v) Hydraulic.
    - (vi) Flight controls.
    - (vii) Anti-icing and deicing systems.
    - (viii) Autopilot.
    - (ix) Flight management guidance systems and/or automatic or other approach and landing aids.
    - (x) Stall warning devices, stall avoidance devices, and stability augmentation systems.
    - (xi) Airborne weather radar.
    - (xii) Flight instrument system malfunction.
    - (xiii) Communications equipment.
    - (xiv) Navigation systems.
  - (11) Emergency systems procedures during any phase.
    - (i) Aircraft fires.
    - (ii) Smoke control.
    - (iii) Powerplant malfunctions.
    - (iv) Fuel jettison.
    - (v) Electrical, hydraulic, pneumatic systems.
    - (vi) Flight control system malfunction.
    - (vii) Landing gear and flap system malfunction.
  - (b) Each AOC holder shall ensure that initial flight training for pilots consists of at least the following programmed hours of instruction based on the aircraft to be used, unless a reduction is determined appropriate by the Authority:
    - (1) For one pilot in either an aircraft or flight simulation training devices—
      - (i) Piston-engined aircraft—PIC: 14 hours; CP: 14 hours; and FE: 12 hours.

- (ii) Turbopropeller-powered aircraft—PIC: 15 hours; CP: 15 hours; and FE: 12 hours.
  - (iii) Turbo-jet aircraft—PIC: 20 hours; CP: 16 hours; and FE: 12 hours.
  - (iv) Other aircraft—PIC and CP: 14 hours.
- (2) For two pilots in a flight simulation training device—
  - (i) Piston-engined aircraft—PIC: 24 hours; CP: 24 hours; and FE: 20 hours.
  - (ii) Turbopropeller-powered aircraft—PIC: 24 hours; CP: 24 hours; and FE: 20 hours.
  - (iii) Turbo-jet aircraft—PIC: 28 hours; CP: 28 hours; and FE: 20 hours.
  - (iv) Other aircraft—PIC and CP: 24 hours.

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**IS: 8.10.1.15(c) INITIAL SPECIALIZED OPERATIONS TRAINING**

- (a) Each AOC holder shall provide initial specialized operations training to ensure that each pilot and flight operations officer is qualified in the type of operation in which he or she serves and in any specialized or new equipment, procedures, and techniques, such as:
  - (1) Long-range navigation.
    - (i) Knowledge of specialized navigation procedures, such as RVSM.
    - (ii) Knowledge of specialized equipment, such as INS, LORAN, GPS, GNSS.
  - (2) CAT II and CAT III approaches.
  - (3) Special equipment, procedures and practice.
  - (4) A demonstration of competency.
  - (5) Low visibility take-off operations.
    - (i) Runway and lighting requirements.
    - (ii) Rejected take-offs at, or near, V<sub>1</sub> with a failure of the most critical engine.
    - (iii) Taxi operations.
    - (iv) Procedures to prevent runway incursions under low visibility conditions.
  - (6) Extended range operations with two engine aeroplanes (EDTO).
  - (7) Approaches using on-board radar.
  - (8) Autopilot instead of Co-pilot.

**IS: 8.10.1.16****AIRCRAFT DIFFERENCES**

- (a) Each AOC holder shall provide aircraft differences training for flight operations officers when the operator has aircraft variances within the same type of aircraft, which includes at least the following:
  - (1) Operations procedures—
    - (i) Operations under adverse weather phenomena conditions, including clear air turbulence, windshear, and thunderstorms.
    - (ii) Mass and balance computations and load control procedures.
    - (iii) Aircraft performance computations, to include takeoff mass limitations based on departure runway, arrival runway, and en- route limitations, and also engine-out limitations.
    - (iv) Flight planning procedures, to include route selection, flight time, and fuel requirements analysis.
    - (v) Dispatch release preparation.
    - (vi) Crew briefings.
    - (vii) Flight monitoring procedures.
    - (viii) Flight crew response to various emergency situations, including the assistance the aircraft flight operations officer can provide in each situation.
    - (ix) MEL and CDL procedures.
    - (x) Manual performance of required procedures in case of the loss of automation capabilities.
    - (xi) Training in appropriate geographic areas.
    - (xii) ATC and instrument procedures, to include ground hold and central flow control procedures.
    - (xiii) Radio/telephone procedures.
  - (2) Emergency procedures—
    - (i) Actions taken to aid the flight crew.
    - (ii) AOC holder and Authority notification.

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**IS: 8.10.1.19(d) PILOT PROFICIENCY – AIRCRAFT AND INSTRUMENT PROFICIENCY CHECKS**

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- (a) Aircraft and instrument proficiency checks for PIC and CP must include the following operations and procedures listed in the appropriate skill test in MCAR Part 2, on each type or variant of type of aircraft.
- (b) The oral and flight test phases of a proficiency check should not be conducted simultaneously.
- (c) When the check pilot determines that an applicant's performance is unsatisfactory, the check pilot may terminate the flight test immediately or, with the consent of the applicant, continue with the flight test until the remaining events are completed.
- (d) If the check must be terminated (for mechanical or other reasons) and there are events which still need to be repeated, the check pilot shall issue a letter of discontinuance, valid for 60 days, listing the specific areas of operation that have been successfully completed.
- (e) Satisfactory completion of a proficiency check following completion of an approved air carrier training programme for the particular type aircraft, satisfies the requirement for an aircraft type rating skill test if—
  - (1) That proficiency check includes all maneuvers and procedures required for a type rating skill test.
  - (2) Proficiency checks are to be conducted by a check pilot approved by the Authority.
- (f) The PIC proficiency check given in accordance with this part may be used to satisfy the proficiency requirements of MCAR Part 2 to act as a PIC.
- (g) The CP proficiency check given in accordance with this part may be used to satisfy the proficiency requirements of MCAR Part 2 to act as a CP.
- (h) The AOC holder may combine recurrent training with the AOC holder's proficiency check if approved to do so by the Authority.

**IS: 8.10.1.23(e) RECURRENT TRAINING—FLIGHT CREW**

- (a) Each AOC holder shall establish a recurrent training programme for all flight crew members in the AOC holder's Operations Manual and shall have it approved by the Authority.
- (b) Each flight crew member shall undergo recurrent training relevant to the type or variant of aircraft on which he or she is certified to operate and for the crew member position involved.
- (c) Each AOC holder shall have all recurrent training conducted by suitably qualified personnel.
- (d) Each AOC holder shall ensure that flight crew member recurrent ground training includes at least the following:
  - (1) General subjects.
    - (i) Flight locating procedures.
    - (ii) Principles and method for determining mass/balance and runway limitations.
    - (iii) Meteorology to ensure practical knowledge of weather phenomena including the principles of frontal system, icing, fog, thunderstorms, windshear, and high altitude weather situations.
    - (iv) ATC systems and phraseology.
    - (v) Navigation and use of navigational aids.
    - (vi) Normal and emergency communication procedures.
    - (vii) Visual cues before descent to MDA.
    - (viii) Accident/incident and occurrence review.
    - (ix) Other instructions necessary to ensure the pilot's competence.
  - (2) Aircraft systems and limitations.
    - (i) Normal, abnormal, and emergency procedures.
    - (ii) Aircraft performance characteristics.
    - (iii) Engines and, if applicable, propellers.
    - (iv) Major aircraft components.
    - (v) Major aircraft systems (i.e., flight controls, electric, hydraulic and other systems as appropriate).
  - (3) Ground icing and de-icing procedures and requirements.
  - (4) Emergency equipment and drills.
  - (5) Every 12 months—
    - (i) Location and use of all emergency and safety equipment carried on the aeroplane.
    - (ii) The location and use of all types of exits.
    - (iii) Actual donning of a lifejacket where fitted.

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- (iv) Actual donning of protective breathing equipment.
    - (v) Actual handling of fire extinguishers.
  - (6) Every 3 years—
    - (i) Operation of all types of exits.
    - (ii) Demonstration of the method used to operate a slide, where fitted.
    - (iii) Fire-fighting using equipment representative of that carried in the aeroplane on an actual or simulated fire.
    - (iv) Effects of smoke in an enclosed area and actual use of all relevant equipment in a simulated smoke-filled environment.
    - (v) Actual handling of pyrotechnics, real or simulated, where fitted.
    - (vi) Demonstration in the use of the life-raft(s), where fitted.
    - (vii) An emergency evacuation drill.
    - (viii) A ditching drill, if applicable.
    - (ix) A rapid decompression drill, if applicable.
    - (x) Survival suits, if applicable to the operation.
  - (7) Crew resource management—
    - (i) Decision-making skills.
    - (ii) Briefings and developing open communication.
    - (iii) Inquiry, advocacy, and assertion training.
    - (iv) Workload management.
    - (v) Situational awareness.
  - (8) Dangerous goods—
    - (i) Recognition of and transportation of dangerous goods.
    - (ii) Proper packaging, marking, and documentation.
    - (iii) Instructions regarding compatibility, loading, storage and handling characteristics.
  - (9) Security—
    - (i) Hijacking.
    - (ii) Disruptive passengers.
  - (e) Each AOC holder shall verify knowledge of the recurrent ground training by an oral or written examination.
  - (f) Each AOC holder shall ensure that pilot recurrent flight training include at least the following:
    - (1) Preparation—
      - (i) Visual inspection (use of pictorial display authorized).
      - (ii) Pre-taxi procedures.

- (2) Ground operation—
  - (i) Performance limitations.
  - (ii) Cockpit management.
  - (iii) Securing cargo.
  - (iv) Pushback.
  - (v) Powerback taxi, if applicable.
  - (vi) Starting.
  - (vii) Taxi.
  - (viii) Pre-takeoff checks.
- (3) Takeoff—
  - (i) Normal.
  - (ii) Crosswind.
  - (iii) Rejected.
  - (iv) Power failure after V<sub>1</sub>.
  - (v) Powerplant failure during second segment.
  - (vi) Low Visibility Takeoff Operations.
- (4) Climb—
  - (i) Normal.
  - (ii) One-engine inoperative climb to en route altitude.
- (5) En route—
  - (i) Steep turns.
  - (ii) Approaches to stalls (takeoff, en route, and landing configurations).
  - (iii) In-flight powerplant shutdown.
  - (iv) In-flight powerplant restart.
  - (v) High speed handling characteristics.
- (6) Descent—
  - (i) Normal.
- (7) Approaches—
  - (i) VFR procedures.
  - (ii) Visual approach with 50% loss of power of available powerplants.
  - (iii) Visual approach with slat/flap malfunction.
  - (iv) IFR precision approaches (ILS normal and ILS with one-engine inoperative).
  - (v) IFR non-precision approaches (NDB normal and VOR normal).
  - (vi) Non-precision approach with one engine inoperative (LOC back course, SDF/LDA, GPS, TACAN and circling approach procedures).



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- (vii) Missed approach from precision approach.
  - (viii) Missed approach from non-precision approach.
  - (ix) Missed approach with powerplant failure.
- (8) Landings—
- (i) Abnormal with a pitch mistrim (small aircraft only).
  - (ii) Abnormal from precision instrument approach.
  - (iii) Abnormal from precision instrument approach with most critical engine inoperative.
  - (iv) Abnormal with 50% loss of power of available powerplants.
  - (v) Abnormal with flap/slat malfunction.
  - (vi) Rejected landings.
  - (vii) Crosswind.
  - (viii) Short/soft field (small aircraft only).
  - (ix) Glassy/rough water (seaplanes only).
  - (x) Auto-rotation (helicopter only)
- (9) After landing—
- (i) Parking.
  - (ii) Emergency evacuation.
  - (iii) Docking, mooring, and ramping (seaplanes only).
- (10) Other flight procedures during any airborne phase—
- (i) Airborne Collision Avoidance System: use and avoidance maneuvers
  - (ii) Holding.
  - (iii) Ice accumulation on airframe.
  - (iv) Air hazard avoidance.
  - (v) Windshear/microburst.
- (11) Normal, abnormal and alternate systems procedures during any phase—
- (i) Pneumatic/pressurization.
  - (ii) Air conditioning.
  - (iii) Fuel and oil.
  - (iv) Electrical.
  - (v) Hydraulic.
  - (vi) Flight controls.
  - (vii) Anti-icing and deicing systems.
  - (viii) Flight management guidance systems and/or automatic or other approach and landing aids.
  - (ix) Stall warning devices, stall avoidance devices, and stability augmentation systems.
  - (x) Airborne weather radar.

- (xi) Flight instrument system malfunction.
  - (xii) Communications equipment.
  - (xiii) Navigation systems.
  - (xiv) Autopilot.
  - (xv) Approach and landing aids.
  - (xvi) Flight instrument system malfunction.
- (12) Emergency systems procedures during any phase—
- (i) Aircraft fire.
  - (ii) Smoke control.
  - (iii) Powerplant malfunctions.
  - (iv) Fuel jettison.
  - (v) Electrical, hydraulic, pneumatic systems.
  - (vi) Flight control system malfunction.
  - (vii) Landing gear and flap system malfunction.
- (g) The AOC holder may combine recurrent training with the AOC holder's proficiency check if approved by the Authority.
- (h) Recurrent ground and flight training curricula may be accomplished concurrently or intermixed, but completion of each of these curricula shall be recorded separately.

**IS: 8.10.1.24(c) RECURRENT NORMAL AND EMERGENCY TRAINING—CABIN CREW MEMBERS**

- (a) Each AOC holder shall establish and have approved by the Authority a recurrent training programme for all cabin crew members.
- (b) Each cabin crew member shall undergo recurrent training in evacuation and other appropriate normal and emergency procedures and drills relevant to his or her assigned positions and the type(s) and/or variant(s) of aircraft on which he or she operates.
- (c) Each AOC holder shall have all recurrent training conducted by suitably qualified personnel.
- (d) Each AOC holder shall ensure that, every 12 months, each cabin crew member receive recurrent training in at least the following:
  - (1) Emergency equipment, if applicable—
    - (i) Emergency communication and notification systems.
    - (ii) Aircraft exits.
    - (iii) Exits with slides or sliderafts (emergency operation).
    - (iv) Slides and sliderafts in a ditching.
    - (v) Exits without slides (emergency operation).
    - (vi) Window exits (emergency operation).
    - (vii) Exits with tailcones (emergency operation).
    - (viii) Cockpit exits (emergency operation).
    - (ix) Ground evacuation and ditching equipment.
    - (x) First aid equipment.
    - (xi) Portable oxygen systems (oxygen bottles, chemical oxygen generators, protective breathing equipment (PBE)).
    - (xii) Firefighting equipment.
    - (xiii) Emergency lighting systems.
    - (xiv) Additional emergency equipment.
  - (2) Emergency procedures—
    - (i) General types of emergencies specific to aircraft.
    - (ii) Emergency communication signals and procedures.
    - (iii) Rapid decompression.
    - (iv) Insidious decompression and cracked window and pressure seal leaks.
    - (v) Fires.
    - (vi) Ditching.
    - (vii) Ground evacuation.
    - (viii) Unwarranted evacuation (i.e., passenger initiated).
    - (ix) Illness or injury.

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- (x) Abnormal situations involving passengers or crew members.
    - (xi) Turbulence.
    - (xii) Other unusual situations.
  - (3) Emergency drills.
  - (4) Every 12 months—
    - (i) Location and use of all emergency and safety equipment carried on the aeroplane.
    - (ii) The location and use of all types of exits.
    - (iii) Actual donning of a lifejacket where fitted.
    - (iv) Actual donning of protective breathing equipment (PBE).
    - (v) Actual handling of fire extinguishers.
  - (5) Every 3 years—
    - (i) Operation of all types of exits.
    - (ii) Demonstration of the method used to operate a slide, where fitted.
    - (iii) Fire-fighting using equipment representative of that carried in the aeroplane on an actual or simulated fire.
    - (iv) Effects of smoke in an enclosed area and actual use of all relevant equipment in a simulated smoke-filled environment.
    - (v) Actual handling of pyrotechnics, real or simulated, where fitted.
    - (vi) Demonstration in the use of the life-raft(s), where fitted.
    - (vii) An emergency evacuation drill.
    - (viii) A ditching drill, if applicable.
    - (ix) A rapid decompression drill, if applicable.
    - (x) Survival suits, if applicable to the operation.
  - (6) Crew resource management—
    - (i) Decision-making skills.
    - (ii) Briefings and developing open communication.
    - (iii) Inquiry, advocacy, and assertion training.
    - (iv) Workload management.
  - (7) Dangerous goods—
    - (i) Recognition of and transportation of dangerous goods.
    - (ii) Proper packaging, marking, and documentation.
    - (iii) Instructions regarding compatibility, loading, storage and handling characteristics.

- (8) Security—
    - (i) Hijacking.
    - (ii) Disruptive passengers.
- (e) Each AOC holder shall verify knowledge of the recurrent training by an oral or written examination.
- (f) An AOC holder, if approved by the Authority, may administer each of the recurrent training curricula concurrently or intermixed, but shall record completion of each of these curricula separately.

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**IS: 8.10.1.25(b)      RECURRENT TRAINING—FLIGHT OPERATIONS OFFICER**

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- (a) Each AOC holder shall establish and maintain a recurrent training programme, approved by the Authority and established in the AOC holder's Operations Manual, to be completed annually by each flight operations officer.
- (b) Each flight operations officer shall undergo recurrent training relevant to the type(s) and/or variant(s) of aircraft and the operations conducted by the AOC holder, and that training shall consist of at least the following hours of instruction:
  - (1) Piston-engined aircraft – 8 hours.
  - (2) Turbopropeller-powered aircraft – 10 hours.
  - (3) Turbo-jet aircraft – 20 hours.
  - (4) Other aircraft– 10 hours.
- (c) Each AOC holder shall have all recurrent training conducted by an appropriately qualified instructor.
- (d) An AOC holder shall ensure that, every 12 months, each flight operations officer receives recurrent training in the subjects required for initial training listed in IS: 8.10.1.13(d) in sufficient detail to ensure competency in each specified area of training. Operators may choose to provide in-depth coverage of selected subjects on any one cycle of training. In such cases the operator's training programme must cover all the subjects to the detail required for initial qualification within three years.
- (e) Each AOC holder shall verify knowledge of the recurrent training by an oral or written examination.
- (f) An AOC holder shall record completion of the required training.

**IS: 8.10.1.27****INSTRUCTOR TRAINING**

- (a) Flight crew instructor training.
  - (1) No operator may use a person, nor may any person serve as flight instructor in a training programme unless:
    - (i) That person has satisfactorily completed initial or transition flight instructor training; and
    - (ii) Within the preceding 24 calendar months, that person satisfactorily conducts instruction under the observation of an inspector from the Authority or an AOC holder's check personnel.
  - (2) An AOC holder may accomplish the observation check for a flight instructor, in part or in full, in an aircraft or a flight simulation training device.
  - (3) Each AOC holder shall ensure that initial ground training for flight instructors includes the following—
    - (i) Flight instructor duties, functions, and responsibilities.
    - (ii) Applicable regulations and the AOC holder's policies and procedures.
    - (iii) Appropriate methods, procedures, and techniques for conducting the required checks.
    - (iv) Proper evaluation of student performance including the detection of:
    - (v) Improper and insufficient training; and
    - (vi) Personal characteristics of an applicant that could adversely affect safety.
    - (vii) Appropriate corrective action in the case of unsatisfactory checks.
    - (viii) Approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the aircraft.
    - (ix) Except for holders of existing flight instructor licences:
      - (A) The fundamental principles of the teaching-learning process;
      - (B) Teaching methods and procedures; and
      - (C) The instructor-student relationship.
  - (4) Each AOC holder shall ensure that the transition ground training for flight instructors includes the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the aircraft to which the flight instructor is in transition.

- (5) Each AOC holder shall ensure that the initial and transition flight training for flight instructors includes the following:
  - (i) The safety measures for emergency situations that are likely to develop during instruction.
  - (ii) The potential results of improper, untimely, or non-execution of safety measures during instruction.
  - (iii) For pilot flight instructor (aircraft):
    - (A) In-flight training and practice in conducting flight instruction from the left and right pilot seats in the required normal, abnormal, and emergency procedures to ensure competence as an instructor; and
    - (B) The safety measures to be taken from either pilot seat for emergency situations that are likely to develop during instruction.
- (6) An AOC holder may accomplish the flight training requirements for flight instructors in full or in part in flight or in a flight simulation training device, as appropriate.
- (7) An AOC holder shall ensure that the initial and transition flight training for flight instructors (flight simulation training device) includes the following:
  - (i) Training and practice in the required normal, abnormal, and emergency procedures to ensure competence to conduct the flight instruction required by this part. This training and practice shall be accomplished in full or in part in a flight simulation training device.
  - (ii) Training in the operation of flight simulation training devices, to ensure competence to conduct the flight instruction required by this Part.
- (b) Cabin crew instructor training.
  - (1) No operator may use a person, nor may any person serve as cabin instructor in a training programme unless:
    - (i) That person has satisfactorily completed initial or transition cabin instructor training; and
    - (ii) Within the preceding 24 calendar months, that person satisfactorily conducts instruction under the observation of an inspector from the Authority or an AOC holder's check personnel.
  - (2) An AOC holder may accomplish the observation check for a cabin instructor, in part or in full, in an aircraft or a cabin simulation training device.



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- (3) Each AOC holder shall ensure that initial ground training for cabin instructors includes the following—
    - (i) Cabin instructor duties, functions, and responsibilities.
    - (ii) Applicable regulations and the AOC holder's policies and procedures.
    - (iii) Appropriate methods, procedures, and techniques for conducting the required checks.
    - (iv) Proper evaluation of student performance including the detection of:
      - (A) Improper and insufficient training; and
      - (B) Personal characteristics of an applicant that could adversely affect safety.
    - (v) Appropriate corrective action in the case of unsatisfactory checks.
    - (vi) Approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the aircraft, as applicable.
    - (vii) Except for existing cabin instructors:
      - (A) The fundamental principles of the teaching-learning process;
      - (B) Teaching methods and procedures; and
      - (C) The instructor-student relationship.
  - (4) Each AOC holder shall ensure that the transition ground training for cabin instructors includes the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the aircraft, as appropriate to which the cabin instructor is in transition.
  - (5) Each AOC holder shall ensure that the initial and transition flight training for cabin instructors includes the following:
    - (i) The safety measures for emergency situations that are likely to develop during instruction.
    - (ii) The potential results of improper, untimely, or non-execution of safety measures during instruction.
  - (c) Flight operations officer instructor training.
    - (1) No operator may use a person, nor may any person serve as flight operations officer instructor in a training programme unless:
      - (i) That person has satisfactorily completed initial or transition flight operations officer instructor training; and

- (ii) Within the preceding 24 calendar months, that person satisfactorily conducts instruction under the observation of an inspector from the Authority or an AOC holder's check flight operations officer.
- (2) An AOC holder may accomplish the observation check for a flight operations officer instructor, in part or in full, in a flight operations centre.
- (3) Each AOC holder shall ensure that initial ground training for flight operations officer instructors includes the following—
  - (i) Flight operations officer instructor duties, functions, and responsibilities.
  - (ii) Applicable regulations and the AOC holder's policies and procedures.
  - (iii) Appropriate methods, procedures, and techniques for conducting the required checks.
  - (iv) Proper evaluation of student performance including the detection of:
    - (A) Improper and insufficient training; and
    - (B) Personal characteristics of an applicant that could adversely affect safety.
  - (v) Appropriate corrective action in the case of unsatisfactory checks.
  - (vi) Approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures for the aircraft or position involved.
  - (vii) Except for holders of existing flight operations officer instructor licences:
- (4) The fundamental principles of the teaching-learning process;
  - (i) Teaching methods and procedures; and
  - (ii) The instructor-student relationship.
- (5) Each AOC holder shall ensure that the transition ground training for flight operations officer instructors includes the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the aircraft or position involved to which the flight operations officer instructor is in transition.

- (6) Each AOC holder shall ensure that the initial and transition training for flight operations officer instructors includes the following:
  - (i) The safety measures for emergency situations that are likely to develop during instruction in a flight operations centre.
  - (ii) The potential results of improper, untimely, or non-execution of safety measures during instruction in a flight operations centre.

**IS: 8.10.1.29****DESIGNATED EXAMINER TRAINING**

- (a) Training for designated examiner - general.
  - (1) No operator may use a person, nor may any person serve as a Designated Examiner in a training programme unless, with respect to the aircraft type involved, that person has satisfactorily completed the appropriate training phases for the aircraft, including recurrent training and differences training, that are required to serve as PIC, cabin crewmember, or flight operations officer, as applicable.
  - (2) Each AOC holder shall ensure that initial ground training for Designated Examiner includes:
    - (i) Designated Examiner duties, functions, and responsibilities.
    - (ii) Applicable regulations and the AOC holder's policies and procedures.
    - (iii) Appropriate methods, procedures, and techniques for conducting the required checks.
    - (iv) Proper evaluation of student performance including the detection of:
    - (v) Improper and insufficient training.
    - (vi) Personal characteristics of an applicant that could adversely affect safety.
      - (A) Appropriate corrective action in the case of unsatisfactory checks.
      - (B) Approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures in the aircraft.
  - (3) Transition ground training for all Designated Examiner, shall include the approved methods, procedures, and limitations for performing the required normal, abnormal, and emergency procedures applicable to the aircraft to which the Designated Examiner is in transition.
- (b) Training for Designated Examiner of flight crew.
  - (1) For Designated Examiner, each AOC holder shall ensure that the initial and transition flight training includes:
    - (i) Training and practice in conducting flight evaluations (from the left and right pilot seats for Designated Examiner) in the required normal, abnormal, and emergency procedures to ensure competence to conduct the flight checks.

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- (ii) The potential results of improper, untimely or non-execution of safety measures during an evaluation.
    - (iii) The safety measures (to be taken from either pilot seat for Designated Examiner) for emergency situations that are likely to develop during an evaluation.
  - (2) Each AOC holder shall ensure that the initial and transition flight training for Designated Examiner (simulator) includes:
    - (i) Training and practice in conducting flight checks in the required normal, abnormal, and emergency procedures to ensure competence to conduct the checks required by this part (this training and practice shall be accomplished in a flight simulation training device).
    - (ii) Training in the operation of flight simulation training devices, to ensure competence to conduct the checks required by this Part.
  - (3) An AOC holder may accomplish flight training for Designated Examiner, in full or in part in an aircraft or in a flight simulation training device, as appropriate.
  - (4) The AOC holder shall record the training in each individuals training record maintained by the AOC holder.
  - (c) Training for Designated Examiner cabin crewmembers.
    - (1) For Designated Examiner cabin crewmembers, each AOC holder shall ensure that the training includes:
      - (i) The safety measures for emergency situations that are likely to develop during a check; and
      - (ii) The potential results of improper, untimely or non-execution of safety measures during a check.
  - (d) Training for Designated Examiner flight operations officers.
    - (1) For Designated Examiner flight operations officers, each AOC holder shall ensure that the training includes:
      - (i) The safety measures for emergency situations that are likely to develop during a check; and
      - (ii) The potential results of improper, untimely or non-execution of safety measures during a check.
  - (e) The AOC holder shall record the training in each individuals training record maintained by the AOC holder.