CIVIL AVIATION AUTHORITY of NEPAL



FLIGHT OPERATIONS REQUIREMENTS

(AEROPLANE)

SIXTH EDITION - 2020

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FOREWORD

This sixth edition of the Flight Operations Requirements-Aeroplane, known hereafter as the FOR-A, is hereby issued by the Director General of Civil Aviation Authority Nepal in pursuant to Rule 82 of the Civil Aviation Regulations 2058 Bikram Samvat (2002 AD).

These Requirements complement and amplify the CARs 2058 under the authority of Civil Aviation Authority Act 2053 B.S. (1996 AD) and is applicable to AOC holders involved in commercial operations of aircraft under the Nepalese Civil Aviation registration.

This sixth edition includes material from the previous editions while being updated to include the latest edition and amendments of ICAO Annex 6, Part I.

It shall be the obligation of the AOC holder to adhere to and maintain the standards of this FOR-A to ensure compliance with national aviation regulations and maintain continued safety.

The FOR-A has been prepared to maintain compliance with ICAO Annex 6, Part I as far as practicable and will be amended as and when necessary.

This sixth edition of the FOR-A shall be applicable from the 15th of August 2020.

R. Pokhrel

Rajan Pokhrel
Director General
Civil Aviation Authority of Nepal
10 July 2020

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CHAPTER 1

DEFINITIONS AND ABBREVIATIONS

DEFINITIONS

When the following terms are used in the Flight Operations Requirements have the following meanings:

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

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.

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

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

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

b) landing in 2D instrument approach operations, expressed in terms of visibility and/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.

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

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

Note.— The other State in the above definition refers to the State of the Operator for commercial air transport operations.

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

Aircraft operating manual. A manual, acceptable to the DG, CAAN, 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.

Aircraft tracking. A process, established by the operator, that maintains and updates, at standardized intervals, a ground-based record of the four dimensional position of individual aircraft in flight.

Air operator certificate (AOC). A certificate authorizing an operator to carry out specified commercial air transport operations.

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

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

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

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

En-route alternate. An alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en-route.

Destination alternate. An alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodrome of intended landing.

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

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

Appropriate airworthiness requirements. The comprehensive and detailed airworthiness codes established, adopted or accepted by a Contracting State for the class of aircraft, engine or propeller under consideration.

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

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

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

Cargo: Things other than passengers carried on aircraft.

Category A STOL Airfield: Those STOL airfields located below 5500 feet AMSL and where missed approach is possible.

Category B STOL Airfield: Those STOL airfields which are below 7000 feet above mean sea level and where missed approach is critical.

Category C STOL Airfield: Those STOL airfields which are at or above 7000feet above mean sea level, approach is difficult due to local weather conditions and where missed approach is not advisable or possible after a certain point during the approach and landing phase.

COMAT. Operator material carried on an operator's aircraft for the operator's own purposes.

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

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

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

Contaminated runway. A runway is contaminated when a significant portion of the runway surface area (whether in isolated areas or not) within the length and width being used is covered by one or more of the substances listed in the runway surface condition descriptors.

Note.— Further information on runway surface condition descriptors can be found in the Annex 14, Volume I — *Definitions.*

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.

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

Continuous descent final approach (CDFA). A technique, consistent with stabilized approach procedures, for flying the final approach segment (FAS) of an instrument non-precision approach (NPA) procedure as a continuous descent, without level-off, from an altitude/height at or above the final approach fix altitude/height to a point approximately 15 m (50 ft) above the landing runway threshold or the point where the flare manoeuvre 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.

Co-pilot. A licensed pilot serving in any piloting capacity other that as pilot-in-command but excluding a pilot who is on board the aircraft for the sole purpose of receiving flight instruction.

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

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

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

Damp Lease means wet lease with partial – crew

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 CAAN Dangerous Goods Handling Requirements..

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".

Director General. Director General of Civil Aviation Authority of Nepal.

Differences Training. - The training required for crew members and dispatchers who have qualified and served on a particular type of aircraft but the differences training is necessary before a crewman serves in the same capacity on a particular variation of that aircraft.

Dry Lease. Dry Lease means a lease of aircraft without the crew. In this case the aircraft is normally registered in the AOC holder's State, bears the lessee's AOC holder name/logo and is operated under the AOC of the Lessee.

Dry runway. A runway is considered dry if its surface is free of visible moisture and not contaminated within the area intended to be used.

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.

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.

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 DG, CAAN.

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 D contains guidance on EDTO critical fuel scenarios.

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.

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

Emergency locator transmitter (ELT). A generic term describing equipment which broadcast distinctive signals on designated frequencies and, depending on application, may be automatically activated by impact or be manually activated. An ELT may be any of the following:

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

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

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

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 DG, CAAN.

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

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

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

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

Fatigue. A physiological state of reduced mental or physical performance capability resulting from sleep loss or 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.

***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.

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

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

Flight data analysis. A process of analysing recorded flight data in order to improve the safety of flight operations.

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.

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

Flight operations officer/flight dispatcher. A person designated by the operator to engage in the control and supervision of flight operations, whether licensed or not, suitably qualified in accordance with PELR Chapter 11, who supports, briefs and/or assists the pilot-in-command in the safe conduct of the flight.

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

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

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

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

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

A flight simulator, which provides an accurate representation of the flight deck of a particular aircraft type to the extent that the mechanical, electrical, electronic, etc. aircraft systems control functions, the normal environment of flight crew members, and the performance and flight characteristics of that **type** of aircraft are realistically simulated;

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

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

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

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

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

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

Glider flight time. The total time occupied in flight whether being towed or not, from the moment the glider first moves for the purpose of taking off until the moment it comes to rest at the end of the flight.

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

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

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

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

In-flight – refers to manouevers procedures or functions that must be conducted in the aircraft.

Initial Training - The training required for crew members and dispatchers who have not qualified and served in the same capacity on another aircraft of the same group.

Inspector means Flight Operation Inspector authorized by the Director General.

Instrument flight time. Time during which a pilot is piloting an aircraft solely by reference to instruments and without external reference points.

Instrument ground time. Time during which a pilot is practicing, on the ground, simulated instrument flight in a synthetic flight trainer approved

Instrument time. Instrument flight time or instrument ground time.

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.

Instrument approach procedure (IAP). A series of predetermined manoeuvres 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 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 II, Section 5.

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

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

Note.— Refer to 4.2.8.3 for instrument approach operation types.

Instrument meteorological conditions (IMC). Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling (as defined in CAR 2) less than the minima specified for visual meteorological conditions.

Note.— The specified minima for visual meteorological conditions are contained in CAR 2.

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

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

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

Leased Aircraft. means an aircraft as one used under a contractual leasing arrangement;

Lessor. means the person, party or the AOC holder from whom the aircraft is leased;

Lessee. means the person, party or the AOC holder to which the aircraft is leased;

Long Term Lease. means an operating lease for a period exceeding 90 days;

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

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

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

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

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

Maximum diversion time. Maximum allowable range, expressed in time, from a point on a route to an en-route alternate aerodrome.

Maximum mass. Maximum certificated take-off mass.

Medical Assessment. The evidence issued by a Contracting State that the license holder meets specific requirements of medical fitness. It is issued following an evaluation by the Licensing Authority of the report submitted by the designated medical examiner who conducted the medical examinations.

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

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

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

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

Minimum equipment list (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.

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

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

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

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

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 FOR (A) as the concept of RNP has been overtaken by the concept of PBN. The term RNP in this FOR (A) is now solely used in the context of navigation specifications that require performance monitoring and alerting, e.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with on-board performance monitoring and alerting that are detailed in Doc 9613.

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

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

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

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

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

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

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

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.

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

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

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

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

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

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

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

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

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

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

Pressure-altitude. An atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the Standard Atmosphere (as defined in ICAO Annex 8).

Problematic use of substances. The use of one or more psychoactive substances by aviation personnel in way that:

a) constitutes a direct hazard to the user or endangers the lives, health or welfare of others; and / or
b) causes or worsens an occupational, social, mental or physical problem or disorder.

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

Rating. An authorization entered on or associated with a licence and forming part thereof, stating special conditions, privileges or limitations pertaining to such license.

Relief Crew. Means a crew member licensed for duties who takes over the running of the aircraft.

Repair. The restoration of an aircraft, engine, propeller or associated part to an airworthy condition in accordance with the appropriate airworthiness requirements, after it has been damaged or subjected to wear.

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

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

Rest Facilities on Board. places and facilities sufficiently comfortable and completely separated from the passengers to enable crew members to rest and to provide them with rest in due proportion to the flight time.

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.

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

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

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

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

Safety Recommendation. A proposal of the accident investigation authority of the State conducting the investigation, based on information derived from the investigation, made with the intention of preventing accidents or incidents.

Serious Incident. An incident involving circumstances indicating that an accident nearly occurred.

Note 1 – The difference between an accident and a serious incident lies only in the result.

Note 2 – Examples of serious incidents can be found in Attachment C of Annex 13 and in the Accident/Incident Reporting Manual (Doc 9156).

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 percent of the body surface; or

f) involves verified exposure to infections substances or injurious radiation

Short Term Lease. means a lease designed to meet an AOC holder's need for additional aircraft for seasonal or short period not exceeding 90 days;

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

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 Attachment D of Annex 6-I.

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

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

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

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

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

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

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

Transition Training - The training required for crew members and dispatcher who have qualified and served in the same capacity on another aircraft of the same group.

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 a specific approval for EDTO from the State of the Operator.

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

Upgrade Training - The training required for crew members who have qualified and served as Co-pilot or Flight Engineer on a particular aircraft type before they serve as pilot in command or second command respectively on that aircraft.

Visual meteorological conditions (VMC). Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling (as defined in ICAO Annex 2), equal to or better than specified minima.

Note :- The specified minima are contained in Chapter 4 of Annex 2.

Wet Lease. Lease of aircraft with the crew under a contractual arrangement.

Wet runway. The runway surface is covered by any visible dampness or water up to and including 3 mm deep within the intended area of use.

ABBREVIATIONS AND SYMBOLS

(used in this FOR)

Abbreviations

AC	Alternating current
ACAS	Airborne collision avoidance system
ADF	Automatic Direction Finding
ADRS	Aircraft data recording system
ADS	Automatic dependent surveillance
ADS-C	Automatic dependent surveillance — contract
AEO	All engines operative
AFCS	Automatic flight control system
AGA	Aerodromes, air routes and ground aids
AGL	Above Ground Level
AIP	Aeronautical Information Publication
AMT	Aircraft Maintenance Technician
AIG	Accident investigation and prevention
AIR	Airborne image recorder
AIRS	Airborne image recording system
AOC	Air operator certificate
APCH	Approach
APU	Auxiliary power unit
AR	Authorization Required
ARINC	Aeronautical Radio, Incorporated
ASDA	Accelerate stop distance available
ASE	Altimetry system error
ASIA/PAC	Asia/Pacific
ATC	Air traffic control
ATM	Air traffic management
ATN	Aeronautical Telecommunication Network
ATPL	Airline Transport Pilot License
ATS	Air traffic services
CARS	Cockpit Audio Recording System
C of A	Certificate of Airworthiness
C of G	Center of Gravity
CAAN	Civil Aviation Authority of Nepal
CAS	Calibrated airspeed
CAT I	Category I
CAT II	Category II
CAT III	Category III
CDL	Configuration deviation list

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

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

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

Cargo: Things other than passengers carried on aircraft.

Category A STOL Airfield: Those STOL airfields located below 5500 feet AMSL and where missed approach is possible.

Category B STOL Airfield: Those STOL airfields which are below 7000 feet above mean sea level and where missed approach is critical.

Category C STOL Airfield: Those STOL airfields which are at or above 7000feet above mean sea level, approach is difficult due to local weather conditions and where missed approach is not advisable or possible after a certain point during the approach and landing phase.

COMAT. Operator material carried on an operator's aircraft for the operator's own purposes.

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

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

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

Contaminated runway. A runway is contaminated when a significant portion of the runway surface area (whether in isolated areas or not) within the length and width being used is covered by one or more of the substances listed in the runway surface condition descriptors.

Note.— Further information on runway surface condition descriptors can be found in the Annex 14, Volume I — *Definitions.*

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.

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

Continuous descent final approach (CDFA). A technique, consistent with stabilized approach procedures, for flying the final approach segment (FAS) of an instrument non-precision approach (NPA) procedure as a continuous descent, without level-off, from an altitude/height at or above the final approach fix altitude/height to a point approximately 15 m (50 ft) above the landing runway threshold or the point where the flare manoeuvre 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.

Co-pilot. A licensed pilot serving in any piloting capacity other that as pilot-in-command but excluding a pilot who is on board the aircraft for the sole purpose of receiving flight instruction.

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

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

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

Damp Lease means wet lease with partial – crew

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 CAAN Dangerous Goods Handling Requirements..

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".

Director General. Director General of Civil Aviation Authority of Nepal.

Differences Training. - The training required for crew members and dispatchers who have qualified and served on a particular type of aircraft but the differences training is necessary before a crewman serves in the same capacity on a particular variation of that aircraft.

Dry Lease. Dry Lease means a lease of aircraft without the crew. In this case the aircraft is normally registered in the AOC holder's State, bears the lessee's AOC holder name/logo and is operated under the AOC of the Lessee.

Dry runway. A runway is considered dry if its surface is free of visible moisture and not contaminated within the area intended to be used.

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.

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.

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 DG, CAAN.

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 D contains guidance on EDTO critical fuel scenarios.

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.

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

Emergency locator transmitter (ELT). A generic term describing equipment which broadcast distinctive signals on designated frequencies and, depending on application, may be automatically activated by impact or be manually activated. An ELT may be any of the following:

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

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

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

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 DG, CAAN.

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

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

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

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

Fatigue. A physiological state of reduced mental or physical performance capability resulting from sleep loss or 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.

***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.

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

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

Flight data analysis. A process of analysing recorded flight data in order to improve the safety of flight operations.

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.

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

Flight operations officer/flight dispatcher. A person designated by the operator to engage in the control and supervision of flight operations, whether licensed or not, suitably qualified in accordance with PELR Chapter 11, who supports, briefs and/or assists the pilot-in-command in the safe conduct of the flight.

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

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

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

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

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

A flight simulator, which provides an accurate representation of the flight deck of a particular aircraft type to the extent that the mechanical, electrical, electronic, etc. aircraft systems control functions, the normal environment of flight crew members, and the performance and flight characteristics of that **type** of aircraft are realistically simulated;

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

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

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

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

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

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

Glider flight time. The total time occupied in flight whether being towed or not, from the moment the glider first moves for the purpose of taking off until the moment it comes to rest at the end of the flight.

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

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

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

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

In-flight – refers to manouevers procedures or functions that must be conducted in the aircraft.

Initial Training - The training required for crew members and dispatchers who have not qualified and served in the same capacity on another aircraft of the same group.

Inspector means Flight Operation Inspector authorized by the Director General.

Instrument flight time. Time during which a pilot is piloting an aircraft solely by reference to instruments and without external reference points.

Instrument ground time. Time during which a pilot is practicing, on the ground, simulated instrument flight in a synthetic flight trainer approved

Instrument time. Instrument flight time or instrument ground time.

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.

Instrument approach procedure (IAP). A series of predetermined manoeuvres 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 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 II, Section 5.

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

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

Note.— Refer to 4.2.8.3 for instrument approach operation types.

Instrument meteorological conditions (IMC). Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling (as defined in CAR 2) less than the minima specified for visual meteorological conditions.

Note.— The specified minima for visual meteorological conditions are contained in CAR 2.

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

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

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

Leased Aircraft. means an aircraft as one used under a contractual leasing arrangement;

Lessor. means the person, party or the AOC holder from whom the aircraft is leased;

Lessee. means the person, party or the AOC holder to which the aircraft is leased;

Long Term Lease. means an operating lease for a period exceeding 90 days;

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

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

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

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

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

Maximum diversion time. Maximum allowable range, expressed in time, from a point on a route to an en-route alternate aerodrome.

Maximum mass. Maximum certificated take-off mass.

Medical Assessment. The evidence issued by a Contracting State that the license holder meets specific requirements of medical fitness. It is issued following an evaluation by the Licensing Authority of the report submitted by the designated medical examiner who conducted the medical examinations.

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

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

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

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

Minimum equipment list (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.

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

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

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

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

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 FOR (A) as the concept of RNP has been overtaken by the concept of PBN. The term RNP in this FOR (A) is now solely used in the context of navigation specifications that require performance monitoring and alerting, e.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with on-board performance monitoring and alerting that are detailed in Doc 9613.

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

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

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

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

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

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

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

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.

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

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

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

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

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

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

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

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

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

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

Pressure-altitude. An atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the Standard Atmosphere (as defined in ICAO Annex 8).

Problematic use of substances. The use of one or more psychoactive substances by aviation personnel in way that:

a) constitutes a direct hazard to the user or endangers the lives, health or welfare of others; and / or
b) causes or worsens an occupational, social, mental or physical problem or disorder.

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

Rating. An authorization entered on or associated with a licence and forming part thereof, stating special conditions, privileges or limitations pertaining to such license.

Relief Crew. Means a crew member licensed for duties who takes over the running of the aircraft.

Repair. The restoration of an aircraft, engine, propeller or associated part to an airworthy condition in accordance with the appropriate airworthiness requirements, after it has been damaged or subjected to wear.

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

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

Rest Facilities on Board. places and facilities sufficiently comfortable and completely separated from the passengers to enable crew members to rest and to provide them with rest in due proportion to the flight time.

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.

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

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

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

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

Safety Recommendation. A proposal of the accident investigation authority of the State conducting the investigation, based on information derived from the investigation, made with the intention of preventing accidents or incidents.

Serious Incident. An incident involving circumstances indicating that an accident nearly occurred.

Note 1 – The difference between an accident and a serious incident lies only in the result.

Note 2 – Examples of serious incidents can be found in Attachment C of Annex 13 and in the Accident/Incident Reporting Manual (Doc 9156).

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 percent of the body surface; or

f) involves verified exposure to infections substances or injurious radiation

Short Term Lease. means a lease designed to meet an AOC holder's need for additional aircraft for seasonal or short period not exceeding 90 days;

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

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 Attachment D of Annex 6-I.

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

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

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

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

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

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

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

Transition Training - The training required for crew members and dispatcher who have qualified and served in the same capacity on another aircraft of the same group.

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 a specific approval for EDTO from the State of the Operator.

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

Upgrade Training - The training required for crew members who have qualified and served as Co-pilot or Flight Engineer on a particular aircraft type before they serve as pilot in command or second command respectively on that aircraft.

Visual meteorological conditions (VMC). Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling (as defined in ICAO Annex 2), equal to or better than specified minima.

Note :- The specified minima are contained in Chapter 4 of Annex 2.

Wet Lease. Lease of aircraft with the crew under a contractual arrangement.

Wet runway. The runway surface is covered by any visible dampness or water up to and including 3 mm deep within the intended area of use.

CFIT	Controlled flight into terrain
cm	Centimetre
COMAT	Operator Material
CPDLC	Controller-pilot data link communications
CVR	Cockpit voice recorder
CVS	Combined Vision System
DA	Decision altitude
DA/H	Decision altitude/height
DG, CAAN	Director General, Civil Aviation Authority of Nepal
DC	Direct current
D-FIS	Data link-flight information services
DH	Decision height
DLR	Data link recorder
DLRS	Data link recording system
DME	Distance measuring equipment
DSTRK	Desired track
ECAM	Electronic centralized aircraft monitor
EDTO	Extended diversion time operations
EFB	Electronic flight bag
EFIS	Electronic flight instrument system
EGT	Exhaust gas temperature
EICAS	Engine indication and crew alerting system
ELT	Emergency locator transmitter
ELT(AD)	Automatic deployable ELT
ELT(AF)	Automatic fixed ELT
ELT(AP)	Automatic portable ELT
ELT(S)	Survival ELT
EPR	Engine pressure ratio
EUROCAE	European Organization for Civil Aviation Equipment
ETA	Estimated Time of Arrival
EVS	Enhanced vision system
FANS	Future Air Navigation System
FOD	Flight Operations Directive
F/E	Flight Engineer
F/O	First Officer
FD	Flight Dispatcher
FDAP	Flight Data Analysis Programmes
FDAU	Flight data acquisition unit
FDR	Flight Data Recorder
FFS	Full Flight Simulator
FL	Flight Level
FM	Frequency modulation
FOO	Flight Operations Officer

FOR	Flight Operations Requirements
ft	Foot
ft/min	Feet per minute
g	Normal acceleration
GCAS	Ground collision avoidance system
GNSS	Global navigation satellite system
GPWS	Ground proximity warning system
hPa	Hectopascal
HF	High Frequency
HSI	Horizontal Situation Indicator
HUD	Head-up display
ICAO	International Civil Aviation Organization
IFR	Instrument flight rules
ILS	Instrument landing system
IMC	Instrument meteorological conditions
in-Hg	Inch of mercury
INS	Inertial navigation system
IRS	Inertial Reference System
ISA	International standard atmosphere
kg	Kilogram
kg/m^2	Kilogram per metre squared
km	Kilometre
km/h	Kilometre per hour
kt	Knot
kt/s	Knots per second
lb	Pound
lbf	Pound-force
LDA	Landing distance available
LED	Light emitting diode
m	Metre
mb	Millibar
MDA	Minimum descent altitude
MDA/H	Minimum descent altitude/height
MDH	Minimum descent height
MEL	Minimum equipment list
MHz	Megahertz
MLS	Microwave landing system
MMEL	Master minimum equipment list
MNPS	Minimum navigation performance specifications

MOPS	Minimum Operational Performance Specification
m/s	Metres per second
m/s^2	Metres per second squared
N	Newton
N_1	Low pressure compressor speed (two-stage compressor); fan speed (three-stage compressor)
N_2	High pressure compressor speed (two-stage compressor); intermediate pressure compressor speed (three-stage compressor)
N_3	High pressure compressor speed (three stage compressor)
NAV	Navigation
NCAR	Nepalese Civil Airworthiness Requirements
NM	Nautical mile
NOTAM	Notice to Airman
NVIS	Night vision imaging systems
OBS	Omni Bearing Selector
OCA	Obstacle clearance altitude
OCA/H	Obstacle clearance altitude/height
OCH	Obstacle clearance height
OEI	One engine inoperative
PANS	Procedures for Air Navigation Services
PBC	Performance-based communication
PBN	Performance-based navigation
PBS	Performance-based surveillance
PIC	Pilot-In-Command
PPC	Pilot Proficiency Check
PPL	Private Pilot License
PUC	Pilot Under Check
QDM	Bearing to station
QDR	Bearing from station
RCP	Required communication performance
RNAV	Area navigation
RNP	Required navigation performance
RNP-AR	Required Navigation Performance-Authorization Required
RSP	Required surveillance performance
RTCA	Radio Technical Commission for Aeronautics
RVR	Runway visual range
RVSM	Reduced vertical separation minima

SB	Satisfactory with briefing
SID	Standard Instrument Departure
Sim	Simulator
SICASP	Secondary Surveillance Radar Improvements and Collision Avoidance Systems Panel
SOP	Standard operating procedures
SST	Supersonic transport
STOL	Short take-off and landing
SVS	Synthetic vision system
TAS	True airspeed
TAWS	Terrain awareness warning system
TCAS	Traffic alert and collision avoidance system
TLA	Thrust lever angle
TLS	Target level of safety
TODA	Take-off distance available
TORA	Take-off run available
TSO	Technical Standard Order
TVE	Total vertical error
U/s	Unserviceable
UTC	Coordinated universal time
VASI	Visual Approach Slope Indicator
V_D	Design diving speed
VFR	Visual flight rules
VMC	Visual meteorological conditions
V_{MC}	Minimum control speed with the critical engine inoperative
VOR	VHF omnidirectional radio range
V_{S0}	Stalling speed or the minimum steady flight speed in the landing configuration
V_{S1}	Stalling speed or the minimum steady flight speed in a specified configuration
VSM	Vertical Separation Minima
VTOL	Vertical take-off and landing
WXR	Weather

Symbols

°C	Degrees Celsius
%	Per cent

CHAPTER 2

APPLICABILITY

2.1 Requirements mentioned in this Flight Operations Requirements shall be applicable to the operation of aeroplanes by operators authorized to conduct domestic and international commercial air transport operations.

Note 1. Requirements applicable to domestic and international general aviation operations with aeroplanes and helicopters are to be found in Flight Operations Requirements (FOR)– General Aviation (Volumes I and II).

Note 2. Requirements applicable to domestic and international commercial air operations with helicopters are to be found in Flight Operations Requirements (FOR) – Helicopters

2.2 *Appendices* contain comprising material grouped separately for convenience but form part of the Flight Operations Requirements.

2.3 *Notes* are included in the text, where appropriate, to give factual information or references bearing on the Requirements in question but not constitute a part of these Requirements.

CHAPTER 3

GENERAL

3.1 COMPLIANCE WITH LAWS, REGULATIONS AND PROCEDURES

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

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

Note.— Information for pilots and flight operations personnel on flight procedure parameters and operational procedures is contained in PANS-OPS (Doc 8168), Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS (Doc 8168), Volume II. Obstacle clearance criteria and procedures used in certain States may differ from PANS-OPS, and knowledge of these differences is important for safety reasons.

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

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

3.1.5 If an emergency situation which endangers the safety of the aeroplane or persons becomes known first to the flight operations officer/flight dispatcher, action by that person in accordance with 4.6.2 shall include, where necessary, notification to the appropriate authorities of the nature of the situation without delay, and requests for assistance if required.

3.1.6 If an emergency situation which endangers the safety of the aeroplane or persons necessitates the taking of action which involves a violation of local regulations or procedures, the pilot-in-command shall notify the appropriate local authority without delay. If required by the State in which the incident occurs, the pilot-in-command shall submit a report on any such violation to the appropriate authority of such State; in that event, the pilot-in-command shall also submit a copy of it to the State of the Operator. Such reports shall be submitted as soon as possible and normally within ten days.

3.1.7 Operators shall ensure that pilots-in-command have available on board the aeroplane all the essential information concerning the search and rescue services in the area over which the aeroplane will be flown.

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

3.1.8 Operators shall ensure that flight crew members demonstrate the ability to speak and understand the language used for radiotelephony communications as specified in PELR.

3.2 COMPLIANCE BY A FOREIGN OPERATOR WITH LAWS, REGULATIONS AND PROCEDURES OF NEPAL

3.2.1 When CAAN identifies a case of non-compliance or suspected non-compliance by a foreign operator with laws, regulations and procedures applicable within the territory of Nepal or a similar serious safety issue with that operator, CAAN shall immediately notify the operator and, if the issue warrants it, the State of the Operator. Where the State of the Operator and the State of Registry are different, such notifications shall be also be made to the State of Registry, if the issue falls within the responsibilities of that State and warrants a notification.

3.2.2 In the case of notification to States as specified in 3.2.1, if the issue and its resolution warrant it, CAAN shall engage in consultations with the State of the Operator and the State of Registry, as applicable, concerning the safety standards maintained by the operator.

Note.- The Manual of Procedures for Operations Inspection, Certification and Continued Surveillance (DOC 8335) *provides guidance on the surveillance of operations by foreign operators. The manual also contains guidance on the consultations and related activities as specified in 3.2.2, including the ICAO model clause on aviation safety, which, if included in a bilateral or multilateral agreement, provides for consultations among States, when safety issues are identified by any of the parties to a bilateral or multilateral agreement on air services.*

3.3 SAFETY MANAGEMENT

3.3.1. RESERVED

3.3.2 The operator of an aeroplane of a maximum certificated take-off mass in excess of 27 000 kg shall establish and maintain a flight data analysis programme as part of its safety management system.

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

3.3.3 A flight data analysis programme shall contain adequate safeguards to protect the source(s) of the data in accordance with Appendix 3 to Civil Aviation Requirements for Safety Management (CAR- 19).

3.3.4 CAAN shall not allow the use of recordings or transcripts of CVR, CARS, Class A AIR and Class A AIRS for purposes other than the investigation of an accident or incident as per CAAN Aircraft Accident Investigation Procedure Manual, except where the recordings or transcripts are:

a) related to a safety-related event identified in the context of a safety management system; are restricted to the relevant portions of a de-identified transcript of the recording; and are subject to the protections accorded by Civil Aviation Requirements for Safety Management (CAR-19);

b) sought for use in criminal proceedings not related to an event involving an accident or incident investigation and are subject to the protections accorded by Civil Aviation Requirements for Safety Management (CAR- 19); or

c) used for inspections of flight recorder systems as provided in Section 7 of Appendix 8.

Note.— Provisions on the protection of safety data, safety information and related sources are contained in Appendix 3 to Civil Aviation Requirements for Safety Management (CAR- 19). When an investigation under Aircraft Accident Investigation Procedure Manual *is instituted, investigation records are subject to the protections accorded by the same.*

3.3.5 The use of recordings or transcripts of FDR, ADRS as well as Class B and Class C AIR and AIRS for purposes other than the investigation of an accident or incident as per ICAO Annex 13 shall not be allowed, except where the recordings or transcripts are subject to the protections accorded by CAR-19 and are:

a) used by the operator for airworthiness or maintenance purposes;
b) used by the operator in the operation of a flight data analysis programme required in this FOR (A);
c) sought for use in proceedings not related to an event involving an accident or incident investigation;
d) de-identified; or
e) disclosed under secure procedures.

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

3.3.7 Flight Operations Mandatory Occurrence Reports. When the flight crew of a particular flight encounters any of the events listed under Attachment D of this FOR, the air operator shall notify to the DG, CAAN within 48 hours of the particular event using the form included in this Attachment D or a similar type of form used by the Operator containing similar information.

3.4 USE OF PSYCHOACTIVE SUBSTANCES

3.4.1 Holders of licenses provided for in this FOR as well as PELR shall not exercise the privileges of their licenses and related ratings while under the influence of any psychoactive substance which might render them unable to safely and properly exercise these privileges.

3.4.2 Holders of licenses provided for in this FOR as well as PELR shall not engage in any problematic use of substances.

3.4.3 An AOC holder shall ensure, as far as practicable, that all license holders who engage in any kind of problematic use of substances are identified and removed from their safety-critical functions. Return to the safety-critical functions may be considered after successful treatment or, in cases where no treatment is necessary, after cessation of the problematic use of substances and upon determination that the person's continued performance of the function is unlikely to jeopardize safety.

3.5 AIRCRAFT TRACKING

3.5.1 The operator shall establish an aircraft tracking capability to track aeroplanes throughout its area of operations.

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

3.5.2 RESERVED

3.5.3 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:

a) the aeroplane has a maximum certificated take-off mass of over 45 500 kg and a seating capacity greater than 19; and

b) 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.— Refer to ICAO Annex 11, Chapter 2, for coordination between the operator and air traffic services providers regarding position report messages.

3.5.4 Notwithstanding the provisions in 3.5.2 and 3.5.3, the DG, CAAN may, based on the results of an approved risk assessment process implemented by the operator, allow for variations to automated reporting intervals. The process shall demonstrate how risks to the operation, resulting from such variations, can be managed and shall include at least the following:

a) capability of the operator's operational control systems and processes, including those for contacting ATS units;
b) overall capability of the aeroplane and its systems;
c) available means to determine the position of, and communicate with, the aeroplane;
d) frequency and duration of gaps in automated reporting;
e) human factors consequences resulting from changes to flight crew procedures; and
f) specific mitigation measures and contingency procedures.

Note.— Guidance on development, implementation and approval of the risk assessment process, which allows for variations to the need for automatic reporting and the required interval, including variation examples, is contained in the Aircraft Tracking Implementation Guidelines *(Cir 347).*

3.5.5 The operator shall establish procedures, approved by the DG, CAAN, for the retention of aircraft tracking data to assist SAR in determining the last known position of the aircraft.

Note.— Refer to 4.2.1.3.1 for operator responsibilities when using third parties for the conduct of aircraft tracking under 3.5.

3.6 RESERVED

3.7 INSPECTION AUTHORITY

3.7.1 Each certificate holder shall allow the inspectors of Director General in their respective fields at any time or place to make an inspection or test to determine its compliance with the civil air regulation, its operating certificate and its operations specifications or its eligibility to continue to hold its certificate.

3.7.2 Any person appointed by Director General as an authorized officer or inspector shall be permitted at any time to board and to enter and remain on the flight deck, provided that the commander of the aeroplane, during in flight phase, may refuse to allow the authorized officer to enter or remain in the flight deck if in his opinion, the safety of the aeroplane would thereby be endangered.

3.7.3 All authorized officers of CAAN for liaison and inspection carry a CAAN identity document, which will be produced on request. Request for arrangements of tickets on free passage and other required facilities to help to complete the task of inspection, will normally be made in advance. Except in case of the random surveillance inspection on base, while preparing the flight and in-flight, notification will not be made in advance.

3.7.4 Authorized Inspector(s) shall visit to observe the conduct of ground classes, demonstration classes etc. of an operator and Flight Operation Inspectors shall observe the ground and training flights of pilots, competency checks, type rating ground and flight tests and instrument issuance and/or renewal tests. They are also empowered to inspect flight crew licenses and records of trainings and tests.

3.7.5 All matters relating to pilots that require monitoring shall be conducted by CAAN Flight Operations Inspectors or Assistant Inspectors.

3.7.6 The holder of an Air Operator certificate shall notify to the Director General of Civil Aviation of Nepal, not less than 14 days' notice in writing of the intended abolition of any of its responsible posts or of any intended change in the person holding the post or his duties.

3.7.7 Any person authorized by the Director General of Civil Aviation in that regard shall have access to any premises in the occupation or control of the holder of this Certificate for the purpose of examining the premises and any document, equipment, tools, material or other thing of whatsoever nature, relating to the operation of aeroplane there under kept or used or intended to be used in connection with the operation of the aeroplane.

3.7.8 Every flight under this certificate shall be conducted in accordance with the relevant provisions of the aforesaid operations manual and instructions.

3.8 OFFENCE AND PENALTY

3.8.1 Any person who:

a) contravenes or fails to comply with any provision of this Requirement.
b) performs any duty or exercises or any functions for which a license or rating is required under this Flight Operation Requirements.
c) makes a false or deceptive statement or in connection with any application for a license rating or certificate issued under Flight Operations Requirement.
d) makes, procures or assists in the making or procuring of any false or deceptive entry in any document book or record made or kept under any rules made under Flight Operation Requirements.
e) destroys, mutilates or alters any document book or record made or kept under any rules made under Flight Operation Requirements.
f) obstructs or hinders an investigation carried;
g) obstructs or impedes any authorized person acting in the performance or exercise of any duties powers of functions conferred on him by this Requirements.
h) does or attempts to do anything likely to imperil the safety of an aeroplane or its passengers or crew shall be guilty of an offence and shall be liable on conviction to any of:
    a) a warning
    b) a temporary suspension to perform his duty

c) suspension or revocation of license (or including suspension and cancellation of an authorization, permission, ratings or other endorsements)
d) a fine and/or possible imprisonment as applicable.

3.8.2 The Owner, Operator, Hirer or a Pilot-In-Command of an aeroplane which flies in contravention of any rules made under Flight Operations Requirement, shall be guilty of an offence and shall be liable on conviction to any of a warning, suspension or revocation of license, a fine and possible imprisonment as applicable, unless it is proved that the alleged contravention took place without that person in actual fault.

3.8.3 Enforcement actions shall be implemented in accordance with CAAN Aviation Enforcement Policy and Procedure Manual.

3.9 PRIVELEGES OF INSTRUCTOR PILOTS / FLIGHT INSTRUCTORS

3.9.1 The holder of an Air Operator Certificate issued by the Director General who is engaged in commercial operations shall ensure that Flight Instructor(s) and Ground Instructors for ground courses are qualified with not less than that mentioned in FOR/PELR.

3.9.2 The Privileges of Instructor Pilot shall be as mentioned in Personnel Licensing Requirements – 2019, para 7.46.

3.10 OPERATORS TO PROVIDE OPERATIONS DIRECTORS

The holder of an Air Operator Certificate issued by the Director General who is engaged in commercial operations shall assign a pilot (or experienced as a pilot) as an Operations Director in the Operation Department.

3.11 NOMINATED POSTHOLDERS REQUIRING CAAN ACCEPTANCE

3.11.1 The following post-holders of an air operator shall require CAAN acceptance prior to the person assuming the post, where "nominated post-holder" may be defined as a person nominated by the air operator and accepted by CAAN, who is suitably qualified and experienced as the case may be to perform a particular function:
(a) Operations Director
(b) Chief Pilot
(c) Chief of Training
(d) Safety Manager

3.11.2 Details of the qualifications and experience of such nominated post-holders must be sent to CAAN at least 15 days prior to appointing that person and a written acceptance must be received from CAAN.

3.11.3 When such a nominated post-holder mentioned in 3.11.1 is unable to perform the duties and responsibilities either temporarily or permanently for any reason, the operator must appoint a person equally qualified to fill that vacant post and duly notify CAAN within 48 hours.

3.12 OPERATORS TO ENSURE THAT FLIGHT CREW ARE QUALIFIED

3.12.1 The holder of an Air Operator Certificate issued by the Director General shall not permit an aircraft to fly unless:

a) The number and composition of the flight crew are not less than the minimum specified in the Operations Manual or as approved by the CAAN for that aircraft and the route to be flown; or the number of crew;

b) A pilot in the flight crew is designated as pilot-in-command for that flight;

c) All members of the flight crew are properly qualified as mentioned in this Flight Operations Requirements and medically fit to carry out their duties.

d) The flight and cabin crew have successfully received Initial and Recurrent Ground and Flight Trainings.

3.12.2 Such an operator shall not permit an aircraft to fly for other than training purposes unless;

a) Each member of the flight crew holds a valid license appropriate to his duties;

b) Each member has demonstrated his competence to perform those duties by successfully completing the training program required under this directive; and

c) Each member of the flight crew is in regular and full time employment of the holder or has been authorized by the Director General to make the flight.

3.12.3 Crew member requirements and their qualifications shall not be less than that as specified in the FOR.

3.12.4 Flight crewmember emergency duties
An operator shall, for each type of aeroplane, assign to all flight crew member the necessary functions they are to perform in an emergency or in a situation requiring in the operator's training program and shall include instruction in the use of all emergency and lifesaving equipment required to be carried and drills in the emergency evacuation of the aeroplane.

3.13 *RESERVED*

3.14 OPERATORS TO ENSURE NON-MISUSE OF FLIGHT CREW IDENTITY

3.14.1 An Operator shall make the necessary provisions in company Operations Manual and any other regulation to ensure that the identities of Flight Crew are not misused. *refer Chapter 13 Security.*

3.15 OPERATORS TO PROVIDE FLIGHT DISPATCHERS/FLIGHT OPERATIONS OFFICERS

3.15.1 The holder of an Air Operator Certificate issued by the Director General shall not commence its operations where the number of aircraft being involved in operations is two or more, unless it has employed the person(s) holding the Flight Dispatcher or Flight Operations Officer license for operational control including dispatching of the aircraft.

3.15.2 The holder of an Air Operator Certificate issued by the Director General shall not commence its operations unless he or his designated representative shall have responsibility for operational control.

3.15.3 Where the duties assigned for the dispatch of the aircraft is conducted by the flight crew, the requirement mentioned in 3.15.1 will not apply provided the flight time and duty time limitations of the pilot is not violated and the pilot's job description is mentioned in company's Operations Manual.

3.16 REVENUE, TRAINING AND TEST FLIGHTS

3.16.1 With the exception of en-route Inspection flight or Route Check, no commercial air operator shall conduct **any** type of training flight including Pilot Proficiency Checks (PPC), for the issuance or renewal of a license, during a flight filed with the ATC as a commercial or revenue flight i.e. scheduled, non-scheduled or chartered.

3.16.2 Any commercial aircraft, when it is carrying passengers or Cabin Crew, shall not be used to flight test the aircraft, or its power plant, or any item included in the Minimum Equipment List.

3.17 *RESERVED*

3.18 OPERATORS TO PROVIDE TRAININGS

3.18.1 With respect to 3.12.1 (d), operators must provide Initial and Recurrent ground and flight trainings to all its Crew members, Flight Dispatchers and any other personnel involved in the safe conduct of operations as per their requirements.

3.18.2 The details of the trainings mentioned in 3.18.1 shall be as required in Chapter 16 of this FOR.

3.18.3 The AOC holder shall maintain records of the qualifications and the training of each crew member and flight dispatcher until termination of service.

3.19 OPERATORS TO ENSURE THAT CREW COMPLY WITH INTERCEPTION ORDERS

3.19.1 An Operator shall ensure that their crew receive appropriate trainings on and comply with Interception Orders from other States.

3.19.2 Attachment A contains the instructions that crew of an intercepted aircraft must follow when complying with Interception Orders from Interceptor aircraft of other States.

Refer Appendix 1 Contents of an Operations Manual para 2.1.32.

3.20 OPERATORS TO ENSURE COMPLIANCE WITH COMPANY SOP

3.20.1 Operators shall make adequate provisions through their documents and procedures to ensure that the flight crew use and adhere to their own company Standard Operating Procedures (SOP) when:

(i) undergoing ground and flight trainings within the country or abroad
(ii) engaged in line flying activities.

3.20.2 An air operator shall ensure that:

a) crew briefings are conducted as an integrated part of its Standard Operating Procedures (SOP);
b) such briefings include departure and approach briefings; and
c) joint Flight and Cabin Crew flight briefings are being conducted.

3.21 OPERATORS TO ESTABLISH A PUBLICATIONS LIBRARY

3.21.1 An air operator shall maintain a library of publications required for its operations.

3.21.2 The library shall also contain a list of publications that the Operator has determined is necessary for its operations.

3.21.3 The operations library shall include as a minimum:

(i) CAAN Rules and Regulations
(ii) Air Operator Certificate Requirements
(iii) Flight Operations Requirements
(iv) Aeronautical Information Publications
(v) Personnel Licensing Requirements
(vi) Dangerous Goods Handling Requirements
(vii) Cabin Crew Training Manual
(viii) Aircraft Flight Manual

(ix) Company Operations Manual
(x) Standard Operating Procedures Manual
(xi) Flight Crew Operating Manual
(xii) Maps and Charts

3.22 FLIGHT OPERATIONS QUALITY ASSURANCE

3.22.1 As of 01 January 2021, all air operators operating aircraft with MTOW of more than 5,700 kgs. shall establish a Quality Assurance system in flight operations as part of its Safety Management System which shall be fully implemented by 01 Jan 2022.

3.22.2 As of 01 January 2021, all air operators operating aircraft with MTOW less than 5,700 kgs. and Non-scheduled air operators shall establish internal audit system in flight operations as part of its Safety Management System which shall be fully implemented by 01 Jan 2022.

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CHAPTER 4

FLIGHT OPERATIONS

4.1 OPERATING FACILITIES

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

4.1.2 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 FOR 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.*

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

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

4.1.5 An operator shall, as part of its Safety Management System, assess the level of Rescue and Fire Fighting Service (RFFS) protection available at any aerodrome intended to be specified in the operational flight plan in order to ensure that an acceptable level of protection is available for the aeroplane intended to be used.

Note.— Annex 19 includes safety management provisions for air operators. Further guidance is contained in the Safety Management Manual (SMM) *(Doc 9859).*

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

Note 1.—Attachment I of ICAO Annex 6 part I contains guidance on assessing an acceptable level of RFFS protection at aerodromes.

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

4.2 OPERATIONAL CERTIFICATION AND SUPERVISION

4.2.1 The Air Operator Certificate

4.2.1.1 An air operator shall not engage in commercial air transport operations unless in possession of a valid Air Operator Certificate issued by the Director General, Civil Aviation Authority of Nepal.

4.2.1.2 The Air Operator Certificate shall authorize the operator to conduct commercial air transport operations in accordance with the operations specifications.

Note.- Provisions for the content of the Air Operator Certificate and its associated Operations Specifications are contained in the AOCR.

4.2.1.3 The issue of an Air Operator Certificate by the Director General, Civil Aviation Authority of Nepal shall be dependent upon the operator demonstrating an adequate organizational structure which includes the responsibilities and authority for the management of all ground handling functions, method of control and supervision of flight operations, training programme as well as ground handling and maintenance arrangements consistent with the nature and extent of the operations specified.

i) The operator shall develop a manual detailing the training requirements, subcontracting policies, handling processes, procedures and practices for all ground handling operations.
ii) The operator shall ensure that the ground handling responsibility is permanently maintained, when all or part of the functions and tasks related to ground handling services have been contracted to a service provider.

4.2.1.3.1 The operator shall develop policies and procedures for third parties that perform work on its behalf.

4.2.1.4 The continued validity of an Air Operator Certificate shall depend upon the operator maintaining the requirements of 4.2.1.3 under the supervision of the DG, CAAN.

4.2.1.5 The Air Operator Certificate shall contain at least the following information in addition to

following the layout as mentioned in the Air Operator Certificate Requirements (AOCR):

a) the State of the Operator and the issuing authority;
b) the Air Operator Certificate number and its expiration date;
c) the operator name, trading name (if different) and address of the principal place of business;
d) the date of issue and the name, signature and title of the authority representative; and
e) the location, in a controlled document carried on board, where the contact details of operational management can be found.

4.2.1.6 The Operations Specifications associated with the Air Operator Certificate shall contain at least those information that are listed in the AOCR.

4.2.1.7 Air operator certificates and their associated operations specifications shall follow the layouts as per the AOCR.

4.2.1.8 Certification for operation of aircraft is to be obtained through the established system of Civil Aviation Authority of Nepal as specified in AOCR. All operators shall be subjected to continued surveillance by the Director General, Civil Aviation Authority of Nepal to ensure that the required standards of operations established in 4.2 are maintained.

Note.- Surveillance and inspection of AOC holders shall be conducted by authorized personnel in accordance with their respective Inspector Manuals in addition to other regulatory documents.

4.2.1.9 Operators must mention the following clause or similar in their policy page of all manuals while submitting manuals/documents to CAAN for approval or acceptance.

"This manual has been prepared in accordance with the requirements and/or Directives of CAAN and prevailing laws of the country; activities of this company shall be carried out in accordance with this manual. In case of any discrepancies or conflicts between this manual and national regulations, the latter shall prevail."

The statement shall be signed by the Accountable Manager.

4.2.2 Surveillance of operations by a foreign operator

4.2.2.1 Civil Aviation Authority of Nepal shall recognize as valid an Air Operator Certificate issued by a Contracting State, provided that the requirements under which the certificate was issued are at least equal to the applicable Standards specified by Annex 6 and Annex 19 of ICAO.

4.2.2.2 Surveillance of foreign air operators' operations within Nepal and taking appropriate action when necessary to preserve safety shall be conducted in accordance with CAAN regulatory documents.

4.2.2.3 An operator shall meet and maintain the requirements established by CAAN when the operations are being conducted within Nepal.

Note.— Guidance on the surveillance of operations by foreign operators may be found in the Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335).*

4.2.3 Operations Manual

4.2.3.1 a) An operator shall provide, for the use and guidance of operations personnel concerned - an Operations Manual in accordance with Appendix 1 containing all such information and instructions as are relevant to the flight operations of all types of aeroplanes which are operated by the operator.

b) The Operations Manual shall be amended or revised as is necessary to ensure that the information contained therein is kept up to date. All such amendments or revisions shall be issued to all personnel that are required to use this manual.

c) A review committee consisting of at least the Director of Flight Operations, Chief of Training, the Safety Manager, Fleet Chief Pilot and at least one type related instructor apart from the post-holders must jointly review every proposed amendment to the Operations Manual prior to submitting to CAAN for approval/acceptance. Such reviews/conclusions must also be submitted to CAAN along with the proposed draft.

4.2.3.2 a) All operators are required to provide a copy of the Operations Manual together with all amendments and/or revisions for review and approval. Certain documents/manuals may be accepted and an approval may not be required. The DG, CAAN shall determine which documents may be accepted without requiring an approval. The operator shall incorporate in the Operations Manual such mandatory material as required by the DG, CAAN.

b) An Operations Manual which may be issued in separate parts corresponding to specific aspects of operations shall not conflict with any rule, Flight Operations Requirements or other directives issued by the DG, CAAN and in the case of an operator engaged in international operations, shall also not be in conflict with the laws, regulations and procedures of the countries into and over which the operator's aeroplanes are operated.

c) The Operations Manual shall be organized in accordance with the following structure as mentioned in Appendix 1:

i) Part A : General

ii) Part B : Aircraft Operating Matters Type Related

iii) Part C : Route and Aerodrome Instructions and Information

iv) Part D : Training

4.2.3.3 An operator shall clearly mention the duties and responsibilities of the nominated post-holders as mentioned in AOCR Appendix 4 in the operator's Operations Manual Part A. In addition, the Manual should also clearly state the person(s) responsible for Operations Control.

4.2.3.4 The operator must provide to CAAN all the names of the nominated post-holders listed in the operator's Operations Manual.

4.2.4 Operating Instructions — General

4.2.4.1 An operator shall ensure that all operations personnel are properly instructed in their particular duties and responsibilities and the relationship of such duties to the operation as a whole.

4.2.4.2 An aeroplane shall not be taxied on the movement area of an aerodrome unless the person at the controls:

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

4.2.4.3 The operator shall issue operating instructions and provide information on aeroplane climb performance with all engines operating to enable the pilot-in-command to determine the climb gradient that can be achieved during the departure phase for the existing take-off conditions and intended take-off technique. This information should be included in the Operations Manual.

4.2.5 In – flight simulation of emergency situation

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

4.2.6 Checklists

The checklists provided in accordance with 6.1.4 shall be used by flight crews prior to, during and after all phases of operations, and in emergency, to ensure compliance with the operating procedures contained in the aircraft operating manual and the Aeroplane Flight Manual or other documents associated with the Certificate of Airworthiness and otherwise in the Operations Manual. The design and utilization of checklists shall observe Human Factors principles.

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

4.2.7 Minimum flight altitudes

4.2.7.1 An 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.

4.2.7.2 An operator shall specify the method by which it is intended to determine minimum flight altitudes for operations conducted over routes for which minimum flight altitudes have not been established by the State flown over or the responsible State, and shall include this method in the Operations Manual. The minimum flight altitudes determined in accordance with the above method shall not be lower than that specified in CAAN regulations.

4.2.7.3 RESERVED

4.2.7.4 RESERVED

4.2.8 Aerodrome Operating Minima

4.2.8.1 An operator shall establish Aerodrome Operating Minima for each aerodrome to be used in operations, and shall obtain approval of the DG, CAAN for the method of determination of such minima. Such minima shall not be lower than any that may be established for such aerodromes by the State of the Aerodrome, except when specifically approved by that State.

4.2.8.1.1 The DG, CAAN 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, a specific approval shall be issued. 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 (4.4.1.2), a 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 B 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).*

4.2.8.2 In establishing the aerodrome operating minima, which will apply to any particular operation, the operator shall take full account of:

a) the type, performance and handling characteristics of the aeroplane and any conditions or limitations stated in the flight manual;

b) the composition of the flight crew, their competence and experience;

c) the dimensions and characteristics of the runways which may be selected for use;

d) the adequacy and performance of the available visual and non-visual ground aids;

e) the equipment available on the aeroplane for the purpose of navigation, acquisition of visual references and/or control of the flight path during the approach, landing and the missed approach;

f) the obstacles in the approach and missed approach areas and the obstacle clearance altitude/height for the instrument approach procedures;

g) the means used to determine and report meteorological conditions;

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

i) the conditions prescribed in the operations specifications; and

j) any minima that may be promulgated by the State of the Aerodrome.

4.2.8.3 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:

a) Type A: a minimum descent height or decision height at or above 75 m (250 ft); and

b) Type B: a decision height below 75 m (250 ft). Type B instrument approach operations are categorized as:

1) Category I (CAT I): a decision height not lower than 60 m (200 ft) and with either a visibility not less than 800 m or a runway visual range not less than 550 m;

2) 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;

3) Category III (CAT III): a decision height lower than 30 m (100 ft) or no decision height and a runway visual range less than 300 m or no runway visual range limitations.

Note 1.— Where decision height (DH) and runway visual range (RVR) fall into different categories of operation, the instrument approach operation would be conducted in accordance with the requirements of the most demanding category (e.g. an operation with a DH in the range of CAT III but with an RVR in the range of CAT III would be considered a CAT III 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).*

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

4.2.8.5 For take-off in low visibility, a specific approval for the minimum take-off RVR shall be required from CAAN.

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

4.2.8.6 RESERVED

4.2.8.7 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 II, Section 5.

4.2.8.8 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.

4.2.9 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 instrument approach operations crosses the threshold by a safe margin, with the aeroplane in the landing configuration and attitude.

4.2.10 Fuel and oil records

4.2.10.1 An operator shall maintain fuel records to enable the DG, CAAN to ascertain that, for each flight, the requirements of 4.3.6 and 4.3.7.1 have been complied with.

4.2.10.2 An operator shall maintain oil records to enable the DG, CAAN to ascertain that trends for oil consumption are such that an aeroplane has sufficient oil to complete each flight.

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

4.2.11 Flight and Cabin Crew

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

4.2.11.2 RESERVED

4.2.11.3 *Fatigue Management.* An operator shall establish flight time and duty period limitations and a rest scheme that enable it to manage the fatigue of all its flight and cabin crew members. This shall comply with the regulations established by CAAN and shall be included in the Operations Manual.

4.2.11.4 To comply with the regulations established by CAAN an operator shall maintain records for all its flight and cabin crew members of flight time, flight duty periods and rest periods.

Note. — Guidance on the maintenance of cumulative radiation records is given in Circular 126 — Guidance Material on SST Aircraft Operations.

4.2.11.5 No air operator may assign a person as a flight crew member unless that person holds a valid license or authorization letter/certificate as the case may be, issued by the Director General.

4.2.11.6 No air operator shall operate an aeroplane with less than the minimum flight crew as specified in the Certificate of Airworthiness or the Aeroplane Flight Manual.

4.2.11.7 No air operator shall operate:

a) an aeroplane without a co-pilot if that aeroplane has a passenger seating configuration, excluding any pilot seats, of five seats and upto nine.

b) an aeroplane without a co-pilot and cabin crew if that aeroplane has a passenger seating configuration, excluding any pilot seats, of ten seats or more. The number of Cabin Crew to be determined by the Operator shall be as follows:

(i) a minimum of one Cabin Crew when the number of passengers carried is more than ten or more and up to fifty.

(ii) a minimum of two Cabin Crew when the number of passengers carried is more than fifty and up to one hundred.

(iii) when the number of passengers carried exceed one hundred, minimum of one additional Cabin Crew shall be added for every additional fifty passengers.

4.2.11.8 No air operator shall carry passengers in a single-engine aeroplane:

a) in day IFR flight conditions with a single pilot; for two-pilot day IFR flight conductions, refer to Chapter 5.4.
b) at night
c) for a published schedule flight
d) over such routes and diversions there from that does not permit a safe forced landing to be executed in the event of engine failure.

4.2.11.9 No air operator shall operate a single-engine aeroplane on multi-pilot operations or any multi-engine aeroplane unless the flight crew includes at least two pilots, one of whom shall be designated by the operator as Pilot-in-Command and the other as Second-in-Command.

4.2.11.10 No air operator shall let the pilot or co-pilot have an endorsement on more than two types of aeroplanes weighing less than 5700 kgs for commercial operations.

4.2.11.11 When a flight crew is engaged in commercial air operations involving aeroplanes with a certificated MTOW of more than 5700 kgs, the person shall be limited to a single aeroplane type.

4.2.12 Passengers

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

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

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

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

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

4.2.12.5 An operator shall include in its Operations Manual, an Emergency Exit Seating Policy that defines what types of passengers may not be permitted to be seated in the seat row adjacent to an Emergency Exit. The manual should also indicate that a briefing will be given to the person seated on that row.

4.3 FLIGHT PREPARATION

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

a) the aeroplane is airworthy and the appropriate certificates (i.e. airworthiness, registration) are on board the aeroplane;

b) the instruments and equipment prescribed in Chapter 6, for the particular type of operation to be undertaken, are installed and are sufficient for the flight;

c) a Maintenance Release as prescribed in NCAR has been issued in respect of the aeroplane;

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

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

f) a check has been completed indicating that the operating limitations of Chapter 5 can be complied with for the flight to be undertaken; and

g) the requirements of 4.3.3 relating to operational flight planning have been complied with.

4.3.2 Completed flight preparation forms shall be kept by an operator for a period of three months.

4.3.3 Operational flight planning

4.3.3.1 a) An operational flight plan shall be completed for every intended flight, except when the departure and landing aerodromes are the same.

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.

Note.— The duties of a flight operations officer/flight dispatcher are contained in 4.6.

4.3.3.2 The Operations Manual shall describe the content and use of the operational flight plan.

4.3.4 Alternate aerodromes

4.3.4.1 *Take-off alternate aerodrome*

4.3.4.1.1 A take-off alternate aerodrome shall be selected and specified in the operational flight plan if 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.

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

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

b) for aeroplanes with three or more engines, two hours of flight time at an all-engine

operating cruising speed, determined from the aircraft operating manual, calculated in ISA and still-air conditions using the actual take-off mass; or

c) for aeroplanes engaged in extended diversion time operations (EDTO) where an alternate aerodrome meeting the distance criteria of a) or b) 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.

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

4.3.4.2 *En-route alternate aerodromes*

En-route alternate aerodromes, required by 4.7 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.

4.3.4.3 *Destination alternate aerodromes*

4.3.4.3.1 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:

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

1) the approach and landing may be made under visual meteorological conditions; and
2) separate runways are usable at the estimated time of use of the destination aerodrome with at least one runway having an operational instrument approach procedure; or

b) the aerodrome is isolated. Operations into isolated aerodromes do not require the selection of a destination alternate aerodrome(s) and shall be planned in accordance with 4.3.6.3 d) 4);

1) for each flight into an isolated aerodrome a point of no return shall be determined; and
2) 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 Manual *(Doc 9976).*

4.3.4.3.2 Two destination alternate aerodromes shall be selected and specified in the operational and ATS flight plans when, for the destination aerodrome:

a) meteorological conditions at the estimated time of use will be below the operator's established aerodrome operating minima for that operation; or

b) meteorological information is not available.

4.3.4.4 Notwithstanding the provisions in 4.3.4.1, 4.3.4.2, and 4.3.4.3; the DG, CAAN 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:

a) capabilities of the operator;

b) overall capability of the aeroplane and its systems;

c) available aerodrome technologies, capabilities and infrastructure;

d) quality and reliability of meteorological information;

e) identified hazards and safety risks associated with each alternate aerodrome variation; and

f) specific mitigation measures.

Note.— Guidance on performing a safety risk assessment and on determining variations, including examples of variations, are contained in the Flight Planning and Fuel Management Manual *(Doc 9976) and the* Safety Management Manual (SMM) *(Doc 9859).*

4.3.5 Meteorological conditions

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

4.3.5.2 A flight to be conducted in accordance with the instrument flight rules shall not;

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

b) 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 4.3.4, 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.

4.3.5.3 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 DG, CAAN, 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 Manual *(Doc 9976).*

4.3.5.4 A margin of time when established by the operator for the estimated time of use of an aerodrome shall require an approval from the DG, CAAN.

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 Manual *(Doc 9976).*

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

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

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

4.3.6 Fuel Requirements

4.3.6.1 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.

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

a) the following data:

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

2) if current aeroplane-specific data is not available, data provided by the aeroplane manufacturer; and

b) the operating conditions for the planned flight including:

1) anticipated aeroplane mass;
2) Notices to Airmen;
3) current meteorological reports or a combination of current reports and forecasts;
4) air traffic services procedures, restrictions and anticipated delays; and
5) the effects of deferred maintenance items and/or configuration deviations.

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

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

b) *trip fuel*, which shall be the amount of fuel required to enable the aeroplane to fly from takeoff or the point of in-flight re-planning until landing at the destination aerodrome taking into account the operating conditions of 4.3.6.2 b);

c) *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 re-planning based on the consumption-n 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 (1,500 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 taxi times before take-off, and deviations from planned routings and/or cruising levels.

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

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

i) perform a missed approach at the destination aerodrome;
ii) climb to the expected cruising altitude;
iii) fly the expected routing;
iv) descend to the point where the expected approach is initiated; and
v) conduct the approach and landing at the destination alternate aerodrome; or

2) where two destination alternate aerodromes are required, the amount of fuel, as calculated in 4.3.6.3 d) 1), required to enable the aeroplane to proceed to the destination alternate aerodrome which requires the greater amount of alternate fuel; or

3) 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

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

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

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

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

1) for a reciprocating engine aeroplane, the amount of fuel required to fly for 45 minutes, under speed and altitude conditions specified by the DG, CAAN; or

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

f) *additional fuel*, which shall be the supplementary amount of fuel required if the minimum fuel calculated in accordance with 4.3.6.3 b), c), d) and e) is not sufficient to**:**

1) 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;

i) fly for 15 minutes at holding speed at 450 m (1 500 ft) above aerodrome elevation in standard conditions; and

ii) make an approach and landing;

2) allow an aeroplane engaged in EDTO to comply with the EDTO critical fuel scenario as established by the DG, CAAN;

3) meet additional requirements not covered above;

Note 1.— Fuel planning for a failure that occurs at the most critical point along a route (4.3.6.3 f) 1)) may place the aeroplane in a fuel emergency situation based on 4.3.7.2.

Note 2.—Guidance on EDTO critical fuel scenarios are contained in Attachment C;

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

4.3.6.4 *RESERVED*

4.3.6.5 A flight shall not commence unless the usable fuel on board meets the requirements in 4.3.6.3 a), b), c), d), e) and f) if required and shall not continue from the point of in-flight re-planning unless the usable fuel on board meets the requirements in 4.3.6.3 b), c), d), e) and f) if required.

4.3.6.6 Notwithstanding the provisions in 4.3.6.3 a), b), c), d), and f); the DG, CAAN 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:

a) flight fuel calculations;

b) capabilities of the operator to include:

i) a data-driven method that includes a fuel consumption monitoring programme; and/or

ii) the advanced use of alternate aerodromes; and

c) specific mitigation measures.

Note.— Guidance for 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 Manual *(Doc 9976).*

4.3.6.7 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).*

4.3.7 In-flight fuel management

4.3.7.1 An operator shall establish policies and procedures, approved by the DG, CAAN to ensure that in-flight fuel checks and fuel management are performed.

4.3.7.2 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).*

4.3.7.2.1 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.

4.3.7.2.2 The pilot-in-command shall advise ATC of a minimum fuel state by declaring "MINIMUM FUEL" when, having committed to land at a specific aerodrome, the pilot calculates that any change to the existing clearance to that aerodrome 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).*

4.3.7.2.3 The Pilot-In-Command shall declare a situation of fuel emergency by broadcasting "MAYDAY MAYDAYMAYDAY 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 4.3.6.3 e) 1) or 2) 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).*

4.3.8 Refueling with passengers on board

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

4.3.8.2 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.— The provisions of 4.3.8.1 do not necessarily require the deployment of integral aeroplane stairs or the opening of emergency exits as a prerequisite to refuelling.

Note 2 – Provisions concerning aircraft refueling are contained in ICAO Annex 14, Volume I, and guidance on safe refueling practice is contained in the Airport Services Manual*, (Doc 9137), Parts 1 and 8.*

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

4.3.9 Oxygen supply

Note.- Approximate altitude in the Standard Atmosphere corresponding to the values of absolute pressure used in the text as follows:

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

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

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

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

4.3.9.2 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.

4.3.10 Time capability of cargo compartment fire suppression system

4.3.10.1 RESERVED

4.4 IN-FLIGHT PROCEDURES

4.4.1 Aerodrome operating minima

4.4.1.1 A flight shall not be continued towards the aerodrome of intended landing, unless the latest available information indicates that at the expected time of arrival, a landing can be effected at that aerodrome or at least one destination alternate aerodrome, in compliance with the operating minima established in accordance with 4.2.8.1.

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

Note.— Criteria for the final approach segment is contained in PANS-OPS (Doc 8168), Volume II.

4.4.1.3 If, after entering the final approach segment or after descending below 300 m (1 000 ft) above the aerodrome elevation, the reported visibility or controlling RVR falls below the specified minimum, the approach may be continued to DA/H or MDA/H. In any case, an 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 CAAN criteria.

4.4.2 Meteorological Observations

Note.- The procedures for making meteorological observations on board aircraft in flight and for recording and reporting them are contained in AIP Nepal, GEN 3.5 METEOROLOGICAL SERVICES Chapter 6 Aircraft Reports as well as Annex 3, the PANS-ATM (Doc 4444) and the appropriate Regional Supplementary Procedures (Doc 7030).

4.4.2.1 The pilot-in-command shall report the runway braking action special air-report (AIREP) when the runway braking action encountered is not as good as reported.

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

4.4.2.2 RESERVED

4.4.2.3 The air operator shall establish policy and procedures for the flight crew of aircraft on international air routes for recording and reporting on the following observations:

a) routine aircraft observations during en-route and climb-out phases of the flight; and

b) special and other non-routine aircraft observations during any phase of the flight such as:

i) moderate or severe turbulence; or
ii) moderate or severe icing; or
iii) severe mountain wave; or
iv) thunderstorms, without hail, that are obscured, embedded, widespread or in squall lines; or
v) thunderstorms, with hail, that are obscured, embedded, widespread or in squall lines; or
vi) heavy dust-storm or heavy sandstorm; or
vii) volcanic ash cloud; or
viii) pre-eruption volcanic activity or a volcanic eruption; or
ix) wind shear

Note.— Pre-eruption volcanic activity in this context means unusual and/or increasing volcanic activity which could presage a volcanic eruption.

4.4.3 Hazardous flight conditions

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

4.4.4 Flight crew members at duty stations

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

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

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

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

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

4.4.5 Use of oxygen

4.4.5.1 All flight crew members, when engaged in performing duties essential to the safe operation of an aeroplane in flight, shall use breathing oxygen continuously whenever the circumstances prevail for which its supply has been required in 4.3.9.1 or 4.3.9.2.

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

4.4.6 Safeguarding of cabin crew and passengers in pressurized aeroplanes in the event of loss of pressurization

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

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

4.4.7 In-flight operational instructions

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

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

4.4.8 Instrument flight procedures

4.4.8.1 One or more instrument approach procedures designed in accordance with the classification of instrument approach and landing operations shall be approved and promulgated by the

CAAN when the aerodrome is located in Nepal to serve each instrument runway or aerodrome utilized for instrument flight operations.

4.4.8.2 An operator shall ensure that all aeroplanes operated in accordance with instrument flight rules shall comply with the instrument flight procedures approved by the State in which the aerodrome is located.

Note 1.— See 4.2.8.3 for instrument approach operation classifications.

Note 2.— Information for pilots on flight procedure parameters and operational procedures is contained in PANS-OPS (Doc 8168), Volume I. Criteria for the construction of instrument flight procedures for the guidance of procedure specialists are provided in PANS-OPS (Doc 8168), Volume II. Obstacle clearance criteria and procedures used in certain States may differ from PANS-OPS, and knowledge of these differences is important for safety reasons (see Chapter 3, 3.1.1).

4.4.9 Aeroplane operating procedures for noise abatement

4.4.9.1 RESERVED

4.4.9.2 RESERVED

4.4.10 Aeroplane operating procedures for rates of climb and descent

4.4.10.1 RESERVED

4.4.11 Aeroplane operating procedures for landing performance

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

Note 1.— The procedures used by aerodromes to assess and report runway surface conditions are contained in the PANS-Aerodromes *(Doc 9981) and those for using runway surface condition information on board aircraft are in the* Aeroplane Performance Manual *(Doc 10064).*

Note 2.— Guidance on development of aeroplane performance information is contained in the Aeroplane Performance Manual *(Doc 10064).*

4.5 DUTIES OF PILOT-IN-COMMAND

4.5.1 The pilot-in-command shall be responsible for the safety of all crew members, passengers and cargo on board when the doors are closed. The pilot-in-command shall also be responsible for the operation and safety of the aeroplane from the moment the aeroplane is ready to move for the purpose of taking off until the moment it finally comes to rest at the end of the flight and the engine(s) used as primary propulsion units are shut down.

4.5.2 The pilot-in-command shall ensure that the checklists specified in 4.2.6 are complied with in detail.

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

Note.- A definition of the term "serious injury" is contained in Chapter 1.

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

4.5.5 The pilot-in-command shall be responsible for the journey log book or the general declaration containing the information listed in 11.4.1.

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

4.5.6 The pilot-in-command shall have the authority to give all commands he/she deems necessary for the purpose of securing the safety of the aeroplane and of persons or property carried therein.

4.5.7 The pilot-in-command shall have authority to disembark any person, or any part of the cargo, which, in his/her opinion, may represent a potential hazard to the safety of the aeroplane or its occupants.

4.5.8 The pilot-in-command shall not allow a person to be carried in the aeroplane who appears to be under the influence of alcohol or drugs to the extent that the safety of the aeroplane or its occupants is likely to be endangered.

4.5.9 The pilot-in-command shall have the right to refuse transportation of inadmissible passengers, deportees or persons in custody if their carriage poses any risk to the safety of the aeroplane or its occupants.

4.5.10 The pilot-in-command shall ensure that all passengers are briefed on the location of emergency exits and the location and use of relevant safety and emergency equipment.

4.5.11 The pilot-in-command shall ensure that all operational procedures and check lists are complied with in accordance with the Operations Manual.

4.5.12 The pilot-in-command shall not permit any crew member to perform any activity during take-off, initial climb, final approach and landing except those duties required for the safe operation of the aeroplane.

4.5.13 The pilot-in-command shall not permit:

(i) a Flight Data Recorder to be disabled, switched off or erased during flight nor permit recorded data to be erased after flight in the event of an accident or an incident subject to mandatory reporting;

(ii) a Cockpit Voice Recorder to be disabled or switched off during flight unless he/she believes that the recorded data, which otherwise would be erased automatically, should be preserved for incident or accident investigation nor permit recorded data to be manually erased during or after flight in the event of an accident or an incident subject to mandatory reporting;

4.5.14 The pilot-in-command shall decide whether or not to accept an aeroplane with unserviceabilities allowed by the CDL or MEL.

4.5.15 The pilot-in-command shall ensure that the pre-flight inspection has been carried out.

4.5.16 The commander or the pilot to whom conduct of the flight has been delegated shall, in an emergency situation that requires immediate decision and action, take any action he/she considers necessary under the circumstances. In such cases he/she may deviate from rules, operational procedures and methods in the interest of safety.

4.5.17 The pilot-in-command shall satisfy himself/herself that essential and minimum quantity of extra fuel is available for the proposed flight.

4.5.18 The pilot-in-command shall satisfy himself/herself that weather information for enroute, destination and alternate airports is available and favourable for the proposed flight.

4.5.19 The pilot-in-command shall satisfy himself/herself that during acceptance of the aircraft, the performance of the aeroplane will enable him/her to safely complete the proposed flight.

4.6 DUTIES OF FLIGHT OPERATIONS OFFICER/FLIGHT DISPATCHER

4.6.1 A flight operations officer/flight dispatcher in conjunction with a method of control and supervision of flight operations in accordance with 4.2.1.3 shall:

a) assist the pilot-in-command in flight preparation and provide the relevant information;

b) assist the pilot-in-command in preparing the operational and ATS flight plans, sign when applicable and file the ATS flight plan with the appropriate ATS unit; and

c) furnish the pilot-in-command while in flight, by appropriate means, with information which may be necessary for the safe conduct of the flight; and

d) notify the appropriate ATS unit when the position of the aeroplane cannot be determined by an aircraft tracking capability and attempts to establish communications are unsuccessful.

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

a) initiate such procedures as outlined in the operations manual while avoiding taking any action that would conflict with ATC procedures; and

b) convey safety-related information to the pilot-in-command that may be necessary for the safe conduct of the flight, including information related to any amendments to the flight plan that become necessary in the course of the flight.

Note.— The pilot-in-command also should convey similar information to the flight operations officer/ flight dispatcher during the course of the flight, particularly in the context of emergency situations.

4.7 Additional requirements for operations by aeroplanes with turbine engines beyond 60 Minutes to an en-route alternate aerodrome including Extended Diversion Time Operations (EDTO)

4.7.1 Requirements for operations beyond 60 minutes to an en-route alternate aerodrome

4.7.1.1 Operators conducting operations beyond 60 minutes from a point on a route to an en-route alternate aerodrome shall ensure that:

a) for all aeroplanes:

1) en-route alternate aerodromes are identified; and

2) the most up-to-date information is provided to the flight crew on identified en-route alternate aerodromes, including operational status and meteorological conditions;

b) 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 Attachment C.

4.7.1.2 In addition to the requirements in 4.7.1.1, all operators shall ensure that the following are taken into account and provide the overall level of safety intended by the provisions of ICAO Annex 6, Part I:

a) operational control and flight dispatch procedures;

b) operating procedures; and

c) training programmes.

4.7.2 Requirements for extended diversion time operations (EDTO)

4.7.2.1 Unless DG, CAAN 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 State. 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 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.

4.7.2.2 On issuing the specific approval for extended diversion time operations, the maximum diversion time granted to the operator for each particular aeroplane and engine combination shall be specified by the authority.

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

4.7.2.3 When specifying the appropriate maximum diversion time for an operator of a particular aeroplane type engaged in extended diversion time operations, the DG, CAAN shall ensure that:

a) *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

b) *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.

4.7.2.3.1 Notwithstanding the provisions in 4.7.2.3 a), the DG, CAAN 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:

a) capabilities of the operator;
b) overall reliability of the aeroplane;
c) reliability of each time-limited system;
d) relevant information from the aeroplane manufacturer; and
e) specific mitigation measures.

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

4.7.2.4 For aeroplanes engaged in EDTO, the additional fuel required by 4.3.6.3 f) 2) shall include the fuel necessary to comply with the EDTO critical fuel scenario as established by the DG, CAAN.

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

4.7.2.5 A flight shall not proceed beyond the threshold time in accordance with 4.7.2.1 unless the identified en-route alternate aerodromes have been re-evaluated 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.

4.7.2.6 The DG, CAAN 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 ICAO Annex 8:

a) reliability of the propulsion system;
b) airworthiness certification for EDTO of the aeroplane type; and
c) EDTO maintenance programme.

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

Note 2.—The Airworthiness Manual *(Doc 9760) contains guidance on the level of performance and reliability of aeroplane systems intended by 4.7.2.6, as well as guidance on continuing airworthiness aspects of the requirements of 4.7.2.6.*

4.7.2.7 RESERVED

4.8 CARRIAGE OF CARGO INCLUDING CARRY-ON BAGGAGE

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

(b) No person may carry cargo, including carry-on baggage, in or on any aircraft unless:

(i) it is carried in an approved cargo rack, bin or compartment installed in or on the aircraft.

(ii) it is secured by an approved means, or

(iii) it is carried in accordance with the following:

(1) for cargo, it is properly secured by a safety belt or other tie-down having enough strength to eliminate the possibility of shifting under all normally anticipated flight and ground conditions, or for carry-on baggage, it is restrained so as to prevent its movement during air turbulence.

(2) it is packaged or covered to avoid possible injury to occupants.

(3) it does not impose any load on seats or on the floor structure that exceeds the load limitation for those components.

(4) it is not located in a position that obstructs the access to, or use of any required emergencies or regular exit, or the use of the aisle between the crew and the passenger compartment, or located in a position that obscures any passenger's view of the "seat belt" or "no smoking" sign, or any required exit sign, unless an auxiliary sign or other approved means for proper notification of the passengers is provided.

(5) it is not stowed directly above seated occupants.

(6) for cargo only operations, paragraph (iii) (4) does not apply if the cargo is loaded so that at least one emergency or regular exit is available to provide all occupants of the aircraft a means of unobstructed exit from the aircraft if an emergency occurs.

(iv) Each passenger seat under which the baggage is stowed shall be fitted with a means to prevent articles of baggage stowed under it from sliding under crash impacts severe enough to induce damage or injury to the occupants.

(v) When cargo is carried in cargo compartments that are designed to require the physical entry of a crewmember to extinguish any fire that may occur during flight, the cargo must be loaded so as to allow a crewmember to effectively reach all parts of the compartment with the contents of a hand fire extinguisher.

4.9 SINGLE PILOT OPERATIONS UNDER THE INSTRUMENT FLIGHT RULES (IFR) OR AT NIGHT

4.9.1 A single-engine aeroplane shall not be operated under the IFR by a single pilot or at night for commercial operations.

4.10 FATIGUE MANAGEMENT

4.10.1 Requirements in this FOR have been established for the purpose of managing fatigue with the aim of ensuring that flight and cabin crew members are performing at an adequate level of alertness. Chapter 9 AEROPLANE FLIGHT CREW contains the regulations for flight time, flight duty period and rest period limitations.

4.10.2 An Operator shall, in compliance with 4.10.1 and for the purposes of managing its fatigue-related safety risks, establish flight time, flight duty period, duty period and rest period limitations that are within the prescriptive fatigue management regulations established by the requirements of this FOR Chapter 9. Such limitations shall be included in the Operator's Operations Manual Part A.

4.10.3 Where the operator adopts prescriptive fatigue management regulations for part or all of its operations, the DG, CAAN may approve, only 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.

4.10.4 RESERVED

4.10.5 RESERVED

4.10.6 RESERVED

4.10.7 RESERVED

4.10.8 An operator shall maintain records for all its flight and cabin crew members of flight time, flight duty periods, duty periods, and rest periods for a period of at least six months.

4.11 RESERVED

4.12 PORTABLE ELECTRONIC DEVICES

4.12.1 Except as provided in paragraph 4.12.2 of this chapter, no person may operate, nor may any operator or Pilot-In-Command of an aircraft allow the operation of any portable electronic device on any CAAN registered aircraft.

4.12.2 Paragraph 4.12.1 of this chapter does not apply to the following:

a) Hearing aids
b) Heart pacemakers
c) Portable voice recorders
d) Electric Shavers
e) Any electronic device besides those described above that has been determined by the operator that will not interfere in the smooth functioning of the electronic communication and navigation equipment onboard.

i) The determination of the effect of a particular device on the navigation and communication system of the aircraft on which it is to be used or operated must, in case of an aircraft operated by the holder of an Air Operator Certificate or other operating certificate, be made by that operator (i.e., certificate holder).

ii) In all other cases, a determination must be made and it may be made by the operator and/or the pilot-in-command (PIC).

iii) In some cases, the determination may be based on operational tests conducted by the operator without sophisticated testing equipment. When safely at cruise altitude, the PIC may allow the devices to be operated. If interference is experienced, the types of devices causing interference must be isolated, along with the applicable conditions recorded. The device responsible for the interference must then be turned off.

iv) Personnel specifically designated by the air carrier or commercial operator for this purpose may make this determination.

4.13 RESERVED

4.14 PHOTOGRAPHY/ VIDEOGRAPHY IN FLIGHT

4.14.1 No Flight Crew member or Cabin Crew member shall be permitted to use any portable or fixed devices for the purpose of photography or videography unless permitted by the Director General, CAAN. This shall include the occupant of the jump seat.

4.14.2 Bonafide passengers shall be permitted to take photos or videos during flight under the instructions of the Cabin Crew members as per company rules and national Civil Aviation Regulations.

CHAPTER 5

AEROPLANE PERFORMANCE OPERATING LIMITATIONS

5.1 GENERAL

5.1.1 Aeroplanes shall be operated in accordance with a comprehensive and detailed code of performance established by the Civil Aviation Authority of Nepal in compliance with the applicable requirements of this chapter.

5.1.2 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.

5.1.3 RESERVED

5.2 APPLICABLE TO AEROPLANES CERTIFICATED IN ACCORDANCE WITH PARTS IIIA AND IIIB OF ICAO ANNEX 8.

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

5.2.2 The level of performance defined by the appropriate parts of the comprehensive and detailed national code referred to in 5.1.1 for the aeroplanes designated in 5.2.1 shall be at least substantially equivalent to the overall level embodied in the requirements of this chapter.

Note.— APPENDIX 13 contains guidance material which indicates the level of performance intended by the requirements of this chapter.

5.2.3 An aeroplane shall be operated in compliance with the terms of its Certificate of Airworthiness and within the approved operating limitations contained in its flight manual.

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

5.2.5 A flight shall not be commenced unless the performance information provided in the flight manual, supplemented as necessary with other data acceptable to the DG, CAAN, indicates that the requirements of 5.2.6 to 5.2.11 can be complied with for the flight to be undertaken.

5.2.6 When applying the requirements of this chapter, account shall be taken of all factors that significantly affect the performance of the aeroplane, including but not limited to: the mass of the aeroplane, the operating procedures, the pressure-altitude appropriate to the elevation of the aerodrome, the ambient temperature, the wind, the runway slope and surface conditions of the runway, i.e. presence of snow, slush, water and/or ice, for landplanes. Such factors shall be taken into account directly as operational parameters or indirectly by means of allowances or margins, which may be provided in the scheduling of performance data or in the comprehensive and detailed code of performance in accordance with which the aeroplane is being operated.

5.2.7 Mass limitations

a) The mass of the aeroplane at the start of take-off shall not exceed the mass at which 5.2.8 is complied with, or the mass at which 5.2.9, 5.2.10 and 5.2.11 are complied with, allowing for expected reductions in mass as the flight proceeds, and for such fuel jettisoning as is envisaged in applying 5.2.9 and 5.2.10 and, in respect of alternate aerodromes, 5.2.7 c) and 5.2.11.

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

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

d) In no case shall the mass at the start of take-off, or at the expected time of landing at the aerodrome of intended landing and at any destination alternate aerodrome, exceed the relevant maximum masses at which compliance has been demonstrated with the applicable noise certification mentioned in Annex-16, Vol-1 unless otherwise authorized in exceptional circumstances for a certain aerodrome or a runway where there is no noise disturbance problem, by the competent authority of the State in which the aerodrome is situated.

e) Before the commencement of a public transport flight, the operator, or the person in charge of the loading of the aircraft or the pilot-in-command, shall prepare load and trim sheets that shall contain:

i) the registration mark of the aircraft to which the load and trim sheets relate;
ii) particulars of the intended flight;

iii) the total mass of the aircraft as loaded for that flight;

iv) the mass of several items from which the total mass of the aircraft has been calculated including, in particular, the mass of the aircraft prepared for service and the respective total mass of the crew (unless included in the mass of the aircraft prepared for service), passengers, baggage, and cargo intended to be carried on the flight;

v) the manner in which the load is distributed and the resulting position of the centre of gravity of the aircraft;

f) Load and trim sheets shall be signed by the Operator, or the person(s) identified by the Operator as responsible for despatching the aircraft who is duly trained and certified, as certifying that it has been loaded in accordance with the instructions issued by the operator and approved by the Director General.

g) For the purpose of calculating the total mass of the aircraft, the respective total mass of the passengers and crew entered in the load and trim sheets shall be computed from the actual mass of each person, and for that purpose, each person shall be separately weighed for aircraft carrying up to six passengers. For aircraft carrying seven or more passengers refer to Flight Operations Directive No. 08

h) An Air Operator shall determine the weights to be used for passengers in its Operations Manual. It may conduct a sampling of an adequate number of passengers prior to determining a fixed value. Operators shall define weights for 'adult male, adult female, child and infant' passengers; where 'adult' means a person older than 12 years and 'child' means between 02 and 12 years and 'infant' means below 2 years of age.

i) An Air Operator shall in addition to the passenger weight, also determine the weight of hand baggage, if so permitted. Such determined hand baggage value shall be clearly defined in the Operations Manual.

5.2.8 *Take-off*. The aeroplane shall be able, in the event of a critical engine failing, or for other reasons, at any point in the take-off, either to discontinue the take-off and stop within the accelerate-stop distance available, or to continue the take-off and clear all obstacles along the flight path by an adequate vertical or horizontal distance until the aeroplane is in a position to comply with 5.2.9. When determining the resulting take-off obstacle accountability area, the operating conditions, such as the crosswind component and navigation accuracy, must be taken into account.

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

5.2.9 *En route — one engine inoperative*. The aeroplane shall be able, in the event of the critical engine becoming inoperative at any point along the route or planned diversions therefrom, to continue the flight to an aerodrome at which the requirement of 5.2.11 can be met, without flying below the minimum flight altitude at any point.

5.2.10 *En route — two engines inoperative*. In the case of aeroplanes having three or more engines, on any part of a route where the location of en-route alternate aerodromes and the total duration of the flight are such that the probability of a second engines becoming inoperative must be allowed for if the general level of safety implied by the requirements of this chapter is to be maintained, the aeroplane shall be able, in the event of any two engines becoming inoperative, to continue the flight to an en-route alternate aerodrome and land.

5.2.11 *Landing.* The aeroplane shall, at the aerodrome of intended landing and at any alternate aerodrome, after clearing all obstacles in the approach path by a safe margin, be able to land, with assurance that it can come to a stop within the landing distance available. Allowance shall be made for expected variations in the approach and landing techniques, if such allowance has not been made in the scheduling of performance data.

5.3 OBSTACLE DATA

5.3.1 Obstacle data from the AIP-Nepal shall be used by the operator when developing procedures to comply with 5.2.8 and 5.2.9 when taking off from aerodromes located within Nepal. When using aerodromes located abroad, the operator shall use the obstacle data provided by the local authority of the States in which the aerodromes are located.

5.3.2 The operator shall take account of charting accuracy when assessing compliance with 5.2.8.

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

5.4.1 A single-engine aeroplane is not permitted to be operated at night and/or in IMC conditions within the territory of Nepal for commercial purposes.

5.4.2 All single-engine turbine-powered aeroplanes engaged in commercial operations shall have an engine trend monitoring system, and those aeroplanes for which the individual Certificate of Airworthiness is first issued on or after 01 January 2005 shall have an automatic trend monitoring system.

CHAPTER 6

AEROPLANE INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

Note.- Specifications for the provision of aeroplane communication and navigation equipment are contained in Chapter 7.

6.1 GENERAL

6.1.1 a) An aeroplane registered in Nepal shall not be operated unless the requirements in respect of emergency and life saving equipment, navigational equipment, instrument approach equipment, flight recorders, oxygen and its dispensing apparatus, flight controls and other equipment specified in this chapter are complied with.

b) In addition to the minimum equipment necessary for the issuance of a Certificate of Airworthiness, the instruments, equipment and flight documents prescribed in the following paragraphs shall be installed or carried, as appropriate, in aeroplanes according to the aeroplane used and to the circumstances under which the flight is to be conducted. The prescribed instruments and equipment, including their installation, shall be approved or accepted by the DG, CAAN.

6.1.2 An operator shall carry a certified true copy of the Air Operator Certificate specified in 4.2.1 and a copy of the Operations Specifications relevant to the aeroplane, issued in conjunction with the certificate. When the certificate and the associated Operations Specifications are issued in a language other than English, an English translation shall be included.

Note.- Provisions for the content of the Air Operator Certificate and its associated Operations Specifications are contained in the Air Operator Certificate Requirements (AOCR).

6.1.3 The operator shall include in the operations manual a Minimum Equipment List (MEL), approved by the Director General of CAAN which will enable the Pilot-In-Command to determine whether a flight may be commenced or continued from any intermediate stop should any instrument, equipment or systems become inoperative. Where the State of the Operator is not the State of Registry, the State of the Operator shall ensure that the MEL does not affect the aeroplane's compliance with the airworthiness requirements applicable in the State of Registry.

Note.— Appendix 3 contains guidance on the minimum equipment list.

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

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

6.1.5 Aeroplane operated under an Article 83 *bis* agreement

Note.— Guidance concerning the transfer of responsibilities by the State of Registry to the State of the Operator in accordance with Article 83 bis *is contained in the* Manual on the Implementation of Article 83 *bis* of the Convention on International Civil Aviation *(Doc 10059).*

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

Note.— Guidance regarding the agreement summary is contained in the Manual on the Implementation of Article 83 *bis* of the Convention on International Civil Aviation *(Doc 10059).*

6.1.5.2 The agreement summary of an Article 83 *bis* agreement shall be accessible to a civil aviation safety inspector to determine which functions and duties are transferred under the agreement by the State of Registry to the State of the Operator, when conducting surveillance activities, such as ramp checks.

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

6.1.5.3 The agreement summary shall be transmitted to ICAO together with the Article 83 *bis* agreement for registration with the ICAO Council by the State of Registry or the State of the Operator.

Note.— The agreement summary transmitted with the Article 83 bis *agreement registered with the ICAO Council contains the list of all aircraft affected by the agreement. However, the certified true copy to be carried on board, as per 6.1.5.1, will need to list only the specific aircraft carrying the copy.*

6.1.5.4 The agreement summary shall contain the information in Appendix 16 for the specific aircraft and shall follow the layout of Appendix 16, paragraph 2.

6.2 ALL AEROPLANES ON ALL FLIGHTS

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

6.2.2 An aeroplane shall be equipped with:

a) Accessible and adequate medical supplies appropriate to the number of passengers the aeroplane is authorized to carry, as specified by Director General, CAAN.

Medical supplies should comprise;

1) One or more first aid kits for the use of cabin crew in managing incidents of ill health; and
2) For aeroplanes required to carry cabin crew as part of the operating crew, one universal precaution kit (two for aeroplanes authorized to carry more than 250 passengers) for the use of cabin crew members in managing incidents of ill health associated with a case of suspected communicable disease, or in the case of illness involving contact with body fluids; and
3) For aeroplanes authorized to carry more than 100 passengers, on a sector length of more than two hours, a medical kit, for the use of medical doctors or other qualified persons in treating in-flight medical emergencies.

Note.- Types, number, location and contents of medical supplies are contained in Appendix 4.

b) portable fire extinguishers of a type which, when discharged, will not cause dangerous contamination of the air within the aeroplane. At least one shall be located in:

i) the pilot's compartment; and
ii) each passenger compartment that is separate from the pilot's compartment and that is not readily accessible to the flight crew;

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

Note 2.— Refer to 6.2.2.1 for fire extinguishing agents.

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

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

d) means of ensuring that the following information and instructions are conveyed to passengers:

i) when seat belts are to be fastened;
ii) when and how oxygen equipment is to be used if the carriage of oxygen is required;
iii) restrictions on smoking;
iv) location and use of life jackets or equivalent individual flotation devices where their carriage is required; and
v) location and method of opening emergency exits; and

e) spare electrical fuses of appropriate ratings for replacement of those accessible in flight.

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

a) meet the applicable minimum performance requirements of the State of Registry; and
b) not be of a type listed in the 1987 *Montreal Protocol on Substances that Deplete the Ozone Layer* as it appears in the Eighth Edition of the *Handbook for the Montreal Protocol on Substances that Deplete the Ozone La*yer, Annex A, Group II.

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

6.2.3 An aeroplane shall carry the following documents:

a) the operations manual in parts that pertain to flight operations;
b) the Nepalese Certificate of Registration issued in relation to that aeroplane;
c) current and suitable charts to cover the route of the proposed flight and any route along which it is reasonable to expect that the flight may be diverted;
d) the Nepalese Certificate of Airworthiness issued in relation to that aeroplane;
e) the current Maintenance Release issued in relation to that aeroplane;
f) the flight manual for the aeroplane, or other documents containing performance data required for the application of Chapter 5 and any other information necessary for the operation of the aeroplane within the terms of its certificate of airworthiness, unless these data are available in the operations manual;
g) the Mobile Radio Station Licenses issued in relation to the radio equipment installed in the aeroplane;
h) the current licenses held by each member of the flight crew;
i) the aeroplane journey log book or general declaration;
j) if passengers are carried, a list of their names, places of embarkation and intended place of disembarkation;
k) if cargo is carried, bills of loading and manifests relating to that cargo;
l) a copy of the operational flight plan;
m) a copy of the Air Traffic Control flight plan, if applicable;
n) the load sheet relating to the calculation of mass of the aeroplane;
o) the trim sheets relating to the disposition of the load and balance of the aeroplane and;
p) Aeroplane search procedure checklist
Checklist of the procedures to be followed in searching for a bomb in case of suspected sabotage. The checklist shall be supported by guidance on the course of action to be taken should a bomb or suspicious object be found and information on the least-risk bomb location specific to the aeroplane.
q) Standard Operating Procedure
r) A certified true copy of the AOC and Operations Specifications for aeroplanes engaged in commercial operations
s) A certified true copy of validated noise certificate for international operations

t) Emergency response guidance for aircraft incidents involving dangerous goods (for air operators certified to carry Dangerous Goods)
u) A current copy of the insurance policy

6.2.4 Marking of break-in points

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

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

Note — This requirement does not require any aeroplane to have break-in areas.

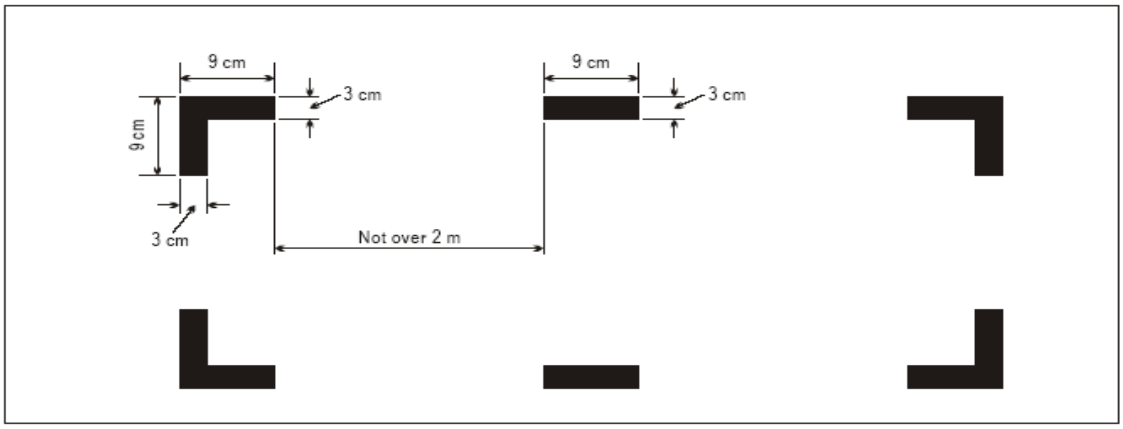


Figure: Marking of break-in points

6.3 FLIGHT RECORDERS

Note 1.— Crash-protected flight recorders comprise one or more of the following:
— a flight data recorder (FDR),
— a cockpit voice recorder (CVR),
— an airborne image recorder (AIR),
— a data link recorder (DLR).
Image and data link information may be recorded on either the CVR or the FDR.

Note 2.— Lightweight flight recorders comprise one or more of the following:
— an aircraft data recording system (ADRS),
— a cockpit audio recording system (CARS),
— an airborne image recording system (AIRS),
— a data link recording system (DLRS).
Image and data link information may be recorded on either the CARS or the ADRS.

Note 3.— Detailed guidance on flight recorders is contained in APPENDIX 8.

Note 4.— For aeroplanes for which the application for type certification is submitted to a Contracting State before 1 January 2016, specifications applicable to flight recorders may be found in EUROCAE ED-112, ED-56A, ED-55, Minimum Operational Performance Specifications (MOPS), or earlier equivalent documents.

Note 5.— For aeroplanes for which the application for type certification is submitted to a Contracting State on or after 1 January 2016, specifications applicable to flight recorders may be found in EUROCAE ED-112A, Minimum Operational Performance Specification (MOPS), or equivalent documents.

Note 6.— Specifications applicable to lightweight flight recorders may be found in EUROCAE ED-155, Minimum Operational Performance Specification (MOPS), or equivalent documents.

Note 7.—Chapter 3 contains requirements regarding the use of voice, image and/or data recordings and transcripts.

6.3.1 FLIGHT DATA RECORDERS AND AIRCRAFT DATA RECORDING SYSTEMS

Note .—Parameters to be recorded are listed in Tables A8-1 and A8-3 of Appendix 8.

6.3.1.1 *Applicability*

6.3.1.1.1 All turbine-engined aeroplanes of a maximum certificated take-off mass of 5 700 kg or less for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 shall be equipped with:

a) an FDR which shall record at least the first 16 parameters listed in Table A8-1 of Appendix 8; or
b) a Class C AIR or AIRS which shall record at least the flight path and speed parameters displayed to the pilot(s), as defined in 2.2.3 of Appendix 8; or
c) an ADRS which shall record at least the first 7 parameters listed in Table A8-3 of Appendix 8.

Note 1.— "The application for type certification is submitted to a Contracting State" refers to the date of application of the original "Type Certificate" for the aeroplane type, not the date of certification of particular aeroplane variants or derivative models.

Note 2.— AIR or AIRS classification is defined in 6.2 of Appendix 8.

6.3.1.1.2 RESERVED

6.3.1.1.3 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1989 shall be equipped with an FDR which shall record at least the first 32 parameters listed in Table A8-1 of Appendix 8.

6.3.1.1.4 All aeroplanes of a maximum certificated take-off mass of over 5 700 kg, up to and including 27 000 kg, for which the individual certificate of airworthiness is first issued on or after 1

January 1989, shall be equipped with an FDR which shall record at least the first 16 parameters listed in Table A8-1 of Appendix 8.

6.3.1.1.5 RESERVED

6.3.1.1.6 All turbine-engined aeroplanes, for which the individual certificate of airworthiness was first issued before 1 January 1989, with a maximum certificated take-off mass of over 5 700 kg, except those in 6.3.1.1.8, shall be equipped with an FDR which shall record at least the first 5 parameters listed in Table A8-1 of Appendix 8.

6.3.1.1.7 RESERVED

6.3.1.1.8 All turbine-engined aeroplanes, for which the individual certificate of airworthiness was first issued on or after 1 January 1987 but before 1 January 1989, with a maximum certificated take-off mass of over 27 000 kg that are of types of which the prototype was certificated by the appropriate national authority after 30 September 1969 shall be equipped with an FDR which shall record at least the first 16 parameters listed in Table A8-1 of Appendix 8.

6.3.1.1.9 RESERVED

6.3.1.1.10 All aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued after 1 January 2005 shall be equipped with an FDR which shall record at least the first 78 parameters listed in Table A8-1 of Appendix 8.

6.3.1.1.11 All aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2023 shall be equipped with an FDR capable of recording at least the 82 parameters listed in Table A8-1 of Appendix 8.

6.3.1.1.12 RESERVED

6.3.1.2 Recording Technology

FDRs or ADRS shall not use engraving metal foil, frequency modulation (FM), photographic film or magnetic tape.

6.3.1.3 Duration

All FDRs shall retain the information recorded during at least the last 25 hours of their operation, with the exception of those installed on aeroplanes referenced in 6.3.1.1.5 for which the FDR shall retain the information recorded during at least the last 30 minutes of its operation, and, in addition, sufficient information from the preceding take-off for calibration purposes.

6.3.2 COCKPIT VOICE RECORDERS (CVR) AND COCKPIT AUDIO RECORDING SYSTEMS (CARS)

6.3.2.1 *Applicability*

6.3.2.1.1 All turbine-engined aeroplanes of a maximum certificated take-off mass of over 2 250 kg, up to and including 5 700 kg, for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and required to be operated by more than one pilot shall be equipped with either a CVR or a CARS.

6.3.2.1.2 RESERVED

6.3.2.1.3 All aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1987 shall be equipped with a CVR.

6.3.2.1.4 All turbine-engined aeroplanes, for which the individual certificate of airworthiness was first issued before 1 January 1987, with a maximum certificated take-off mass of over 27 000 kg that are of types of which the prototype was certificated by the appropriate national authority after 30 September 1969 shall be equipped with a CVR.

6.3.2.1.5 RESERVED

6.3.2.2 Recording technology

CVRs and CARS shall not use magnetic tape or wire.

6.3.2.3 Duration

6.3.2.3.1 All CVRs shall retain the information recorded during at least the last 2 hours of their operation.

6.3.2.3.2 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2021 shall be equipped with a CVR which shall retain the information recorded during at least the last 25 hours of its operation.

6.3.2.3.3 All aeroplanes that are required to be equipped with CARS, and for which the individual certificate of airworthiness is first issued on or after 1 January 2025, shall be equipped with a CARS which shall retain the information recorded during at least the last two hours of their operation.

6.3.2.4 Cockpit voice recorder alternate power source

6.3.2.4.1 An alternate power source shall automatically engage and provide ten minutes, plus or minus one minute, of operation whenever aeroplane power to the recorder ceases, either by normal

shutdown or by any other loss of power. The alternate power source shall power the CVR and its associated cockpit area microphone components. The CVR shall be located as close as practicable to the alternate power source.

Note 1.— "Alternate" means separate from the power source that normally provides power to the CVR. The use of aeroplane batteries or other power sources is acceptable provided that the requirements above are met and electrical power to essential and critical loads is not compromised.

Note 2.— When the CVR function is combined with other recording functions within the same unit, powering the other functions is allowed.

6.3.2.4.2 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the application for type certification is submitted to the DG, CAAN on or after 1 January 2018 shall be provided with an alternate power source, as defined in 6.3.2.4.1, that powers the forward CVR in the case of combination recorders.

6.3.2.4.3 RESERVED

6.3.3 DATA LINK RECORDERS

6.3.3.1 Applicability

6.3.3.1.1 All aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2016, which use any of the data link communications applications referred to in 5.1.2 of Appendix 8 and are required to carry a CVR, shall record the data link communications messages on a crash-protected flight recorder.

6.3.3.1.2 All aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 2016, that are required to carry a CVR and are modified on or after 1 January 2016 to use any of the data link communications applications referred to in 5.1.2 of Appendix 8, shall record the data link communications messages on a crash-protected flight recorder, unless the installed data link communications equipment is compliant with a type certificate issued or aircraft modification first approved prior to 1 January 2016.

Note 1.— Refer to Table L-5 in Attachment L of Annex 6 Part I for examples of data link communication recording requirements.

Note 2.— A Class B AIR could be a means for recording data link communications applications messages to and from the aeroplanes where it is not practical or is prohibitively expensive to record those data link communications applications messages on FDR or CVR.

Note 3.— The "aircraft modifications" refer to modifications to install the data link communications equipment on the aircraft (e.g. structural, wiring).

6.3.3.1.3 RESERVED

6.3.3.2 Duration

The minimum recording duration shall be equal to the duration of the CVR.

6.3.3.3 Correlation

Data link recording shall be able to be correlated to the recorded cockpit audio.

6.3.4 FLIGHT CREW-MACHINE INTERFACE RECORDINGS

6.3.4.1 *Applicability*

6.3.4.1.1 All aeroplanes of a maximum take-off mass of over 27 000 kg for which the application for type certification is submitted to the DG, CAAN on or after 1 January 2023 shall be equipped with a crash-protected flight recorder which shall record the information displayed to the flight crew from electronic displays, as well as the operation of switches and selectors by the flight crew as defined in Appendix 8.

6.3.4.1.2 RESERVED

6.3.4.2 *Duration*

The minimum flight crew-machine interface recording duration shall be at least for the last two hours.

6.3.4.3 *Correlation*

Flight crew-machine interface recordings shall be able to be correlated to the recorded cockpit audio.

6.3.5 FLIGHT RECORDERS – GENERAL

6.3.5.1 Construction and installation

Flight recorders shall be constructed, located and installed so as to provide maximum practical protection for the recordings in order that the recorded information may be preserved, recovered and transcribed. Flight recorders shall meet the prescribed crashworthiness and fire protection specifications.

6.3.5.2 Operation

6.3.5.2.1 Flight recorders shall not be switched off during flight time.

6.3.5.2.2 To preserve flight recorder records, flight recorders shall be deactivated upon completion of flight time following an accident or incident. The flight recorders shall not be re-activated before their disposition as determined in accordance with ICAO Annex 13 or as advised by the Director General of CAAN.

Note 1 – The need for removal of the flight recorder records from the aircraft will be determined by the investigation authority in the State conducting the investigation with due regard to the seriousness of an occurrence and the circumstances, including the impact on the operations.

Note 2 – The operator's responsibilities regarding the retention of flight recorders are contained in 11.6.

6.3.5.3 Continued serviceability

Operational checks and evaluation of recordings from the flight recorder systems shall be conducted to ensure the continued serviceability of the recorders.

Note.— Procedures for the inspections of the flight recorder systems are given in Appendix 8.

6.3.5.4 Flight recorder electronic documentation - RESERVED

6.3.5.5 Combination recorders

6.3.5.5.1 RESERVED

6.3.5.5.2 All aeroplanes of a maximum certificated take-off mass of over 15 000 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and which are required to be equipped with both a CVR and an FDR, shall be equipped with two combination recorders (FDR/CVR). One recorder shall be located as close to the cockpit as practicable and the other recorder located as far aft as practicable.

6.3.5.5.3 RESERVED

6.3.5.5.4 RESERVED

6.3.6 Flight recorder data recovery

6.3.6.1 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg and authorized to carry more than nineteen passengers for which the application for type certification is submitted to a CAAN on or after 1 January 2021, shall be equipped with a means approved by the DG, CAAN, to recover flight recorder data and make it available in a timely manner.

6.3.6.2 In approving the means to make flight recorder data available in a timely manner, the DG, CAAN shall take into account the following:

a) the capabilities of the operator;
b) overall capability of the aeroplane and its systems as certified by the State of Design;
c) the reliability of the means to recover the appropriate CVR channels and appropriate FDR data; and
d) specific mitigation measures.

Note.— Guidance on approving the means to make flight recorder data available in a timely manner

is contained in the Manual on Location of Aircraft in Distress and Flight Recorder Data Recovery *(Doc 10054).*

6.4 ALL AEROPLANES OPERATED AS VFR FLIGHTS

6.4.1 All aeroplanes when operated as VFR flights shall be equipped with:

a) a magnetic compass;
b) an accurate timepiece indicating the time in hours, minutes and seconds;
c) a sensitive pressure altimeter;
d) an airspeed indicator; and
e) such additional instruments or equipment as may be prescribed by the Director General of CAAN.

6.4.2 VFR flights which are operated as controlled flights shall be equipped in accordance with 6.9 (*All Aeroplanes Operated In Accordance With Instrument Flight Rules).*

6.5 ALL AEROPLANES ON FLIGHTS OVER WATER

6.5.1 Seaplanes - RESERVED

6.5.2 Landplanes

6.5.2.1 Aeroplanes shall carry the equipment prescribed in 6.5.2.2

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 5.2.9 or 5.2.10.

b) when flying en route over water beyond gliding distance from the shore, in the case of all other landplanes; and

c) when taking off or landing at an aerodrome where in the opinion of the DG, CAAN, 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.

6.5.2.2 The equipment referred to in 6.5.2.1 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.

6.5.3 All aeroplanes on long-range over-water flights

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

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

b) equipment for making the pyrotechnical distress signals described in CAR 2; and

c) at the earliest practicable date but not later than 1 January 2018, on all aeroplanes of a maximum certificated take-off mass of over 27,000 kg, a securely attached underwater locating device operating at a frequency of 8.8 kHz. This automatically activated underwater locating device shall operate for a minimum of 30 days and shall not be installed in wings or empennage.

Note.— Underwater locator beacon (ULB) performance requirements are as contained in the SAE AS6254, Minimum Performance Standard for Low Frequency Underwater Locating Devices (Acoustic) (Self-Powered)*, or equivalent documents.*

6.5.3.2 Each life jacket and equivalent individual flotation device when carried in accordance with 6.5.1 a), 6.5.2.1 and 6.5.2.2, shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons, except where the requirement of 6.5.2.1 c) is met by the provision of individual flotation devices other than life jackets.

6.6 ALL AEROPLANES ON FLIGHTS OVER DESIGNATED LAND AREAS

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

6.7 ALL AEROPLANES ON HIGH ALTITUDE FLIGHTS

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

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

6.7.1 An aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa in personnel compartments shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 4.3.9.1.

6.7.2 An aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa but which is provided with means of maintaining pressures greater than 700 hPa in personnel compartments shall be provided with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 4.3.9.2.

6.7.3 Pressurized aeroplanes newly introduced into service on or after 1 July 1962 and intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa shall be equipped with a device to provide positive warning to the pilot of any dangerous loss of pressurization.

6.7.4 RESERVED

6.7.5 An aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa, cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa and for which the individual certificate of airworthiness is first issued on or after 9 November 1998, shall be provided with automatically deployable oxygen equipment to satisfy the requirements of 4.3.9.2. The total number of oxygen dispensing units shall exceed the number of passenger and cabin crew seats by at least 10 per cent.

6.7.6 RESERVED

6.8 ALL AEROPLANES IN ICING CONDITIONS

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

6.9 ALL AEROPLANES OPERATED IN ACCORDANCE WITH INSTRUMENT FLIGHT RULES

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

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

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

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

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

h) a means of indicating whether the power supply to the gyroscopic instrument is adequate;
i) a means of indicating in the flight crew compartment the outside air temperature;
j) for each pilot station, a rate-of-climb and descent indicator;
k) a Transponder with Mode C capability,
l) a power failure warning device or vacuum indicator to show the power available for gyroscopic instruments from each power source.
m) an alternate source of static pressure for the altimeter and the airspeed and vertical speed indicators.
n) for single-engine aeroplanes:

(i) two independent electrical power generating sources each of which is able to supply all probable combinations of continuous in-flight electrical loads for required instruments and equipment – where *continuous in-flight electrical load* includes one that draws current continuously during flight, such as radio equipment, electrically driven instruments and lights but does not include occasional intermittent loads; or

(ii) in addition to the primary electrical power generating source, a standby battery or an alternate source of electric power that is capable of supplying 150% of the electrical loads of all required instruments and equipment necessary for safe emergency operation of the aircraft for at least one hour.

o) for multi-engine aeroplanes, at least two generators or alternators each of which is on a separate engine, of which any combination of one-half of the total number are rated sufficiently to supply the electrical loads of all required instruments and equipment necessary for safe emergency operation of the aeroplane.

p) two independent sources of energy (with means of selecting either) of which at least one is an engine driven pump or generator, each of which is able to drive all required gyroscopic instruments powered by, or to be powered by, that particular source and installed so that failure on one instrument or source, does not interfere with the energy supply to the remaining instruments or the other energy source. For multi-engine aeroplanes, each engine driven source of energy must be on a different engine.

q) such additional instruments or equipment as may be prescribed by the Director General of CAAN.

6.9.2 All aeroplanes over 5,700 kg — Emergency power supply for electrically operated attitude indicating instruments

6.9.2.1 All aeroplanes of a maximum certificated take-off mass of over 5,700 kg newly introduced into service after 1 January 1975 shall be fitted with an emergency power supply, independent of the main electrical generating system, for the purpose of operating and illuminating, for a minimum period of 30 minutes, an attitude indicating instrument (artificial horizon), clearly visible to the pilot-in-command. The emergency power supply shall be:

(i) automatically operative after the total failure of the main electrical generating system; and
(ii) in the case of dedicated power supply, clear indication shall be given on the instrument panel that the attitude indicator(s) is being operated by emergency power.

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

6.10 ALL AEROPLANES WHEN OPERATED AT NIGHT

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

a) all equipment specified in 6.9 ALL AEROPLANES OPERATED IN ACCORDANCE WITH INSTRUMENT FLIGHT RULES.

b) the lights required by ICAO Annex 2 for aircraft in flight or operating on the movement area of an aerodrome;

Note.-Specifications for lights meeting the requirements of ICAO Annex 2 for navigation lights are contained in Appendix 14. The general characteristics of lights are specified in ICAO Annex 8.

c) two landing lights

Note – aeroplanes not certificated in accordance with ICAO Annex 8 which are equipped with a single landing light having two separately energized filaments will be considered to have complied with 6.10 c).

d) illumination for all instruments and equipment that are essential for the safe operation of the aeroplane that are used by the flight crew;

e) lights in all passenger compartments; and

f) an independent portable light for each crew member station;

6.11 PRESSURIZED AEROPLANES WHEN CARRYING PASSENGERS -- WEATHER RADAR

Pressurized aeroplanes when carrying passengers shall be equipped with operative weather radar whenever such aeroplanes are being operated in areas where thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather radar, may be expected to exist along the route either at night or under instrument meteorological conditions.

6.12 ALL AEROPLANES OPERATED ABOVE 15,000 m (49,000 ft) — RADIATION INDICATOR - RESERVED

6.13 ALL AEROPLANES COMPLYING WITH THE NOISE CERTIFICATION STANDARDS IN ANNEX 16, VOLUME I

An aeroplane engaged in international air transportation operations, shall carry a document attesting noise certification. When the document, or a suitable statement attesting noise certification as contained in another document approved by the State of Registry, is issued in a language other than English, it shall include an English translation.

Note — The attestation may be contained in any document, carried on board, approved by the State of Registry.

6.14 MACH NUMBER INDICATOR

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

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

6.15 AEROPLANES REQUIRED TO BE EQUIPPED WITH GROUND PROXIMITY WARNING SYSTEMS (GPWS)

6.15.1 All turbine-engine aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers shall be equipped with a ground proximity warning system which has a forward-looking terrain avoidance function.

6.15.2 The operator shall implement database management procedures that ensure the timely distribution and update of current terrain and obstacle data to the ground proximity warning system.

6.15.3 RESERVED.

6.15.4 All piston-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers shall be equipped with a ground proximity warning system which provides the warnings in 6.15.6 a) and c), warning of unsafe terrain clearance and a forward-looking terrain avoidance function.

6.15.5 A ground proximity warning system shall provide automatically a timely and distinctive warning to the flight crew when the aeroplane is in potentially hazardous proximity to the earth's surface.

6.15.6 A ground proximity warning system shall provide, unless otherwise specified herein, warnings of the following circumstances:

a) excessive descent rate;
b) excessive terrain closure rate;
c) excessive altitude loss after take-off or go-around;
d) unsafe terrain clearance while not in landing configuration;
   i) gear not locked down;
   ii) flaps not in a landing position; and
e) excessive descent below the instrument glide path.

6.16 AEROPLANES CARRYING PASSENGERS — CABIN CREW SEATS

6.16.1 **Aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 1981**

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

6.16.2 RESERVED

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

6.17 EMERGENCY LOCATOR TRANSMITTER (ELT)

6.17.1 RESERVED

6.17.2 Except as provided for in 6.17.3, all aeroplanes authorized to carry more than 19 passengers shall be equipped with at least one automatic ELT or two ELTs of any type.

6.17.3 All aeroplanes authorized to carry more than 19 passengers for which the individual certificate of airworthiness is first issued after 1 July 2008 shall be equipped with either:

a) at least two ELTs, one of which shall be automatic; or
b) at least one ELT and a capability that meets the requirements of 6.18.

Note.— In the case where the requirements for 6.18 are met by another system no automatic ELT is required.

6.17.4 Except as provided for in 6.17.5, all aeroplanes authorized to carry 19 passengers or less shall be equipped with at least one ELT of any type.

6.17.5 All aeroplanes authorized to carry 19 passengers or less for which the individual certificate of airworthiness is first issued after 1 July 2008 shall be equipped with at least one automatic ELT.

6.17.6 ELT equipment carried to satisfy the requirements of 6.17.1, 6.17.2, 6.17.3, 6.17.4 and 6.17.5 shall operate in accordance with the relevant provisions of ICAO Annex 10, Volume III.

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

6.18 LOCATION OF AN AEROPLANE IN DISTRESS

6.18.1 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2023, shall autonomously transmit information from which a position can be determined by the operator at least once every minute, when in distress, in accordance with Appendix 9.

6.18.2 RESERVED

6.18.3 The operator shall make position information of a flight in distress available to the appropriate organizations, as established by the DG, CAAN.

Note.— Refer to 4.2.1.3.1 for operator responsibilities when using third parties.

6.19 AEROPLANES REQUIRED TO BE EQUIPPED WITH AN AIRBORNE COLLISION AVOIDANCE SYSTEM (ACAS II)

6.19.1 a) All turbine-engine aeroplanes of a maximum certificated take-off mass in excess of 5, 700 kg or authorized to carry more than 19 passengers shall be equipped with an airborne collision avoidance system (ACAS II).

b) Reference to para 6.19.1 a), aircraft engaged in STOL operations certified to carry more than nine passengers shall be equipped with airborne collision avoidance system ACAS I or higher.

6.19.2 RESERVED

6.19.3 An airborne collision avoidance system shall operate in accordance with the relevant provisions of ICAO Annex 10, Volume IV.

Note - Guidance on the use of ACAS equipment is contained in Appendix 7

6.20 REQUIREMENTS FOR PRESSURE-ALTITUDE REPORTING TRANSPONDER

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

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

6.20.3 All aeroplanes shall be equipped with a data source that provides pressure - altitude information with a resolution of 7.62m (25ft), or better.

6.20.4 RESERVED

Note1 – These provisions will improve the effectiveness of airborne collision avoidance systems as well as air traffic services that employ Mode S radar. In particular, tracking processes are significantly enhanced with a resolution of 7.62m (25 ft) or better.

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

6.21 MICROPHONES

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

6.22 TURBO-JET AEROPLANES – FORWARD LOOKING WINDSHEAR WARNING SYSTEM

6.22.1 All turbo-jet aeroplanes of a maximum certificated take-off mass in access of 5700kg or authorized to carry more than nine passengers should be equipped with a forward – looking wind shear warning system.

6.22.2 A forward-looking wind shear warning system should be capable of providing the pilot with a timely aural and visual warning of wind shear ahead of the aircraft and the information required to permit the pilot to safely comments and the continue a missed approach or go-around or to execute an escape manoeuvre if necessary. The system should also provide an indication to the pilot when the limits specified for the certification of automatic landing equipment are being approached, when such equipment is in use.

6.23 ALL AEROPLANES OPERATED BY A SINGLE PILOT UNDER THE INSTRUMENT FLIGHT RULES (IFR) OR AT NIGHT

6.23.1 A single-engine aeroplane shall not be operated under the IFR by a single pilot or at night for commercial operations.

6.24 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)

6.24.1 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 DG, CAAN.

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).*

6.24.2 In approving the operational use of automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS, the DG, CAAN shall ensure that:

a) the equipment meets the appropriate airworthiness certification requirements;

b) 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 Attachment B.

6.25 ELECTRONIC FLIGHT BAGS (EFBs)

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

6.25.1 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.

6.25.2 EFB functions

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

a) assess the safety risk(s) associated with each EFB function;
b) establish and document the procedures for the use of, and training requirements for, the device and each EFB function; and
c) 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.

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

6.25.2.2 Specific approval shall be required from the DG, CAAN for the operational use of EFB functions to be used for the safe operation of aeroplanes.

6.25.3 EFB specific approval

When issuing a specific approval for the use of EFBs, the it shall be ensured that:

a) the EFB equipment and its associated installation hardware, including interaction with aeroplane systems if applicable, meet the appropriate airworthiness certification requirements;
b) the operator has assessed the safety risks associated with the operations supported by the EFB function(s);
c) the operator has established requirements for redundancy of the information (if appropriate) contained in and displayed by the EFB function(s);
d) the operator has established and documented procedures for the management of the EFB function(s) including any database it may use; and
f) 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).*

CHAPTER 7

AEROPLANE COMMUNICATION AND NAVIGATION EQUIPMENT

7.1 COMMUNICATION EQUIPMENT

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

a) conducting two-way communication for aerodrome control purposes;

b) receiving meteorological information at any time during flight; and

c) conducting two-way communication at any time during flight with at least one aeronautical station and with such other aeronautical stations and on such frequencies as may be prescribed by the appropriate authority.

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

7.1.2 The radio communication equipment required in accordance with 7.1.1 shall provide for communication on the aeronautical emergency frequency 121.5 MHz.

7.1.3 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 7.1.1:

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

b) 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 by the DG, CAAN; and

c) 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).*

7.1.4 For operations where an RCP specification for PBC has been prescribed, an operator shall establish and document:

a) normal and abnormal procedures, including contingency procedures;
b) flight crew qualification and proficiency requirements, in accordance with appropriate RCP specifications;
c) a training programme for relevant personnel consistent with the intended operations; and
d) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RCP specifications.

7.1.5 In respect of those aeroplanes mentioned in 7.1.3:

a) reports shall be submitted to the relevant organization within CAAN of observed communication performance issued by monitoring programmes established in accordance with ICAO Annex 11, Chapter 3, 3.3.5.2; and
b) immediate corrective action shall be taken for individual aircraft, aircraft types or operators, identified in such reports as not complying with the RCP specification(s).

7.2 NAVIGATION EQUIPMENT

7.2.1 An aeroplane shall be provided with navigation equipment which will enable it to proceed:

a) in accordance with its operational flight plan;
b) in accordance with the requirements of air traffic services;

except when the DG, CAAN is satisfied that navigation for flights under the Visual Flight Rules is accomplished by visual reference to landmarks

7.2.2 Performance Based Navigation

For operations where a navigation specification for performance-based navigation (PBN) has been prescribed, an aeroplane shall, in addition to the requirements specified in 7.2.1:

a) be provided with navigation equipment which shall enable it to operate in accordance with the prescribed navigation specification(s); and

b) 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 (in the case of leased aircraft); and

c) have information relevant to the aeroplane navigation specification capabilities included in the MEL.

d) be authorized by DG, CAAN for such operations.

Note.— Guidance on aeroplane documentation is contained in the CAAN Performance-based Navigation (PBN) Approval Manual.

7.2.3 An operator shall establish and document to ensure that for operations where a navigation specification for PBN has been prescribed:

a) normal and abnormal procedures including contingency procedures;
b) flight crew qualification and proficiency requirements in accordance with the appropriate navigation specifications;
c) a training programme for relevant personnel consistent with the intended operations; and
d) appropriate maintenance procedures to ensure continued airworthiness in accordance with 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.

7.2.4 A specific approval shall be required by an operator from the DG, CAAN prior to conducting 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 CAAN Performance-based Navigation (PBN) Operational Approval Manual *(Doc 9997).*

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

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

b) has been authorized by the DG, CAAN for the MNPS operations concerned.

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

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

a) 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 ± 90 m (300 ft); and

iv) automatically reporting pressure-altitude; and

b) the DG, CAAN shall issue a specific approval for RVSM operations.

7.2.7 Prior to granting the RVSM specific approval required in accordance with 7.2.6 b), the DG, CAAN shall be satisfied, that:

a) the vertical navigation performance capability of the aeroplane satisfies the requirements specified in APPENDIX 12;

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

c) the operator has instituted appropriate flight crew procedures for operations in RVSM airspace.

Note – An RVSM 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.

7.2.8 The DG, CAAN, in consultation with the State of Registry, if appropriate, shall ensure that, in respect of those aeroplanes mentioned in 7.2.6, adequate provisions exist for:

a) receiving the reports of height-keeping performance issued by the monitoring agencies established in accordance with ICAO Annex 11, 3.3.4.1; and

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

7.2.9 An operator specifically approved for RVSM specific operations shall ensure that a minimum of two aeroplanes of each aircraft type grouping of the operator have their height-keeping performance monitored, at least once every two years or within intervals of 1 000 flight hours per aeroplane, whichever period is longer. If an operator aircraft

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

Note.— Monitoring data from any regional monitoring programme established in accordance with ICAO Annex 11, 3.3.5.2, may be used to satisfy the requirement.

7.2.10 Appropriate action will be taken as per CAAN Aviation Enforcement Policy Manual 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 Nepal, and the situation where an operator for which Nepal has regulatory oversight responsibility is found to be operating without the required approval in the airspace of another State.

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

7.2.11 The aeroplane shall be sufficiently provided with navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment will enable the aeroplane to navigate in accordance with 7.2.1 and where applicable 7.2.2, 7.2.5 and 7.2.6.

Note – Guidance material relating to aircraft equipment necessary for flight in airspace where RVSM is applied is contained in the Manual on Implementation of a 300m (1000 ft) Vertical Separation Minimum Between FL 250 and FL 410 Inclusive (Doc 9574).

7.2.12 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 at each aerodrome at which it is intended to land in instrument meteorological conditions and at any designated alternate aerodromes.

7.2.13 For flights under Instrument Flight Rules, an aeroplane shall be equipped with at least the following:

a) One VOR receiver for each pilot station; *or*
one VOR receiver and one Horizontal Situation Indicator (HSI).

b) One DME receiver

c) One Radio Magnetic Indicator (RMI) for each pilot station which enable flight crew to select either VOR or NDB frequency.

d) One Mode C transponder

7.3 SURVEILLANCE EQUIPMENT

7.3.1 An aeroplane shall be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services.

7.3.2 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 7.3.1:

a) be provided with surveillance equipment which will enable it to operate in accordance with the prescribed RSP specification(s);
b) have information relevant to the aeroplane RSP specification capabilities listed in the flight manual or other aeroplane documentation approved by the State of Design or State of Registry; and
c) 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).*

7.3.3 An Operator shall, for operations where an RSP specification for PBS has been prescribed, establish and document:

a) normal and abnormal procedures, including contingency procedures;

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

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

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

7.3.4 In respect of those aeroplanes mentioned in 7.3.2:

a) reports shall be submitted to the relevant organization within CAAN, of observed surveillance performance issued by monitoring programmes established in accordance with ICAO Annex 11, Chapter 3, 3.3.5.2; and

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

7.4 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.

7.5 ELECTRONIC NAVIGATION DATA MANAGEMENT

7.5.1 a) An operator shall not employ electronic navigation data products that have been processed for application in the air and on the ground unless the DG, CAAN 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.

b) The operator must continue to monitor both 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.

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

7.6 DUAL FLIGHT CONTROLS

An aeroplane registered in Nepal shall not fly on any flight when operational considerations require that two pilots are required in the flight crew unless dual flight controls are installed for use by the second pilot together with equipment for inter-communication between the pilots and unless the instruments that will be used on that flight by any one pilot are positioned so as to permit the pilot to see both set of indications from his station with the minimum practicable deviation from the position and line of vision which he normally adopts when looking forward along the flight path.

7.7 GNSS EQUIPMENT

7.7.1 Panel mounted GNSS equipment shall be mandatory unless equipped with IRS/DME. The limitations imposed by the aircraft or equipment manufacturer shall apply and thereby limit the nature of the operation of the flight accordingly.

7.7.2 Prior approval shall be required from CAAN for the installation of the GNSS equipment.

7.7.3 Navigation database shall be current and updated as per 7.4.2.

7.7.4 An operator shall ensure that the flight crew is properly trained on the use of such GNSS equipment.

CHAPTER 8

RESERVED

CHAPTER 9

AEROPLANE FLIGHT CREW

DEFINITIONS

Operators and crew members

Augmented flight crew. A flight crew that comprises more than the minimum number required to operate the aeroplane and in which each flight crew member can leave his or her assigned post and be replaced by another appropriately qualified flight crew member for the purpose of in-flight rest.

Cabin crew member. A crew member who performs, in the interest of the 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.

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

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

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

Flight or block times

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.

Duty and flight duty

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.

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.

Flight duty period. A period which commences when a 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 at the end of the last flight on which he/she is a crew member.

Rest period and standby

Rest period. For the purpose of this FOR, a continuous and defined period of time, subsequent to and/or prior to flight duty, during which flight or cabin crew members are free of all flight duties.

Standby. A defined period of time during which a flight or cabin crew member is required by the operator to be available to receive an assignment for a specific duty without an intervening rest period.

General

Home base. The location nominated by the operator to the crew member from where the crew member normally starts and ends a duty period or a series of duty periods.

Positioning. The transferring of a non-operating crew member from place to place as a passenger at the behest of the operator.

Note.— "Positioning" as here defined is synonymous with the term "Deadheading".

Reporting time. The time at which flight and cabin crew members are required by an operator to report for duty.

Roster. A list provided by an operator of the times when a crew member is required to undertake duties.

Note.— "Roster" as here defined is synonymous with "Schedule", "Line of Time", "Pattern", and "Rotation".

Rest facility. A bunk or seat accommodation installed in an aircraft that provides a flight crew member with a sleep opportunity.

(1) ***Class 1 rest facility.*** *A* bunk or other surface that allows for a flat sleeping position and is located separate from both the flight deck and passenger cabin in an area that is temperature-controlled, allows the flight crew member to control light, and provides isolation from noise and disturbance.

(2) ***Class 2 rest facility.*** A seat in an aircraft cabin that allows for a flat or near flat sleeping position; is separated from passengers by a minimum of a curtain to provide darkness and some sound mitigation; and is reasonably free from disturbance by passengers or flight crew members.

(3) ***Class 3 rest facility.*** A seat in an aircraft cabin or flight deck that reclines at least 40 degrees and provides leg and foot support.

Suitable accommodation. A furnished bedroom which provides for the opportunity of adequate rest.

Unforeseen operational circumstance. An unplanned event, such as unforecast weather, equipment malfunction, or air traffic delay that is beyond the control of the operator.

9.0 ASSESSMENT OF CREW AND OTHER PERSONNEL

9.0.1 An AOC holder shall conduct an assessment of a flight crew for the following conditions:

(i) When the AOC holder inducts a new co-pilot or First Officer into the company
(ii) When the AOC holder upgrades a co-pilot or First Officer to Captain
(iii) When the AOC holder selects a candidate to undergo a Type Rating Instructor or Type Rating Examiner training programme
(iv) When the AOC holder selects a Cabin Crew to be upgraded to Check Cabin Crew
(v) When the AOC holder selects a Flight Dispatcher to be upgraded to Check Flight Dispatcher
(vi) When the AOC holder inducts any new Flight Crew from any other company

9.0.2 TYPES OF ASSESSMENT

The AOC holder shall conduct an assessment of a Flight Crew member or other personnel mentioned in 9.0.1 in a manner best suited to its operations; however, it should normally consist of a written and oral test/interview followed by at least one session in the simulator or aircraft.

The different methodologies used to assess a flight crew are:
(a) Basic mental abilities eg. Logic abilities, memory capacity, serial learning, visual processing
(b) Operational competencies eg. Planning, prioritizing, decision making, multi-tasking, information processing, problem solving etc.
(c) Social competencies eg. Communication skills, cooperation, assertiveness, leadership etc.
(d) Personality traits eg. Self-discipline, self-critical attitudes, stress management, self-organization, professional aspiration level
(e) Manual flying skills assessment and/or Systems and Crew Management assessment as required.

9.0.3 RESULT OF THE ASSESSMENT

(i) The purpose of such types of assessment is to assess the level of competency of the candidate in terms of knowledge of general topics of aviation or type specific as the case may be.

(ii) Once the assessment has been conducted, the AOC holder must conduct a gap analysis of the competency demonstrated by the candidate and the company's standards.

(iii) The gap (if any) demonstrated by the candidate in relation to the company's standards must be closed using suitable means prior to the candidate proceeding further with any formal training leading to a type rating or endorsement.

9.1 COMPOSITION OF THE FLIGHT CREW

9.1.1 The number and composition of the flight crew shall not be less than that specified in the operations manual. The flight crews shall include flight crew members in addition to the minimum numbers specified in the flight manual or other documents associated with the Certificate of Airworthiness, when necessitated by considerations related to the type of aeroplane used, the type of operation involved and the duration of flight between points where flight crews are changed.

9.1.2 Radio operator

The flight crew shall include at least one member who holds a valid license, issued or rendered valid by the State of Registry, authorizing operation of the type of radio transmitting equipment to be used.

9.1.3 Flight engineer

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

9.1.4 Flight navigator

The flight crew shall include at least one member who holds a flight navigator license in all operations where, as determined by the Director General Civil Aviation Authority of Nepal, navigation necessary for the safe conduct of the flight cannot be adequately accomplished by the pilots from the pilot station.

9.2 FLIGHT CREW MEMBER EMERGENCY DUTIES

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

9.3 FLIGHT CREW MEMBER TRAINING PROGRAMMES

9.3.1 An operator shall establish and maintain a ground and flight training programme, approved by DG, CAAN, which ensures that all flight crew members are adequately trained to perform their assigned duties. The facilities, qualifications of the instructors, the ground and flight training programs shall be subject to the approval of the DG, CAAN. The training programme shall:

a) include ground and flight training facilities and properly qualified instructors as determined by the DG, CAAN;

b) consist of ground and flight training in the type(s) of aeroplane on which the flight crew member serves; *refer to chapter 16.5,*

c) include proper flight crew coordination and training in all types of emergency and abnormal situations or procedures caused by engine, airframe or systems malfunctions, fire or other abnormalities;

d) include upset prevention and recovery training (UPRT); *refer to Note 11 below,*

e) include training in knowledge and skills related to visual and instrument flight procedures for the intended area of operation, charting, human performance including threat and error management and in the transport of dangerous goods;

f) ensure that all flight crew members know the functions for which they are responsible and the relation of these functions to the functions of other crew members, particularly in regard to abnormal or emergency procedures;

g) be given on a recurrent basis, once within a calendar year and shall include an assessment of competence;

h) include training on (i) human performance limitations and Crew Resource Management (ii) Controlled Flight Into Terrain (CFIT) (iii) use of Minimum Equipment List;

i) Include training and checkout on Line Indoctrination for crew who are newly licensed, type rated or recently employed by the company; and

j) Include a ZFTT and/or Base Training Program for flight crew as mentioned in the PELR Appendix 2.

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

Note 2 – Flight training may, to the extent deemed appropriate by the DG, CAAN, be given in flight simulation training devices approved by the DG, CAAN for that purpose.

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

Note 4 –The use of correspondence courses and written examinations as well as other means may, to the extent deemed feasible by the DG, CAAN, be utilized in meeting the requirements for periodic ground training.

Note 5 – Provisions for training in the transport of dangerous goods are contained in the CAAN Dangerous Goods Handling Requirements 2009.

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

Note 7.— Information for pilots and flight operations personnel on flight procedure parameters and operational procedures is contained in PANS-OPS (Doc 8168), Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS (Doc 8168), Volume II. Obstacle clearance criteria and procedures used in certain States may differ from PANS-OPS, and knowledge of these differences is important for safety reasons.

Note 8.— Guidance material to design flight crew training programmes can be found in the Manual of Evidence-based Training *(Doc 9995).*

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

Note 10.— Procedures for upset prevention and recovery training in a flight simulation training device are contained in the Procedures for Air Navigation Services — Training *(PANS-TRG, Doc 9868).*

Note 11.— Guidance on upset prevention and recovery training in a flight simulation training device is contained in the Manual on Aeroplane Upset Prevention and Recovery Training *(Doc 10011).*

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

a) the use, (to the extent deemed feasible by Director General CAAN), of flight simulation training devices approved by the same for that purpose; or

b) the completion within the appropriate period of the proficiency check required by 9.4.4 (Pilot Proficiency Checks) in that type of aeroplane.

9.3.3 RESERVED

9.3.4 Initial PBN Operations Training

(a) No person may serve nor may any AOC holder use a person as a flight crew member or flight operations officer (if applicable) unless he or she has completed the appropriate initial PBN operations training curriculum approved by the Director General, CAAN.

(b) The initial PBN training curriculum for each Navigation Specification shall ensure that each pilot and flight operations officer (if applicable) is included in the CAAN PBN Operational Approval Manual.

(c) Each AOC holder shall require each pilot and flight operations officer (if applicable) to complete a demonstration of competence to a defined standard of knowledge and performance.

9.4 QUALIFICATIONS

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

9.4.1 Recent experience — pilot-in-command and co-pilot

9.4.1.1 An operator shall not assign a pilot-in-command or a co-pilot to operate at the flight controls of a type or variant of a type of aeroplane during take-off and landing unless that pilot has operated the flight controls during at least three take-offs and landings within the preceding 90 days on the same type of aeroplane or in a flight simulator approved for the purpose. For night currency, refer to PELR Chapter 7.

9.4.1.2 When a pilot-in-command or a co-pilot is flying several variants of the same type of aeroplane or different types of aeroplanes with similar characteristics in terms of operating procedures, systems and handling, the Director General of CAAN shall decide under which conditions the requirements of 9.4.1.1 for each variant or each type of aeroplane can be combined.

9.4.1.3 Where a pilot's currency on type or a variant of a type has expired as stated in 9.4.1.1, the pilot may perform the required minimum three take-offs and landings in a non-commercial flight with another Captain provided that (a) his/her license is valid, (b) his/her medical certificate is valid and (c) the last proficiency check is valid. In such cases it is not mandatory for an IP or TRI/TRE or DCP to be onboard.

9.4.1.4 Upon successful completion of an initial or revalidation type related checkride or skill test on a jet engine aeroplane simulator, the pilot must be at the controls of the aeroplane for the purpose of either undertaking a base training or conducting a commercial flight upon completion of a ZFTT course, within twenty-one days of that skill test. Upon failure to do so shall require the pilot to undergo a recurrent training and assessment in the type simulator prior to undertaking the base training or commercial flight.

9.4.2 Recent experience — cruise relief pilot

9.4.2.1 An operator shall not assign a pilot to act in the capacity of cruise relief pilot in a type or variant of a type of aeroplane unless, within the preceding 90 days that pilot has either:

a) Operated as a pilot-in-command, co-pilot or cruise relief pilot on the same type of aeroplane; or

b) carried out flying skill refresher training including normal, abnormal and emergency procedures specific to cruise flight on the same type of aeroplane 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 aeroplane.

9.4.2.2 When a cruise relief pilot is flying several variants of the same type of aeroplane or different types of aeroplanes with similar characteristics in terms of operating procedures, systems and

handling, the DG, CAAN shall decide under which conditions the requirements of 9.4.2.1 for each variant or each type of aeroplane can be combined.

9.4.3 Pilot-in-command area, route and aerodrome qualification

9.4.3.1 An operator shall not utilize a pilot as pilot-in-command of an aeroplane on a route or route segment for which that pilot is not currently qualified until such pilot has complied with 9.4.3.2 and 9.4.3.3.

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

a) the route to be flown, and the aerodromes which are to be used. This shall include knowledge of:

1) the terrain and minimum safe altitudes;
2) the seasonal meteorological conditions;
3) the meteorological, communication and air traffic facilities, services and procedures;
4) the search and rescue procedures; and
5) the navigational facilities and procedures, including any long-range navigation procedures, associated with the route along which the flight is to take place; and

b) procedures applicable to flight paths over heavily populated areas and areas of high air traffic density, obstructions, physical layout, lighting, approach aids and arrival, departure, holding and instrument approach procedures, and applicable operating minima.

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

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

a) the approach to the aerodrome is not over difficult terrain and the instrument approach procedures and aids available are similar to those with which the pilot is familiar, and a margin to be approved by Director General Civil Aviation Authority of Nepal is added to the normal operating minima, or there is reasonable certainty that approach and landing can be made in visual meteorological conditions; or

b) the descent from the initial approach altitude can be made by day in visual meteorological conditions; or

c) the operator qualifies the pilot-in-command to land at the aerodrome concerned by means of an adequate pictorial presentation; or

d) the aerodrome concerned is adjacent to another aerodrome at which the pilot-in-command is currently qualified to land.

9.4.3.4 The operator shall maintain a record, sufficient to satisfy Civil Aviation Authority of Nepal of the qualification of the pilot and of the manner in which such qualification has been achieved.

9.4.3.5 An operator shall not continue to utilize a pilot as a pilot-in-command on a route or within an area specified by the operator and approved by the DG. CAAN unless, within the preceding 12 months, that pilot has made at least one trip as a pilot member of the flight crew, or as a check pilot, or as an observer in the flight crew compartment (where applicable):

a) within that specified area; and

b) if appropriate, on any route where procedures associated with that route or with any aerodromes intended to be used for take-off or landing require the application of special skills or knowledge.

9.4.3.6 In the event that more than 12 months elapse in which a pilot-in-command has not made such a trip on a route in close proximity and over similar terrain, within such a specified area, route or aerodrome, and has not practiced such procedures in a training device which is adequate for this purpose, prior to again serving as a pilot-in-command within that area or on that route, that pilot must re-qualify in accordance with 9.4.3.2 and 9.4.3.3.

9.4.4 Pilot proficiency checks

9.4.4.1 An operator shall ensure that piloting technique and the ability to execute emergency procedures is checked in such a way as to demonstrate the pilot's competence on each type or variant of a type of aeroplane. Where the operation may be conducted under instrument flight rules, an operator shall ensure that the pilot's competence to comply with such rules is demonstrated to either a check pilot of the operator or to a representative of CAAN. Two such checks must be conducted within one year with each check being valid for six months.

Note 1. - Flight simulation training devices of aeroplane category approved by Director General Civil Aviation Authority of Nepal may be used for those parts of the checks for which they are specifically approved. See Appendix 5.

Note 2. - For the renewal of Flight Instructor rating, the applicant must produce required documents for renewal of his pilot license except in this case, his proficiency check report should include the details on flight occupying position as an instructor.

9.4.4.2 Operators shall ensure that PPCs of their flight crew are conducted in the following manner:

a) When an operator schedules flight crew on several variants of the same type of aeroplane with similar characteristics in terms of operating procedures, systems and handling, the PPC shall be conducted on the aeroplane of the higher performance capability.

b) When the license holder of aeroplanes weighing less than 5700 kgs, is rated in two different aeroplane types, then at least one PPC in each type shall be required annually.

9.4.4.3 RESERVED

9.4.4.4 No flight crew member shall be rated on more than one type of aeroplane, for commercial operations, when the license holder receives or is currently rated on a type having a maximum certificated Take-off weight of more than 5700 kgs.

9.4.4.5 With reference to 9.4.4.1, at least one Pilot Proficiency Check per year shall be conducted in an appropriate, approved simulator on type for aeroplanes engaged in commercial operations and:

a) is authorized to carry more than nineteen passengers; or
b) is pressurized

9.4.4.6 With reference to 9.4.4.5, no two consecutive Pilot Proficiency Checks shall be permitted in actual aircraft.

9.4.5 SINGLE PILOT OPERATIONS UNDER THE INSTRUMENT FLIGHT RULES (IFR) OR AT NIGHT

9.4.5.1 A single-engine aeroplane shall not be operated under the IFR by a single pilot or at night for commercial operations.

9.4.5.2 RESERVED

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

9.5 FLIGHT CREW EQUIPMENT

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

9.6 FLIGHT TIME, FLIGHT DUTY PERIODS AND REST PERIODS

9.6.1 The Operator shall establish for approval by Director General Civil Aviation Authority of Nepal the limitations applicable to the flight time and flight duty periods for flight crew members including the provision for adequate rest periods and shall be such as to ensure that fatigue occurring either in a flight or successive flights or accumulated over a period of time due to these and other tasks, does not endanger the safety of a flight.

9.6.1.1 The definition of flight duty period is intended to cover a continuous period of duty that always includes a flight or series of flights for a flight or cabin crew member. It is meant to include all duties a crew member may be required to carry out from the moment he or she reports for duty until he or she completes the flight or series of flights and the aeroplane finally comes to

rest and the engines are shut down. It is considered necessary that a flight duty period should be subject to limitations because a crew member's activities over extended periods would eventually induce fatigue — transient or cumulative — which could adversely affect the safety of a flight.

9.6.1.2 A flight duty period does not include the period of travelling time from home to the point of reporting for duty. It is the responsibility of the flight or cabin crew member to report for duty in an adequately rested condition.

9.6.1.3 Time spent positioning at the behest of the operator is part of a flight duty period when this time immediately precedes (i.e., without an intervening rest period) a flight duty period in which that person participates as a flight or cabin crew member.

9.6.1.4 An operator shall recognize the responsibility of a flight crew member to refuse further flight duty when suffering from fatigue of such a nature as to adversely affect the safety of flight.

9.6.1.5 An operator shall not require a flight crew member to operate an aeroplane if it is known or suspected that the flight crew member is fatigued to the extent that the safety of flight may be adversely affected.

9.6.1.6 The operator shall nominate a home base for each flight and cabin crew member, from where the flight and cabin crew member will normally start and end a duty period or a series of duty periods. The home base shall be assigned with a degree of permanence.

Standby

9.6.1.7 An operator shall define the start time and end time of standby and shall indicate the number of hours it will notify the crew in advance for standby duty, and shall indicate the maximum number of hours it will put the crew on standby duty.

9.6.1.8 Where **airport standby** is immediately followed by a flight duty period, the relationship between such airport standby and the assigned flight duty shall be defined. In such a case, airport standby, if it is likely to induce fatigue, shall be considered as part of a duty period and shall be taken into account to calculate the minimum rest preceding a subsequent flight duty period.

9.6.1.9 When flight and cabin crew members are required to be on standby at an accommodation arranged by the operator, then adequate rest facilities shall be provided.

Availability

9.6.1.10 When flight and cabin crew members are required to be available for contact over a brief period of time to receive instructions concerning a possible change of roster, that requirement should not prevent that crew member from having a rest period before reporting for duty. The time spent being available shall not be counted as duty.

Positioning

9.6.1.11 All time spent positioning counts as duty, and positioning followed by operating without an intervening rest period also counts as flight duty. However, positioning should not count as an operating sector when planning or calculating a flight duty period.

Controlled Rest for flight deck crew

9.6.1.12 An operator may permit a flight deck crew to take a controlled rest for fatigue mitigation in compliance with Appendix 15; however, it shall only be permitted for no longer than 40 minutes and only during cruise in flight sectors of at least 3 hours.

9.6.2 Flight Crew Duty Time Limitations:

9.6.2.1 Single-pilot operations

a) The maximum Flight Duty Period in any period of 24 hours for a pilot engaged in single pilot operation shall be 10 hours of which not more than 6 hours shall be Flight Time.

b) The minimum Rest Period between two consecutive Flight Duty Periods shall be 9 hours, and if the preceding Flight Duty Period was 10 hours or more, it shall not be less than 10 hours. Any period between two consecutive Flight Duty Periods which is spent at place where there is no facility for supine rest shall not qualify as a Rest Period.

9.6.2.2 TWO-PILOT OPERATIONS

a) FOR INTERNATIONAL OPERATIONS

(i) Two Pilot Operations: Single-set crew operations

The maximum Flight Duty Period in any period of 24 hours for pilots engaged in two-pilot operations shall be 13 hours of which not more than 10 hours shall be Flight Time.

(ii) Three Pilot Operations: (One augmented crew operations)

The maximum Flight Duty Period in any period of 24 hours for pilot engaged in three pilot operations shall be 15 with (Class 2 or 3 rest facility) and / or 17 hours with (Class 1 rest facility or Bunk) of which not more than 12 hours shall be Flight Time.

(iii) Four Pilot Operations: (Two augmented crew operations)

The maximum Flight Duty Period in any period of 24 hours for pilot engaged in four pilot operations shall be 16 with (Class 2or 3 rest facility) and / or 18 hours with (Class 1 rest facility or Bunk) of which not more than 12 hours shall be Flight Time.

In case of augmented/ double flight crew, the division of duty and rest between flight crew members being reviewed will be balance, which would be spelt out in detail in Operators Manual.

b) FOR DOMESTIC NON-STOL OPERATIONS

The maximum Flight Duty Period in any period of 24 hours for aeroplane pilots engaged in two-pilot operations shall be 11 hours of which not more than 9 hours shall be Flight Time.

9.6.2.3 The minimum Rest Period between two consecutive Flight Duty Periods shall be 9 hours, and if the preceding Flight Duty Period was 10 hours or more, it shall not be less than 11 hours. Any period between two consecutive Flight Duty Periods which is spent at place where there is no facility for supine rest shall not qualify as a Rest Period

9.6.2.4 Relaxation of limitations

a) Where an operator has established flight time and duty period limitations which are more restrictive than those specified in this directive, pilots-in-command may be authorized by the operator to extend flight times and duty periods up to the limits of those specified in this FOR subject to such conditions as the operator may establish.

b) A pilot-in-command of an aircraft may be authorized to exceed the limits specified in this FOR by upto 1 hour Flight Time and Flight Duty Period by upto 2 hours maximum per event and upto maximum of 3 hours and 6 hours respectively within one calendar month if in his judgement it is safe to do so for the following purposes:

i) search and rescue action;
ii) provisions of relief in cases of distress; and
iii) completion of a flight where unforeseen operational conditions for eg. unforecast weather, equipment malfunction, air traffic delay etc. has extended beyond the limitations.

c) Whenever flight times or duty periods exceed the limitations specified, the pilot-in-command and the operator shall submit a report in writing to the DG, CAAN.

d) Reduction of the rest periods specified in this directive to facilitate search and rescue action or for provision of relief in cases of emergency or distress, shall be subject to the prior approval of the DG, CAAN.

9.6.2.5 Rest Period

i) A "Rest Period" requires that flight and cabin crew members be relieved of all duties for the purpose of recovering from fatigue. The way in which this recovery is achieved shall be the responsibility of the flight or cabin crew member.

ii) Rest periods shall not include standby if the conditions of the standby would not enable flight and cabin crew members to recover from fatigue.

iii) An operator shall establish for flight crew members, a minimum rest period that allows them to obtain:

a) adequate rest prior to flight duty time, calculated by taking into account the number and type of flight crew member duties that precede and follow the rest period and;

b) at least one rest period of not less than 24 consecutive hours, which should include two nights, once within each seven-day period; the preceding six days to include both those days when flight duties or airport standby duties have been performed;

c) the minimum rest period immediately before commencing a Flight Duty Period may not be less than 9 hours.

iv) Rest provisions should be introduced to take into account the impact of time zone crossings and night operations.

v) Longer rest periods should be granted on a regular basis to preclude cumulative fatigue.

vi) Minimum rest periods may be reduced in unforeseen operational circumstances by no more than one hour only at the discretion of the pilot-in-command.

vii) Travelling time spent by a flight or cabin crew member in transit between the place of rest and the place of reporting for duty is not counted as duty, even though it is a factor contributing to fatigue. Excessive travelling time undertaken immediately before commencing a flight duty period could therefore detract from a flight or cabin crew member's ability to counter fatigue arising whilst on duty, and should therefore be taken into account when deciding where pre-flight rest should be taken.

9.6.2.6 Flight and Duty Time Limitation of Cabin Crew

a) The maximum Flight Duty Period in any period of 24 hours shall be 13 hours of which not more than 11 hours shall be Flight Time.

b) The minimum Rest Period between two consecutive Flight Duty Periods shall be 9 hours, and if the preceding Flight Duty Period was 10 hours or more, it shall not be less than 11 hours. Any period between two consecutive Flight Duty Periods which is spent at place where there is no facility for supine rest shall not qualify as a Rest Period.

c) The Operator shall determine the maximum number of landings for Cabin Crew per day taking into consideration the nature and the duration of the flights.

d) Augmented Cabin Crew: The maximum Flight Duty Period for Cabin Crew engaged in flight duty as part of an Augmented Cabin Crew team with one or more additional crew member in any period of 24 hours shall be:

(i) When one augmented Cabin Crew is added to the minimum crew - 14 hours of which not more than 12 hours shall be Flight Time.

(ii) When two augmented Cabin Crew are added to the minimum crew – 15 hours of which not more than 13 hours shall be Flight Time.

9.7 Discretion that may be exercised by the pilot-in-command

9.7.1 The pilot-in-command, at his or her discretion in consideration of special circumstances that could lead to unforeseen levels of fatigue and after discussion with flight or cabin crew members affected, may reduce an actual flight duty period and/or increase a minimum rest period (see 4.8.1.3) in order to remove any adverse effect on flight safety.

9.7.2 The pilot-in-command should report to the operator the use of discretion to reduce a duty period or extend a rest period.

9.8 CUMULATIVE HOURS

Flight Crew and Cabin Crew members shall not fly:

- more than 100 hours in any period of one calendar month,
- more than 290 hours in any period of three consecutive months,
- more than 1000 hours in any period of twelve consecutive months.

9.9 NUMBER OF LANDINGS

For domestic fixed-wing operations, the maximum number of landings permitted for aeroplane flight crew-members engaged in single-pilot or multi-pilot operations shall not exceed ten landings within one calendar date.

Note – Guidance for the development of prescriptive fatigue management regulations is given in Attachment A of the ICAO Annex 6 Part I.

9.10 RECORDS

9.10.1 To enable the operator to ascertain that the company fatigue management scheme is functioning as intended and as approved, records shall be kept for a minimum period of six months of the duties performed and rest periods achieved so as to facilitate inspection by the operator's authorized personnel and audit by the DG, CAAN.

9.10.2 The operator should ensure that these records include for each flight and cabin crew member, at least:

a) the start, duration and end of each flight duty period;

b) the start, duration and end of each duty period;

c) rest periods; and

d) flight time.

9.10.3 The operator shall also keep records of occasions when a pilot-in-command has exercised his or her discretion (as described in 9.7.1). If discretion has to be applied for similar reasons on more than 10 per cent of occasions when a particular route or route pattern is flown, it is likely

that the intention of this Chapter is not being met and undue fatigue may result. Arrangements should be made to change the schedule or the crewing arrangements so as to reduce the frequency at which such events occur. The DG, CAAN may require that, in addition, copies of certain records should be submitted.

9.10.4 Flight crew members shall maintain a personal record of their daily flight time. Only one continuous personal record of their daily flight time shall be maintained by each crew member at any one time regardless of the place, ownership and nature of operations.

9.11 RESERVED

9.12 PILOT-IN-COMMAND (PIC/P1) QUALIFICATIONS

(a) No air carrier may use a pilot to act as pilot-in-command in any single-engine aeroplane unless that pilot;

i) holds at least a Commercial Pilot License with appropriate class and type rating; and

ii) has at least 100 hours of flight time as pilot-in-command with an Instructor Pilot in the type of aeroplane; however, a pilot who holds a P1 or PIC rating in a multi-engine aeroplane and converting to a single-engine aeroplane or a CPL holder who already has more than 1000 hours in aeroplanes in Nepal in commercial operations and converting to another single-engine aeroplane type for commercial operations shall fly a minimum of 50 hours with an instructor on type prior to being released with a copilot. *For STOL clearances refer to Chapter 14.*

(b) No air carrier may use a pilot to act as pilot in command of a multi-engine aeroplane unless that pilot;

i) holds at least an Airline Transport Pilot License with appropriate class and type rating; and
ii) meets the requirements of PELR 2.13.

9.13 SECOND-IN-COMMAND (SIC/P2) QUALIFICATIONS

(a) No air carrier may use a pilot to act as co-pilot of an aeroplane under IFR unless that person:

i) holds a valid CPL/IR/ME license with ATPL theory and with appropriate class and type rating;
ii) holds an instrument rating endorsed by CAAN, valid for the class and type of aeroplane;

(b) Under supervision flying for co-pilot shall be conducted as per PELR para 2.13.

(c) Such under supervision flying for co-pilots shall be pre-informed to CAAN prior to the commencement of such flights.

9.14 PILOT LOGBOOK

9.14.1 Every flight crewmember shall maintain at any time he is engaged in active flight duties, a personal logbook that shall include as a minimum the following:

i) Date
ii) Aircraft make and model
iii) Aircraft registration number
iv) Time of departure and landing in UTC
v) Origin and destination aerodromes
vi) Flight or block time
vii) Number of landings
viii) Name of PIC
ix) Name of SIC
x) Name of Flight Engineer (when applicable)
xi) Single-engine flight details including day and/or night flight time
xii) Multi-engine flight details including day and/or night flight time
xiii) Instrument hours (simulated or actual)
xiv) Records of trainings conducted in synthetic flight training device

9.14.2 No flight crewmember shall at any one time maintain more than one flight logbook nor falsify any data in the logbooks.

9.15 CREWMEMBERS AND ALCOHOL CONSUMPTION

9.15.1 A crew member shall not perform duties on an aeroplane:

a) while under the influence of any drug that may affect his/her faculties in a manner contrary to safety;

b) following deep sea diving except when a reasonable time period has elapsed;

c) following blood donation except when a reasonable time period has elapsed;

d) if applicable medical requirements are not fulfilled, or if he/she is in any doubt of being able to accomplish his/her assigned duties; or

e) if he/she knows or suspects that he/she is suffering from fatigue, or feels unfit to the extent that the flight may be endangered.

9.15.2 A crew member shall be subject to appropriate requirements on the consumption of alcohol which shall be established by the operator and acceptable by the Authority, and which shall not be less restrictive than the following:

a) no alcohol shall be consumed prior to a reasonable amount of time before the specified reporting time for flight duty or the commencement of standby;

b) alcohol should not be present in the blood from the start of and during the entire flight duty period;

c) alcohol shall not be consumed whilst on standby.

CHAPTER 10

FLIGHT OPERATIONS OFFICER/FLIGHT DISPATCHER

10.1 The Operator shall ensure that a flight operations officer/flight dispatcher, employed in conjunction with an approved method of control and supervision of flight operations, be licensed, in accordance with the provisions of Personnel Licensing Requirements (PELR).

10.2 In accepting proof of qualifications other than the option of holding of a flight operations officer/flight dispatcher license, the Operator, in accordance with the approved method of control and supervision of flight operations, shall ensure that, as a minimum, such persons meet the requirements specified in the Personnel Licensing Requirements (PELR) for the flight operations officer/flight dispatcher license.

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

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

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

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

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

c) demonstrated to the operator a knowledge of:

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

d) demonstrated to the operator a knowledge of the following details concerning operations for which the officer is responsible and areas in which that individual is authorized to exercise flight supervision:

1) the seasonal meteorological conditions and the sources of meteorological information;
2) the effects of meteorological conditions on radio reception in the aeroplanes used;
3) the peculiarities and limitations of each navigation system which is used by the operation; and
4) the aeroplane loading instructions;

e) demonstrated to the operator knowledge and skills related to human performance relevant to dispatch duties; and

f) demonstrated to the operator the ability to perform the duties specified in 4.6.

10.4 A flight operations officer/flight dispatcher assigned to duty should maintain complete familiarization with all features of the operation which are pertinent to such duties, including knowledge and skills related to human performance.

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

10.5 A flight operations officer/flight dispatcher should not be assigned to duty after 12 consecutive months of absence from such duty, unless the provisions of 10.3 are met.

10.6 FLIGHT DISPATCHER MANUAL

The operator shall prepare and implement a Flight Dispatcher Manual other than the company Operations Manual for the use by its Flight Dispatchers (Flight Operations Officers) for the conduct of flight operations. The manual shall include among others:

a) the duties and responsibilities of the FD and other concerned operations personnel,
b) the fuel policy,
c) procedures for acquiring and briefing weather information to the flight crew,
d) briefing any navigational information pertinent to the flight,
e) flight time and duty time limitation restrictions,
f) qualification and trainings required,
g) currency requirements,
h) procedures to be followed in case of emergency or abnormal situations, hijacking, bomb threats etc.

10.7 The air operator shall maintain duty records for each flight dispatcher exercising duty in operational control.

CHAPTER 11

MANUALS, LOGS AND RECORDS

Note – The following additional manuals, logs and records are associated with this FOR but are not included in this chapter.

Fuel and oil records – 4.2.10

Maintenance records – NCAR

Flight time, flight duty periods, duty periods rest periods records – 4.2.11.4

Flight preparation forms – 4.3

Operational flight plan – 4.3.3.1

Pilot-in-command route and airport qualification records – 9.4.3.4

11.1 Aeroplane Flight Manual

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

11.1.1 The Aeroplane Flight Manual shall be updated by implementing changes made mandatory by the State of Registry.

11.1.2 Each aeroplane shall have its own Aeroplane Flight Manual indicating the Manufacturer's Serial Number and the Registration Number.

11.2 Operator's maintenance control manual

The operator's maintenance control manual shall be prepared and approved as per the NCAR.

11.3 Maintenance program

The operator's maintenance for each aeroplane shall be prepared and approved as per the NCAR.

11.4 JOURNEY LOG BOOK

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

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

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

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

11.5 RECORDS OF EMERGENCY AND SURVIVAL EQUIPMENT CARRIED

11.5.1 Operators shall at all times have available for immediate communication to rescue coordination centres, lists containing information on the emergency and survival equipment carried on board any of their aeroplanes engaged in international air navigation.

11.5.2 The information required by 11.5.1 shall include, as applicable, the number, colour and type of life rafts and pyrotechnics, details of emergency medical supplies, water supplies and the type and frequencies of the emergency portable radio equipment.

11.6 FLIGHT RECORDER RECORDS

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

11.7 TIME

11.7.1 Coordinated Universal Time (UTC) shall be used and shall be expressed in hours and minutes and, when required, seconds of the 24-hour day beginning at midnight.

11.7.2 A time check shall be obtained prior to operating a controlled flight and at such other times during the flight as may be necessary.

Note.— Such time check is normally obtained from an air traffic services unit unless other arrangements have been made by the operator or by the appropriate ATS authority.

11.7.3 Wherever time is utilized in the application of data link communications, it shall be accurate to within 1 second of UTC.

CHAPTER 12

CABIN CREW

12.1 ASSIGNMENT OF EMERGENCY DUTIES

12.1.1 An operator shall establish, to the satisfaction of the DG, CAAN, the minimum number of cabin crew required for each type of aeroplane, based on seating capacity or the number of passengers carried, in accordance with 4.2.11.9, in order to effect a safe and expeditious evacuation of the aeroplane, and the necessary functions to be performed in an emergency or a situation requiring emergency evacuation. The operator shall assign these functions for each type of aeroplane.

12.1.2 Operators are required to establish "Cabin Crew Procedures" that refers to cabin operation requirements and procedures through its Operation Manual and/or a separate volume known as "**Cabin Crew Manual"**. Such manual shall cover both the normal and abnormal procedures to be followed by cabin crew and obtain approval from CAAN. It shall also include general rules, regulations and the training and competency requirements of the cabin crew.

Note.- Refer "Cabin Crew Manual Preparation Checklist"- Attachment B to Cabin Crew Training Manual, 2015 for necessary reference.

12.2 CABIN CREW AT EMERGENCY EVACUATION STATIONS

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

12.3 PROTECTION OF CABIN CREW DURING FLIGHT

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

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

12.4 TRAINING

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

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

b) drilled and capable in the use of emergency and lifesaving equipment required to be carried, such as life jackets, life rafts, evacuation slides, emergency exits, portable fire extinguishers, oxygen equipment, first aid and universal precaution kits, and automated external defibrillators;

c) when serving on aeroplanes operated above 3,000 m (10,000 ft), knowledgeable as regards the effect of lack of oxygen and, in the case of pressurized aeroplanes, as regards physiological phenomena accompanying a loss of pressurization;

d) aware of other crew members' assignments and functions in the event of an emergency so far as is necessary for the fulfillment of the cabin crew member's own duties;

e) aware of the types of dangerous goods which may, and may not, be carried in a passenger cabin and has completed the dangerous goods training programme required by Dangerous Goods Handling Requirements 2009; and

f) knowledgeable about human performance as related to passenger cabin safety duties including flight crew-cabin crew coordination (Crew Resource Management).

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

Note 2. — For more information on dangerous goods operational requirements, see CAAN DGHR.

Note 3. — Guidance material to design training programmes to develop knowledge and skills in human performance can be found in the Cabin Crew Safety Training Manual *(Doc 10002).*

Note 4. - Cabin Crew Training requirements are detailed in Cabin Crew Training Manual, 2015. Operators shall cover each of the training elements as prescribed by the manual and shall also address specific training needs as applicable to their operation.

12.4.2 Cabin Crew Certificate

Upon successful completion of all the required trainings, operators are required to issue Cabin Crew Certificate to their cabin crew in compliance with the provisions stated in Annex 5 of Cabin Crew Training Manual, 2015 and shall maintain the required qualifications and the recency of experience of each cabin crew to whom the Cabin Crew Certificate has been issued.

No person shall be assigned as a Cabin Crew member without a valid Cabin Crew Certificate evidenced with required training and competency records.

12.5 FLIGHT TIME, FLIGHT DUTY PERIODS AND REST PERIODS

12.5.1 The Operator shall establish the limits applicable to flight time, flight duty periods and rest periods for cabin crew not exceeding the limitations set by this FOR.

a) The probability that fatigue will affect cabin attendants in the performance of their assigned duty to an extent that will adversely affect the safety of the operation is obviously lower than that which applies to flight crews, but it must be remembered that the time that a cabin attendant is most likely to be called upon to perform emergency duties is on landing when the person is nearing the end of a duty period. The duty period limitations applied to cabin crew may be less stringent than those for flight crew but similar rest periods should be provided.

b) Duty Periods and Flight Duty Periods limitations for Cabin Crew shall be as per para 9.6.2.6.

c) Monthly, Ninety Days and Yearly Flight Time Limitations of Cabin Crew shall be the same as that of the Flight Crew.

d) Relaxation of flight time or duty period limitations of cabin attendants shall be at the discretion of the pilot-in-command of the aircraft for the purpose specified in paragraph 9.6.2.4 but whenever the limitations are exceeded, the pilot-in-command and the operator shall submit a written report to the DG, CAAN.

12.5.2 Rest Period

An operator shall establish for flight crew members a minimum rest period that allows them to obtain:

a) adequate rest prior to flight duty time, calculated by taking into account the number and type of flight crew member duties that precede and follow the rest period and ;

b) at least one rest period of not less than 24 consecutive hours, which should include two nights, once within each seven-day period.

12.5.3 RESERVED

12.6 CABIN CREW INSTRUCTOR QUALIFICATIONS

12.6.1 Operators shall establish qualifications for cabin crew instructors as required by CAAN Cabin Crew Training Manual, 2015 Para 3.2.15, and maintain an instructor training program to the satisfaction of DG, CAAN. Cabin Crew Instructors shall obtain necessary authorization before being assigned on any instructional tasks.

12.6.2 Operators shall appoint adequate number of cabin crew examiners (check cabin crew) based upon the criteria as per CAAN Cabin Crew Manual, 2015 Para 3.2.16, to carry out necessary checks and evaluation of the cabin crew.

12.6.3 Cabin Crew Instructors are to be updated regularly and have to be assigned with instructional tasks as frequently as possible. They shall be reassessed by CAAN Inspectors within each 12 months period to monitor that the required level of knowledge and skills are adequately maintained. Cabin Crew Instructors who have not been engaged in instructional tasks in the preceding 12 months period shall go through an update/refresher training.

12.7 RESERVED

12.8 PASSENGER SAFETY BRIEFING CARD

12.8.1 A Passenger Safety Briefing Card, which may be a part of the Cabin Crew Manual and which must be clear and legible of reasonable quality, preferably laminated, shall be required onboard every aircraft in each passenger seat. The Card must also contain instructions in the national language.

12.8.2 Where there is no such provision for placing the Card in every passenger seat, then at least one Card shall be affixed in various prominent positions which will enable every passenger to view the Card and comply with its instructions.

12.8.3 The Passenger Safety Briefing Card shall contain information on:

(a) procedures to follow in the case of fire, decompression, smoke etc. during flight
(b) procedures to follow in the case of emergency evacuation on land and water including the use of all emergency equipment
(c) the use of breathing apparatus (if installed)
(d) the use of life vests (if installed)
(e) restrictions on the use of personal electronic equipment
(f) smoking and seat belt signs
(g) the pictorial display of location of emergency and survival equipment.

12.8.4 When the operator operates more than one type or variants of a type, the Passenger Safety Briefing Card shall also indicate the type or series of the type.

CHAPTER 13

SECURITY

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

13.1 DOMESTIC AND INTERNATIONAL COMMERCIAL OPERATIONS

Information set forth in this Chapter is applicable to all operators engaged in domestic and international commercial air operations.

13.2 SECURITY OF THE FLIGHT CREW COMPARTMENT

13.2.1 In all aeroplanes which are equipped with a flight crew compartment door, this door shall be capable of being locked, and means shall be provided by which cabin crew can discreetly notify the flight crew in the event of suspicious activity or security breaches in the cabin.

13.2.2 All passenger-carrying aeroplanes:

a) of a maximum certificated take-off mass in excess of 54 500 kg; or
b) of a maximum certificated take-off mass in excess of 45 500 kg with a passenger seating capacity greater than 19; or
c) with a passenger seating capacity greater than 60

shall be equipped with an approved flight crew compartment door that is designed to resist penetration by small arms fire and grenade shrapnel, and to resist forcible intrusions by unauthorized persons. This door shall be capable of being locked and unlocked from either pilot's station.

13.2.3 In all aeroplanes which are equipped with a flight crew compartment door in accordance with 13.2.2:

a) this door shall be closed and locked from the time all external doors are closed following embarkation until any such door is opened for disembarkation, except when necessary to permit access and egress by authorized persons; and

b) means shall be provided for monitoring from either pilot's station the entire door area outside the flight crew compartment to identify persons requesting entry and to detect suspicious behaviour or potential threat.

13.2.4 RESERVED

13.2.5 RESERVED

13.3 AEROPLANE SEARCH PROCEDURE CHECKLIST

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

13.4 TRAINING PROGRAMMES

13.4.1 An operator shall establish and maintain an approved security training programme which ensures crew members act in the most appropriate manner to minimize the consequences of acts of unlawful interference. The training programme shall be compatible with the National Aviation Security programme and shall be evaluated by CAAN. As a minimum, this programme shall include the following elements:

a) determination of the seriousness of any occurrence;

b) crew communication and coordination;

c) appropriate self-defense responses;

d) use of non-lethal protective devices assigned to crew members whose use is authorized by the DG, CAAN;

e) understanding of behaviour of terrorists so as to facilitate the ability of crew members to cope with hijacker behaviour and passenger responses;

f) live situational training exercises regarding various threat conditions;

g) flight crew compartment procedures to protect the aeroplane;

h) aeroplane search procedures and guidance on least-risk bomb locations where practicable;

i) security of the flight crew compartment; and

j) post-flight concerns for the crew

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

13.4.3 Such a training should be provided to the crew and concerned personnel on an initial and recurrent basis.

13.5 REPORTING ACTS OF UNLAWFUL INTERFERENCE

Following an act of unlawful interference, the pilot-in command shall submit, without delay, a report of such an act to the DG, CAAN as well as to the designated local authority.

13.6 WEAPONS AND LEAST-RISK BOMB LOCATION

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

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

13.7 UNAUTHORIZED ENTRY IN FLIGHT CREW COMPARTMENT

13.7.1 Operators shall ensure that unauthorized entries into the flight deck are strictly prohibited.

13.7.2 Only persons assigned on duty may occupy jump seats (observer seats) in the flight deck. Such persons may either be company staff or CAAN officials on duty.

CHAPTER 14

Short Take Off and Landing (STOL) Operations

Part I
FLIGHT CREW

14.1 An Operator shall develop and include in its Operations Manual a procedure based on a Safety Risk Assessment that addresses crew currency, crew rostering, flight planning and preparation in such cases where an Operator has not operated to a particular STOL field for more than six months.

14.2 RESERVED

14.3 Pilot-in-command clearance for STOL airfields shall be conducted as per Part II of this Chapter.

14.4 No pilot upon attaining their 60th birthday shall be permitted to operate a single-engine aeroplane for STOL operations either as PIC or First Officer.

14.5 Within the required Pilot Proficiency Checks as determined by 9.4.4.1, Instructor Pilots rated in multi-engine STOL aeroplanes engaged in commercial STOL operations shall perform at least one Pilot Proficiency Check in an appropriate, approved simulator on the type of aeroplane for which the pilot is rated, within every two consecutive years.

14.6 Flight Crew Duty Time Limitations: DOMESTIC STOL OPERATIONS

14.6.1 The maximum Flight Duty Period in any period of 24 hours for aeroplane pilots engaged in two-pilot STOL operations shall be 10 hours of which not more than 8 hours shall be Flight Time.

Part II

STOL FIELDs CLEARANCE REQUIREMENTS

".....This manual provides guidance for the planning and establishment of STOLPORTS, unique airports designed to serve aeroplanes that have exceptional short-field performance capabilities. While "stolport" and "STOL aircraft" have not been precisely defined by ICAO, it is recognized that the capability of certain aeroplanes to operate safely in areas constrained by limited space, restricted terrain or both, offers economic and social advantages provided there are dedicated airports available.

A **STOLPORT** is "an airport whose physical characteristics, visual and non-visual aids and total infrastructure are created to support safe and effective public air transport in and out of densely populated urban areas as well as to and from rural areas with difficult terrain."

As no Standards or Recommended Practices for stolports exist in any of the ICAO Annexes, this manual covers all the aircraft operating aspects of stolports except non-visual navigation aids. The airport terminal building and groundside operations are not addressed. The material in this manual is based on adaptations of conventional airport practices and on the experience of States that have operated stolports or complete STOL systems. It should, however, be noted that Stolport specifications included herein are *not* applicable to **ALTIPORTS** which are constructed in mountainous regions, though some of the STOL aircraft in use today are designed to operate from altiports.

An **ALTIPORT** may be defined as "a small airport in a mountainous area with a steep gradient runway, used for landing up the slope and for take-off down the slope, thereby making use of only one approach/departure area."

On the other hand, the longitudinal slope of a STOL runway is flatter than even that prescribed for a runway designed for the operation of conventional aircraft and generally has approach/departure areas at both ends of the runway. Contemporary "short-field" aeroplanes fall into a rather narrow range with respect to size and performance. The guidance in this manual caters to that fact. The future of civil STOL aircraft development is uncertain, but should progress in this area lead to larger aeroplanes, a revision of some of the material in this manual will be required……." **Foreword**, **STOLPORT Manual, Doc 9150-AN/899, Second Edition – 1991 (ICAO)**

1. INTRODUCTION

1.1 What has generally been accepted commonly in Nepal as "STOL fields", do not necessarily fall under the definition of ICAO DOC 9150 as STOLPORTS. Airfields like Lukla, Syangboche, Dolpa, Rara, Simikot clearly reflect the definition of ALTIPORTs as defined by Doc 9150, as all these fields are located in mountainous regions, have a steep gradient runway and only one approach/departure path is used. Surprisingly however, Manang does not fit this definition of ALTIPORT, despite being located at approximately 11000 ft above mean sea level as it does not have a steep gradient runway and departure/approaches are possible (with caution) from both ends of the runway.

Some STOL airfields located on a lower altitude, seem to partially fit the definition of an ALTIPORT where the runway has a somewhat steep gradient and normally only one end of the runway is used for both arrival and departure eg. Salley and Bhojpur. However, they cannot be classified as Altiports because of their low elevation. Kangeldanda and Lamidanda both have fairly flat runways and both runway ends can be used for departure or arrival.

Phaplu and Rumjatar, on the other hand, have steep runway gradients and although normally only one runway end is used for departure and arrival, it is possible to use both. Taplejung on the other hand is located on a mountain slope but has a fairly flat runway gradient and now both ends can be used for arrival but only one end for departure. Most of Nepal's STOL airfields are much more demanding and present a much higher risk factor than the STOLPORT concept described by DOC 9150.

1.2 The different and unique challenges presented by the STOL fields of Nepal make it difficult to determine a universal STOL field clearance procedure for every class and type of aeroplane or for every operator. What have been provided in this Chapter after more than three decades of study and experience, are the minimum requirements to be met by an operator and it is strongly recommended by CAAN for operators to opt for a more stringent clearance procedure to ensure that the flight crew will have sufficient experience and skill prior to being released for normal STOL operations.

1.3 SMS and SOP

While operators now are required to have a Safety Management System in place, particular attention must be paid by operators using STOL fields in their systems focusing particularly on this issue. The SOP too must have a section devoted entirely to the standard procedures to be followed by a flight crew for every STOL field to which it operates.

1.4 Flight Crew utilization

Operators should ensure that the flight crew maintain their proficiency and familiarization for the airfields and routes to which they operate. Consideration should be particularly given to crew who were previously operating to STOL fields but have not been engaged in STOL field operations for a number of years or even months.

The utilization of expatriate and foreign flight crew members who have never flown to STOL fields abroad or who have never flown in Nepal requires particular attention. Despite having a great many hours in type, their inexperience in flying in Nepal's extreme flying environment presents a serious challenge to all concerned. Instructor-on-type does **not** automatically qualify a pilot for release for solo or with a copilot to any of Nepal's STOL fields. This is of particular concern in the case of single-engined aeroplanes. The utilization of CRM and Human Factors principles in the rostering of crew as well as their implementation in flight must be emphasized.

1.5 Aircraft

Previous clearance requirements focused primarily on twin engined aeroplanes. The recent change of policy of permitting the continuation of operation of single-engined aeroplanes to and from STOL fields has yet presented even greater challenges. Every operator who operates such class of aeroplanes to Nepal's STOL fields must identify and include in their SOP, an emergency landing field or strip along the route in case of engine failure, to which the aeroplane can safely glide and land.

STOL field clearance for crew involved in such operations will naturally be more stringent than for crew flying multi-engined STOL aeroplanes. Operators that operate "tail-dragger" or tail-wheel type aeroplanes should as far as practicable refrain their flight crew from operating another type of aeroplane.

Certain airfields situated at a low elevation and categorized as STOL fields (eg. Ramechhap, Chaurjhari etc.) for multi-engined aeroplanes may not necessarily be STOL fields for certain aeroplanes like the PC-6 Pilatus Porter which has an exceptional short-field performance capability and for which a so-called "STOL" field is really a normal field.

1.6 Airfields

Each and every STOL field in Nepal is unique and has its own peculiar characteristics. A STOL pilot should be well acquainted with these characteristics before being released for solo or flights with copilots. STOL fields in Nepal range from the shortest field length of 1400 feet (Doti) to the longest at 2200 feet (Jumla, Jomsom and Phaplu). They range from the lowest elevation at 1,555 feet MSL (Ramechhap) to the highest at 12,297 feet MSL (Syangboche). They range from flat airfields to the steepest at 12% (Lukla). Rapidly changing weather and wind conditions in mountainous regions are both highly critical influential factors in the safe operations in these airfields. Narrow and busy routes through a particular mountain pass during peak travel season to some of these airfields provide further hazards to pilots operating to and from these airfields particularly if their aircraft are not equipped with ACAS equipment or flying solo.

1.6.1 Categories of STOL airfields.

In the case of single-engine aeroplanes, since it is assumed that pilots will initially fly as First Officers with Instructors and Line Captains for a number of years acquiring the required flight hours prior to being promoted to Captain, they will normally be first cleared to the STOL fields for two-pilot operations. Only after having gained considerable flight experience over a number of years in all seasons, should an operator consider releasing a pilot for solo operations to STOL fields. It is therefore assumed that by the time a pilot is released for solo, he will have already cleared the required STOL fields during his multi-pilot operational period.

Pilots shall be cleared to the following airfields with copilots categorically through Categories A, B and C; however, where an operator does not operate to any airfields in Category A, his pilots may commence clearing Category B airfields after having completed the preliminary requirements of Category B. Similarly where an operator does not operate to any Category B airfields, his pilots may, after having cleared Category A airfields, commence clearance of Category C airfields.

DEFINITIONS

Aerodrome Traffic Density

a) *Light.* Where the number of movements in the mean busy hour is not greater than 15 per runway or typically less than 20 total aerodrome movements.
b) *Medium.* Where the number of movements in the mean busy hour is of the order of 16 to 25 per runway or typically between 20 to 35 total aerodrome movements.
c) *Heavy.* Where the number of movements in the mean busy hour is of the order or 26 or more per runway or typically more than 35 total aerodrome movements.

Note 1. The number of movements in the mean busy hour is the arithmetic mean over the year of the number of movements in the daily busiest hour.

Note 2. Either a take-off or a landing constitutes a movement.

Aeroplane reference field length. The minimum field length required for take-off at maximum certificated take-off mass, sea level, standard atmospheric conditions, still air and zero runway slope, as shown in the appropriate aeroplane flight manual prescribed by the certificating authority or equivalent data from the aeroplane manufacturer. Field length means balanced field length for aeroplanes, if applicable, or take-off distance in other cases.

Slush. Water-saturated snow which with a heel-and-toe slap-down motion against the ground will be displaced with a splatter, specific gravity: 0.5 upto 0.8.

Note.-Combinations of ice, snow and/or standing water may, especially when rain, rain and snow, or snow is falling, produce substances with specific gravities in excess of 0.8. These substances, due to their high water/ice content, will have a transparent rather than a cloudy appearance and, at the higher specific gravities, will be readily distinguishable from slush.

Snow (on the ground).

a) *Dry snow*. Snow which can be blown if loose or, if compacted by hand, will fall apart again upon release; specific gravity: up to but not including 0.35.

b) *Wet snow*. Snow which, if compacted by hand, will stick together and tend to or form a snowball; specific gravity: 0.35 up to but not including 0.5.

c) *Compacted snow*. Snow which has been compressed into a solid mass that resists further compression and will hold together or break up into lumps if picked up; specific gravity: 0.5 and over.

(I) Category A airfields:

- a Pilot must have accumulated at least 500 hours as PIC in STOL operations after acquiring CAAN ATPL;
- the first airfield of this category should be cleared after completing at least five missions* with an Instructor Pilot and checked by another Instructor Pilot in the sixth mission; and
- the remaining airfields of this category may be cleared by an Instructor Pilot as per the approved Company Manuals.

1	Ramecchap	4	Baitadi	7	Darchula
2	Chaurjhari	5	Sanfebagar	8	Salley
3	Doti	6	Baglung	9	Bajhang

(I) Category B airfields:

- a Pilot must have accomplished at least 100 STOL missions* and 12 months experience to any Cat B or Cat C airfield after acquiring CAAN ATPL and every STOL field of this Category should be cleared after completing at least five missions with an Instructor Pilot in each airfield and checked by another Instructor Pilot in the sixth mission.
- Clearance to Cat A and B airfields may not be commenced until 12 calendar months have passed since the pilot was upgraded to P1 status and the experience requirements of Section 2 have been satisfied.

1	Bhojpur	5	Bajura	9	Khanidanda	13	Lamidanda
2	Taplejung	6	Rolpa	10	Thamkharka		
3	Phaplu	7	Kangeldanda	11	Dhorpatan**		
4	Jomsom (for multi-engine operations)	8	Rumjatar	12	Jumla		

(II) Category C airfields (ALTIPORTS):

- a Pilot must have accomplished additional 150 missions* in Cat C airfields.
- For multi-engine aeroplanes, having accumulated at least 2500 hours and after being upgraded to P1 status, 18 months must have been completed prior to beginning the clearance of CAT C airfields; and for single-engine aeroplanes, a minimum of three years for multi-pilot operations and four years for single-pilot operations after receiving the CPL license. Cat C airfields may not be cleared until a pilot has completed the experience requirements of Section 2.
- Each airfield of this category should be cleared after accomplishing ten missions in each airfield and checked by an Instructor Pilot in the eleventh mission.

1	Lukla	4	Simikot	7	Langtang**
2	Manang	5	Rara	8	Jomsom (for single-engine operations)
3	Jufal (Dolpa)	6	Syangboche**	9	Masinechour (Upper Dolpa)

Note- In certain instances where an operator does not operate to a particular aerodrome in Category C on a regular basis and it is not possible to clear his pilots with the required number of missions due to various constraints, clearances to such airfields is permitted as per the following procedure, provided that the pilots have already been cleared for at least two Cat C airfields:

i) Company must notify CAAN for every pilot adopting this procedure stating the reason for the diversion from the normal procedure.
ii) The pilot shall perform a minimum of twelve Takeoffs and landings at that particular airfield within no less than three missions. He shall then be cleared by another IP in the next mission.

*mission = For use of this document, a mission is defined as one complete sector commencing from the aerodrome of origin to the intended destination aerodrome culminating in a full stop landing. Such a completed sector shall fulfill one mission.
** single engine STOL operations

2. P-I-C CLEARANCE TO STOL FIELDS (AEROPLANE)

2.1 PIC clearances to STOL fields have been segregated in three parts viz; two-pilot operations in single-engined aeroplanes; single-pilot operations in single-engined aeroplanes and two-pilot operations in multi-engined aeroplanes.

2.2 A pilot will not be designated as Pilot-In-Command, for the destination to STOL airfields unless he has completed the experience in flight as specified below;

A) Aeroplane with multi-pilot operations (single-engined aeroplanes)

1) Upon obtaining P1 license from CAAN, a new pilot (designated as a copilot) shall fly a minimum of 100 flying hours logged as P1 with Instructor Pilot.

2) A pilot should have a minimum of total 2500 hours of experience in aeroplane category in which the minimum of experience mentioned below should be included and a clearance from the Instructor Pilot:

i) should have minimum of 300 hours logged as P1 airfields in Nepal to fly with colleagues; and minimum of 700 hours as P1 in STOL to fly with new copilots. The minimum number of landings required in STOL airfields to be mentioned in the Company Operations Manual. In the case of STOL airfields with Line Captains, accumulations of P1 hours only on return leg to base is allowed, while both ways may be logged as P1 when flying with an Instructor.

ii) should have minimum of 100 hours of flying experience in STOL airfield as P1 with Instructor Pilot.

3) Clearance to STOL airfields may be commenced categorically as mentioned in 1.6.1.

4) In the case of foreign Instructor Pilots on type, he must first fly a minimum of 400 hours and one year of flying experience in Nepal with Nepalese Instructor Pilots, Senior Line Captains or Senior Copilots (with more than 1000 flight hours in Nepal) before he is released with a new copilot. He must then receive a Clearance from the local Instructor Pilot or an authorized Senior Line Captain of the company before being released with new co-pilots. Such a clearance shall be required for every airfield to which the operator operates.

5) In the case where the operator does not have a local Instructor Pilot but only Line Captains and the foreign Instructor is required to fly with a copilot to clear his (copilot's) IP hours, the foreign Instructor shall fly to the destination STOL field with the Line Captain and on the return leg to base, he shall fly with the copilot to clear the copilot's IP hours. However, foreign Instructor Pilots who have accumulated a minimum of 400 hours of STOL flying experience in Nepal shall be exempted from this requirement.

6) Captains and copilots of multi-engine aeroplanes who already have previous STOL flying experience in Nepal need to fly a minimum of 50 hours with Instructor Pilots of single-engine STOL aeroplanes for type conversion. However, those with non-STOL experience or who have not flown STOL operations during the last five years must fly a minimum of 100 hours with Instructors prior to be being released for normal flights.

7) Pilots who already have an Instructor Pilot rating in multi-engine aeroplanes and acceptable to the Director General, CAAN, shall be eligible to be endorsed with an IP rating in a single-engine aeroplane after acquiring a rating on type; accumulating a minimum of 100 hours of flight experience on type and successfully completing a checkride to the Check Pilot's satisfaction. However, in the case of tail-wheel type aeroplanes, he shall fly a minimum of 200 hours prior to applying for an IP rating.

B) Aeroplane with single-pilot operations (single-engined aeroplanes)

1) should have a minimum of total 5000 hours of experience in aeroplane category in which the minimum of experience mentioned below should be included:

   i) should have a minimum of 2000 hours logged as P1 in Nepal in STOL airfields. In the case of STOL airfields with Line Captains, accumulations of P1 hours only on return leg to base is allowed, while both ways may be logged as P1 when flying with an Instructor.
   ii) should have minimum of 100 hours of flying experience in STOL airfield as P1 with Instructor Pilot.

2) must have previously cleared as PIC, the particular STOL field in multi-pilot operations to which he intends to fly solo.

3) foreign pilots are prohibited to fly solo to and from Nepal's STOL fields until fulfilling the requirements of B 1).

C) Aeroplane with multi-pilot operations (multi-engined aeroplanes)

1) Upon obtaining P1 license from CAAN, the person shall fly a minimum of 100 hours logged as P1 under supervision with Instructor Pilot. The pilot shall undergo assessments every 50 hours as per PELR Appendix 1 Performance Based Assessment; and

2) shall comply with the following:

   i) should have minimum of 500 hours logged as P1 in Nepal in STOL airfields. In the case of STOL airfields with Line Captains, accumulations of P1 hours only on return leg to base is allowed, while both ways may be logged as P1 when flying with an Instructor.

   iii) at least two years of continuous STOL experience in Nepal (for pilots who convert from non-STOL flying and have no previous STOL flying experience).

3) Clearance to STOL airfields may be commenced categorically as mentioned in 1.6.1.

4) In the case of pilots converting from single engine aeroplanes to multi-engine aeroplanes, the following shall apply:

   a) pilots without previous multi-engine experience shall require a minimum of 1000 hours in multi-engine aeroplanes and an ATPL prior to commencing STOL clearance procedures;

   b) pilots who already have more than 1000 hours in multi-engine aeroplanes but are flying in single-engine aeroplanes and who have already cleared certain STOL airfields in single-

a) engine aeroplanes may commence STOL field clearances in multi-engine aeroplanes after obtaining an ATPL, completing the required IP hours, and performing at least ten missions to that STOL field and checkout by another IP or DCP.

2.3 a) In the case of foreign Instructor Pilots, he must first fly a minimum of 400 hours with Nepalese Instructor Pilots and/or Line Captains. He must then receive a Clearance from the local Instructor Pilot or a company authorized Senior Line Captain of the company before being released with co-pilots. Such a clearance shall be required for every airfield to which the operator operates.

b) In the case of foreign Line Captains with or without type rating, he must fulfill the requirements of C 1), 2) and 3).

c) In the case where the operator does not have a local Instructor Pilot but only a Line Captain and the foreign Instructor is required to fly with a copilot to clear his (copilot's) IP hours, the foreign Instructor shall fly to the destination STOL field with the Line Captain and on the return leg to base, he shall fly with the copilot to clear the copilot's IP hours.

2.4 In cases where a pilot has been cleared in at least two Category C STOL airfields and is seeking approval for clearance to a Category A or B airfield, the pilot shall have to undergo at least one check flight to that airfield prior to being released with a copilot.

1. REFERENCES

- STOLPORT Manual, Doc 9150-AN/899, Second Edition – 1991 (ICAO)
- UNDP/ICAO PROJECT : NEP/82/009 - HIGH ALTITUDE STOL PERFORMANCE CRITERIA STUDY (DHC-6/300 Series Twin Otter Aircraft) - His Majesty's Government of Nepal – February 1998
- ANNEX 14 VOLUME I – AERODROMES
- REPORT ON CAAN STOL SAFETY COMMITTEE ON ATPL REQUIREMENTS AND PIC UPGRADE PROCEDURE 2019.

CHAPTER 15.

CARGO COMPARTMENT SAFETY

Note.— Guidance on the hazards associated with the transport of items in the cargo compartment, the conduct of a specific safety risk assessment in accordance with the Safety Management Manual (SMM) (Doc 9859), and the responsibilities for the transport of dangerous goods, is contained in the Guidance for Safe Operations Involving Cargo Compartments (Doc10102).

15.1 TRANSPORT OF ITEMS IN THE CARGO COMPARTMENT

15.1.1 The Air Operator shall ensure that the operator establishes policies and procedures for the transport of items in the cargo compartment, which include the conduct of a specific safety risk assessment. The risk assessment shall include at least the:

a) hazards associated with the properties of the items to be transported;
b) capabilities of the operator;
c) operational considerations (e.g. area of operations, diversion time);
d) capabilities of the aeroplane and its systems (e.g. cargo compartment fire suppression capabilities);
e) containment characteristics of unit load devices;
f) packing and packaging;
g) safety of the supply chain for items to be transported; and
h) quantity and distribution of dangerous goods items to be transported.

Note.— Additional operational requirements for the transport of dangerous goods are contained in CAAN Dangerous Goods Handling Requirements (DGHR).

15.2 FIRE PROTECTION

15.2.1 The elements of the cargo compartment(s) fire protection system, as approved by the State of Design or State of Registry, and a summary of the demonstrated cargo compartment fire protection certification standards, shall be provided in the Aeroplane Flight Manual or other documentation supporting the operation of the aeroplane.

Note.— Guidance on the elements of cargo compartment fire protection and associated demonstrated standards are provided in the Guidance for Safe Operations Involving Cargo Compartments (Doc 10102).

15.2.2 The Operator shall establish policies and procedures that address the items to be transported in the cargo compartment. These shall ensure, to a reasonable certainty, that in the event of a fire involving those items, it can be detected and sufficiently suppressed or contained by the elements of the aeroplane design associated with cargo compartment fire protection, until the aeroplane makes a safe landing.

Note.— Guidance on policies and procedures that address the items to be transported in the cargo compartment are provided in the Guidance for Safe Operations Involving Cargo Compartments (Doc 10102).

CHAPTER 16

TRAINING REQUIREMENTS AND SAFE TRAINING PRACTICES

16.1 GENERAL

16.1.1 This chapter prescribes the requirements applicable to each certificate holder for establishing and maintaining a training program for crew members, aircraft dispatchers and other operations personnel and for the approval and use of training devices in the conduct of the program as well as the contains of safe training practices.

16.1.2 DEFINITIONS. The following terms are used throughout this chapter and are defined as follows:

- *Training Program:* A system of instruction which includes curriculums, facilities instructors, check airmen and examiners, courseware, instructional delivery methods, and testing and checking procedures. This system must satisfy the training program requirements of the CIVIL AVIATION AUTHORITY OF NEPAL and ensure that each crewmember and dispatcher remains adequately trained for each aircraft, duty position, and kind of operation in which the person serves.

- *Modular Training:* The concept of program development in which logical subdivisions of training programs are developed, reviewed, approved, and modified as individual units. Curriculum segments and modules may be used in multiple curriculums. The modular approach allows great flexibility in program development and reduces the administrative workload on both operators and instructors in the development and approval of these programs.

- *Categories of Training:* The classification of instructional programs by the requirement the training fulfills. Categories of training consist of one or more curriculums. The categories of training are initial new-hire, initial equipment, transition, upgrade, recurrent (periodic), and requalification.

- *Curriculum:* A complete training agenda specific to an aircraft type, a crewmember or dispatcher duty position, and a category of training. An example is an "initial new-hire, Boeing 737 first officer curriculum." Each curriculum consists of several curriculum segments.

- *Curriculum Segment:* The largest subdivision of a curriculum containing broadly related training subjects and activities based on regulatory requirements. Curriculum segments are logical subdivisions of a curriculum which can be separately evaluated and individually approved. Examples are a "ground training" segment and a "flight training" segment. Each curriculum segment consists of one or more training modules.

- *Training Module:* A subpart of a curriculum segment which constitutes a logical, self-contained unit. A module contains elements or events which relate to a specific subject. For example, a ground training curriculum segment could logically be divided into modules pertaining to aircraft systems (such as hydraulic, pneumatic, and electrical). As another example, a flight training curriculum segment is normally divided into flight periods, each of which is a separate module. A training module includes the outline, appropriate courseware, and the instructional delivery methods. It is usually, but not necessarily, completed in a single training session.

- *Element:* An integral part of a training, checking, or qualification module that is subject oriented and not task-oriented. For example, an "electrical power" ground training module may include such elements as a DC power system, an AC power system, and circuit protection.

- *Event:* An integral part of a training, checking, or qualification module which is task-oriented and requires the use of a specific procedure or procedures. A training event provides a student an opportunity for instruction, demonstration, and/or practice using specific procedures. A checking or qualification event provides an evaluator the opportunity to evaluate a student's ability to correctly accomplish a specific task without instruction or supervision.

- *Checking and Qualification Module:* An integral part of a qualification curriculum segment which contains checking and qualification requirements. For example, a qualification curriculum segment may contain a proficiency check module, a LOFT module and an operating experience (qualification) module.

- *Courseware:* Instructional material developed for each curriculum. This is information in lesson plans, instructor guides, computer software programs, audiovisual programs workbooks, aircraft operating manuals, and handouts. Courseware must accurately reflect curriculum requirements, be effectively organized, and properly integrate with instructional delivery methods.

- *Instructional Delivery Methods:* Methodology for conveying information to a student. For example, this may include lectures, demonstrations, audiovisual presentations, programmed and directed self study workshops, and drills. Training devices, simulators, aircraft, and computer work stations are also considered instructional delivery methods.

- *Testing and Checking:* Methods for evaluating students as they demonstrate a required level of knowledge in a subject, and when appropriate apply the knowledge and skills learned in instructional situations to practical situations.

- *Training Hours:* The total amount of time necessary to complete the training required by a curriculum segment. This must provide an opportunity for instruction, demonstration, practice, and testing, as appropriate. This time must be specified in hours on the curriculum segment outline. A training hour includes time for normal breaks, usually 10 minutes each hour. Lunch breaks are not included.

- *Programmed Hours:* The hours specified for certain categories of training (initial new-hire, initial equipment, and recurrent). Programmed hours are specified in curriculum segment outlines in terms of training hours.

- *Duty Position:* The functional or operating position of a crewmember or aircraft dispatcher. Common duty positions are pilot-in-command (PIC), second-in-command (SIC), flight engineer (FE), flight attendant (FA), and aircraft dispatcher (AD).

- *Training/Checking Month (Base Month):* The calendar month during which a crewmember or aircraft dispatcher is due to receive required recurrent training, a required flight check, a required competency check, or required operating familiarization. Calendar month means the first day through the last day of a particular month.

- *Eligibility Period:* Three calendar months (the calendar month before the "training/checking month," the "training/checking month," and the calendar month after the "training/checking" month). During this period a crewmember or aircraft dispatcher must receive recurrent training, a flight check, or a competency check to remain in a qualified status. Training or checking completed during the eligibility period is considered to be completed during the "training/checking month" and is due in the "training/checking month" in the following year.

- *Initial Approval:* A CIVIL AVIATION AUTHORITY OF NEPAL letter which conditionally authorizes an operator to begin instruction to qualify personnel under a specific curriculum or curriculum segment pending an evaluation of training effectiveness. An initial approval letter must specify an expiration date for the conditional authorization.

- *Final Approval:* A CIVIL AVIATION AUTHORITY OF NEPAL letter, without an expiration date, which authorizes an operator to continue training in accordance with a specific curriculum or curriculum segment.

16.1.3 In order that Operators impart training to their Flight and Cabin Crew members to comply with the requirements of 3.12 OPERATORS TO ENSURE THAT FLIGHT CREW ARE QUALIFIED, Operators shall fulfill the requirements of Chapter 16.2; however, such training programs prepared by the Operator and approved by the DG, CAAN shall be only for the purpose of training those Flight and Cabin Crew who are currently employed by the Operator or CAAN pilots who have been deputed to the company for the purpose of receiving such trainings with prior permission from the DG, CAAN.

16.1.4 a) An Instructor of pilots and/or cabin crew who has imparted flight training to a student or a group of students, shall not conduct the final skill test or final clearance. Therefore an Operator shall ensure that it always has an adequate number of instructors and check personnel (Pilots or Cabin Crew).

b) When there is only one Instructor or Check Pilot of the type for the purpose of training and checking pilots, the DG, CAAN may approve the same Instructor to impart both the training and conduct the skill test or final clearance provided that the Instructor has a proven record of unbiased trainings and checks, has not violated the Rules and Regulations of CAAN within the past two years and is determined to be fit for the duty by the DG, CAAN.

16.2 TRAINING PROGRAM CURRICULUM

16.2.1 Each certificate holder must prepare and keep current a written training program curriculum for each type of aircraft with respect to dispatcher and each crew member required for that type aircraft. Curriculum must include ground and flight training required by this chapter.

16.2.2 Each training program curriculum must include:

a) a list of principal ground training subjects, including emergency training subjects that are provided.

b) a list of all the training devices mockups, system trainers, procedures trainers or other training aids that the certificate holder will use.

c) detailed descriptions or pictorial displays of the approved normal, abnormal and emergency maneuvers, procedures and functions that will be performed during each flight training phase or flight check indicating those maneuvers, procedures and functions that are to be performed during the in-flight portion of flight training and flight checks.

d) a list of aircraft simulators or other training devices approved, including approvals for particular maneuvers, procedures or functions.

e) the program hours or training that will be applied to each phase of training.

f) a copy of each statement issued by the DG, CAAN for reduction of program hours of training.

16.3 TRAINING PROGRAM AND REVISION; Initial and Final Approval

16.3.1 To obtain initial program, each certificate holder must submit to the DG, CAAN:

a) an outline of the proposed program or revision, including an outline of the proposed or revised curriculum that provides enough information for a preliminary evaluation of the proposed training program or revised training program; and

b) additional relevant information as may be requested by the DG, CAAN.

16.3.2 If the proposed training program or revision complies with this chapter the DG, CAAN grants initial approval in writing after which the certificate holder may conduct the training in accordance with that program. The DG, CAAN then evaluates the effectiveness of the training program and advises the certificate holder of deficiencies, if any, that must be corrected.

16.3.3 The DG, CAAN grants final approval of the program or revision if the certificate holder shows that the training conducted under the initial approval set forth in the above paragraph ensures that each person that successfully completes the training is adequately trained to perform his assigned duties.

16.3.4 In granting initial or final approval of training programs or revision, including reduction in program hours specified in this chapter, the DG, CAAN considers the training aids, devices, methods and procedures listed in the certificate to holder's curriculum that increases the quality and effectiveness of the teaching-learning process.

16.3.5 If approval of reduced program hours of training is granted, the DG, CAAN provides the certificate holder with a statement for the basis for the approval.

16.3.6 Whenever the DG, CAAN finds that revisions are necessary for the continued adequacy of a training program that has been granted final approval, the certificate holder shall, after notification by the DG, CAAN, make any changes in the program that are found necessary by the DG, CAAN, within 30 days after the certificate holder receives such notice. However, if the DG, CAAN finds that there is an emergency that requires immediate action in the interest of safety in air transportation, he may, upon a statement of the reasons, require a change effective without stay.

16.4 GROUND INSTRUCTOR (TECHNICAL/PERFORMANCE)

16.4.1 No certificate holder may use a person to serve as a ground instructor for a course of approved training unless that person:

(a) In the case of pilots:

(i) has demonstrated his knowledge and capacity on teaching subject matter by conducting a ground class satisfactorily to the DG, CAAN and is cleared by DG, CAAN to act as an instructor for the ground training.

(ii) for a single-engine aeroplane, holds a CPL with more than 2000 hours of flying experience in Nepal and successfully completes a Ground Instructor's course; and

(iii) for multi-engine aeroplanes, holds an ATP license for more than three years and successfully completes a Ground Instructor's course.

(b) In the case of Engineers:

(i) has demonstrated his knowledge and capacity on teaching subject matter by conducting a ground class satisfactorily to the DG, CAAN and is cleared by DG, CAAN to act as an instructor for the ground training.

(ii) For aeroplanes having a MTOW of less than 5,700 kgs:

- holds an Aircraft Maintenance license with at least three years' experience with an aviation organization applicable to the category; or
- an Engineering degree of any discipline as well as having a work experience of at least three years with an aviation organization and whose affiliation with subject to instruct should be fit to satisfy the DG, CAAN.

(iii) For aeroplanes having a MTOW of more than 5,700 kgs:

- holds an Aircraft Maintenance license with at least three years experience and one year experience on type with an aviation organization applicable to the category; or

- an Engineering degree of any discipline and type rating as well as having a work experience of at least three years with an aviation organization and whose affiliation with subject to instruct should be fit to satisfy the DG, CAAN.

Note-A pilot whose license is not current but has qualification and experience mentioned above also may be considered to be eligible to apply for a position of Ground Instructor.

16.4.2 a) Ground Instructor Authorization shall only be issued by the concerned air operator or ATO to suitably qualified candidates that meet all requirements for imparting ground training to flight and cabin crew.

b) The detailed procedure of Ground Instructor Authorization developed by the air operator or ATO shall be approved by CAAN.

16.4.3 In case of ground instruction for cabin crew, all the ground instructor's requirements as mentioned in Cabin Crew Training Manual, 2015 shall be met to conduct ground courses and obtain necessary authorization before being assigned on any instructional tasks. (Refer FOR 12.6).

16.4.4 In case of ground instruction for flight operations officer and persons involved in dispatching aircraft, a pilot or FOO license holder, with experience of not less than three years shall be eligible to conduct ground instruction, if his qualification and background is satisfactory to DG, CAAN.

16.4.5 Ground instructor's certificates shall be valid as mentioned in CAR 2058, Rule 38 (1).

16.4.6 For the renewal of ground instructor certificate, the applicant must produce an evidence of conducting a ground class of his/her subject at least once in a year.

16.5 PILOT TRAINING: Ground and Flight Training

16.5.1 Initial, Transition, Recurrent, Re-qualification and Upgrade Ground Training. For Differences training refer to para 15.12.

16.5.1.1 Initial, transition, recurrent, re-qualification and upgrade ground training for pilots must include instruction in at least the following, as applicable, to their assigned duties:

a) General Subjects:

i) the certificate holders dispatch or flight release procedures.
ii) principles and methods for determining weight and balance, and runway limitations for take-off and landing (regulated take-off and landing weight)
iii) enough meteorology to ensure a practical knowledge of weather phenomena, including the principal of frontal systems, icing, fog, thunderstorms and high altitude weather situations.
iv) air traffic control systems, procedures and phraseology.
v) navigation and the use of navigation aids, including instrument approach procedures.
vi) normal and emergency communication procedures.
vii) visual cues prior to and during descent below DH or MDA; and
viii) other instructions including human factors, CRM, CFIT, Dangerous Goods, Upset Prevention Recovery Training, Minimum Equipment List as necessary to ensure his competence.

b) For each aircraft type:
i) a general description.
ii) performance characteristics.
iii) engines and propellers.
iv) major components.
v) major aircraft systems, appropriate procedures and limitations.
vi) procedures for avoiding severe weather situations and for operating in or near thunderstorms, turbulent air, icing, hail, and other potentially hazardous meteorological conditions.
vii) operating limitations
viii) fuel consumption and cruise control.
ix) flight planning.
x) each normal and emergency procedure; and
xi) the approved aircraft flight manual.

16.5.1.2 Initial ground training for pilots must consist all the programmed hours of instructions in the required subjects specified in the above paragraph and approved by DG, CAAN.

16.5.2 Initial, Recurrent, Re-qualification, Transition and Upgrade Flight Training.

16.5.2.1 Initial, recurrent, transition, re-qualification and upgrade training for pilots must include flight training and practice in the maneuvers and procedures set forth in the Operator's Operations Manual Part-D Training.

16.5.2.2 The maneuvers and procedures required by the above paragraph must be performed in-flight or (except to the extent that certain maneuvers and procedures may be performed) in a Flight Simulation Training Device accepted by the DG, CAAN.

16.5.2.3 The initial flight training required must include at least 5 hours for pilot-in-command and 8 hours for co-pilot or as per the approved training programme, prior to the skill test. The recurrent flight training shall consist of a minimum of one hour; however, this shall not be limiting and shall be subject to the type of aircraft operated and the assessment by the Instructor.

16.5.2.4 The skill test or PPC shall include at least three landings.

16.5.2.5 Operators shall use their own training programs and check forms when conducting recurrent flight trainings abroad in an aircraft or simulator.

16.5.2.6 Flight Crew upon receiving a type rating on a new type of aircraft shall receive Line Indoctrination Training consisting of a minimum of 50 hours for turbo-prop aircraft or 50 sectors for jet aircraft followed by a Line Check prior to being released for normal flights with Line Captains or co-pilots. In the case of Cross Crew Qualification (CCQ), the line training and final checks shall comprise of at least 6 sectors including check.

16.5.2.7 Operators shall have a Line Indoctrination Training and Check Program as part of Operations Manual – Part D.

16.6 CABIN CREW

Initial, recurrent, transition, re-qualification and differences ground training-

16.6.1 The initial, recurrent, transition, re-qualification and differences ground training for cabin crew must include instruction in at least the following-

a) General subjects-

i) authority of the Pilot In Command
ii) passenger handling, including the procedures to be followed in the case of deranged persons or other persons or other persons whose conduct might jeopardize safety.

b) For each aircraft type-

i) A general description of the aircraft of the aircraft emphasizing physical characteristics that may have a bearing on ditching, evacuation and inflight emergency procedures and on other related duties.

ii) The use of both the public address system and the means of communicating with other crew members, including emergency means in the case of attempted hijacking or other unusual situations; and

iii) Proper use of electrical galley equipment and the controls for cabin heat and ventilation.

iv) drilled and capable in the use of emergency and life saving equipment required to be carried, such as life jackets, life rafts, evacuation slides, emergency exits, portable fire extinguishers, oxygen equipment and first aid kits;

v) when serving on aeroplanes operated above 3000 m (10000 ft), knowledgeable as regards the effect of lack of oxygen and, in the case of pressurized aeroplanes, as regards physiological phenomena accompanying a loss of pressurization.

vi) aware of other crew members' assignments and functions in the event of an emergency so far as is necessary for the fulfillment of the cabin crew member's own duties;

vii) aware of the types of dangerous goods which may, and may not, be carried in a passenger cabin and has completed the dangerous goods training programme required by Annex 18; and

viii) knowledgeable about human performance as related to passenger cabin safety duties including flight crew-cabin crew co-ordination.

16.6.2 Initial and Recurrent ground training for cabin crew must include a competency check to determine ability to perform duties and responsibilities.

16.6.3 Initial ground training for cabin crew must consist of all the programmed hours of instruction in the subjects specified in the above and approved by DG, CAAN.

16.7 AIRCRAFT DISPATCHER; Initial, recurrent, re-qualification and Transition Ground Training

16.7.1 Initial, recurrent, requalification and transition (conversion) Ground Training for aircraft dispatcher must include instruction in at least the following –

a) General subjects-

i) Use of communication systems including the characteristics of those systems and the appropriate normal and emergency procedures
ii) Meteorology, including various types of meteorological information and forecast, interpretation of weather data, (including forecasting of en route and terminal temperatures and weather conditions) frontal systems wind conditions and use of actual and prognostic weather charts for various altitudes
iii) The NOTAM system
iv) Navigational aids and publications
v) Joint dispatcher-Pilot responsibilities
vi) Characteristics of appropriate airports
vii) Prevailing weather phenomena and the available sources of weather information; and
viii) Air Traffic control and instrument approach procedures

b) For each aircraft -

i) A general description of the aircraft emphasizing operating and performance characteristics, navigation equipment, instrument approach and communication equipment and procedures and other subjects having a bearing on dispatcher duties and responsibilities.

ii) Flight operations procedures including procedures specified
iii) Weight and balance computation
iv) Basic aircraft performance dispatch requirements and procedures,
v) Flight planning including track selection, flight time analysis and fuel requirements, and;
vi) Emergency procedures

16.7.2 Emergency procedures must be emphasized, including the alerting of proper government, company and private agencies during emergencies to give maximum help to an aircraft in distress.

16.7.3 Initial and transition ground training for aircraft dispatchers must include a competence check given by an appropriate supervisor or ground instructor that demonstrate knowledge and ability with the subjects set forth in this chapter.

16.7.4 Initial ground training for the aircraft dispatchers must consist the programmed hours of instruction in the subjects specified in this paragraph and approved by DG, CAAN.

16.7.5 Recurrent ground training for dispatchers must include at least:

a). the knowledge with respect to the aircraft type and

b). in the subjects required for initial ground training as appropriate in the form of a competency check.

16.8 INSTRUCTOR PILOTS (IP) and SYNTHETIC FLIGHT INSTRUCTOR (SFI)

Initial and Transition Training

16.8.1 The initial and transition ground training for Instructor Pilots and Synthetic Flight Instructors must include the following:

a) Instructor duties, functions and responsibilities;
b) The applicable Civil Aviation Regulations and the certificate holder's policies and procedures.
c) The learning process;
d) The teaching process;
e) Training philosophies;
f) Techniques of applied instruction;
g) Student evaluation and testing;
h) Training program development;
i) Human performance and limitations relevant to flight instruction;
j) Specific hazards involved in simulating systems failures and malfunctions in the aircraft during flight;
k) Training administration.

16.8.2 The initial and transition flight training for Instructor Pilots and Synthetic Flight Instructors must include the following:

a) Technical training (instructing for CBT systems or CPT training)
b) Simulator training (where simulators are available for the type)
c) Right hand seat qualification (not required for SFI candidates)
d) Assessment of competence

16.8.3 Recurrent Training

a) Recurrent Training /PPC of Instructor Pilots may be included in type training.
b) Synthetic Flight Instructors shall undergo a recurrent type training and skill test annually in the type simulator on which he/she is type rated

16.9 RESERVED

16.10 INDOCTRINATION GROUND TRAINING: Crew Members and Dispatcher

16.10.1 Each training program must provide the following basic indoctrination ground training as appropriate to the particular assignment of the crew member or dispatcher:

a) duties and responsibilities of crew members or dispatchers, as applicable.
b) appropriate provisions of the Civil Aviation Regulations.
c) contents of the certificate holders operating certificate and operations specifications.
d) appropriate provisions of the certificate holders operating manual and
e) company manuals.

16.11 CREW MEMBER EMERGENCY TRAINING

16.11.1 Each training program must provide the emergency training set forth in this chapter with respect to each aircraft type model and configuration, each required crew member and each kind of operation conducted, in so far as appropriate for each crew member and the certificate holder.

16.11.2 Emergency training must provide the following:

a) instruction in emergency assignments and procedures, including coordination among crew members.

b) individual instruction in the location, function and operation of emergency equipment including:

i) equipment used in ditching and evacuation.
ii) first aid equipment and its proper use.
iii) portable fire extinguishers, with emphasis on type of extinguisher to be used on different classes of fire; and
iv) emergency exits in the emergency mode with the evacuation slide pack attacked (if

applicable), with training emphasis on the operation of the exits under adverse conditions.

c) Instructions in the handling of emergency situations including:

i) rapid decompression.
ii) fire in flight or on the surface and smoke control procedures with emphasis on electrical equipment and related circuit breakers located in cabin areas including all galleys, service centers, lifts, lavatories and movie screens.
iii) ditching and other evacuation, including, the evacuation of persons and their attendants, if any, who may need the assistance of another person to move expeditiously to an exit in the event of an emergency.
iv) illness, injury, or other abnormal situations involving passengers or crew members; and
v) hijacking and other unusual situations.

d) review and discussion of previous aircraft accidents and incidents.

16.11.3 Each crew member must perform at least the following emergency drills and actually operate the following emergency equipment during initial and recurrent training on each type aircraft in which they are to serve:

a) each type emergency exit in the emergency and normal mode.

b) each type fire extinguisher.

c) each type of emergency oxygen system.

d) emergency evacuation including the use of a slide.

e) donning, use and inflation of individual floatation means, if applicable.

f) ditching, if applicable, including but not limited to, as appropriate:

i) cockpit preparation and procedures.
ii) crew coordination.
iii) passenger briefing and cabin preparation.
iv) donning and inflation of life preserves.
v) removal from the aircraft and inflation of each type raft.
vi) transfer of each type slide pack from one door to another.
vii) deployment, inflation and detachment from the aircraft of each type of slide.
viii) use of life lines.
ix) boarding of passengers into raft or slide pack.

g) crew members who serve in operations above 25,000 feet must receive instruction in the following:

i) respiration.
ii) hypoxia.
iii) duration of consciousness without supplemental oxygen at altitude.
iv) gas expansion.
v) gas bubble formation.
vi) physical phenomena and incidents of decompression.

16.12 DIFFERENCE TRAINING; Crew Members and Dispatchers

16.12.1 Differences training for crew members and dispatchers must consist of at least the following, as applicable to their assigned duties and responsibilities:

a) instruction in each appropriate subject or part thereof required for initial ground training in the aircraft unless the Director General finds that particular subjects are not necessary.

b) flight training in each appropriate maneuver or procedure required for initial flight training in the aircraft unless the Director General finds that particular maneuvers or procedures are not necessary.

c) the number of programmed hours of ground and flight training determined by the Director General to be necessary for the aircraft, the operator the crew member or the aircraft dispatcher involved.

16.12.2 Differences training for all variations of a particular type aircraft may be included in initial, transition, upgrading and recurrent training for the aircraft.

16.13 SAFE TRAINING PRACTICES

16.13.1 The goal of adherence of safe training practices by all pilots is to achieve an effective and safe level of pilot proficiency by practicing emergency procedures in a manner which will ensure that the practice does not become the real thing. Training beyond this level can be hazardous and unnecessary.

16.13.2 To preserve the highest degree of safety during training or checking, those conducting emergency exercises are to ensure that candidates are completely briefed on all aspects of the flight. *No sudden actions such as an engine shutdown or feathering are permitted.* The check or training pilot shall state the exercise required i.e. "engine fire drill". The pilots under training or checking shall complete the check in accordance with published Flight Manual Procedures and operator's Operating Procedures. The flying pilot will primarily fly the aircraft and delegate duties to the non-flying pilot. The non-flying pilot will act on the memory items then using the emergency written checklist, complete the remainder of the check. Emergency procedures requiring the closing of a throttle, condition lever, mixture control, feathering of a propeller or shutting down of any major system must be confirmed by both pilots before the lever or switch is moved.

16.13.3 Activation of fire bar handles, fuel firewall shutoff valves, fuel/oil shutoffs etc. are to be SIMULATED only or activated above 5000' AGL.

16.13.4 Multiple emergencies, except those which follow logically from the first malfunction, shall not be completed at the same time.

16.13.5 It is not possible to compile safe training practices for all emergency procedures. Training sequences not specified may be conducted by training or check pilots. Common sense is essential in the preservation of flight safety.

16.13.6 Instrument checks should not be performed during an IMC or at night unless the aircraft is equipped with either approved thunderstorm detection equipment or approved airborne weather radar equipment.

16.13.7 Practices to real stalls on multiengine aircraft which has not been certified on demonstration of control in case of spin should not be practiced.

16.13.8 For aeroplanes above 5700 kgs and not certificated for STOL operations, touch-and-go shall not be permitted at night at airports having less than 5000 feet runway length.

16.13.9 When conducting Route Checks in aeroplanes equipped with a jump seat, the pilot conducting the check may occupy the jump seat, provided that it is equipped with a headset to enable the Check Pilot to monitor and/or instruct the Pilot Under Check (PUC).

16.13.10 The Operator shall ensure that flight training times recorded in the training records conform to that of the Aircraft Journey Logs as well as conforming to that of the airport traffic sheets.

16.14 TOLERANCE FOR P_2 INITIAL AND RECURRENT CHECK

EXERCISE	HEIGHT (ft)	SPEED (knots)	HEADING (degree)
01. Normal take-off (Rotation and climb speed)		+10 - 5	±10
02. STOL Take-off		+10 - 5	±10
03. X wind Take-off		+10 - 5	±10
04. SIM Power failure or engine fire after Take-off	- 0	+10 - 5	±20
05. SIM fire during landing	- 0	+10 - 5	±20
06. Normal turns	±100	±10	±10
07. 45° turns	±200	±10	±10
08. Approach to stall	-200		±10
09. Full stall clean configuration	-200		±10
10. Full stall landing configuration	-500		
11. Stall (25° bank)	-200		±10
12. Normal landing (approach and VRef speed)		+10 - 5	
13. Single engine landing		+10 - 0	
14. Rejected landing		+10 - 5	±10

Notes : 1. Prevailing weather condition must be taken into consideration.
2. Guidelines on required maneuvers for an initial and recurrent pilot proficiency check are mentioned in Appendix 2.

16.15 TOLERANCE FOR P1 UPGRADING AND PROFICIENCY CHECK

EXERCISE	HEIGHT (ft)	SPEED (knots)	HEADING (degree)
01. Normal take-off (Rotation and climb speed)		+ 5 - 0	± 5
02. STOL Take-off		+ 5 - 0	± 5
03. X wind Take-off		+ 5 - 0	± 5
04. SIM Power failure after Take-off	- 0	+ 5 - 0	± 10
05. SIM fire after Take-off	- 0	+ 5 - 0	± 10
06. Normal turns	± 50	± 0	± 0
07. 45° turns	± 100	± 5	± 5
08. Approach to stall, clean configuration	- 100		± 5
09. Approach to stall, landing configuration	- 200		± 5
10. Approach to stall (25° bank)	- 100		± 5
11. Normal landing (approach and VRef speed)		+ 5 - 0	
12. Single engine landing		+ 10 - 0	
13. Rejected landing		+ 5 - 0	± 5

Notes: 1. Prevailing weather condition must be taken into consideration. Guidelines on required maneuvers for an initial and recurrent pilot proficiency check are mentioned in Appendix 2 PPC.

16.16 GRADINGS SAMPLE

16.16.1 Grading Sample for Initial and Recurrent Trainings. Each exercise will be marked:

1 = Proficiency
2 = Normal Progression
3 = Additional Training Required
4 = Unsatisfactory
N/A = Not Applicable
D = Discussed and Simulated

16.16.2 Grading Sample for PPC and Check rides

(a) **Satisfactory (S)-** All exercises completed within tolerances. A sequence shall be rated "satisfactory" if:

1. It contains minor errors only;
2. Airspeed control is acceptable for prevailing condition;
3. Altitude control is acceptable for prevailing condition;
4. Due to lack of experience, the candidate's flying is not as smooth and accurate as would be expected from an experienced on-type-candidate.
5. Rating of "satisfactory" on initial proficiency check (check-ride flights) is necessary for the endorsement by CAAN.
6. The applicant PUC shall not be permitted for flight check unless he successfully completes an oral examination on General Aerodynamics and Technical Knowledge related to the type of aircraft.

(b) **Satisfactory with briefing (SB)-** All exercises completed within tolerance but required briefing for minor errors. A sequence shall be rated "satisfactory with briefing" if;

1. It is safe but contains minor errors due to misinterpretation of procedures and is repeated satisfactorily;
2. Aircraft control is safe but of a lower standard than would be expected;
3. An emergency procedure deviates from the check list but would not create a more hazardous situation if done in an actual emergency;
4. An approach, take-off, or landing briefing is not in accordance with the Company's Operations Manual or Company's Standard Operating Procedures;
5. A sequence deviates from Company's Standard Operating Procedures but can be corrected with a de-briefing.

(c) **Unsatisfactory (US)-** Exercises exceed tolerances and attempted gross error.

A sequence shall be rated "unsatisfactory" If:

1. Any attempt is made to follow a procedure which would violate an ATC clearance or endanger the aircraft;
2. An improper emergency procedure is used which would create a more hazardous situation than the original emergency.
3. The flight controls are grossly mishandled; or
4. Gross deviations in airspeed, altitude and direction occur.

Any unsatisfactory grading constitutes a failed check

Note- Any sequences that is recorded as "Satisfactory with Briefing" or" Unsatisfactory" shall be summarized in the space provided. Procedures may be repeated, if in the check pilot's view, the candidate can perform the sequence correctly the second time.

16.17 BRIEFING AND DE-BRIEFING PROCEDURES

16.17.1 Briefing:

A pre-flight briefing of the candidate is mandatory. It is expected that the candidate will fly the aircraft or simulator in accordance with the approved techniques and that he can do so within acceptable tolerances. The pre-flight briefing should therefore include the following:

a. The duration of flight test;

b. An outline of the proposed sequence of events;

c. The candidate should be prepared to demonstrate any procedure applicable to the aircraft, and will be expected to provide the initiative in response to any event;

d. It is anticipated that aircraft will be flown in accordance with:

   i. Aircraft Flight Manual:

   ii. Aircraft Training Manual;

   iii. Company Operations Manual; and

   iv. Company Standard Operating Procedures.

e. Simulated emergencies will be introduced during the flight; however, the safety of flight must not be jeopardized at any time. He is expected to complete all actions that can be completed in the simulator and indicate those actions that must be simulated in the aircraft. All simulated emergencies given by the check pilot in the aircraft will be prefixed by the word "simulated".

f. The candidate will not be subjected to multiple unrelated system failures, although related failures may be introduced to demonstrate specific emergency procedure, e.g. multiple engine failure, total hydraulic failure etc.

g. When conducting flight checks in a simulator, emergency situations caused by an inappropriate response by the candidate will not be corrected by the check pilot.

h. The simulated prevailing weather will be at or below minima for the approach being carried out.

i. If "Field-in-Sight" is not indicated by the check pilot, at the published approach minima, a missed approach procedure or other appropriate action is to be carried out.

16.17.2 De-Briefing:

a. Except where a candidate's ability is border lined and required considerable elevation, the candidate should always be advised at the conclusion of the flight test whether he has been rated "satisfactory" or "unsatisfactory".

b. If the check is "satisfactory", the candidate should be advised accordingly and de-briefed following the sequence of occurrence. When necessary, the candidate should be questioned to determine motive, reasoning and knowledge of a procedure before he is offered constructive criticism of a particular technique he has used. Criticism must

always be given the correct emphasis, depending on its relative importance in the entire operation. Instance where the candidate indicates a particularly high standard of ability or demonstrates sound judgment, should be mentioned to balance the criticism.

c. If the check is "unsatisfactory", the candidate must be advised accordingly and the specific instances resulting in the assessment discussed. After discussion of the unacceptable points, the de-briefing should continue in the sequence of occurrence.

16.18 INSTRUMENT RATING

16.18.1 General requirement for check

Candidates will be evaluated on the accuracy of their general instrument flying, operational planning, adherence to ATC procedures and ability to execute let down and approach procedures to the standard required.

16.18.2 Equipment to be provided

(1) Instrument Flying Hood or eyepiece that limits all-round vision to within the cockpit panel or any suitable cockpit screens for simulated instrument flight shall be provided.

(2) Disks or other means for blanking out certain flight and navigation instruments shall be provided.

16.18.3 Standards

1. Descent below decision height (DH) or minimum descent altitude (MDA) will involve mandatory failure of the examination.

2. If one item of the flight examination (other than descent below minima) is failed by the candidate, this item may be repeated once. Should the candidate fail that item again, he will have failed the complete test.

3. Tolerance limit for flight maneuvers are intended for calm, stable air conditions. Due allowance for adverse weather conditions and aircraft type may be made by the examiner if so required.

16.18.4 Navigation Aids and Equipment

1. The aircraft used for examination shall be equipped with functioning instruments and equipment required by ICAO Annex 6 (operation of aircraft) section 6.9 and 6.10 as appropriate for flight under IFR conditions and at night.

2. The flight check will be conducted at an aerodrome or aerodromes equipped with VOR/DME and NDB approach facilities.

16.18.5 Lighting System

For the night rating, candidate should have additional thorough knowledge of aerodrome lighting system, navigational lighting system as well as cockpit and aircraft interior.

16.18.6 Tolerances

(A) Normal flight, flight with simulated engine failure, air-work and limited panel:

HEIGHT :

i) 100 feet
ii) For initiating overshoot from decision height or MDA
+50 -0 feet

iii) Maintenance of MDA
+100 -0 feet

HEADING:
±10° (for normal flight ±5°)

SPEED:
+10 Kts
-15 Kts

(B) Approach Aids

TRACKING	±5°
VOR APPROACH	Less than full scale deflection (when inbound from Final Approach Fix)
ADF APPROACH	5 Degree of inbound QDM

ILS APPROACH Not more than full scale deflection in localizer and glide path when inbound from Final Approach Fix.

(C) Missed approach decision point or descent point on non-precision aids must be reached at a constant rate of descent to confirm to a 3° Glide Slope.

16.19 NIGHT FLIGHT QUALIFICATION

16.19.1 General Procedure

The Instructor Pilot will be responsible to explain each and every item and ensure that the student understands them well before commencement of night flight training.

a) As per requirements, the operator will initiate the night flight training to the pilot, who holds IR valid for the type of aircraft he is flying, in accordance with the training plan. Training and check should be conducted by night rated Instructor Pilot.

b) Briefing and de-briefing procedures will be conducted as mentioned in 16.17 of this section.

c) Items which will result in failure of the flight test at night is mentioned in 16.20

16.19.2 Essential Background Knowledge

a) The considerations with respect to night vision, aero-medical factors for night flying, how to adapt to reduced lighting, and the need to avoid exposure to bright light.

b) Airport beacons and runway lighting systems, turn-off points, taxiway lighting, strobes, VASIS threshold and runway and lighting, and obstruction light.

c) Additional considerations for the aircraft external line check:

(1) Position, landing and taxi-light serviceability check.
(2) Instrument lighting-proper level and adjustment.
(3) Serviceable flashlight, spare fuses.

d) The extra care necessary, due to deceptive speed illusion, for taxiing when ground references not visible and minima is reached.

e) The proposed flight training in its various stages emphasizing the extra care necessary when taxiing at night, systematic check, and the need to maintain sufficient generator/alternator output to meet the additions demands when taxiing lights and other night illumination is used.

f) For take-off, stress the basic similarity to that of a daylight take-off, except for the necessity to supplement visual references with instrument references to establish a safe climb-out.

g) For the approach and landing, emphasize how runway lights can be used to assess drift, constant approach angle, and as a landing reference to approach and runway light.

16.19.3 Advice to Instructor

a) Before commencing night flying, a student should be reasonably proficient in instrument flying.

b) Ensure the student is thoroughly aware of the entire airport lighting system. Review the lights and visual signals that could be expected from the control tower in the event of radio failure.

c) Insist on extreme care being taken while taxiing, due to the difficulty in estimating speed and distance.

d) Point out the importance of the generator or alternator charging rate as both radio equipment and lighting depend upon it.

e) Point out that night flying is a combination of visual and instrument flight and that the degree of instrument reference depends on the clarity of the horizon, or dependable ground lights.

f) Insist on the student keeping a sharp look-out for other aircraft at all times. Do not allow him to concentrate only inside the cock-pit.

g) The student should be given practice in landing with and without the use of a landing light.

16.20 FAILURE OF THE FLIGHT TEST

Following are the items which will result in failure of the flight test:

a) Failure to fly the aircraft within the prescribed tolerance.

b) Failure to check the flight instruments or radio equipment before flight.

c) Failure to check before flight or to use correctly in flight any one of the de-icing or anti-icing.

d) Failure to check the electrical charging systems before flight.

e) Failure to apply the correct altimeter setting.

f) Failure to check any vital action item contained in the appropriate check list provided by the manufacturer, which are vital to the safety of the aircraft being flown.

g) Failure to obtain ATC or simulated ATC clearances when necessary or to comply with such clearances

h) Failure to communicate with ATC using proper applicable terminology in both content and format, at any of the standard or requested reporting points except where reason for non-acceptance or non-compliance can be justified.

i) Failure to correctly select or identify the appropriate navigational aids.

j) Failure to follow the correct procedure in the event of communications Failure.

k) Failure to identify failed engine.

l) By reason of lack of skill, knowledge or experience, he is unable to
   i) complete an orientation;
   ii) establish a holding pattern within the allocated airspace ; or
   iii) maintain control of the aircraft.

16.21 REMEDIAL TRAINING

16.21.1 During training or skill test, the instructor or examiner shall inform the Chief Pilot and the Chief of Training Department of a pilot's inability to meet company standards and recommend for further appropriate training. The Chief of Training Department in consultation with the Chief Pilot may assign a new instructor to impart further ground or flight trainings as appropriate. Further skill test may be authorized upon successful completion of the remedial training and a recommendation from the instructor.

16.22 Flight Simulation Training Devices (FSTD) USER PERMISSION

16.22.1 All flight synthetic (simulation) training devices (FSTD), such as full flight simulators (FFS) or flight training devices (FTD), that are located abroad and are used instead of an aeroplane for training or checking purposes of flight crew members including Flight Engineers, are to be qualified in accordance with local requirements applicable to synthetic training devices.

16.22.2 An operator intending to use such FSTD must obtain a permission from the DG, CAAN.

16.22.3 Organizations applying for permission will normally hold a valid Air Operator Certificate (AOC) for the relevant aircraft type. Other cases for granting a permission are considered by the DG, CAAN on an individual basis taking into account the need for and the competencies required for the training activity.

Note - See Appendix 5 for permission application form.

16.22.4 An applicant for Flight Simulator Instructor or Check Pilot Authorization shall meet the requirements as mentioned in the Personnel Licensing Requirements.

16.22.5 A permission to use a particular FSTD shall remain valid only if the FSTD maintains its specified qualification level and if all related conditions and limitations listed on the Qualification Certificate for the FSTD and CAAN's permission are complied with.

16.22.6 A declaration shall be made by the AOC holder in respect of the differences between the FSTD and the aircraft for which training is being undertaken on that FSTD. Additional information concerning identified differences and training mitigation must be submitted with the application where appropriate.

16.22.7 Upon receiving an application from an AOC holder for a permission, an initial inspection of the FSTD shall be conducted by a Flight Operations Inspector. A second application from another AOC holder for the same device may not require another inspection by an FOI unless the device has been moved to a new location in another State or has been modified or has been converted or if the application submitted suggests an issue that need further investigation.

16.22.8 A FSTD may be purchased by another Operator, relocated, modified, updated or upgraded. Such changes may affect the permission issued by CAAN. It is the responsibility of the user of the FSTD to ensure that the device being used remains qualified to the appropriate level that supports his/her training needs.

16.22.9 Applying for a permission to use a FSTD

16.22.9.1 Application form as mentioned in Appendix 5 of this FOR, together with the appropriate fees (and, if applicable, additional information concerning the differences between the FSTD and the operator's aircraft), should be submitted.

16.22.9.2 A current copy of the Qualification Certificate and Evaluation Report must also be enclosed.

16.22.9.3 Application for an initial permission should be submitted as early as possible. For renewal of a permission, application must be submitted to CAAN no later than 15 working days prior to the expiry of the current permission.

16.22.9.4 A permission or renewal thereof shall be valid till the expiry date of the Qualification Certificate issued by the concerned Authority.

16.23 SMS INSTRUCTOR QUALIFICATIONS

The applicant applying for Safety Management Systems Instructor authorization shall comply with the following:

a) Train The Trainer Course;
b) Safety Management Systems Course within the past twelve calendar months that reflects the latest amendment to the latest edition of ICAO DOC 9859;
c) Minimum five years of work experience in aviation related field; and
d) At least one SMS course conducted in presence of CAAN inspector

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CHAPTER 17

OPERATOR AUTHORISATION For ILS CAT - II/III OPERATIONS

17.1 INTRODUCTION

17.1.1 Prior to conducting Cat - II or Cat - III operations, the operators are required to take necessary measures to meet the requirements and obtain authorization from the DG, CAAN.

17.1.2 Authorisation for Cat - II and Cat - III operations is dependent on the following four elements in order to maintain the required level of safety:

a) The aircraft;
b) The flight crew;
c) The airport; and
d) The operator

All of these elements must comply with the regulations stipulated by the DG, CAAN and ICAO. An aircraft type must be approved for Cat - II/III operations with an Automatic Landing System, which provides automatic control of the aircraft during approach and landing. The flight crew should be trained for such operations and have authorization for the same from the DG, CAAN. Similarly, the airport must be equipped and approved for Cat - II/Cat - III operations.

17.1.3 This chapter of the FOR lays down the requirements to be met by the operators in respect of equipment, organisation, staffing, training and other matters affecting the operations of aircraft for grant of authorization for ILS Cat – II and Cat - III operations. Authorization for Cat - II & III operations is through issuance of or amendments to Operations Specifications.

17.2 APPLICABILITY

The requirements contained in this chapter are applicable to all Nepalese operators intending to carry out Cat - II and Cat - III operations. Before operating flights to foreign airports, the operators shall file their operating minima and other relevant documents required by the Aviation Authority of that country and seek their approval for commencing Cat - II and Cat - III operations after obtaining approval from the DG, CAAN for the same.

17.3 DEFINITIONS

a) Categories of precision approach and landing operations

i) **Category - II (Cat - II) Operation:** A precision instrument approach and landing with:

a) a Decision Height lower than 60m (200 ft) but not lower than 30m (100 ft); and
b) a Runway Visual Range not less than 300m.

ii) **Category - III (Cat - III) Operation**: A precision instrument approach and landing with:

a) a decision height lower than 30 m (100 ft) or no decision height; and
b) and a runway visual range less than 300 m or no runway visual range limitations.

Note: Where the Decision Height and Runway Visual Range do not fall within the same Category, either the Decision Height or the RVR may determine in which Category the operation is to be considered. The operation will be in the Category with the lower minima.

b) **Alert Height (AH):** An Alert Height is a height above the runway based on the characteristics of the aeroplane and its fail operational Automatic Landing System, above which a Category - III approach would be discontinued and a missed approach initiated if a failure occurred in one of the redundant parts of the Automatic Landing System, or in the relevant ground equipment.

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

Note: i) Decision Altitude (DA) is referenced to Mean Sea Level (MSL) and Decision Height (DH) is referenced to the threshold elevation.

ii) 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.

d) **Low Visibility Procedures (LVP):** Procedures applied at an aerodrome for the purpose of ensuring safe operations during Category II and III approaches and Low Visibility Take - offs.

e) **Fail - passive Automatic Landing System**: An Automatic Landing System is fail - passive if, in the event of a failure, there is no significant deviation of aeroplane trim, flight path or attitude but the landing will not be completed automatically.

f) **Fail - operational Automatic Landing System**: An Automatic Landing System is fail - operational if, in the event of a failure, the approach, flare and landing can be completed by the remaining part of the automatic system.

17.4 PROCEDURE FOR GRANT OF AUTHORISATION

17.4.1 An operator applying for Cat - II or Cat - III operations shall adhere to the rigid structure of the regulations to get the operational authorization. An operator, who applies for Cat - II or Cat - III authorization, shall submit a detailed proposal to the DG, CAAN defining clearly the plans and policies on all aspects of the operations. The proposal shall include information on, amongst other aspects, the following items:

a) Aircraft Type

Details of the aircraft intended to be used, its certification status with respect to Cat - II or Cat - III operations, list of required equipment for the intended mode of operations, the operating limitations, the procedures to be followed following various failures, etc.

b) Maintenance Programme

Description of the maintenance programme, which is mandatory to ensure that the airborne equipment will remain at the required level of airworthiness standard, reliability and performance. It shall include training of Aircraft Maintenance Engineers, maintenance of test equipment and standards, maintenance procedures, engineering modifications and periodic checks of auto-land system.

c) Flight Crew Procedure

A description of the operational procedures covering in particular crew task sharing, approach monitoring, decision - making, handling of failures and go - around. Detailed requirements in this regard are given in succeeding para 5.

d) Flight Crew Training

Syllabi for ground training, simulator training, flight training, recurrent training and upgrade training shall be furnished in order to get the Cat – II or Cat - III authorization for the flight crew.

e) Airfield Equipment

A description of the airfield equipment in accordance with ICAO standards for Cat - II/Cat - III, including visual and non-visual aids, runway characteristics, obstacle clearance area, RVR measurements, ATC procedures, low visibility procedures, etc.

f) Airfield Operating Minima

A proposal for airfield operating minima for each airfield intended to be used by the operator for such operations.

17.4.2 After receiving the proposal, the concerned officers at CAAN shall examine the information and hold discussions with the operator to ensure that the operator establishes a well laid down system and procedures for conducting and monitoring Cat - II/Cat - III operations.

17.4.3 On completion of the necessary actions, the operator shall submit a consolidated statement showing item - wise compliance to the requirements of this FOR. On satisfactory meeting the requirements the DG, CAAN will grant necessary authorization by issuing relevant initial Operations Specifications for Cat - II operations and specifying:

i) Minima (RVR, AH and DH) to be used;
ii) Aeroplanes (indicated by registration numbers) which can be used;
iii) Aerodromes to be used; and
iv) Any limitation that may be imposed by the DG, CAAN.

17.4.4 The operator shall be required to demonstrate his ability to perform Cat - II operations with an appropriate approach success rate and level of safety. On satisfactory completion of this, the operator shall be granted standard Operations Specifications for Cat - II operations.

17.4.5 For grant of Cat - III authorization, same procedure shall be followed i.e. grant of initial Operations Specifications, successful operational demonstration and grant of standard Operations Specifications through gradual reduction in meteorological minima.

17.4.6 The Operations Specifications shall form part of the operator's permit.

17.5 OPERATING REQUIREMENTS

17.5.1 Operators shall develop procedures and operational instructions to be used by their flight crew for Cat II/ III operations and Low Visibility Take - off to ensure safe conduct of the operations. These procedures and instructions shall be included in the Operations Manual. All the instructions shall be compatible with limitations and mandatory procedures contained in the approved Flight Manual and the national Rules, Regulations and other instructions issued by the DG, CAAN from time to time.

17.5.2 The procedures and the operational instructions shall cover normal and abnormal situations which can be encountered in actual operations which shall include at least the following items:

i) Checks for satisfactory functioning of the aircraft equipment, both before departure and in flight;
ii) Effect on minima caused by changes in the status of the ground installations and airborne equipment;
iii) Procedure for take-off, approach, flare, landing, roll out and missed approach;
iv) Procedure to be followed in the event of failures, warnings and other abnormal situations;
v) The minimum visual reference required;
vi) The importance of correct seating and eye position; and
vii) Action which may be necessary arising from deterioration of the visual reference.

17.5.3 Crew Co-ordination:

Appropriate procedures for crew co-ordination shall be established so that each flight crew member can carry out their assigned responsibilities. Briefings prior to the applicable takeoff or approach shall be specified to assure appropriate and necessary crew communications. Responsibilities and assignment of tasks shall be clearly understood by crew members.

17.5.4 Monitoring:

The operator shall establish procedures and instructions for Low Visibility Take Off and Cat - II/III operations. These procedures shall be included in the Operations Manual and contain the duties of flight crew members during taxing, take off, approach, flare, landing, roll out and missed approach as appropriate.

These procedures shall assure that adequate crew attention can be devoted to control of aircraft flight path, displacements from intended path, mode annunciations, failure annunciations and warnings, and adherence to minima requirements associated with DH and AH.

Procedures for calling out failure conditions shall be pre-established, and responsibility for alerting other crew members to a failure condition shall be clearly identified.

17.5.5 Use of the Decision Height or Alert Height:

Procedure for setting various reference bugs in the cockpit shall be laid down, responsibilities for Decision Height call-outs shall be clearly defined, and visual reference requirements necessary at Decision Height shall be specified so that flight crew are aware of the necessary visual references that shall be established by, and maintained after passing Decision Height.

17.5.6 The operator shall assure that at each runway intended for Category II/III operations, the Radio Altimeter systems used to define Alert Height or Decision Height provides consistent, reliable, and appropriate readings for determination of Decision Height or Alert Height over the terrain underlying the approach path. Any adjustments to approach minima or procedures made on final approach shall be completed prior to Alert Height and applicable annunciation (e.g. LAND2) for fail passive operations.

17.5.7 Call-outs:

Altitude/Height call-outs shall be used for Category II/III. Call-outs shall be accomplished by the flight crew or shall be automatic (e.g., using synthetic voice call-outs). Call-outs shall be specified to address any non-normal configurations, mode switches, failed modes, or other failures that could affect safe flight, continuation of the landing, or the accomplishment of a safe missed approach.

17.5.8 Aircraft Configurations:

Operational procedures shall include any authorized aircraft configurations that might be required for low visibility takeoff or Category - II/III approaches or missed approaches. Examples of configurations that operational procedures which need to be included are:

(i) Alternate Flap Settings approved for Category - II/III;
(ii) Use of alternate AFCS modes or configurations (e.g., Single Land, LAND2);
(iii) Inoperative equipment provisions related to the Minimum Equipment List, such as a non-availability of certain electrical system components, inoperative Radio Altimeter, air data computers, hydraulic systems or instrument switching system components; and
(iv) Availability and use of alternate electrical power sources (e.g., APU) if required as a standby source.

Procedures required to accommodate various aircraft configurations shall be readily available to the flight crew and the aircraft dispatcher to preclude the inadvertent use of an incorrect procedure or configuration. Acceptable configurations and aircraft type shall be clearly identified so that the crew can easily determine whether the aircraft is or is not in a configuration to initiate a low visibility takeoff or Category - II/III Approach.

17.5.9 Airport Surface Depiction for Category II/III Operations:

A suitable airport surface depiction (e.g., airport diagrams) shall be available to flight crews to assure appropriate identification of visual landmarks or lighting to safely accomplish taxing in Cat - II/III conditions from the gate to the runway and from the runway to the gate. The Airport depiction shall use an appropriate scale with suitable detailed information on gate locations, parking locations, holding locations, critical areas, obstacle free zones, taxi way identifications, runway identifications, and any applicable taxi way markings for designated holding spots or holding areas.

17.5.10 The operator shall lay down procedure in their operations manual to ensure that the Commander satisfies himself that:

i) the status of the visual and non-visual facilities is sufficient prior to commencing a Low Visibility Take Off or a Cat - II or Cat - III approach;

ii) appropriate LVPs are in force according to information received from Air Traffic Services before commencing a low visibility take off or a Cat - II or Cat – III approach.

17.5.11 The operator shall include in the Operations Manual the minimum equipment that has to be serviceable prior to departure for the commencement of Low Visibility Take Off or a Cat - II or Cat - III approach in accordance with the Aircraft Flight Manual or approved document and the Commander shall satisfy himself that the status of aeroplane and the relevant airborne system is appropriate for the specific operation to be conducted.

17.5.12 The operator specify despatch procedures which shall include appropriate consideration of reported and forecast weather, field conditions, facilities status, NOTAM information, alternate airport designation, missed approach performance, crew qualifications, airborne system status (provisions of MEL and CDL) and fuel planning.

17.5.13 All the flight crew members of a flight shall hold appropriate authorization for the particular type of operations to be conducted.

17.5.14 Clearance to carry out Cat - II and Cat - III approach shall be requested from ATC, who shall activate the low visibility procedures i.e. prepare the airfield and assure appropriate aircraft separation. Such an approach shall not be undertaken until the clearance has been received. ATC shall be informed when an automatic landing is intended to be performed, so that the ATC may initiate action to provide the same protection even in Cat - I or better conditions.

17.6 AIRCRAFT AND MAINTENANCE REQUIREMENTS

The detailed airworthiness and maintenance requirements for Cat - II and Cat - III operations are contained in NCAR C19.

17.7 FLIGHT CREW TRAINING REQUIREMENTS

17.7.1 Flight crew shall be trained and equipped in all aspects of all-weather operations. Detailed requirements for the ground and flight training are contained in para 5.1 of this Appendix and ICAO Manual of All Weather Operations Doc No.9365.

17.7.2 The operators shall lay down detailed training programme for initial authorisation, recurrent training and for obtaining authorisation for an additional aircraft type. The operators are encouraged to have their training programmes higher than the minimum stipulated by the DG, CAAN, keeping in view the general level of experience of the flight crew employed by them.

17.8 AIRPORT REQUIREMENTS

Requirements contained in ICAO Annex 14, Manual of All Weather Operations Doc 9365 (Cat - II and Cat - III) and those stipulated by the DG, CAAN shall be complied with. Some of the salient requirements concerning airports are given below:

a) An operator shall not use an airport for Cat - II or Cat - III operations unless it is approved for such operations.

b) Due to very low visibility in Cat - II and Cat - III operations, each airfield shall meet stringent criteria concerning obstacle clearance to avoid any aircraft on approach, landing or go-around, touching obstacles on the ground. The basis of these criteria are included in ICAO Annex 14 and PANS-OPS Doc-8168.

c) The ILS installation shall conform to the appropriate specifications contained in ICAO Annex 10, Volume 1, Part (i), Chapters 2 & 3 and be designed and operated in accordance with the guidance material contained in attachment 'C' to Part (i) of Annex 10.

d) During Cat - II and Cat - III approaches, the ILS beams shall be protected from unacceptable disturbances in the critical area and sensitive area.

e) The RVR reports shall be given in increments of not more than 50m when the RVR is less than 800m and not more than 25m when the RVR is less than 150m.

f) A system of maintenance of visual aids shall be established to ensure both lighting and marking system reliability. A system of maintenance for ILS installations shall also be established with regular ground and flight checks as stipulated in the ICAO Annex 10. Users shall be advised as soon as possible of any degradations in ILS performance.

g) A secondary power supply for visual aids shall be required with maximum switch-over time as indicated in ICAO Annex 14.

h) Cat-II and Cat-III operations require special procedures for the ATC and all services in the aerodrome i.e. Low Visibility Procedures. The aerodrome authority shall develop the procedure in accordance with the ICAO Manual of All Weather Operations.

Mainly, the procedures to be established are:

i) procedures for ATC to be quickly informed of all degradations in ILS performance and to inform the pilot, if necessary;
ii) procedures for ATC to be quickly informed of all degradations in visual aids and to inform the pilot, if necessary;
iii) procedures for the protection of the Obstacle Free Zone by the control of ground movements;
iv) procedures for the protection of the ILS critical area and the ILS sensitive area by control of ground movements and adequate separation between two aircraft on approach or one aircraft on approach and another taking-off;
v) procedures for meteorological services particularly for ATC to quickly inform the crew changes in RVR;
vi) procedures for maintenance; and
vii) procedures for security.

17.9 OPERATIONAL DEMONSTRATION AND ISSUANCE OF OPERATIONS SPECIFICATIONS

The implementation of all-weather operations shall be achieved in stages through gradual reduction in meteorological criteria commensurate with the confidence and experience gained by the operator as stipulated hereunder:

17.9.1 Issuance of Initial Cat-II Operations Specifications

(i) The operator shall have gained experience of at least **one year** in Cat-I operations for issuance of initial Operations Specifications for Cat-II operations.

(ii) Operator shall be issued initial Operations Specifications authorizing to carry out Cat-II operations with Decision Height of 150 feet and RVR of 500 metres after ensuring that an operator has prepared all the required documents, procedures, maintenance and training programmes and the flight crew have been trained and obtained necessary authorization for conducting Cat-II operations.

17.9.2 Operational Demonstration for Cat - II Operations

17.9.2.1 The operator shall carry out operational demonstration, in order to establish that an appropriate level of safety can be met in such operations. The operator shall prove that he can perform Cat - II operations with the appropriate success rate and level of safety. For this purpose, operator shall carry out in-service proving for a period of at least six months. Particular attention shall be given to the flight and maintenance procedures as established by the operator. During this period, the operator shall successfully complete the following operations demonstrations and data collection programme in line service as part of the approval process to ensure continued performance and reliability of the system before operations down to the next succeeding lower minima are authorized:

(i) For operational demonstration of airborne system, **one hundred** successful landings are to be accomplished in line operations, including training flights, using Cat - II system. The system should demonstrate reliability and performance in line operations consistent with the operational concepts.

(ii) For collection of data during airborne system demonstration, the applicant shall provide crew flight reports and automatic flight recording data giving approach and landing performance whenever an approach and landing is attempted utilising the Cat - II system, regardless of whether the approach is abandoned or concluded successfully. The completed forms and a summary of the demonstration results will be made available to the DG, CAAN. Entry must also be made in the Technical log/Journey Logbook after the flight.

(iii) Approaches where the pilot was assured that the critical area protection was provided which do not result in a successful landing, are to be fully documented giving factors which result in unsuccessful approaches e.g. due to ATC factors, faulty ground station signals or other factors.

17.9.2.2 The operator shall provide crew flight reports and automatic flight recording data during all the operational demonstrations. The flight crew reports should provide at least the following data:

i) Airfield and runway used;
ii) Weather conditions;
iii) Time;
iv) Adequacy of speed control;
v) Any out-of-trim condition at time of Automatic Flight Control System disengagement;
vi) Compatibility of Automatic Flight Control Systems, Flight Director and raw data;
vii) Indication of the position of the aircraft relative to the ILS centre-line when descending through 100 ft. (30m);
viii) Touchdown position;
ix) Reason for failure leading to aborted approach, give height above runway at which approach, was discontinued; and
x) Quality of overall system performance.

The automatic flight recordings shall provide at least the following:

i) Deviation from localizer at touchdown;
ii) Flare time;
iii) Rate of descent at touchdown;
iv) Pitch and bank angles at touchdown;
v) Speed loss in flare; and
vi) Maximum deviation during ground roll-out (for aircraft with automatic ground roll control or guidance intended for operations with no DH).

17.9.2.3 The operator shall develop a form for use by the flight crew to record the data listed above. A sample pro-forma for crew reports is given at Annexure - I.

This form shall be completed whenever an approach is attempted utilising the airborne low visibility approach system regardless of whether it is initiated, abandoned or concluded successfully. A successful approach is one in which at 100 feet point:

i) The airplane is in trim so as to allow for continuation of normal approach and landing.
ii) The indicated airspeed and heading are satisfactory for a normal flare and landing. With auto throttle control system, the speed must be +5 knots of programmed airspeed but may not be less than computed threshold speed.
iii) The airplane is positioned so that the cockpit is within, and tracking so as to remain within, the lateral confines of the runway extended.
iv) Deviation from glideslope does not exceed +75 microamps as displayed on the ILS indicator. The Operator may specify the equivalent scale deviation for their type of aircraft in consultation with the aircraft manufacturer.
v) No unusual roughness or excessive attitude changes occur after leaving middle marker.
vi) No unusual deviation in the touchdown or touchdown and roll out performance.

17.9.2.4 i) During the six months period following the issuance of initial Operations Specifications to conduct Cat - II operations (as mentioned in para 9.1), the operator, when practicable, shall use the Cat - II airborne system using the operator's operating and maintenance procedures. During this period, pilot reports shall be obtained for each approach with the data described above.

ii) These reports shall be analysed and a summary report prepared and submitted to the DG, CAAN. This report shall show that, at least 95% of approaches made during this period were successful.

17.9.3 Issuance of Standard Cat - II Operations Specifications

After successful completion of six months of operations under initial Operations Specifications and at least one hundred approaches as indicated in para 9.2.1 above, the operator shall be issued revised Standard Operations Specifications authorising him to carry out Cat - II operations with a Decision Height not lower than 100 feet and RVR not less than 300 m.

17.9.4 Issuance of Initial Cat - III Operations Specifications

Operator shall be issued an initial Operations Specifications to carry out Cat – III operations with Decision Height not less than 100 feet and RVR not less than 200 metres after ensuring that operator has prepared all the required documents, procedures, maintenance and training programmes and the flight crew have been trained and the operator has also successfully acquired six months experience of Cat - II operations and issued standard Operations Specifications for such operations.

17.9.5 Operational Demonstration for Cat - III Operations

17.9.5.1 The operator shall then carry out operational demonstration, in order to establish that an appropriate level of safety can be met in such operations. The operator shall prove that he can perform Cat - III operations with the appropriate success rate and level of safety. For this purpose, he must carry out in-service proving for a period of **six months**. Particular attention shall be given to the flight and maintenance procedures as established by the operator. During this period, the operator shall successfully complete the following operations demonstrations and data collection programme in line service as part of the approval process to ensure continued performance and reliability of the system before operations down to the next succeeding lower minima are authorised:

(i) For operational demonstration of airborne system, **one hundred** successful landings are to be accomplished in line operations, including training flights, using Cat – III system. The system should demonstrate reliability and performance in line operations consistent with the operational concepts.

(ii) For collection of data during airborne system demonstration, the applicant shall provide crew flight reports and automatic flight recording data in accordance with the pro-forma given at Annexure - I giving approach and landing performance whenever an approach and landing is attempted utilising the Cat – III system, regardless of whether the approach is abandoned or concluded successfully. The completed forms and a summary of the demonstration results will be made available to the DG, CAAN.

(iii) Approaches where the pilot was assured that the critical area protection was provided which do not result in a successful landing, are to be fully documented giving factors which result in unsuccessful approaches e.g. due to ATC factors, faulty ground station signals or other factors.

17.9.5.2 During operational demonstrations of Cat - III operations, the operator shall provide crew flight reports and automatic flight data recording in accordance with para 16.9.2.2 and 16.9.2.3.

17.9.5.3 During the six month period following the issuance of initial Operations Specifications to conduct Cat - III operations, the operator, when practicable, shall use the Cat – III airborne system using the operator's operating and maintenance procedures. During this period, pilot reports shall be obtained for each approach with the data described above.

These reports shall be analysed and a summary report prepared and submitted to the DG, CAAN. This report shall show that 95% of approaches made during this period were successful.

17.9.6 Issuance of Standard Cat - III Operations Specifications

After successful completion of six months of operations under initial Cat – III Operations Specifications and at least one hundred approaches as indicated in para 9.5.1, the operator shall be issued a final Operations Specifications authorizing him Cat - III operations with a Decision Height less than 100 ft. but not lower than 50ft. and a RVR not less than 175 m.

17.9.7 Introduction of New Type of Aircraft for Experienced Operators

Whenever an operator introduces a new type of aircraft into service for Cat – II or Cat – III operations, a complete operational demonstration as stipulated in above paras shall be carried out. This demonstration process will follow the same basic sequence. It consists of a progressive introduction of lower minima with periodic reports of the approaches made during actual in-line service leading to amendment of Operations Specifications.

17.10 CONTINUOUS MONITORING

After obtaining the authorization, the operator must continue to provide quarterly reports of in-line service. These reports must include the following information:

i) The total number of approaches, by aircraft type, where the airborne Cat - II or Cat – III equipment was utilised to make satisfactory, actual or practice, approaches to the applicable Cat - II or Cat - III minima.

ii) The total number of unsatisfactory approaches by aerodrome and aircraft registration - wise in the following categories:
   a) Airborne equipment faults;
   b) Ground facility difficulties;
   c) Missed approaches because of ATC instructions; and
   d) Other reasons.

iii) The operator shall establish a procedure to monitor the performance of the Automatic Landing System of each aircraft. The continuous monitoring shall permit the detection of any decrease in the level of safety before it becomes hazardous. The operator shall continue to check his results and to take adequate actions by modifying the operating or maintenance procedures, if necessary. The monitoring shall also permit problems to be detected on a specified airfield (ILS, ATC procedures, etc.). The monitoring shall be continuous and data shall be retained for a period of at least 1 year.

17.11 GENERAL REQUIREMENTS

(i) No operator shall carry out Cat - II or Cat - III operations without specific approval of the DG, CAAN and unless each aircraft concerned is equipped and certified for operations with decision height below 60m (200 ft).

(ii) Every operator shall file with the DG, CAAN, minima for every airport for Cat - II and Cat - III operations keeping in view the requirements contained in ICAO Manual of All Weather Operations and the operator's experience and policy.

(iii) An operator shall verify that Low Visibility Procedure (LVP) have been established and are enforced at those aerodromes where low visibility operations are to be conducted.

(iv) Every operator shall establish and maintain a suitable system for recording success and failure of approach and automatic landing to monitor the overall safety of the operation.

(v) Each operator must have sufficient qualified personnel to continuously monitor and ensure the highest degree of safety in Cat - II and Cat – III operations. The operator should provide necessary training to the ground staff directly involved with flight operations.

(vi) The authorization granted to an operator for conducting Cat - II/III operations shall be valid only if the requirements contained in this FOR and NCAR are complied with and the capability of the operator, its flight crew and aircraft does not degrade below the required level.

(vii) The authorization is liable to be cancelled/suspended/ withdrawn/modified at any time in the event of any of the above conditions not being complied with and/or violated by the operator and for reasons affecting safety of aircraft operations.

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SAMPLE FORM FLIGHT CREW REPORT ON AUTO-APPROACH AND AUTO-LAND PERFORMANCE

OPERATOR _____

1. SECTION I – Complete all items

AIRCRAFT TYPE	AIRCRAFT REGISTRATION NO.	CAPTAIN	FLIGHT NO.	DATE
Airport	**Runway**	**Conditions** **Cat I+** ☐ **Cat II** ☐ **Cat III** ☐	**Wind Direction & Speed**	**ATC Runway Protection Provided** ☐ **Unknown or None** ☐ **Cat II**

The Auto-Approach Auto-Land was:

☐ Satisfactory ☐ Unsatisfactory

If Unsatisfactory you must complete Section II

Auto-Land Touchdown Zone is 900 feet to 2400 feet down the runway and within 27 feet of centerline.

Record area of touchdown with an 'X' on Runway Depiction

2. SECTION II – Complete ONLY if Auto-Approach or Auto-Land was UN-SATISFACTORY

If the Approach was discontinued, it was due to:

□ Airborne Equipment failure
□ Ground Facilities Difficulties
□ ATC Instructions
□ Other (Specify)

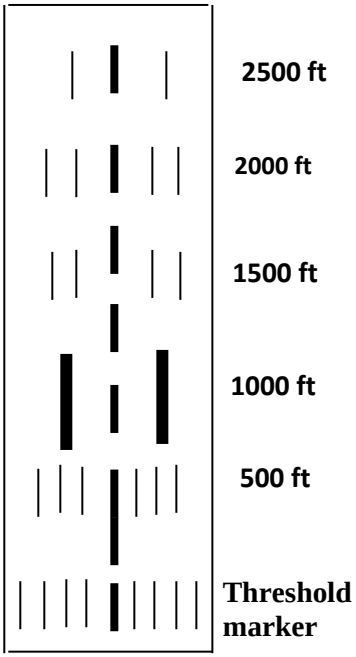
LOCALIZER (Left/Right) GLIDESLOPE (High/Low)

OUTER		MIDDLE		INNER	
L ☐	**H** ☐	**L** ☐	**H** ☐	**L** ☐	**H** ☐
R ☐	**L** ☐	**R** ☐	**L** ☐	**R** ☐	**L** ☐

If the autopilot was disconnected the altitude was:

_____ft. MSL.

Other Comments



CHAPTER 18

ALL WEATHER OPERATIONS (AWO)

18.1 INTRODUCTION

Aerodrome Operating Minima are established in order to ensure the desired level of safety in Aeroplane Operations at an Aerodrome by limiting these operations in specified weather conditions. The values of aerodrome operating minima for a particular operation must ensure that at all times the combination of information available from external sources and the aeroplane instruments and equipment is sufficient to enable the aeroplane to be operated along the desired flight path.

18.2 APPLICABILITY

This Civil Aviation Requirement (CAR) lays down the requirements for all weather operations conducted by Scheduled, Non-scheduled and General Aviation operators (Aeroplanes). This CAR is issued under the provisions of Schedule II, Rule 29C and Rule 133A of the Aircraft Rules, 1937.

18.3 DEFINITIONS/TERMINOLOGY

For the purpose of this CAR, definitions and terminology associated with AWO are amplified below;

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 2 D i n s t r u m e n t approach operations, expressed in termsof 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) appropriate to the type and/or category of the operation.

Alert height. An alert height is a height above the runway threshold based on the characteristics of the aeroplane and its fail operational landing system, above which a Category III operation would be discontinued and a missed approach initiated if a failure occurred in one of the redundant parts of the landing system, or in the relevant ground equipment.

All weather operations. Any surface movement, take-off, departure, approach or landing operations in conditions where visual reference is limited by weather conditions.

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

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

En-route alternate. An alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en-route.

Destination alternate. An alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodrome of intended landing.

Note: The aerodrome from which a flight departs may also be an enroute or a destination alternate aerodrome for that flight.

Approach ban point. The point on a final approach where the reported weather conditions at the runway must meet the applicable minima so as to be able to meet regulatory requirements for continuing an instrument approach to a landing.

Automatic flight control system (AFCS) with coupled approach mode. Airborne system which provides automatic control of the flight path of the aeroplane during approach.

Automatic landing system. The airborne system which provides automatic control of the aeroplane during the approach and landing.

Categories of aeroplanes. The following five categories of typical aeroplanes have been established based the indicated airspeed at threshold (Vat) which is equal to the stall speed Vso multiplied by 1.3 or stall speed Vs1g multiplied by 1.23 (whichever is higher) in the landing configuration at maximum certificated landing mass.

Category A — less than 169 km/h (91 kt) IAS
Category B — 169 km/h (91 kt) or more but less than 224 km/h (121 kt) IAS
Category C — 224 km/h (121 kt) or more but less than 261 km/h (141 kt) IAS
Category D — 261 km/h (141 kt) or more but less than 307 km/h (166 kt) IAS
Category E — 307 km/h (166 kt) or more but less than 391 km/h (211 kt) IAS

Ceiling. The height above the ground or water of the base of the lowest layer of cloud below 6000 m (20 000 ft) covering more than half the sky.

Circling approach. An extension of an instrument approach procedure which provides for visual circling of the aerodrome prior to landing.

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

Continuous Descent Final Approach (CDFA). A technique, consistent with stabilized approach procedures, for flying the final approach segment of a non-precision instrument approach 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 should begin for the type of aircraft flown.

Converted Meteorological Visibility (CMV). A value equivalent to an RVR which is derived from the reported meteorological visibility, as converted in accordance with the specified requirements in the CAR

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".

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

Equivalent position. A position that can be established by means of a DME distance, a suitably located NDB or VOR, SRE or PAR fix or any other suitable fix between three and five miles from threshold that independently establishes the position of the aeroplane.

Fail-operational automatic landing system. An automatic landing system is fail operational if, in the event of a failure, the approach, flare and landing can be completed by the remaining part of the automatic system.

Fail-operational hybrid landing system. A system which consists of two or more independent landing systems. In the event of failure of one system, guidance or control is provided by the remaining system(s) to permit completion of the landing.

Note.— A fail-operational hybrid landing system may consist of a fail-passive automatic landing system with a monitored head-up display which provides guidance to enable the pilot to complete the landing manually after failure of the automatic landing system.

Fail-passive automatic landing system. An automatic landing system is fail-passive if, in the event of a failure, there is no significant deviation of aeroplane trim, flight path or attitude but the landing will not be completed automatically.

Final approach. That part of an instrument approach procedure which commences at the specified final approach fix or point, or where such a fix or point is not specified,

a) at the end of the last procedure turn, base turn or inbound turn of a racetrack procedure, if specified; or
b) at the point of interception of the last track specified in the approach procedure; and ends at a point in the vicinity of an aerodrome from which:

1) A landing can be made; or
2) A missed approach procedure is initiated.

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

Flight visibility. The visibility forward from the cockpit of an aircraft in flight. *GLS.* An instrument approach operation that is based on GBAS.

Ground-based augmentation system (GBAS). An augmentation system in which the user receives augmentation information directly from a ground-based transmitter.

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

Head-up display (HUD) approach and landing guidance system (HUDLS). An airborne instrument system which presents sufficient information and guidance in a specific area of the aircraft windshield, superimposed for a conformal view with the external visual scene, which permits the pilot to manoeuvre the aircraft manually by reference to that information and guidance alone to a level of performance and reliability that is acceptable for the category of operation concerned.

Ground visibility. The visibility at an aerodrome as reported by an accredited observer or by automatic systems.

ILS critical area. An area of defined dimensions about the localizer and glide path antennas where vehicles, including aircraft, are excluded during all ILS operations. The critical area is protected because the presence of vehicles and/or aircraft inside its boundaries will cause unacceptable disturbance to the ILS signal-in-space.

ILS sensitive area. An area extending beyond the critical area where the parking and/or movement of vehicles, including aircraft, is controlled to prevent the possibility of unacceptable interference to the ILS signal during ILS operations. The sensitive area is protected to provide protection against interference caused by large moving objects outside the critical area but still normally within the airfield boundary.

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.

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:

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

1) Category I (CAT I): a decision height not lower than 60 m (200 ft) and with either a visibility not less than 800 m or a runway visual range not less than 550 m;
2) 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;
3) Category IIIA (CAT IIIA): a decision height lower than 30 m (100 ft) or no decision height and a runway visual range not less than 175 m;
4) Category IIIB (CAT IIIB): a decision height lower than 15 m (50 ft), or no decision height and a runway visual range less than 175 m but not less than 50 m; and
5) Category IIIC (CAT IIIC): no decision height and 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 IIIB would be considered a CAT IIIB operation or an operation with a DH in the range of CAT II but with an RVR in the range of CAT I would be considered a CAT II operation).

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 All Weather Operations Manual (Doc 9365).

Instrument approach procedure. A series of predetermined manoeuvres 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 technique (CDFA). CDFA with advisory VNAV guidance calculated by on-board equipment (see PANS-OPS (Doc 8168), Volume I, Part I, Section 4, Chapter 1, paragraph 1.8.1) are considered 3D instrument approach operations. CDFA with manual calculation of the required rate of descent are considered 2D instrument approach operations. For more information on CDFA refer to PANS-OPS (Doc 8168), Volume I, Section 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.

Instrument flight rules (IFR). A set of rules governing the conduct of flight under instrument meteorological conditions.

Note.— IFR specifications are found in Chapter 4 of Annex 2. Instrument flight rules may be followed in both IMC and VMC.

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 1 - *Ceiling as defined in ICAO Annex 2.*

Note 2 - The specified minima for visual meteorological conditions are contained in ICAO Annex 2.

*Low visibility procedures (LVP). S*pecific procedures applied at an aerodrome for the purpose of ensuring safe operations during Categories II and III approaches and/or low visibility take-offs.

Low visibility take-off (LVTO). A term used in relation to flight operations referring to a take-off on a runway where the RVR is less than 400 m.

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

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

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

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

Missed approach point (MAPt). That point in an instrument approach procedure at or before which the prescribed missed approach procedure must be initiated in order to ensure that the minimum obstacle clearance is not infringed.

Missed approach procedure. The procedure to be followed if the approach cannot be continued.

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 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".

Obstacle free zone (OFZ). The airspace above the inner approach surface, inner transitional surfaces, and balked landing surface and that portion of the strip bounded by these surfaces, which is not penetrated by any fixed obstacle other than a low mass and frangibly mounted one required for air navigation purposes.

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.

Procedure turn. A manoeuvre in which a turn is made away from a designated track followed by a turn in the opposite direction to permit the aircraft to intercept and proceed along the reciprocal of the designated track.

Note 1. — Procedure turns are designated "left" or "right" according to the direction of the initial turn.

Note 2. — Procedure turns may be designated as being made either in level flight or while descending, according to the circumstances of each individual instrument approach procedure.

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

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

Runway holding position. A designated position intended to protect a runway, an obstacle limitation surface, or an ILS critical/sensitive area at which taxiing aircraft and vehicles shall stop and hold, unless otherwise authorised by the aerodrome control tower.

Note. — In radiotelephony phraseologies, the expression "holding point" is used to designate the runway-holding position.

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

Stabilised Approach. (SAp). An approach which is flown in a controlled and appropriate manner in terms of configuration, energy and control of the flight path from a pre-determined point or altitude/height down to a point 50 feet above the threshold or the point where the flare manoeuvre is initiated, if higher.

Surveillance radar. Radar equipment used to determine the position of an aircraft in range and azimuth.

Touchdown zone (TDZ). The portion of a runway, beyond the threshold, where it is intended landing aeroplanes first contact the runway.

Vertical Navigation (VNAV). A method of navigation which permits aircraft operation on a vertical flight profile using altimetry sources, external flight path references, or a combination of these.

Visibility. Visibility for aeronautical purposes is the greater of:

a) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background;

b) The greatest distance at which lights in the vicinity of 1 000 candelas can be seen and identified against an unlit background.

Note 1. — The two distances have different values in air of a given extinction coefficient, and the latter b) varies with the background illumination. The former a) is represented by the meteorological optical range (MOR).

Note 2. — The definition applies to the observations of visibility in local routine and special reports, to the observations of prevailing and minimum visibility reported in METAR and SPECI and to the observations of ground visibility.

Visual approach. An approach by an IFR flight when either part or all of an instrument approach procedure is not completed and the approach is executed by visual reference to terrain.

Visual flight rules (VFR). Regulatory provisions for visual flight.

Note – VFR specifications are found in ICAO Annex 2

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

*Note 1 - * Ceiling as defined in ICAO Annex 2.*

Note 2 - VFR specifications are found in ICAO Annex 2

18.4 AERODROME OPERATING MINIMA (AOM) - GENERAL

18.4.1 Reference to para 4.2.8

18.4.2 RESERVED

18.4.3 Reference to para 4.2.8.2.

18.4.4 The operator shall ensure the following:

(a) the PIC and Co-pilot must hold an instrument rating for flights under IFR and meet the requirements for recent experience;
(b) all flight crew members should be qualified and trained for take-off, instrument approaches and operations to the lowest Cat-I/II/III minima as applicable;
(c) the flight crew members should have completed all necessary proficiency checks including demonstration of proficiency using the relevant types of instrument approaches;
(d) the Operations Manual instructions are appropriate to the operation and reflect the mandatory procedures and/or limitations contained in the Flight Manual;
(e) a system of records is maintained to ensure that the necessary qualifications of the flight crew members are being met on a continuing basis; and

(f) the PIC of a scheduled operator must have gained command experience of 100 hours in the relevant aeroplane type with restricted AOM before using normal AOM.

18.4.5 Approach and landing conditions

Before commencing an approach to land, the PIC must satisfy himself/herself that, according to the information available to him/her, the weather at the aerodrome and the condition of the runway intended to be used should not prevent a safe approach, landing or missed approach, having regard to the performance information contained in the Operations Manual.

18.4.6 Commencement and Continuation of Approach (Approach Ban Policy)

18.4.6.1 The PIC shall not commence an instrument approach if the reported RVR/Visibility is below the applicable minimum.

18.4.6.2 If, after commencing an instrument approach, the reported RVR/Visibility falls below the applicable minimum, the approach shall not be continued:

(a) below 1 000 ft above the aerodrome; or
(b) into the final approach segment.

18.4.6.3 Where the RVR is not available, RVR values may be derived by converting the reported visibility.

18.4.6.4 If, after entering the final approach segment or descending below1000 ft above the aerodrome elevation, the reported RVR/visibility falls below the applicable minimum, the approach may be continued to DA/H or MDA/H.

18.4.6.5 The approach may be continued below DA/H or MDA/H and the landing may be completed provided that the required visual reference is established at the DA/H or MDA/H and is maintained.

18.4.6.6 The touch-down zone RVR is always controlling. If reported and relevant, the mid-point and stop-end RVR are also controlling. The minimum RVR value for the mid-point is 125 m or the RVR required for the touch-down zone if less, and 50 m for the stop-end. For aeroplanes equipped with a stop-end (roll-out) guidance or control system, the minimum RVR value for the mid-point is 50 m.

Note: "Relevant", in this context, means that part of the runway used during the high speed phase of the landing down to a speed of approximately 60 knots.

18.4.7 Stabilized Approaches

All approaches shall be flown as stabilized approaches (SAp) unless otherwise approved by the DG, CAAN for a particular approach to a particular runway.

18.4.8 Non-precision Approaches.

All non-precision approaches shall be flown using the Continuous Descent Final Approaches (CDFA) technique unless otherwise approved by the DG, CAAN for a particular approach to a particular runway. When calculating the minima the operator shall ensure that the applicable minimum RVR is increased by 200m for Cat A/B aeroplanes and by 400m for Cat C/D aeroplanes for approaches not flown using the CDFA technique, providing that the resulting RVR/CMV value does not exceed 5000m.

18.4.9 Conversion of Reported Meteorological Visibility to RVR/CMV

Horizontal visibility reported by the meteorological office could be different from the slant visibility observed by the pilot due to factors such as low lying haze and a smoke layer. The reported visibility has inherent limitations due to the fact that it is reported at a site that is removed from the point at which a pilot makes the approach to land and is expected to acquire the visual reference to continue the approach. An RVR is a better representation of the expected distance that the pilot may acquire visual cues on approach.

As RVR and meteorological visibility are established differently, a ratio can be identified between the two. Effect of lighting intensities and background luminance play a role when establishing an RVR. In cases where the RVR is not reported, a pilot may derive RVR/CMV by using a mathematical conversion depending upon the type of approach lighting and day/night conditions. The RVR/CMV derived from the table below may be used by an operator to commence or continue an approach to the applicable DA/MDA.

An Operator should ensure that a meteorological visibility to RVR conversion is not used;

a) for takeoff
b) for calculating any other required RVR minimum less than 800 m,
c) for visual/circling approaches,
d) or when reported RVR is available.
e) or when reported visibility is below 800 m and RVR (instrumented or human observation) is not available

When converting meteorological visibility to RVR in all other circumstances than those in sub-paragraphs above, an operator should ensure that Table 1 below is used:

Note- If the RVR is reported as being above the maximum value assessed by the aerodrome operator, e.g. "RVR more than 1500 metres", it is not considered to be a reported value for the purpose of this paragraph.

Table 1: Conversion of Meteorological visibility to RVR

Lighting elements in operation	RVR = Reported Meteorological. Visibility x	
	Day	Night
HI approach and runway lighting	1·5	2·0
Any type of lighting installation other than above	1·0	1·5
No lighting	1·0	Not applicable

18.5 LOW VISIBILITY OPERATIONS - GENERAL

18.5.1 An operator shall not conduct Category II or III operations unless:

(a) Each aeroplane concerned is certified for operations with decision heights below 200 ft, or no decision height, and equipped in accordance with NCAR Airworthiness and Maintenance Requirements for Cat II/III Operations.

(b) The operations are approved by the DG, CAAN in accordance with NCAR Airworthiness and Maintenance Requirements for Cat II/III Operations, FOR (A) Operator Authorization for ILS Cat II/III/A Operations.

(c) A suitable system for recording approach and/or automatic landing success and failure is established and maintained to monitor the overall safety of the operation;

(d) The flight crew consists of at least two pilots; and

(e) Decision height is determined by means of a radio altimeter.

18.5.2 An operator shall not conduct low visibility take-offs in less than 400 m RVR unless approved by DG, CAAN. Scheduled operators may be authorized LVTO minima of up to 125 m. This requires that a 90 m visual segment shall be available from the cockpit at the start of the take-off run.

18.5.3 An operator shall not conduct take-off with RVR/visibility less than standard Category I conditions of 550m RVR/800 m visibility unless low visibility procedures are enforced.

18.6 LOW VISIBILITY OPERATIONS — AERODROME CONSIDERATIONS

18.6.1 An operator shall not use an aerodrome for Category II or III operations unless the aerodrome is approved for such operations.

18.6.2 An operator shall verify that low visibility procedures (LVP) have been established, and will be enforced, at those aerodromes where low visibility operations are to be conducted.

18.7 LOW VISIBILITY OPERATIONS — TRAINING AND QUALIFICATIONS

18.7.1 An operator shall ensure that low visibility training and checking is conducted in accordance with a detailed syllabus approved by the DG, CAAN and included in the Operations Manual. The flight crew qualification is specific to the operation and aircraft type. An operator shall ensure that, prior to conducting LVTO, Category II and III operations each flight crew member completes the training and checking requirements for LVTO and CAT II/III prescribed herein to the limiting values of RVR and Decision Height appropriate to the operator's approval; and is qualified in accordance with this CAR. LVTO and CAT II/III authorization shall be applicable only to scheduled operators. LVTO and CAT II/III training and qualification shall be based on a modular concept of training. LVTO training and qualification module is a pre-requisite for CAT II/III training and qualification modules. CAT II/III training may be combined while covering respective approaches and failures. For operators conducting manual F/D CAT II landings, the simulator training (initial/recurrent) and evaluation shall include at least one manual F/D CAT II landing. The quantum of ground/simulator training and checking for respective modules is tabled below (breakdown of exercises is covered in following paragraphs);

Exercise	Ground training	Simulator training	Simulator check
Initial authorization			
LVTO	1:00	1:00	1:00
CAT II	2:00	2:00	1:00
CAT III	2:00	1:00	1:00
CAT II/III (combined)	3:00	3:00	1:00
Pilots with previous authorization on similar design type			
LVTO	1:00	1:00	1:00
CAT II	2:00	1:00	1:00
CAT III	2:00	1:00	1:00
CAT II/III (combined)	3:00	2:00	1:00

18.7.2 **Qualifications and Flying Experience Requirements** for Cat-II/III Prior to being authorized for CAT-II or CAT-III operations, pilot shall meet the following qualifications and experience requirements:

18.7.2.1 Licence and Ratings

(a) Current CPL or higher licence.
(b) Instrument Rating

18.7.2.2 Flying Experience for PIC

(a) Total flying experience 2500 hrs

(b) PIC experience on type 500 hrs (for pilots with no previous CAT II/III authorization), 400 hrs (for pilots with previous CAT II/III authorization as co-pilot on same type or as PIC on different design type), 100 hrs (for pilots with previous CAT II/III authorization as PIC on similar design type).

(c) Night Flying on type 100 hrs.

18.7.2.3 Flying Experience for Co-Pilot

(a) Total flying experience 500 hrs

(b) On type experience as released Co-pilot 300 hrs (for pilots with no previous Cat II/III authorization), 100 hrs (for pilots with previous CAT II/III authorization on similar design type).

18.7.3 **Ground Training** for PIC, Co-Pilot for CAT II and CAT III Authorization The ground training shall lay specific emphasis on the following;

18.7.3.1 All the technical aspects required for CAT II and CAT III operations, the aircraft equipment required for carrying out CAT II and CAT III approaches and associated weather phenomenon, with special emphasis on poor visibility in fog, rain, meteorological minima etc. This training shall be given by Ground Instructor/Flight Instructor/TRI/SFI/Examiner trained in CAT II and CAT III operations.

18.7.3.2 The techniques for CAT II and CAT III operations, effects on operations due failures in the airborne and ground equipment and their indications, and action required to be taken on various failures. This training shall be given during pre-simulator briefing by Flight Instructor/TRI/SFI/Examiner trained in CAT II and CAT III operations.

18.7.4 SIMULATOR TRAINING AND LINE FLYING FOR CAT II/CAT III AUTHORIZATION

The training exercises stipulated hereunder shall be the minimum to be carried out on an approved simulator. The Flight Instructor/TRI/SFI/Examiner shall ensure that the pilot acquires the required proficiency and if necessary additional training be given. In case of a gap between ground classes/simulator training and line flying of more than six months the pilot shall undergo a simulator training session of at least 8 CAT II/III approaches. This may be combined with recurrent IR/PPC training.

18.7.4.1 Simulator Training for PIC/Co-pilot.

18.7.4.1.1 Pilots with no previous CAT II/III Authorization

(a) One CAT II training session of minimum of 2 hours consisting of a minimum of 10 CAT II approaches in which at least 4 landings and 4 go around shall be accomplished. The exercise shall also include approaches with one engine inoperative for landing and go-around. Handling of failures and taking necessary corrective action shall also be part of the training.

(b) One CAT II check session of 1 hour by a TRI/Examiner to assess the proficiency consisting of at least 3 landings and 1 go around to include engine failure on approach, go around, recognition of aircraft and ground equipment failures and to take necessary corrective action.

(c) Only on successful completion of simulator training/check for CAT II operations, pilot shall undergo one CAT III training session of 1 hour consisting of at least 3 landings and 1 go around with all engines operating, critical engine failure and also with equipment failures and to demonstrate ability to take necessary corrective actions to handle the failures.

(d) One CAT III check session of 1 hour by a TRI/Examiner to assess the proficiency consisting of a minimum of 3 landings and 1 go around.

(e) An operator may combine CAT II/III training and check modules. In this case, the training session will be identical as covered above (2 hours for CAT II and 1 hour for CAT III), however, the check for CAT II and CAT III can be combined in one session of 1 hour consisting of at least 3 landings and 1 go around of which minimum 1 landing shall be CAT II.

18.7.4.1.2 Pilots with previous CAT II/III authorization on different design type Training and evaluation as per Para 17.7.4.1.1 above.

18.7.4.1.3 Pilots with previous CAT II/III authorization on same or similar design type.

(a) One CAT II training session of minimum of 1 hours consisting of a minimum of 3 CAT II landings and 1 go around shall be accomplished. The exercise shall also include approaches with one engine inoperative for landing and go-around. Handling of failures and taking necessary corrective action shall also be part of the training.

(b) One CAT II check session of 1 hour by a TRI/Examiner to assess the proficiency for consisting of at least 3 landings and 1 go around to include to include engine failure on approach, go around, recognition of aircraft and ground equipment failures and to take necessary corrective action.

(c) Only on successful completion of simulator training/check for CAT II operations, pilot shall undergo one Cat-III training session of 1 hour consisting of at least 3 CAT III landings and 1 go around with all engines operating, critical engine failure and also with equipment failures and to demonstrate ability to take necessary corrective actions to handle the failures.

(d) One CAT III check session of 1 hour by a TRI/Examiner to assess the proficiency consisting of a minimum of 3 approaches and 1 go around.

(e) An operator may combine CAT II/III training and check modules. In this case, the training session will be identical as covered above (1 hour for CAT II and 1 hour for CAT III), however, the check for CAT II and CAT III can be combined in one session of 1 hour consisting of at least 3 landings and 1 go around of which minimum 1 landing shall be CAT II.

Note 1: CAT II/III training and checking may be conducted as part of PIC upgrade/co-pilot type training conversion course.

Note 2: Incapacitation procedures shall be practiced

18.7.4.2 Line Flying for PIC/Co-pilot

(a) One ILS CAT II/ CAT III approach for PIC with a CAT II/III qualified copilot in weather conditions at or above the CAT I minima.

(b) One ILS CAT II/ CAT III approach for co-pilot with a CAT II/II qualified PIC in weather conditions at or above the CAT I minima.

18.7.5 RECENCY REQUIREMENTS FOR CAT-II/III

To exercise the privileges of applicable CATII/III authorization, a PIC/co-pilot shall have carried out a minimum of 6 CAT II/III approaches to the authorized RVR including at least 3 landings in the approved simulator in the preceding 6 months. For CAT II authorized pilots, at least one CAT II landing shall be conducted in the simulator exercise above. There is no separate requirement to maintain CAT II recency for such pilots.

Note: All the above required practice approaches on the aircraft for initial authorization can be carried out at any Category-I ILS runway where auto-land can be carried out and which has been suitably assessed, after flight trials, by the operator. All Operators must maintain a periodically updated list of airports/ runways where practice CAT II/ III approaches/auto-land may be carried out.

18.7.6 RECURRENT TRAINING AND CHECKING FOR CAT II/III

18.7.6.1 Recurrent Ground Training.

Recurrent ground training shall provide any remedial review of topics specified in initial CAT II and CAT III ground training, to ensure continued familiarity with those topics. Emphasis shall be placed on any programme modifications, changes to aircraft equipment or procedures, review of any occurrences or incidents that may be pertinent, and finally emphasis may be placed on re-familiarisation with topics such as flight mode annunciation for failure conditions or other information which the pilots may not routinely see during normal line operations. Topics to be addressed for each PIC and copilot are those topics, necessary for the performance of the assigned duties for each respective crew member in the current assignment. This training may be completed during annual refresher training.

18.7.6.2 Recurrent Simulator Training and Checks for PIC/co-pilot

Pilot's knowledge and ability to perform the tasks associated with the particular category of operation for which he is authorized, is to be demonstrated during recurrent training and PPC/IR checks. This shall include a minimum of 3 CAT II/III approaches and a minimum of 1 go-around in the training and PPC/IR check profiles.

18.7.7 Qualification and Flying Experience Requirements for LVTO

18.7.7.1 An operator shall ensure that, prior to conducting Low Visibility Take-offs each flight crew member:

(a) Completes the training and checking requirements for LVTO prescribed in this FOR(A) as appropriate to the operator's approval; and
(b) Is qualified in accordance with this FOR(A)
(c) On successful completion of LVTO training and checks, the Pilot's proficiency to undertake LVTO Operations will be recorded and certified
(d) The air operator is required to indicate in the Operations Manual the airfields along with their designated take-off alternate(s) for each of the aerodromes at which LVTO Operations would be carried out.

18.7.7.2 The PIC and Co-pilot should have gained experience of at least 25 sectors in the relevant aeroplane type as PIC and released Co-pilot respectively before being authorized to use LVTO minima up to the limiting RVR.

18.7.8 Ground Training for LVTO

This training programme shall outline the procedures and techniques, conditions and requirements (like MEL, Special Weather phenomenon etc.) for reduced visibility take-off under weather conditions below landing minima. Emphasis should be given on taxiing in low visibility conditions; CRM for Low Visibility Operations; R/T procedures and avoidance of runway incursions

18.7.9 Simulator Training and Checking for LVTO

The pilots shall be subjected to adequate simulator training (minimum 1 hour) to cover the following and any other relevant maneuvers:

(a) Take-offs under simulated conditions of RVR 125 m.
(b) Reject take-off at low speed and high speed under limiting RVR conditions.
(c) Exercise of diversion to the designated take-off alternate from engine failure/fire at V1 including climb-out to en-route airway and landing at take-off alternate at landing minima.
(d) Simulator check (minimum 1 hour) covering the above to assess the proficiency.

Note 1: LVTO training and checking may be conducted as part of PIC upgrade/co-pilot type training conversion course.

Note 2: Incapacitation procedures shall be practised

18.7.10 Recurrent Simulator Training and Checking for LVTO for PIC/co-pilot

Pilot's knowledge and ability to perform the tasks for which he is authorised, is to be demonstrated during normal proficiency/IR training and checks. This shall include a minimum of one take-off and one reject take-off under limiting RVR conditions in the training and PPC/IR check profiles.

18.8. LOW VISIBILITY OPERATIONS — OPERATING PROCEDURES

18.8.1 An operator must establish procedures and instructions to be used for low visibility take-off, Category II and III operations. These procedures must be included in the Operations Manual and contain the duties of flight crew members during taxiing, take-off, approach, flare, landing, roll-out and missed approach as appropriate.

18.8.2 The PIC shall satisfy himself/herself that:

(a) The status of the visual and non-visual facilities is sufficient prior to commencing a low visibility take-off, Category II or III approach;
(b) Appropriate LVPs are in force according to information received from Air Traffic Services, before commencing a low visibility take-off, Category II or III approach; and
(c) The flight crew members are properly qualified and trained prior to commencing a low visibility take-off (in an RVR of less than 400 m), Category II or III approach.

18.8.3 Full thrust take off rating is to be used for LVTO.

18.8.4 Supervised take-off and landing is not permitted during CAT II/III operations or LVTO.

18.9 LOW VISIBILITY OPERATIONS – MINIMUM EQUIPMENT (AIRCRAFT)

18.9.1 An operator must include in the Operations Manual, the minimum equipment that has to be serviceable at the commencement of a low visibility takeoff, Category II or III approach in accordance with the AFM or other approved document. The following aircraft systems equipment listed as applicable/installed which are critical for LVO shall be fully serviceable;

18.9.1.1 Windshield wipers (where fitted) for both PIC and Co-pilot during actual or forecast precipitation conditions.

18.9.1.2 Window heat system for all heated cockpit windows

18.9.1.3 Anti-skid system

18.9.1.4 Thrust reversers for all engines

18.9.2 The PIC shall satisfy himself/herself that the status of the aeroplane and of the relevant airborne systems is appropriate for the specific operation to be conducted.

18.10 VFR OPERATING MINIMA

18.10.1 An operator shall ensure that VFR flights are conducted in accordance with the Visual Flight Rules and in accordance with Table 2.

18.10.2 Special VFR flights are not normally permitted for commercial air transport aeroplanes.

Table 2: Minimum Visibilities for VFR Operations (refer to AIP)

Altitude Band	Airspace Class	Flight Visbility	Distance from Cloud
At or above 3050 m (10000 ft) AMSL	A[3] B C D E F G	8 km	1500 m horizontally 300 m (1000 ft) vertically
Below 3050 m (10000 ft) and above 900 m (3000 ft) AMSL, or above 300 m (1000 ft) above terrain, whichever is the higher	A[3]B C D E F G	5 km	1500 m horizontally 300 m (1000 ft) vertically
At or below 900 m (3000 ft) AMSL, or 300 m (1000 ft) above terrain, whichever is the higher	A[3] B C D E	5 km	1500 m horizontally 300 m (1000 ft) vertically
	F G	5 km[2]	Clear of clouds and with the surface in sight

Note 1 - When the height of the transition altitude is lower than 3 050 m (10 000 ft) AMSL, FL 100 should be used in lieu of 10 000 ft.

Note 2 - a) When so prescribed by the appropriate ATS authority: flight visibilities reduced to not less than 1500 m may be permitted for flights operating:

1) at speeds that, in the prevailing visibility, will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision; or

2) 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.

b) Helicopters may be permitted to operate in less than 1 500 m flight visibility, if manoeuvres at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision.

Note 3 - 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.

18.11 AERODROME OPERATING MINIMA - LANDING

18.11.1 Aerodrome Operating Minima (AOM)

AOM shall be calculated based on the latest information of airport facilities, procedures and OCAs. Operators shall ensure that only information promulgated by the DG, CAAN through the Aeronautical Information Publication is used for calculation of AOM at civil aerodromes.

18.11.1.1 AOM is applicable to all Operators subject to compliance with the following conditions;

(a) The PIC and Co-pilot shall have minimum 200 hours experience on type.
(b) The PIC and Co-pilot shall have minimum 10 hours experience on type in the preceding 90 days.
(c) The operator shall provide adequate training including training on the relevant simulator (minimum Level C) to its pilots to make them familiar with the operation under reduced visibility conditions and other associated hazards.
(d) The PIC and Co-pilot shall have to demonstrate to an Examiner qualified on type his proficiency to handle normal/abnormal situations under simulated/actual reduced visibility conditions.
(e) The operations manual incorporates the above conditions and is approved by the DG, CAAN.

18.11.2 RESERVED

18.11.3 Category I, APV and Non-Precision Approach Operations

18.11.3.1 A Category I approach operation is a precision instrument approach and landing using ILS, GLS (GNSS/GBAS) or PAR with a decision height not lower than 200 ft and with visibility not less than 800 m or an RVR not less than 550 m.

18.11.3.2 A non-precision approach (NPA) operation is an instrument approach using any of the facilities described on Table 3 (System Minima) with a MDH or DH not lower than 250 ft and an RVR/CMV not lower than 750 m unless accepted by the DG, CAAN.

18.11.3.3 An APV operation is an instrument approach which utilizes lateral and vertical guidance, but does not meet the requirements established for precision approach and landing operations, with a DH not lower than 250 ft and a runway visual range of not less than 600 m unless approved by the DG, CAAN.

18.11.3.4 Decision height (DH). An operator must ensure that the decision height to be used for an approach is not lower than:

(a) the minimum height to which the approach aid can be used without the required visual reference; or
(b) the OCH for the category of aeroplane; or
(c) the published approach procedure decision height where applicable; or
(d) 200 ft for Category I approach operations; or
(e) the lowest decision height specified in the Aeroplane Flight Manual (AFM) or equivalent document, if stated; whichever is higher.

18.11.3.5 Minimum Descent Height (MDH).

An operator must ensure that the minimum descent height for an approach is not lower than:

(a) the OCH for the category of aeroplane; or
(b) the system minimum in Table 3; or
(c) the minimum descent height specified in the Aeroplane Flight Manual (AFM) if stated; whichever is higher.

18.11.3.6 Visual reference.

A pilot may not continue an approach below MDA/MDH unless at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:

(a) elements of the approach light system;
(b) the threshold;
(c) the threshold markings;
(d) the threshold lights;
(e) the threshold identification lights;
(f)) the visual glide slope indicator;
(g)) the touchdown zone or touchdown zone markings;
(h) the touchdown zone lights;
(i) runway edge lights

Table 3: System Minima vs Instrument Approach Procedures

System minima	
Instrument Approach Procedure	Lowest DH / MDH
ILS/MLS/GLS CAT I	200 ft[1]
RNAV with approved vertical guidance	200 ft
Localizer with or without DME	250 ft
SRA (terminating at ½ NM)	250 ft
SRA (terminating at 1 NM)	300 ft
SRA (terminating at 2 NM or more)	350 ft
RNAV without approved vertical guidance	300 ft
VOR	300 ft
VOR/DME	250 ft
NDB	350 ft
NDB/DME	300 ft
VDF	350 ft

Note 1.— 200 ft. is the lowest authorized DH for Category I operation unless an equivalent level of safety can be achieved through use of additional procedural or operational requirements.

Note 2.— A lowest DH of 200 ft. for RNAV with approved vertical guidance approaches shall only be used if full SBAS capability is available. Otherwise a DH of 250 ft. is required.

18.11.3.7 Determination of RVR/CMV/Visibility minima for Category 1, APV and non-precision approaches. The minimum RVR/CMV/Visibility shall be the highest of the values derived from Table 4 or Table 5, but not greater than the maximum values shown in Table 5 where applicable. The values in Table 4 are derived from the formula below with the length of the approach lighting system taken into account as part of the formula for derivation of RVR;

Required RVR/Visibility (m) = [(DH/MDH (ft) x 0.3048) / tanα] - length of approach lights (m); where α is the calculation angle, being a default value of 3.00° increasing in steps of 0.10° for each line in Table 5 up to 3.77° and then remaining constant.

Table 4: Lowest Straight-in Approach Minima for Instrument Approach and Landing Operations Other Than CAT II or CAT III

DH or MDH (ft)			Class of Lighting Facility			
			FALS	IALS	BALS	NALS
			(metres)			
			See para 11.3.9. for RVR < 750 m			
200	-	*210*	*550*	*750*	*1000*	*1200*
211	-	*220*	*550*	*800*	*1000*	*1200*
221	-	*230*	*550*	*800*	*1000*	*1200*
231	-	*240*	*550*	*800*	*1000*	*1200*
241	-	*250*	*550*	*800*	*1000*	*1300*
251	-	*260*	*600*	*800*	*1100*	*1300*
261	-	*280*	*600*	*900*	*1100*	*1300*
281	-	*300*	*650*	*900*	*1200*	*1400*
301	-	*320*	*700*	*1000*	*1200*	*1400*
321	-	*340*	*800*	*1100*	*1300*	*1500*
341	-	*360*	*900*	*1200*	*1400*	*1600*
361	-	*380*	*1000*	*1300*	*1500*	*1700*
381	-	*400*	*1100*	*1400*	*1600*	*1800*
401	-	*420*	*1200*	*1500*	*1700*	*1900*
421	-	*440*	*1300*	*1600*	*1800*	*2000*
441	-	*460*	*1400*	*1700*	*1900*	*2100*
461	-	*480*	*1500*	*1800*	*2000*	*2200*
481	-	*500*	*1500*	*1800*	*2100*	*2300*
501	-	*520*	*1600*	*1900*	*2100*	*2400*
521	-	*540*	*1700*	*2000*	*2200*	*2400*

DH or MDH (ft)			Class of Lighting Facility			
			FALS	IALS	BALS	NALS
			(metres)			
			See para 11.3.9. for RVR < 750 m			
541	-	*560*	*1800*	*2100*	*2300*	*2500*
561	-	*580*	*1900*	*2200*	*2400*	*2600*
581	-	*600*	*2000*	*2300*	*2500*	*2700*
601	-	*620*	*2100*	*2400*	*2600*	*2800*
621	-	*640*	*2200*	*2500*	*2700*	*2900*
641	-	*660*	*2300*	*2600*	*2800*	*3000*
661	-	*680*	*2400*	*2700*	*2900*	*3100*
681	-	*700*	*2500*	*2800*	*3000*	*3200*
701	-	*720*	*2600*	*2900*	*3100*	*3300*
721	-	*740*	*2700*	*3000*	*3200*	*3400*
741	-	*760*	*2700*	*3000*	*3300*	*3500*
761	-	*800*	*2900*	*3200*	*3400*	*3600*
801	-	*850*	*3100*	*3400*	*3600*	*3800*
851	-	*900*	*3300*	*3600*	*3800*	*4000*
901	-	*950*	*3600*	*3900*	*4100*	*4300*
951	-	*1000*	*3800*	*4100*	*4300*	*4500*
1001	-	*1100*	*4100*	*4400*	*4600*	*4900*
1101	-	*1200*	*4600*	*4900*	*5000*	*5000*
1201 and above			*5000*	*5000*	*5000*	*5000*

Table 5: Minimum and Maximum RVR for Instrument Approaches down to CAT I Minima

Facility/Conditions	*RVR/CMV (m)*	*Aeroplane Category*			
		A	*B*	*C*	*D*
ILS/MLS/GLS, PAR, and RNAV with approved vertical guidance	*Min*	*According to Table 4*			
	Max	*1500*	*1500*	*2400*	*2400*
NDB, NDB/DME, VOR, VOR/DME, LOC, LOC/DME, VDF, SRA, RNAV without approved vertical guidance with a procedure which fulfills the critera in paragraph 11.3.8(b)	*Min*	*750*	*750*	*750*	*750*
	Max	*1500*	*1500*	*2400*	*2400*
For NDB, NDB/DME, VOR, VOR/DME, LOC, LOC/DME, VDF, SRA, RNAV without approved vertical guidance: - *Not fulfilling the criteria in paragraph 11.3.8(b), or* - *With a DH or MDH ≥ 1200 ft*	*Min*	*1000*	*1000*	*1200*	*1200*
	Max	*According to Table 4, if flown using the CDFA technique, otherwise an add-on of 200/400 m applies to the values in Table 4 but not to result in a value exceeding 5000 m.*			

Table 5a: Failed or downgraded equipment – effect on landing minima

Table 5a contains instructions concerning failed or downgraded equipment and consequential effect on landing minima. The table has instructions intended for use both pre-flight and in-flight. It is however not expected that the PIC would consult such instructions after passing 1 000 ft above the aerodrome. If failures of ground aids are announced at such a late stage, the approach could be continued at the PIC's discretion. If failures are announced before such a late stage in the approach, their effect on the approach should be considered as described in Table 5a, and the approach may have to be abandoned.

Failed or downgraded equipment[1]	*Effect on landing minima*	
	CAT I	*APV, NPA*
ILS standby transmitter	No effect	
Outer marker	No effect if replaced by height check at 1 000 ft	APV - Not applicable
		NPA with FAF: No effect unless used as FAF
		If FAF cannot be identified (e.g. no method available for timing of descent), NPA cannot be conducted
Middle marker	No effect	No effect unless used as MAPt
RVR assessment systems	No effect	
Approach lights	Minima as for NALS	
Approach lights except the last 210 m	Minima as for BALS	
Approach lights except the last 420 m	No effect	Minima as for IALS

Failed or downgraded equipment[1]	*Effect on landing minima*	
	CAT I	*APV, NPA*
Standby power for approach lights	No effect	
Edge lights, threshold lights and runway end lights	Day: no effect Night: Not allowed	
Centre line lights	No effect if F/D or auto land; otherwise RVR 750m	No effect
Centre line lights spacing increased to 30m	No effect	
Touchdown zone lights	No effect if F/D or auto land; otherwise RVR 750 m	No effect
Taxiway lighting system	No effect	

Note1 – Conditions applicable to Table 5a:

(a) multiple failures of runway lights other than indicated in Table 5a are not acceptable;
(b) deficiencies of approach and runway lights are treated separately;
(c) Category II or III operations. Deficiencies in equipment are not permitted; and
(d) failures other than ILS affect RVR only and not DH.
(e) "RVR assessment - "No effect" is subject to As long as human observation/manual RVR is reported, when visibility is below 800m. The MID RVR report may be substituted for TDZ RVR if TDZ RVR report is not available)

Table 6: Approach Lighting Systems

Class of facility	Length, configuration and intensity of approach lights
FALS (full approach light system)	Precision approach CAT I lighting system (HIALS >720m) distance coded centreline, barrette centerline
IALS (intermediate approach light system)	Simple approach lighting system (HIALS 420-719m) single source, barrette
BALS (basic approach light system)	Any other approach lighting system (HIALS, MIALS or ALS 210-419m)
NALS (no approach light system)	Any other approach lighting system (HIALS, MIALS or ALS <210m) or no approach lights

18.11.3.8 In order to qualify for the lowest allowable values of RVR detailed in Table 4 (applicable to each approach grouping), the instrument approach procedures should be flown as an instrument approach and landing operation and shall meet at least the following facility requirements and associated conditions:

(a) Instrument approaches procedures with a designated vertical profile up to and including 4.5° for Category A and B aeroplanes, or 3.77° for Category C and D aeroplanes, unless other approach angles are approved by DGCA, where the facilities are:

i) ILS/MLS/GLS/PAR; or
ii) RNAV with approved vertical guidance; and where the final approach track is offset by not more than 15 degrees for Category A and B aeroplanes or by not more than 5 degrees for Category C and D aeroplanes.

(b) Instrument approach procedures flown using the CDFA technique with a nominal vertical profile up to and including 4.5° for Category A and B aeroplanes, or 3.77° for Category C and D aeroplanes, unless other approach angles are approved by DGCA, where the facilities are NDB, NDB/DME, VOR, VOR/DME, LOC, LOC/DME, VDF, SRA or RNAV/LNAV, with a final approach segment of at least 3 NM, which also fulfill the following criteria:

i) the final approach track is offset by not more than 15 degrees for Category A and B aeroplanes or by not more than 5 degrees for Category C and D aeroplanes; and

ii) the FAF or another appropriate fix where descent is initiated is available, or distance to THR is available by FMS/RNAV or DME; and

iii) if the MAPt is determined by timing, the distance from FAF to THR is < 8 NM.

18.11.3.9 An RVR of less than 750 m as indicated in Table 4 may be used for:

(a) Category I operations to runways with FALS (see Table 6), runway touchdown zone lights (RTZL) and runway centre line lights (RCLL); or

(b) Category I operations to runways without RTZL and RCLL when an approved HUDLS, or equivalent approved system, or when conducting a coupled approach or flight-director-flown approach to the DH; or

(c) RNAV with approved vertical guidance approach procedures to runways with FALS, RTZL and RCLL when using an approved HUD.

18.11.4 Precision Approach – Category II Operations

18.11.4.1 A Category II operation is a precision instrument approach and landing using ILS with:

(a) A decision height below 200 ft but not lower than 100 ft; and
(b) A runway visual range of not less than 300 m.

18.11.4.2 Decision Height.

An operator must ensure that the decision height for Category II operations is not lower than:

(a) The minimum decision height specified in the AFM, if stated; or
(b) The minimum height to which the precision approach aid can be used without the required visual reference; or
(c) The OCH for the category of aeroplane; or
(d) The decision height to which the flight crew is authorised to operate; Or
(e) 100 ft. whichever is higher.

18.11.4.3 Visual reference.

A pilot may not continue an approach below either the Category II decision height determined in accordance with Para 17.11.4.2 above unless visual reference containing a segment of at least 3 consecutive lights being the centre line of the approach lights, or touchdown zone lights, or runway centre line lights, or runway edge lights, or a combination of these is attained and can be maintained. This visual reference must include a lateral element of the ground pattern, i.e. an approach lighting crossbar or the landing threshold or a barrette of the touchdown zone lighting.

18.11.4.4 Required RVR.

The lowest minima to be used by an operator for Category II operations is 300 m for a DH of 100 ft. If it is necessary to increase DH due to, for example, facility limitations or an increased OCH, then a corresponding increase in minimum RVR will be required as shown in Table 7.

Table 7: RVR for Category II operations minima

Decision Height	Category II operations minima (RVR) coupled to below DH[1]	
	RVR/aeroplane Category A, B and C	RVR/aeroplane Category D
100 ft - 120 ft	300 m	300 m[2] / 350 m
121ft - 140 ft	400 m	400 m
141 ft – 199 ft	450 m	450 m

Note1 - The reference to "Coupled to below DH" in this table means continued use of the automatic flight control system down to a height which is not greater than 80 per cent of the applicable DH. Thus airworthiness requirements may, through minimum engagement height for the automatic flight control system, affect the DH to be applied.
Note 2- For a CAT D aeroplane conducting an auto land, 300 m may be used.

18.11.5 Precision Approach – Category III Operations

18.11.5.1 Category III/A operations are as follows:

(a) Category III/A operations. A precision instrument approach and landing using ILS with:

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

Note: Where the decision height (DH) and runway visual range (RVR) do not fall within the same Category, the RVR will determine in which Category the operation is to be considered.

18.11.5.2 Decision height.

For operations in which a decision height is used, an operator must ensure that the decision height is not lower than:
(a) the minimum decision height specified in the AFM, if stated; or
(b) the minimum height to which the precision approach aid can be used without the required visual reference; or
(c) the decision height to which the flight crew is authorised to operate.

18.11.5.3 No Decision height operations.

Operations with no decision height may only be conducted if:
(a) the operation with no decision height is authorised in the AFM; and
(b) the approach aid and the aerodrome facilities can support operations with no decision height; and
(c) the operator has an approval for CAT III operations with no decision height.

Note: In the case of a CAT III runway it may be assumed that operations with no decision height can be supported unless specifically restricted as published in the AIP or NOTAM.

18.11.5.4 Visual reference.

For Category III A operations conducted either with fail-passive flight control systems a pilot may not continue an approach below the decision height determined in accordance with Para 17.11.5.2. above unless a visual reference containing a segment of at least three consecutive lights being the centerline of the approach lights, or touchdown zone lights, or runway centerline lights, or runway edge lights, or a combination of these is attained and can be maintained.

18.11.5.5 Required RVR.

The lowest minima to be used by an operator for Category III operations depend on the decision height and aeroplane systems as shown in Table 8 below:

Table 8: RVR for Category III operations minima

Category	Decision Height	Roll-out control/guidance system	RVR
III A	Less than 100 ft or no DH	Not required	175 m
III B	Less than 50 ft or no DH	Fail-operational [1]	50 m

Note 1 – The fail-operational system referred to may consist of a fail operational hybrid system

18.12 CIRCLING APPROACH MINIMA

Circling approach and the associated minima will be authorized for Operators by the DG, CAAN as per the AIP and the training programme implemented by the Operators.

18.13 VISUAL APPROACH

For a visual approach, an operator shall use higher of the associated non-precision approach minima or minimum visibility/RVR of 2800 m for Category A/B aeroplanes, 3200 m for Category C aeroplanes and 3600 m for Category D aeroplanes. If visual approach is requested for a runway which has only a circling approach, the ground visibility shall not be less than 5 Km.

Table 9: Alternate (Destination and En-route) Aerodrome Operating Minima for Dispatch

Approach facility configuration	Ceiling DA/H or MDA/H	RVR
For airports supporting one approach and landing operation.	Authorized DA/H or DA/H plus an increment of 400 ft	Authorized visibility plus an increment of 1 500 m
For airports supporting at least two approach and landing operations, each providing a straight-in approach and landing operation to different, suitable runways	Authorized DA/H or MDA/H plus an increment of 200 ft	Authorized visibility plus an increment of 800 m
For airports with a published Cat II or Cat III approach and landing operation, and at least two approach and landing operations, each providing a straight-in approach and landing operation to different, suitable runways	Cat II procedures, a ceiling of at least 300 ft, or for Cat III procedures, a ceiling of at least 200 ft	Cat II, a visibility of at least RVR 1 200 m or, for Cat III, a visibility of at least RVR 550 m

Note 1 - Conditional forecast elements need not be considered, except that a PROB40 or TEMPO condition below the lowest applicable planning minima must be taken into account

Note 2 – When determining the usability of an IAP, wind plus gust forecast must be within operating limits, including reduced visibility limits, and should be within the aeroplane maximum approved crosswind value.

Note 3 – When dispatching under the provisions of MEL, those MEL limitations affecting instrument approach minima must be considered in determining alternate minima.

Note 4 – For airports supporting at least two approach and landing operations each providing a straight-in approach and landing operation to different suitable runways, the term "suitable runways" will account for factors such as crosswind/tailwind components, LDA, runway surface that shall be within aircraft limitations for both runways. In this case, the two approach and landing operations shall be based on separate navigation/approach aids.

18.14. AERODROME OPERATING MINIMA – TAKE OFF

18.14.1 Take-off minima established by the operator must be expressed as visibility or RVR limits, taking into account all relevant factors for each aerodrome planned to be used and the aeroplane characteristics. Where there is a specific need to see and avoid obstacles on departure, take-off minima may include cloud base limits. Where avoidance of such obstacles may be accomplished by alternate procedural means, such as use of climb gradients or specified departure paths, cloud base restrictions need not be applied.

18.14.2 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. The take-off alternate aerodrome should have weather conditions and facilities suitable for landing the aeroplane in normal and non-normal configurations pertinent to the operation. In addition, in the non-normal configuration the aeroplane should be capable of climbing to, and maintaining, altitudes which provide suitable obstacle clearance and navigation signals en-route to a take-off alternate aerodrome. 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, and in any case not lower than Cat I minima. Any limitation related to one-engine-inoperative operations shall be taken into account. The take-off alternate aerodrome should be located within the following distances from the aerodrome of departure:

(a) 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 takeoff mass; or

(b) 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

(c) aeroplanes engaged in extended diversion time operations (EDTO): where an alternate aerodrome meeting the distance criteria of (a) or (b) is not available, the first available alternate aerodrome located within the distance of the operator's approved maximum diversion time considering the actual take-off mass.

Note: To be "engaged in EDTO operations" means that the aircraft and operator have been approved for EDTO operations and the aircraft has been dispatched in accordance with applicable EDTO requirements.

18.14.3 Visual reference.

The take-off minima must be selected to ensure sufficient guidance to control the aeroplane in the event of both a discontinued take-off in adverse circumstances and a continued take-off after failure of the critical power unit.

18.14.4 Required RVR/Visibility

For multi-engine aeroplanes, whose performance is such that, in the event of a critical power unit failure at any point during take-off, the aeroplane can either stop or continue the take-off to a height of 1500 ft above the aerodrome while clearing obstacles by the required margins, the take-off minima established by an operator must be expressed as RVR/Visibility values not lower than those given in the table below. Use of these minima is based on the following factors:

18.14.4.1 Flight characteristics and cockpit instrumentation typical of multi-engine turbine aircraft;

18.14.4.2 Comprehensive programmes for crew qualification which address use of the specified minima;

18.14.4.3 Comprehensive programmes for airworthiness, with any necessary equipment operational (MEL);

18.14.4.4 Availability of specified facilities for the respective minima, including programmes for assurance of the necessary reliability and integrity;

18.14.4.5 Availability of air traffic services to ensure separation of aircraft and timely and accurate provision of weather, NOTAM, and other safety information;

18.14.4.6 Standard runway, airport, obstruction clearance, surrounding terrain, and other characteristics typical of major facilities serving scheduled international operations;

18.14.4.7 Routine low visibility weather conditions (e.g. fog, precipitation, haze, wind components, etc.) which do not require special consideration; and

18.14.4.8 Availability of alternate courses of action in the event of emergency situations.

Table 10: RVR/Visibility for Take-off (Commercial Transport Aeroplanes)

Take-off RVR/Visibility	
Facilities	*RVR/VIS [1]* *Cat A, B, C & D*
Adequate Visual reference [2] (Day only)	500m
Runway edge lights or Runway centre line markings [3]	400 m
Runway edge lights and Runway centre line markings [3]	300 m
Runway edge lights and Runway centre line lights	200 m
Runway edge lights and Runway centre line lights and relevant RVR information [4]	150 m
High intensity Runway edge lights and Runway centre line lights (spacing 15 m or less) and relevant RVR information [4]	125 m
High intensity Runway edge lights and Runway centre line lights (spacing 15 m or less), approved lateral guidance system and relevant RVR information [4]	75 m

Note 1 – The TDZ RVR/VIS may be assessed by the pilot

Note 2 - Adequate Visual reference means, that a pilot is able to continuously identify the take-off surface and maintain directional control.

Note 3 - For night operations at least runway edge lights or centre line lights and runway end lights are available.

Note 4 - The required RVR must be achieved for all relevant RVR reporting points (touchdown, mid- point and stop-end/roll-out). The governing RVR shall be the lowest of the reported RVRs

Annexure 1

ADVERSE WEATHER /MONSOON OPERATIONS

1. Background

Adverse weather is an integral part of flight operations. Adverse weather prevails in one part of an operator's network or another at different times of the year. Adverse weather operations encompass those operations conducted in weather conditions that could result in degradation of take-off and landing surfaces due to rain, snow, sleet, other contaminants associated with wet and cold weather.

2. Purpose:

Operating techniques applicable to each aircraft, under various generic adverse weather conditions, exist in flight manuals and must be adhered to. However, to ensure an enhanced level of safety, the reinforcement of these operating practices in the context of the adverse weather with relevant, specific and mandatory regulatory guidelines is necessary. Operators are to ensure that pilots are qualified as per this Annexure to the FOR(A) prior to undertaking flights into adverse weather affected regions.

3. Applicability:

CAAN registered aircraft and operators. The period of adverse weather is reckoned by actual and forecast weather conditions at an aerodrome (departure, destination and alternate) that could result in degradation of take-off and landing surfaces due to rain, snow, sleet and other contaminants associated with wet and cold weather.

4. Pilots who have obtained Command Rating for the first time:

Pilots who have obtained their command rating on commercial transport aircraft for the first time, fall under this category.

The following additional criteria must be fulfilled:

(a) Should have operated as a P2 on commercial transport aircraft during a minimum of one monsoon season prior to obtaining PIC rating for the first time.

(b) Should have at least 100 hours PIC experience on type before being released to fly as PIC during adverse weather conditions unless the pilot has a minimum of three monsoon seasons as P2 on type prior to obtaining PIC rating for the first time. In cases where a PIC is short of the 100 hours requirement or his/her endorsement has been obtained prior to or during adverse weather, the pilot may continue to fly as PIC during adverse weather conditions till he/she achieves 100 hours provided the co-pilot has a minimum of 1000 hours on type and a minimum of two monsoon seasons on type.

Note: For the purpose of qualification criteria of Para 4; 100 hours of PIC must include actual time in the left seat and not include hours logged as a cruise relief captain. Monsoon season in Sub Para (a) and (b) refers from beginning of June to end of September of one calendar year.

5. Adverse Weather Training and Checks

All Operators are to provide annual adverse weather ground training as below to all their pilots irrespective of the fact that they may have flown during previous adverse weather periods. This ground training may be combined with the annual recurrent training programme of pilots and must be a part of the Operations Manual Part D.

All pilots are to undergo simulator training and checks as below before they are released to fly as PIC on a new type in actual or forecast, adverse weather conditions. Simulator training and checks may be conducted during PIC upgrade/co-pilot type training conversion course.

(a) Ground Training:

Ground training shall cover, but not be limited to:

(i) Aircraft Performance during Take-off and Landing with specific emphasis on wet and contaminated runway conditions.

(ii) Calculation of take-off and landing field lengths and impact of individual failure events (type specific).

(iii) Use of weather radar (type specific)

(iv) Techniques of weather avoidance.

(v) South Asian monsoon climatology

(vi) ALAR and Adverse Weather Tool Kit

(b) Simulator Training:

(i) One hour simulator training for adverse weather operations covering all aspects of adverse weather conditions likely to be encountered en-route and in terminal areas covering aircraft performance related to wet/ contaminated runway conditions combined with MEL dispatch. Increased emphasis on landing performance should be given including assessment of landing distance required in reduced braking effectiveness vs. actual Landing Distance Available (Safety Margins).

(ii) One hour simulator check for adverse weather operations.

(c) Aircraft for which a type simulator is not available:

(i) Pilots of such Operators will undergo ground training as given above.

(ii) Two sector route checks on aircraft. The check has to be done in actual adverse weather conditions for landing.

6. General Conditions:

(i) Minimum **total** cockpit experience level of the crew as PIC and Co-Pilot should not be less than 500 hours on type.

(ii) No supervised take-offs and landings in actual adverse weather conditions.

(iii) Approach briefing prior to Top of Descent shall include wet/contaminated Actual Landing Distance calculation. Scheduled Operators shall prepare a quick analysis table for use during normal operations for wet/contaminated ALD and 1.15*ALD in view of the high cockpit work-load environment. For aeroplanes where the ALD is factored by at least 15% to derive an Operational Landing Distance, this figure may be used.

(iv) ILS approaches are to be preferred to non-precision approaches. In case of non-precision approaches, emphasis must be given on CDFA.

(v) Greater emphasis on stabilized approaches through Approach and Landing Accident Reduction (ALAR) trainings and adherence to Standard Operating Procedures (SOP).

(vi) All Operators are required to follow a non-reprisal (non-punitive) policy for Go around and Diversion,

(vii) Documentation about upset recovery technique for specific airplane must be reviewed.

(viii) Full flap landing and adequate usage of Reverse thrust and consideration of extra en-route/ terminal fuel computation shall be adhered to. (Type specific manufacturer's guidance accepted)

7. MEL Requirements

7.1 General.

All pressurized commercial transport operators shall ensure that the following is fully serviceable for flights to or from aerodromes with forecast or actual adverse weather conditions irrespective of the type of aeroplane.

(a) Weather radar.
(b) Windshield wipers (where fitted).
(c) TAWS with forward looking function or EGPWS.

7.2 Aircraft certificated for adverse weather performance.

Aircraft that have manufacturer certificated adverse weather performance with appropriate MMEL for defects/unavailability are to incorporate the same in their MEL and be governed by the limitations and considerations therein.

7.3 Aircraft not certificated for adverse weather performance.

7.3.1 For aircraft that do not have manufacturer certificated adverse weather performance, the following equipment must be serviceable during adverse weather conditions:

(a) All deceleration devices including thrust reversers and speed brakes.
(b) Anti-skid system.
(c) Anti-icing/de-icing system.

7.3.2 For aircraft that do not have manufacturer certificated adverse weather performance the following items even though un-serviceable, could be accepted "to return direct to base station for maintenance" (i.e. one landing only) subject to acceptable weather conditions at departure and destination station".

(a) One Thrust reverser provided other decelerating devices are serviceable – Subject to additional margin of minimum 1000 feet to field length requirement for take-off and landing.
(b) Anti-Skid system – Subject to performance limitations.
(c) Wind-shield Wipers (where fitted) – Subject to the PIC side (LHS) being serviceable.
(d) Anti-icing and De-icing – Subject to performance limitations.

Note 1: Clubbing of 7.3.2 (a) and (b) is not permitted.

Note 2: The *above waivers to the MEL restrictions will in any case never be applied if the MEL/ other regulatory requirements are not permitting the same for any other specific operations*.

Annexure 2

ALL WEATHER OPERATIONS EXPLANATORY MATERIAL

1. Para 17.4.2: Operators need to specify method of determination of minima for approval by the DG, CAAN. Compliance with this Requirement will be an acceptable method. Additionally, operators will need to specify the presentation of AOM to crew for reference. Once the method of determination of minima has been approved by the DG, CAAN, operators need not file individual aerodrome minima with the DG, CAAN unless specifically required. Visibility/RVR minima are based on the MDA(H)/DA(H). It is the responsibility of the service provider which publishes the approach procedure to promulgate OCA(H) for that approach procedure that forms the basis of calculation of visibility/RVR minima by the operator. The CAAN as a minimum will ensure that the OCA (H) is promulgated for use by the operator. Where the associated visibility/RVR minimum is also published by the Civil Aviation Authority of Nepal, the minima established by the operator cannot be lower.

2. Para 17.4.6.5: The required visual reference for different types of approach operations has been specified in the FOR. For CAT III B approaches without DH where there is no required visual reference, and hence the provision of continuation of approach below 100 feet above aerodrome with RVR below minimum does not apply. If the RVR falls below the minimum in a CAT III B approach without DH, a missed approach must be carried out.

3. Para 17.4.6.6: Touch-down zone RVR needs to be reported for Cat I operations, touch-down and mid zone RVR for Cat II operations, touch-down, mid and roll-out zone RVR for Cat III operations. In all cases, touch-down zone will always be controlling, however if any other RVR is reported and is relevant (operator shall not define relevant depending on runway length/aircraft stopping distance unless approved by the DG, CAAN) it also becomes controlling. The mid zone and roll-out zone can be lower than the touch-down zone provided conditions enumerated in Note 1 below are met. The following table is to be used for reference;

Type of operation	RVR		
	Touch-down zone	Mid zone	Roll-out zone
CAT I	550m	125m	125m
CAT II	300 m	125m	125m
CAT III A	175m	125m	125m
CAT III B (with roll-out guidance)	75/50m	75/50m	75/50m

Note 1: The use of minimum RVRs in the table above is subject to:

- *operator authorization;*
- *aeroplane authorization;*
- *flight crew training and qualification; and*
- *aerodrome facilities.*

Note 2: The use of minimum RVR of 75m or 50m depends on value approved for operators and aeroplanes with roll-out guidance system.

Note 3: The values in bold font are required for the type of operation.

4. Para 17.4.1 (b) requirement of additive to AOM is for the first flight to an aerodrome by a pilot or where recency requirements are not met as per the FOR. This is intended for the destination aerodrome and not enroute alternate aerodromes.

5. Para 17.4.9: CMV is not to be used for calculating any established RVR minima below 800m. (e.g. if the reported visibility is 700m, then CMV is not to be used for established RVR minima below 800m). CMV is meant to be used by pilots in flight and not as a planning tool for dispatch of a flight.

6. Para 17.4.9: The minimum length of approach lights for application of CMV is 420 m.

7. Para 17.7.3.2: In case an SFI has not held a CAT II/III authorization on type within the previous 5 years, then prior to imparting training for LVTO and CAT II/III operations, he must complete the ground training for LVTO and CAT II/III. Thereafter, the SFI shall observe and conduct under supervision LVTO and CAT II/III training under an SFI/TRI/Instructor/Examiner as appropriate prior to conducting LVTO and CAT II/III training.

8. Para 17.7.4: Simulator training for CAT II/III is prescribed for a standard crew complement of one PIC and co-pilot. However, in case two PICs or co-pilots are paired for the training, it shall be ensured that training and evaluation is completed specific to the seat (e.g. if the quantum is 2 hours training and 1 hour evaluation for CAT II, this shall be carried out for each of the pilots in a nonstandard crew complement which 2 hours plus 1 hour for each pilot).

9. Para 17.7.4.1.3: Similar design types are aeroplanes that have similar displays and procedures for CAT II/III operations such as fail operational A320 family/A330 and fail operational B737/B747/B757/B777/B787.

10. Para 17.10.2: Special VFR flights may be conducted by commercial air transport operators for ferry/test flights and recovery of aeroplanes provided no passengers are carried and requisite safety assessment has been carried out.

11. Para 17.11.1: The calculation of AOM at aerodromes is to be done on the basis of AIP information published by the State of the Aerodrome. For aerodromes where this information is currently not available, operators may continue operating with present available information provided a safety assessment is conducted.

12. Para 17.11.2: Non-scheduled operators fulfilling the specified conditions for normal AOM will be given approval for specific crew, aeroplane and type of approach operations. The use of AOM once approved will require recency experience as in Para 11.2.2. and bi-annual pilot proficiency checks of which at least every alternate check needs to be in the approved simulator (up to Cat I). If these are conditions are not met, then restricted AOM will apply. Restricted AOM is an additive to the normal AOM. In order to calculate restricted AOM, an operator needs to obtain normal AOM from Table 4 and 5 as applicable, and then add 100

feet to the DA/MDA and 400 m to the normal AOM. There is no requirement to re-enter Table 4 or 5 with the restricted AOM values.

13. Para 17.11.3.6, 17.11.4.3 and 17.11.5.4: The required visual reference for different types of approach operations consist of aerodrome lighting systems and facilities. Any one of the specified visual references if acquired and maintained are adequate to continue the approach to landing. For the purpose of AOM application, these visual references (lighting or marking) are expected to be fully serviceable and available. Additionally, operators are expected to stipulate in their Operations Manual the requirement of lighting and marking for precision/APV/non-precision operations by day and night in accordance with relevant regulatory standards. The use of gooseneck flares as main or alternative/standard lighting systems is not authorized. Outages in these lightings and markings are reported through AIS. However, in cases where the outages are reported in terms of number of lights and not complete outage of the system, operators shall use the following to determine availability of lighting systems;

13.1 A lighting system is deemed to be on outage when:

(a) In the case of a lighting system comprising 6 to 13 lights (e.g. threshold lights) more than 2 lights become unserviceable, or 2 adjacent lights become unserviceable.

(b) In the case of a lighting system comprising more than 13 lights, more than 15% of the lights become unserviceable, or two adjacent lights become unserviceable.

13.2 The lighting system for a precision approach runway category II and/or III is deemed to be on outage when;

(a) More than 5 % of the lights are unserviceable in each of the following particular significant elements;

1) precision approach category II or III lighting system, the inner 450 m;
2) runway centre line lights;
3) runway threshold lights; and
4) runway edge lights.

(b) More than 10 % of the lights are unserviceable in the touchdown zone lights;

(c) More than 15 % of the lights are unserviceable in the approach lighting system beyond 450 m; and

(d) More than 25 % of the lights are unserviceable in the runway end lights.

(e) More than two lights, or two adjacent lights of a stop bar are unserviceable.

(f) Two adjacent lights of the taxiway centre line lights are unserviceable.

Note: When any two consecutive lights are unserviceable in any of the significant elements, the system is deemed to be on outage.

14. Table 4: Minima values in table 4 may be RVR/CMV/Visibility. However, for minima below 800m the reported value should have been derived from an instrumented RVR system. In the absence of an instrumented RVR system, human observer RVR system shall be used for minima values less than 800m.

15. Table 5a: Failed or downgraded equipment and the effect on landing minima in Table 5a is to be used when a permanent facility is temporarily downgraded and notified. The table can continue to be used for the period of downgrade.

16. Table 9: Alternate aerodrome operating minima is to be used as a planning tool for dispatch of a flight. After commencement of flight, the authorized DA/H or MDA/H for the approach and associated visibility/RVR may be used.

17. Table 10: Pilot Assessment of equivalent TDZ RVR:

For takeoff circumstances where TDZ RVR is inoperative or is determined by the pilot to be significantly in error (e.g., patchy fog obscuring a transmissometer but not the runway, snow on transmissometer causing erroneous readings), a pilot assessment may be made in lieu of RVR subject to the following;

17.1 To be eligible to use this provision the operator must ensure that each pilot authorized to make this determination has completed approved training addressing pilot procedures to be used for visibility assessment in lieu of RVR, and the pilot can determine the necessary runway markings or runway lighting that must be available to provide an equivalent RVR to that specified to ensure adequate visual reference for the takeoff. Application of pilot assessment of RVR/visibility of the touch-down zone for take-off is to be done by a method specified by the operator (such as counting the number of runway edge/centre line lights).

17.2 When any pilot assessment of equivalent RVR is made, the pilot must be able to positively determine position on the airport and correct runway, and positively establish that the aircraft is at the correct position for initiation of takeoff. Typically, this equivalent RVR assessment is applicable only at a runway threshold where runway identifying markings and number(s) are visible from the takeoff position (e.g., not applicable to intersection takeoffs).

17.3 When such a pilot RVR assessment is made, the result of the assessment should typically be provided to any pertinent air traffic facility when practical, and may also be provided to the operator (e.g., dispatch) to facilitate other operations and timely distribution of meteorological information. It is not intended to be a verification of minima or limit or restrict minima for the aircraft making the report.

17.4 Pilot assessment of touchdown zone RVR is to be made only when the mid and roll out zone RVR are reported and both these are not less than 200m.

18. Table 10: LVTO pertains to take off when the RVR is below 400 m and is applicable whenever the reported RVR in any zone (touch-down/mid/roll-out). RVR is below 400 m. The facilities and conditions of Table 10 required will be as per the lowest RVR reported in any zone (e.g. if the RVR is 400/300/300 representing the three zones, then the 300 m will be the RVR for reckoning facilities and conditions of Table 10. If the RVR is 300/150/Not

Reported, then 150 m will be the reckoning RVR and as the RVR is below 200 m all three RVRs are required).

19. Para 17.14.2: The operator while considering the requirement of selecting and specifying a take-off alternate must consider all situations wherein an aeroplane cannot land at the aerodrome of departure. This includes, but is not limited to weather conditions below CAT I minima, performance limitations, landing minima being higher than reported RVR/visibility. Take off alternate needs to be specified in the ATS flight plan and the OFP. The OFP need not have a detailed navigation log for the take-off alternate.

20. Para 17.14.4: The minimum visibility/RVR for take-off table is to be used by scheduled, non-scheduled and general aviation operators using facilities which meet FOR (A) Chapter 16.

21. Para 17.5.3. The provision of this para is to ensure that take off is not conducted below standard CAT I conditions of 550m RVR/800m visibility unless LVP are enforced. The actual status or availability of a CAT I ILS approach is not relevant. Example is if an aerodrome has only a VORDME approach or the aerodrome CAT I ILS minima is 900m (due ALS etc.), then take off down till 550RVR/800Vis can be conducted, while below this figure LVP has to be enforced for lower RVR/Vis takeoff. Anytime reported visibility is below 800 m, then the 550 m RVR criteria applies for this interpretation.

CHAPTER 19

OPERATIONS AT AN AERODROME AND AIRCRAFT

19.1 GENERAL

19.1.1 The DG, CAAN may specify such requirements relating to the ground operation and servicing of aircraft as he considers to be appropriate.

19.1.2 The DG, CAAN may specify such requirements related to the conduct of persons at an aerodrome as he may consider appropriate.

19.1.3 The DG, CAAN may specify such limitations on obstacles, obstructions, extraneous lighting, radio interference, or activities likely to attract birds at an aerodrome as he may consider appropriate.

19.1.4 A person on board an aircraft operating in Nepal, or on board a Nepalese Registered aircraft wherever it may be, shall comply with such requirements as may be specified by the DG, CAAN.

19.2 GROUND OPERATIONS

19.2.1 Fueling of aircraft

1) An aircraft shall not be refueled or defueled at an aerodrome;
   a) within 15 meters of a building, or
   b) at a time when passengers are embarking, or disembarking, or are on board, unless there are qualified personnel in the aircraft who are ready to initiate and direct an evacuation of the aircraft by the most practical and expeditious means available, and who are in two way communication with the ground crew supervising the refueling.
2) Refueling and defueling of an aircraft shall be supervised by a person appointed by the owner or operator of the aircraft, or by a member of the flight crew, or by a supervisor appointed by the fuel supplier; the person supervising shall ensure that the aircraft is bonded to the fuelling hose and to the fuelling unit and that both are earthed, and that no source of flame or sparks is in the vicinity of the aircraft.

19.2.2 Engines to be run by qualified personnel

a) A person shall not start the engine of an aircraft on the ground, nor operate the controls of an aircraft engine which is running, unless that person is a pilot, or holding a rating on that

aircraft, or is a licensed aircraft maintenance engineer or a member of an approved maintenance organization authorized to ground run the engines of that aircraft.

b) The engine or engines of an aircraft shall not be started unless chocks are in position in front of the main wheels, or the aircraft brakes, if any, are on.

c) No other persons other than the certified pilots are allowed to engage the rotors in helicopter.

19.2.3 Taxiing of aircraft

An aircraft shall not be taxied on the movement area of the aerodrome unless the person operating the controls of the aircraft is a pilot holding as rating on that aircraft, or is a person who has been properly authorized by the operator of the aircraft, or by his agent, has received instructions from the aerodrome manager or his representative in respect of the layout of the aerodrome, taxiing routes, and taxiway signals, and complies with instructions if any, related to taxiing issued by the Air Traffic Services Unit at that aerodrome where such a unit exists. The person operating the aircraft controls while taxiing, or another person in the flight deck who is in communication with the person at the control, shall be qualified and licensed to use the radio telephone.

19.2.4 Compliance with noise abatement procedures

Pilot-in-command of aircraft taking off and landing and persons responsible for ground running aircraft engines at aerodromes shall comply with the procedures, if any, authorized by the DG, CAAN as a noise abatement measure except where in the opinion of the pilot-in-command it would be unsafe to do so.

19.2.5 Parking of Aircraft

a) An aircraft shall not be parked in any position on an aerodrome other than as prescribed by the aerodrome manager or the officer in duty in the Air Traffic Services Unit at the aerodrome.

b) Except with the permission in writing of the DG, CAAN, an aircraft shall not be parked on the movement areas of an aerodrome for a period exceeding four weeks if the Certificate of Airworthiness issued in respect of that aircraft is no longer valid.

c) In the case of an aircraft which is parked in contravention of this directive, the owner shall remove it in compliance with such instructions as may be issued by the DG, CAAN. Where the owner fails to comply within a reasonable period of time with such an instruction, the DG, CAAN, or an authorized representative may take such steps as may be necessary to remove the aircraft in compliance with the instruction.

19.3 MOVEMENT OF PERSONS AND VEHICLE AT AN AERODROME

19.3.1 Unauthorized persons and vehicles

No person shall enter and no vehicle shall be driven on the maneuvering area on aerodrome except with the permission of, and in compliance with instructions issued by, an officer on duty in the Air Traffic Services Unit at that aerodrome, or in the absence of such a unit, without the permission of the aerodrome manager at that aerodrome.

19.3.2 A person shall not operate a vehicle which is authorized to be driven on the movement area of an aerodrome, unless that person has been authorized to operate that vehicle by the Director General or the aerodrome manager.

19.3.3 Taxing on a Movement Area

An aircraft shall not be taxied on the movement area of an aerodrome unless the person at the controls:

a) has been duly authorized by the operator or a designated agent.

b) is competent to taxi the aircraft

c) is qualified to use the radio telephone and

d) has received instruction from a competent person in respect of aerodrome layout, routes, signs, marking, lights, air traffic control (ATC) signals, and instructions, phraseology and procedures, and is able to conform to the operational standards required for safe aeroplane movement at the aerodrome.

19.3.4 Persons not to smoke or create a fire hazard

No person shall smoke or generate a naked flame in any area of an aerodrome which is designated as a "no smoking" area by the aerodrome manager or do any act likely to create a fire hazard in any area of an aerodrome.

19.3.5 Trading at an aerodrome

a) No person shall carry on any trade or business at an aerodrome except with the approval of the DG, CAAN and under such terms and conditions as he may direct.

b) No person at an aerodrome shall solicit any person for any purpose except with the permission of aerodrome manager.

c) No person shall operate for hire at any aerodrome any taxi cab, or omnibus, or other vehicle carrying passengers except with the permission of the DG, CAAN or the aerodrome manager and in such a way as he may direct.

19.3.6 Movement of Vehicle

a) No person shall operate any motor vehicle at an aerodrome other than in accordance with any regulations or directions issued by the aerodrome manager concerning motor vehicles and road traffic at that aerodrome.

b) No person shall operate a motor or other vehicle at an aerodrome contrary to any sign erected or displayed for the control of vehicles by the aerodrome manager.

c) No person shall park any motor or other vehicle at an aerodrome other than as authorized by the aerodrome manager.

d) No person shall load or disembark passengers from a vehicle at an aerodrome other than at places designated for that purpose by the aerodrome manager.

e) No person shall operate a motor or other vehicle at an aerodrome while under the influence of alcoholic liquor or drugs to an extent that his ability to operate the vehicle is impaired.

f) No person shall operate a motor or other vehicle at an aerodrome other than on the roads, paths, or places provided for the use of the particular type or class of vehicle, or occupy such roads, paths or places in such a manner as to hinder or obstruct any use of them.

g) Motor or other vehicles shall give way to pedestrians in areas at an aerodrome which are areas designated for use by pedestrians.

h) For the purpose of the foregoing, "at an aerodrome" shall mean all areas within an aerodrome to which the public has access.

19.3.7 Reporting of incidents/accidents

Any person who is involved in any incident/accident at an aerodrome and all the witnesses to any incident/accident shall report without delay to the aerodrome manager or to the police at the aerodrome.

19.3.8 Articles lost and found

Any person finding a lost article shall deposit it with the aerodrome manager. Such articles which are unclaimed within thirty days, or in the case of perishable foodstuffs twelve hours, shall be disposed of in such a manner as may be directed from time to time by the DG, CAAN.

19.3.9 Keeping of animals

No person shall keep domestic or other animal at an aerodrome except with the permission of, and in accordance with such restrictions and conditions as may be imposed by the aerodrome manager.

19.3.10 Animals constituting a danger

Any bird/animal constituting a danger to the aircraft, or to the public at an aerodrome, may be shot by the persons authorized by DG, CAAN.

19.3.11 Firearms and offensive weapons

a) A person shall not enter an aerodrome while in possession of any firearms, explosives, offensive weapons or other munitions of war unless that person is a duly authorized member of the Armed Forces of Nepal, or is a passenger intending to surrender such firearms or other weapons prior to carriage by air, or is a person authorized by Nepal Government or by the DG, CAAN to carry firearms or other weapons.

b) A person, other than a duly authorized person, in possession of firearms, explosives, offensive weapons or other munitions of war shall surrender them to Security Force at the aerodrome for a period of time that person is in that aerodrome, or a passenger, shall surrender them to the person in charge of loading the aircraft on which that passenger intends to travel, before boarding the aircraft.

19.3.12 Damage to aerodrome property

No person shall destroy or deface any building, sign, equipment, marker or other property at an aerodrome.

19.3.13 Dumping of trash

a) No person shall dispose of garbage, nor deposit refuse or any other object at an aerodrome except by placing it in the receptacle provided for the purpose.
b) No person shall abandon any property or other thing at an aerodrome.

19.3.14 Prohibition of gambling

No person shall engage in gambling, or operate a gambling device, at an aerodrome.

19.3.15 Disorderly conduct

No person shall create any nuisance or any disorderly act at an aerodrome, or use a sanitary convenience in a disorderly manner.

19.3.16 Prevention of fire

a) Combustible liquids shall not be stored at an aerodrome unless they are stored in such a places and subject to such conditions as may be specified by the DG, CAAN or the aerodrome manager, except that this shall not apply to fuel contained in the fuel tank of an aircraft, a motor vehicle or other motor powered appliance.

b) No person shall keep any oiled waste, waste oil, cleaning rags, or substances liable to suffer spontaneous combustion, or which are otherwise inflammable, on or near to aircraft on the ground, near any fueling unit, hanger, or workshop, or other building or installation in which any flammable material is stored. Waste substances such as those referred to in this sub paragraph shall be disposed of daily in such a manner as may be specified by the DG, CAAN or the aerodrome manager.

c) An owner, tenant, or occupant of any premises at an aerodrome shall provide on these premises, and maintain in good working order, fire fighting appliances and equipment to a standard approved by the DG, CAAN and during working hours, have available on the premises sufficient personnel trained in the use of such appliances and equipment.

d) No owner, occupant or tenant of any building at an aerodrome shall install or cause to be installed for use in that building, any engine or electrical apparatus of any kind, or make or cause to be made, any alternation or addition to existing electrical installations in any building without the approval in writing of the DG, CAAN.

e) Facilities for battery charging shall not be installed without the approval in writing of the DG, CAAN or the aerodrome manager, and if installed shall not be left unattended unless the power supply has been switched off and the battery leads disconnected.

f) In the event of a fire occurring in any premises, hanger, or workshop, or in any other places at an aerodrome, a report in writing giving all the circumstances shall be submitted to the aerodrome manager within twenty-four hours by the person occupying or responsible for, the place of the occurrence.

19.3.17 Danger from stock or equipment

No occupant of any hanger, or premises at an aerodrome utilized for commercial purposes shall store or stock, or permit to be stored and stocked, any material or equipment in such a manner as to constitute a danger to persons or property.

19.3.18 Provision of first-aid kits

All tenants or lessees of hangers, workshops, or other premises utilized for commercial purposes at an aerodrome shall provide first-aid kits of a type approved by the DG, CAAN or the aerodrome manager, located in such hangers, work-shops or premises at a conveniently accessible place.

19.3.19 Prohibition of entry

No person shall enter any Air Traffic Service Unit, any hanger, any customs area, any communication center, any movement area or maneuvering area, or passenger arrival and departure area, except

a) persons lawfully assigned to duty therein;

b) persons authorized to enter by the DG, CAAN or the aerodrome manager, or the Security Force;

c) passengers entering the movement area and the arrival and departure lounge for the purpose of disembarking or embarking ; or

d) persons authorized by the Collector of Customs or the Commissioner of Excise with the permission of the DG, CAAN, or the aerodrome manager, or the Security Force.

19.3.20 Aerodrome Restricted Areas

No person shall enter any area designated by the DG, CAAN or the Aerodrome manager as an aerodrome restricted area except with the permission of the DG, CAAN or the aerodrome manager, and on such terms as may be included in the permission.

19.4 SAFEGUARDING AT AERODROMES

19.4.1 Limitation of obstructions

a) No person shall erect any temporary or permanent structure, nor position a vehicle or other mobile object on or in the vicinity of an aerodrome that will protrude through any obstacle limitation at that aerodrome.

b) for the purpose of this rule an obstacle limitation surface at an aerodrome shall be those surface defined by the DG, CAAN in respect of that aerodrome in Air Navigation Directive.

c) In the event that a person erects a structure or positions a vehicle or other mobile objects in contravention of this directive, the DG, CAAN shall take such action as he considers fit to cause the infringing object to be removed and shall not be liable for damage so caused . Any costs incurred by the DG, CAAN in taking such action shall be borne by the person causing the infringement.

19.4.2 Limitations of lights

a) No person shall operate a light in the vicinity of an aerodrome which because of its glare is liable to dazzle pilots of aircraft taking off or landing at that aerodrome, or which can be mistaken for an aeronautical ground light.

b) If such a light is operated it shall be extinguished or satisfactorily screened immediately upon notice being given to the person or persons operating the lights, by the DG, CAAN.

19.4.3 Interference with communications or navigational aids

No person shall operate a radio station or electrical equipment in the vicinity of an aerodrome, or of a radio aid to navigation which is serving an airway, an air route, or an approach to an aerodrome which is liable to cause interference with radio communication between aircraft and an Air Traffic Services unit, or which is liable to disturb the signal from a navigational radio aid.

19.4.4 Measures to avoid attraction of birds

a) No person shall leave waste foodstuffs on, or bring waste foodstuffs onto, an area of land to which this paragraph applies.

b) The DG, CAAN may, by notice in writing, require the owner of land where foodstuffs are, if that land is within an area to which this paragraph applies, to remove the waste foodstuffs or to deal with it within a time and in a manner as specified in the notice.

c) A person shall not fail to comply with the requirement of a notice served on him under sub paragraph (b)

d) For the purpose of this paragraph:

"area of land" means the area of land lying within a radius of 8 kms from either end of a runway at an aerodrome ; and

"waste foodstuffs" includes other waste substances attractive to birds.

19.5 CONDUCT OF PERSONS IN AN AIRCRAFT

19.5.1 Persons not to stow away on aircraft

A person shall not secrete himself in an aircraft or have access without the consent of the pilot-in-command or the operator of the aircraft.

19.5.2 Behavior of persons in an aircraft

A person shall not, while in an aircraft:

a) interfere with a crew member;
b) behave in a disorderly or offensive manner; or
c) do any act that threatens the safety of the aircraft or of persons on board the aircraft.

19.5.3 Persons not to carry weapons

No passenger on board an aircraft shall carry or have in his charge any weapon except that a weapon that is not designed for use in warfare, or against the person, may be carried as passenger baggage provided it is stowed so as to be inaccessible to passengers during flight, and if it is a firearm, is unloaded.

19.5.4 Restrictions on smoking in aircraft

A person shall not smoke when on board an aircraft registered in Nepal
a) in those areas in the aircraft designated as non-smoking areas; and

b) at any time when the cabin crew or the flight crew of the aircraft indicate either verbally or by means of signs that smoking is prohibited.

19.5.5 Consumption of intoxicating liquor or drugs

a) No person shall enter an aircraft while under the influence of intoxicating liquor, or drugs, nor shall any person consume intoxicating liquor, or drugs, in an aircraft registered in Nepal so as to become intoxicated.

b) No person shall administer narcotic or hallucinogenic drugs except in the case of a person under qualified medical supervision.

19.5.6 Carriage of drugs

Narcotic drugs, mood changing or hallucinogenic drugs, depressant or stimulant drugs, or marijuana shall not be carried in an aircraft except as a medicament prescribed for the individual use of a passenger by a qualified medical practitioner or as part of the approved emergency medical kit approved by the DG, CAAN.

19.5.7 Entry to flight deck

a) A person shall not enter the flight crew compartment of an aircraft, when the aircraft is in flight unless he is a member of the crew of the aircraft or has the permission of the pilot-in-command, or is a person authorized by the DG, CAAN to carry out a flight inspection of the aircraft operation, or flight checks of members of its crew.

b) A pilot seat or other operating crew position in an aircraft shall not be occupied by any person other than a member of the operating crew of the aircraft who is licensed and qualified for the duties associated with that seat or position, or by a person authorized by the DG, CAAN to carry out flight inspections or flight checks in that aircraft.

c) The provisions of this Paragraph notwithstanding, the Pilot-in-command of an aircraft shall have the authority to refuse to permit any person to enter the flight crew compartment during flight, or to occupy a pilot seat or other operating crew position, if in his opinion, the presence of that person, or his occupancy of a pilot seat or other operating crew position, would endanger the aircraft.

d) If the person who is refused permission under the provisions of sub paragraph (c) is a person authorized by the DG, CAAN to carry out flight inspections or flight checks in that aircraft, the pilot-in-command shall state the reasons for his refusal to that person and immediately after completion of the flight shall furnish a report in writing to the DG, CAAN.

19.5.8 Authority of the pilot-in-command

The pilot-in-command of an aircraft, with such assistance as he requires, may:

a) take such action, including the removal of a person from the aircraft or the placing of a person under restraint or custody by force, as he considers reasonably necessary to ensure compliance with these requirements in, or in relation to, the aircraft; and

b) detain the passengers, crew, and cargo for such periods as he considers reasonably necessary to ensure compliance with these rules in, or in relation to, the aircraft.

APPENDIX 1

ORGANIZATION AND CONTENTS OF AN OPERATIONS MANUAL

1. Organization

An operations manual, which may be issued in separate parts corresponding to specific aspects of operations, provided in accordance with Chapter 4, 4.2.3.1 shall be organized with the following structure:

Part A - General;

Part B - Aircraft operating information;

Part C - Areas, routes and aerodromes; and

Part D - Training.

2. Contents

The operations manual referred to above in **'1. Organization'** shall contain at the least the following:

2.1 PART A - GENERAL

2.1.1 Instructions outlining the **responsibilities** of operations personnel pertaining to the conduct of flight operations and including:

a) administration and control of Operations Manual including system of amendment and revision
b) organisational structure
c) names of nominated post holders as defined by AOCR Appendix 4

2.1.2 Information and policy relating to **fatigue management** including:

a) rules pertaining to flight time, flight duty period, duty period limitations and rest requirements for flight and cabin crew members in accordance with Chapter 4, 4.10.2 a); and

b) RESERVED.

2.1.3 A list of the navigational equipment to be carried including any requirements relating to operations where **Performance-Based Navigation** is prescribed.

2.1.4 Where relevant to the operations, the long-range navigation procedures, engine failure procedure for **EDTO** and the nomination and utilization of diversion aerodromes.

2.1.5 The circumstances in which a **radio listening watch** is to be maintained.

2.1.6 The method for determining **minimum flight altitudes**.

2.1.7 The methods for determining **aerodrome operating minima.**

2.1.8 Safety precautions during **refueling** with passengers on board.

2.1.9 **Ground handling** arrangements and procedures.

2.1.10 Procedures, as prescribed in ICAO Annex 12, for pilots-in-command observing an accident.

2.1.11 The **flight crew** for each type of operation including the designation of the succession of command.

2.1.12 Specific instructions for the computation of the **quantities of fuel and oil** to be carried, taking into account all circumstances of the operation including the possibility of loss of pressurization and the failure of one or more engines while en route.

2.1.13 The conditions under which **oxygen** shall be used and the amount of oxygen determined in accordance with Chapter 4, 4.3.9.2.

2.1.14 Instructions for **mass and balance** control.

2.1.15 Instructions for the conduct and control of **ground de-icing/anti-icing** operations.

2.1.16 The specifications for the **operational flight plan**.

2.1.17 **Standard operating procedures (SOP)** for each phase of flight.

2.1.17.1 In the case of single-engine aeroplane operations, the SOP must include locations of emergency landing sites along every route in case of engine failure.

2.1.18 Instructions on the use of normal **checklists** and the timing of their use.

2.1.19 Departure contingency procedures.

2.1.20 Instructions on the maintenance of **altitude awareness** and the use of automated or flight crew altitude call-out.

2.1.21 Instructions on the use of autopilots and auto-throttles in IMC.

Note.— Instructions on the use of autopilots and auto-throttles, together with 2.1.26 and 2.1.30, are essential for avoidance of approach and landing accidents and controlled flight into terrain accidents.

2.1.22 Instructions on the clarification and acceptance of ATC clearances, particularly where terrain clearance is involved.

2.1.23 Departure and approach briefings.

2.1.24 Procedures for familiarization with areas, routes and aerodromes.

2.1.25 Stabilized approach procedure.

2.1.26 Limitation on **high rates of descent** near the surface.

2.1.27 Conditions required to commence or to continue an instrument approach.

2.1.28 Instructions for the conduct of precision and non-precision instrument approach procedures.

2.1.29 Allocation of flight crew duties and procedures for the management of crew workload during **night and IMC** instrument approach operations.

2.1.30 Instructions and training requirements for the avoidance of controlled flight into terrain and policy for the use of the **ground proximity warning system (GPWS).**

2.1.31 Policy, instructions, procedures and training requirements for the avoidance of collisions and the use of the **airborne collision avoidance system (ACAS).**

Note.— Procedures for the operation of ACAS are contained in Appendix 7 of this FOR, PANS-OPS (Doc 8168), Volume I, and in PANS-ATM(Doc 4444), Chapters 12 and 15.

2.1.32 Information and instructions relating to the **interception of civil aircraft** including:

a) procedures, as prescribed in Attachment A, for pilots-in-command of intercepted aircraft; and

b) visual signals for use by intercepting and intercepted aircraft, as contained in Attachment A.

2.1.33 RESERVED

2.1.34 Details of the **safety management system** (SMS) provided in accordance with Chapter 3 and 4 of CAR 19.

2.1.35 Information and instructions on the carriage of **dangerous goods**, in accordance with CAAN Dangerous Goods Handling Requirements, including action to be taken in the event of an emergency.

Note.— Guidance material on the development of policies and procedures for dealing with dangerous goods incidents onboard aircraft is contained in Emergency Response Guidance for Aircraft Incidents involving Dangerous Goods (Doc 9481).

2.1.36 **Security** instructions and guidance.

2.1.37 The **search procedure checklist** provided in accordance with Chapter 13, 13.3.

2.1.38 Instructions and training requirements for the use of head-up displays (HUD) and enhanced vision systems (EVS) equipment as applicable.

2.1.39 Instructions and training requirements for the use of the EFB, as applicable.

2.1.40 Policy and procedures for the flight crew of aircraft on international air routes for recording and reporting on the routine and non-routing meteorological observations in accordance with Chapter 4, 4.4.2.3.

2.1.41 Policy and procedure for STOL operators for handing over of flight controls by PIC to Co-pilot during takeoff, cruise, approach and landing.

2.2 PART B - AIRCRAFT OPERATING INFORMATION

2.2.1 Certification limitations and operating limitations.

2.2.2 The **normal, abnormal and emergency procedures** to be used by the flight crew and the checklists relating thereto as required by Chapter 6, 6.1.4.

2.2.3 Operating instructions and information on climb performance with all engines operating, in accordance with Chapter 4, 4.2.4.3.

2.2.4 Flight planning data for pre-flight and in-flight planning with different thrust/power and speed settings.

2.2.5 The **maximum crosswind and tailwind components** for each aeroplane type operated and the reductions to be applied to these values having regard to gusts, low visibility, runway surface conditions, crew experience, use of autopilot, abnormal or emergency circumstances, or any other relevant operational factors.

2.2.6 Instructions and data for mass and balance calculations.

2.2.7 Instructions for **aircraft loading** and securing of load. Company to develop and implement the Regulated Take-off and Landing weight for all airfields to which they operate for every type. The chart to be prepared as per the Template in APPENDIX 10 for STOL Operators.

2.2.8 **Aircraft systems**, associated controls and instructions for their use, as required by Chapter 6, 6.1.4.

2.2.9 The Operator shall develop as part of its Operations Manual, a **Minimum Equipment List** and **Configuration Deviation List** (as required) for the aeroplane types operated and specific operations authorized, including any requirements relating to operations where performance-based navigation is prescribed.

2.2.10 **Checklist of emergency and safety equipment** and instructions for its use.

2.2.11 **Emergency evacuation procedures**, including type specific procedures, crew coordination, assignment of crew's emergency positions and the emergency duties assigned to each crew member.

2.2.12 The normal, abnormal and emergency procedures to be used by the **cabin crew,** the checklists relating thereto and aircraft systems information as required, including a statement related to the necessary procedures for the coordination between flight and cabin crew.

2.2.13 **Survival and emergency equipment** for different routes and the necessary procedures to verify its normal functioning before take-off, including procedures to determine the required amount of oxygen and the quantity available.

2.2.14 The **ground-air visual signal code** for use by survivors, as contained in ICAO Annex 12.

2.3 PART C - ROUTES AND AERODROMES

2.3.1 A **route guide** to ensure that the flight crew will have, for each flight, information relating to communication facilities, navigation aids, aerodromes, instrument approaches, instrument arrivals and instrument departures as applicable for the operation, and such other information as the operator may deem necessary for the proper conduct of flight operations.

2.3.2 The **minimum flight altitudes** for each route to be flown.

2.3.3 **Aerodrome operating minima** for each of the aerodromes that are likely to be used as aerodromes of intended landing or as alternate aerodromes.

2.3.4 The **increase of aerodrome operating minima** in case of degradation of approach or aerodrome facilities.

2.3.5 Instructions for determining aerodrome operating minima for instrument approaches using HUD and EVS.

2.3.6 The **necessary information** for compliance with all flight profiles required by regulations, including but not limited to, the determination of:

a) take-off runway length requirements for dry, wet and contaminated conditions, including those dictated by system failures which affect the take-off distance;

b) take-off climb limitations;

c) en-route climb limitations;

d) approach climb limitations and landing climb limitations;

e) landing runway length requirements for dry, wet and contaminated conditions, including systems failures which affect the landing distance; and

f) supplementary information, such as tire speed limitations.

2.4 TRAINING

2.4.1 Details of the **Flight Crew Training Programme**, as required by Chapter 9, 9.3.

2.4.2 Details of the **Cabin Crew Duties Training Programme** as required by Chapter 12, 12.4.

Note - Details of the Cabin Crew Training Program are available in the CAAN Cabin Crew Training Manual, 2015.

2.4.3 Details of the **Flight Operations Officer/Flight Dispatcher Training Programme** when employed in conjunction with a method of flight supervision in accordance with Chapter 4, 4.2.1.

Note. — Details of the Flight Operations Officer/Flight Dispatcher Training Programme are contained in PELR.

APPENDIX 2

PILOT PROFICIENCY CHECK
(AEROPLANE)

1. GENERAL

1.1 The maneuvers and procedures required for pilot proficiency checks are set in this appendix and must be performed in-flight except to the extent that certain maneuvers and procedures may be performed in an aeroplane simulator.

1.2 Throughout the maneuvers prescribed in this Appendix, good judgment commensurate with a high level of safety must be demonstrated. In determining whether such judgment has been shown, the person conducting the check considers adherence to approved procedures, actions based on analysis of situations for which there is no prescribed procedure or recommended practice, and qualities of prudence and care in selecting a course of action.

2. MANEUVERS/PROCEDURES

2.1 The procedures and maneuvers set forth in this appendix must be performed in a manner that satisfactorily demonstrates knowledge and skill with respect to:

(1) the aeroplane, its systems and components;

(2) proper control of airspeed, configuration, direction, altitude, and attitude in accordance with procedures and limitations contained in the approved Aeroplane Flight Manual, the certificate holder's operations manual, check lists, or other approved material appropriate to the aeroplane type; and

(3) compliance with approach, ATC, or other applicable procedures.

2.2 The Air Operator shall develop a Pilot Proficiency Check program based on the complexity of the aircraft operated. While Operators of light and simple aircraft may develop a PPC program that covers all items in one PPC session, Operators of large and complex aircraft may choose to divide items of a PPC into two or three separate stages.

2.3 The Air Operator shall identify those items of the PPC that are to be performed in every PPC session and those items that may be performed once in every second or third PPC session. Such a phase-wise implementation shall ensure that all items in the PPC form are completed in a two or three stage cycle. In such a case, the PPC form must be suitably modified and clearly elaborated in the Operations Manual-Part D Training.

PHASE: A. PRE FLIGHT

PROFICIENCY CHECK ITEMS:

1.Equipment examination (oral or written)

PROCEDURES:

Equipment examination (oral or written) as part of the practical test the equipment examination must be closely coordinated with, and related to the flight maneuvers portion but may not be given during the flight maneuvers portion.

The equipment examination must cover:

i) Subjects requiring a practical knowledge of the aeroplane, its engines, systems, components, operational, and performance factors;

ii) Normal, abnormal and emergency procedures and the operations and limitations relating thereto; and

iii) The appropriate provisions of the approved Aeroplane Flight Manual.

The person conducting the check may accept, as equal to this equipment test, an equipment test given to the pilot in the certificate holder's ground school within the preceding 6 calendar months.

PROFICIENCY CHECK ITEMS:

2. Pre-flight inspection.

PROCEDURES:

The pilot must:

i) conduct an actual visual inspection of the exterior and interior of the aeroplane, locating each item and explaining briefly the purpose for inspecting it; and

ii) demonstrate the use of the pre-start check list, appropriate control system checks, starting procedures, radio and electronic equipment checks, and the selection of proper navigation and communications radio facilities and frequencies prior to flight. Except for flight checks, an approved pictorial means that realistically portrays the location and detail of preflight inspection items and provides for the portrayal of abnormal conditions may be substituted for the preflight inspection. If a flight engineer is a required flight crewmember for the particular type aeroplane, the visual inspection may be waived.

PROFICIENCY CHECK ITEMS:

3. Taxiing.

PROCEDURES:

This maneuver includes taxiing (in the case of a second in command proficiency check to the extent practical from the second in command crew position), taxiing procedures in compliance with instructions issued by the appropriate traffic control authority or by the person conducting the checks.

PROFICIENCY CHECK ITEMS:

4. Engine checks

PROCEDURES:

As appropriate to the aeroplane type.

PHASE: B. TAKE-OFF

PROFICIENCY CHECK ITEMS:

1. Normal Take-Off

PROCEDURES:

One normal takeoff which, for the purpose of this maneuver, begins when the aeroplane is taxied into position on the runway to be used.

PROFICIENCY CHECK ITEMS:

2. Instrument Take-Off

PROCEDURES:

One takeoff with instrument conditions simulated at or before reaching an altitude of 100 feet above the airport elevation.

PROFICIENCY CHECK ITEMS:

3. Crosswind Take-Off

PROCEDURES:

One crosswind takeoff, if practicable, under the existing meteorological, airport, and traffic conditions, requirements (a) and (c) may be combined, and requirements (a), (b) and (c) may be combined if (b) is performed inflight.

PROFICIENCY CHECK ITEMS:

4. Take-Off with Engine failure

PROCEDURES:

One takeoff with a simulated failure of the most critical engine:

i) at a point after V_1 and before V_2 that in the judgement of the person conducting the check is appropriate to the aeroplane type under the prevailing conditions.
ii) at a point as close as possible after V_1 when V_1 and V_2 or V_1 and V_R are identical; or
iii) at the appropriate speed for non-transport category airplanes.

In an airplane group with aft fuselage-mounted engines, this maneuver may be performed in a non-visual simulator.

PROFICIENCY CHECK ITEMS:

5. Rejected Take-Off

PROCEDURES:

A rejected takeoff may be performed in an aeroplane during a normal takeoff run after reaching a reasonable speed determined by giving due consideration to aircraft characteristics, runway length, surface conditions, wind direction and velocity, brake heat energy and any other pertinent factors that may adversely affect safety of the aeroplane.

PHASE: C. INSTRUMENT PROCEDURE

PROFICIENCY CHECK ITEMS:

1. Area departure and area arrival

PROCEDURES:

During each of these maneuvers the applicant must:

i) adhere to actual or simulated ATC clearances (including assigned radials); and
ii) properly use available navigation facilities.

PROFICIENCY CHECK ITEMS:

2. Holding

PROCEDURES:

This maneuver includes entering, maintaining, and leaving holding patterns. It may be performed in connection with either area departure or area arrival.

PROFICIENCY CHECK ITEMS:

3. ILS and/or other instrument approaches

PROCEDURES:

There must be the following:

i) at least one normal ILS approach.

ii) at least one manually controlled ILS approach with a simulated failure of one engine. The simulated failure should occur before initiating the final approach course and must continue to touchdown or through the missed approach procedure.

iii) Approach on ILS may be conducted at approved flight simulator or flight (Instrument) procedure trainer.

iv) At least one non-precision approach procedure that is representative of the non-precision approach procedures that the certificate holder is likely to use.

v) Demonstration of at least one non-precision approach procedure on a letdown air other than the approach procedure performed under subparagraph (iii) of this paragraph that the certificate holder is approved to use. If performed in a training device, the procedures must be observed by a check pilot or an approved instructor.

Each instrument approach must be performed according to any procedures and limitations approved for the approach facility used. The instrument approach begins when the aeroplane is over the initial approach fix for the approach procedure being used (or turned over to the final approach controller in the case of GCA approach) and ends when the aeroplane touches down on the runway or when transition to a missed approach configuration is completed. Instrument conditions need not be simulated below 100° above touchdown zone elevation.

PROFICIENCY CHECK ITEMS:

4. Circling approaches

PROCEDURES:

If the certificate holder is approved for circling minimums below 1000-3, at least one circling approach must be made under the following conditions :

i) the portion of the approach to the authorized minimum circling approach altitude must be made under simulated instrument conditions.

ii) the approach must be made to the authorized minimum circling approach altitude followed by a change in heading and the necessary maneuvering (by visual reference) to maintain a flight path that permits a normal landing on a flight path that permits a normal landing on a runway at least 90° from the final approach course of the simulated instrument portion of the approach.

iii) the circling approach must be performed without excessive maneuvering, and without exceeding the normal operating limits of the aeroplane. The angle of bank should not exceed 30°.

PROFICIENCY CHECK ITEMS:

5. Missed Approach

PROCEDURES:

i) Each pilot must perform at least one missed approach from an ILS approach.

ii) Each pilot in command must perform at least one additional missed approach.

A complete approved missed approach procedure should be accomplished unless the instructor advises other maneuver. At the discretion of the person conducting the check a simulated engine failure may be required during any of the missed approaches. These maneuvers may be performed either independently or in conjunction with maneuvers required under Section **(C)** or section **(E)** of this appendix. At least one missed approach must be performed in flight.

PROFICIENCY CHECK ITEMS:

6. In-Flight Maneuvers with reference to instruments

   a. Tracking Radials/ Bearing

   b. Unusual attitude control

   c. Partial panel flying

PROCEDURES:

Tracking desired radials and bearings.

Control of airplane's unusual attitude at selected configuration.

Covering panels and maneuvering through timing in reference from other instruments.

PHASE: D. INFLIGHT MANEUVERS

PROFICIENCY CHECK ITEMS:

1. Steep turns

PROCEDURES:

At least one steep turn in each direction must be performed. Each steep turn must involve a bank angle of 45° with a heading change of at least 180° but not more than 360°.

PROFICIENCY CHECK ITEMS:

2. Approaches to stalls

PROCEDURES:

For the purpose of this maneuver the required approach to a stall is reached when there is a perceptible buffet or other response to the initial stall entry. Except as provided below there must be at least three approaches to staffs as follows:

i) One must be in the take-off configuration (except where the airplane uses only a zero-flap take-off configuration)
ii) One in a clean configuration.
iii) One in a landing configuration.

At the discretion of the person conducting the check, one approach to a stall must be performed in one of the above configuration while in a turn with the bank angle between 15° and 30°. One out of three approaches required by this paragraph may be waived.

If the certificate holder is authorized to dispatch or flight release the aeroplane with a stall warning device inoperative the device may not be used during this maneuver.

PROFICIENCY CHECK ITEMS:

3. Maneuver Specific flight characteristics

PROCEDURES:

Recovery from specific flight characteristics that are peculiar to the type of aeroplane such as high rate of descent.

PROFICIENCY CHECK ITEMS:

4. Slow Flight

PROCEDURES:

Flying maneuver at selected configuration and speed.

PROFICIENCY CHECK ITEMS:

5. V_{MC} Demonstration

PROCEDURES:

Demonstration of control of airplane in minimum controllable airspeed.

PROFICIENCY CHECK ITEMS:

6. Engine failures

PROCEDURES:

In addition to specific requirements for maneuvers with simulated power-plant failures, the person conducting the check may require a simulated engine failure at any time during the check.

PHASE: E. LANDINGS AND APPROACHES TO LANDINGS

PROFICIENCY CHECK ITEMS:

Notwithstanding the authorizations for combining and waiving maneuvers and for the use of a simulator, at least two actual landings (one to a full stop) must be made for all pilot-in-command and second-in-command proficiency checks. Landings and approaches to landings must include the following, but more than one type may be combined where appropriate.

Landing and approaches to landings must include the types listed below, but more than one type may be combined where appropriate:

1. Normal Landing

PROCEDURES:

Check adherence to normal SOP including standard callouts.

PROFICIENCY CHECK ITEMS:

2. Landing from a precision or non-precision approach

PROCEDURES:

Landing in sequence from an ILS instrument approach or NDB/VOR DME approach except that if circumstances beyond the control of the pilot prevent an actual landing, the person conducting the check may accept an approach to a point where in his judgment a landing to a full stop could have been made.

PROFICIENCY CHECK ITEMS:

3. Crosswind landing

PROCEDURES:

i) Crosswind landings to be checked only if practical under existing meteorological, airport, and traffic conditions.
ii) Check adherence to centerline using crosswind landing techniques; check control of airspeed; correct use of directional control; flare technique.

PROFICIENCY CHECK ITEMS:

4. Maneuvering to a landing with simulated engine failure

PROCEDURES:

i) in the case of 3-engine aeroplanes, maneuvering to a landing with an approved procedure that approximates the loss of two engines (centre and one outboard engine); or
ii) in the case of other multiengine aeroplanes, maneuvering to a landing with a simulated failure of 50 percent of available engines, with the simulated loss of power on one side of the aeroplane.

Notwithstanding the requirements of subparagraphs 4 (i) and (ii) of this paragraph, in a proficiency check for other than a pilot-in-command, the simulated loss of power may be only the most critical engine.

However, if a pilot satisfies the requirements of subparagraphs 4 (i) or (ii) of this paragraph in a visual simulator, he also must maneuver in flight to a landing with a simulated failure of the most critical engine.

In addition, a pilot-in-command may omit the manuever required by subparagraph 4 (i) or (ii) of this paragraph during a required proficiency check or simulator course of training if he satisfactorily performed that maneuver during the preceding proficiency check, or during the preceding approved simulator course of training under the observation of a check airman, whichever was completed later.

PROFICIENCY CHECK ITEMS:

5. Circling Approach and Landing

PROCEDURES:

As per AIP Nepal, for Cat A, B or C aeroplanes in daytime conditions, a landing under simulated circling approach condition. However, when performed in an aeroplane, if circumstances beyond the control of the pilot prevents a landing, the person conducting the check may accept an approach to a point where, in his judgment, a landing to a full stop could have been made.

PROFICIENCY CHECK ITEMS:

6. Rejected landing

PROCEDURES:

Including a normal missed approach procedure, that is rejected approximately 50 over the runway and approximately over the runway threshold. This maneuver may be combined with instrument, circling, or missed approach procedures, but instrument conditions need not be simulated below 100 feet above the runway.

PHASE: F. Emergency

PROFICIENCY CHECK ITEMS:

1. Normal and Abnormal Procedures

PROCEDURES:

Each applicant must demonstrate the proper use of as many of the systems and devices listed below as the person conducting the check finds are necessary to determine that the perform being checked has a practical knowledge of the use of the systems and devices appropriate to the airplane type:

(a) Anti-icing and de-icing systems.
(b) Auto-pilot system
(c) Automatic or other approach aid systems.
(d) Stall warning devices, stall avoidance devices, stall avoidance devices, and stability augmentation devices.
(e) Airborne radar devices.
(f) Any other systems, devices, or aids available.
(g) Hydraulic and electrical system failures and malfunctions.
(h) Landing gear and flap systems failure or malfunction.
(i) Failure of navigation or communications equipment.

PROFICIENCY CHECK ITEMS:

2. Pilot's Knowledge of Emergency Procedures Appropriate to the Type of Aeroplane

PROCEDURES:

Each applicant must demonstrate the proper emergency procedures for as many of the emergency situations listed below as the person conducting the check finds are necessary to determine that the person being checked has an adequate knowledge of, and ability to perform, such procedure;

(a) Fire in flight / on ground.
(b) Smoke control.
(c) Rapid decompression.
(d) Emergency descent.
(e) Upset Prevention Recovery
(f) Any other emergency procedures outlined in the appropriate approved Aeroplane Flight Manual.

APPENDIX 3

MINIMUM EQUIPMENT LIST (MEL)

Supplementary to Chapter 6, 6.1.3

1. If deviations from the requirements of CAAN in the certification of aircraft were not permitted, an aircraft could not be flown unless all systems and equipment were operable. Experience has proved that some unserviceability can be accepted in the short term when the remaining operative systems and equipment provide for continued safe operations.

2. The CAAN shall indicate through approval of a minimum equipment list those systems and items of equipment that may be inoperative for certain flight conditions with the intent that no flight can be conducted with inoperative systems and equipment other than those specified.

3. A minimum equipment list, approved by the DG, CAAN, is therefore necessary for each aircraft, based on the master minimum equipment list established for the aircraft type by the organization responsible for the type design in conjunction with the State of Design.

4. The DG, CAAN requires the operator to prepare a minimum equipment list designed to allow the operation of an aircraft with certain systems or equipment inoperative provided an acceptable level of safety is maintained.

5. The minimum equipment list is not intended to provide for operation of the aircraft for an indefinite period with inoperative systems or equipment. The basic purpose of the minimum equipment list is to permit the safe operation of an aircraft with inoperative systems or equipment within the framework of a controlled and sound programme of repairs and parts replacement.

6. Operators are to ensure that no flight is commenced with multiple minimum equipment list items inoperative without determining that any interrelationship between inoperative systems or components will not result in an unacceptable degradation in the level of safety and/or undue increase in the flight crew workload.

7. The exposure to additional failures during continued operation with inoperative systems or equipment must also be considered in determining that an acceptable level of safety is being maintained. The minimum equipment list may not deviate from requirements of the flight manual limitations section, emergency procedures or other airworthiness requirements of the State of Registry (when the aircraft is not registered in Nepal) or of the CAAN unless the appropriate airworthiness authority or the flight manual provides otherwise.

8. Systems or equipment accepted as inoperative for a flight should be placarded where appropriate, and all such items should be noted in the aircraft technical log to inform the flight crew and maintenance personnel of the inoperative system or equipment.

9. For a particular system or item of equipment to be accepted as inoperative, it may be necessary to establish a maintenance procedure, for completion prior to flight, to de-activate or isolate the system or equipment. It may similarly be necessary to prepare an appropriate flight crew operating procedure.

10. The responsibilities of the pilot-in-command in accepting an aeroplane for operation with deficiencies in accordance with a minimum equipment list are specified in Chapter 4, 4.3.1.

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APPENDIX 4

MEDICAL SUPPLIES

Supplementary to Chapter 6, 6.2.2 a)

TYPES, NUMBER, LOCATION AND CONTENTS OF MEDICAL SUPPLIES

1. Types

1.1 The different types of medical supplies should be provided as follows: first-aid kit(s) for carriage on all aeroplanes, universal precaution kit(s) for carriage on all aeroplanes that require a cabin crew member, and a medical kit for carriage where the aeroplane is authorized to carry more than 100 passengers on a sector length of more than two hours. Where national regulations allow it, operators may elect to carry the recommended medication in the first-aid kit.

1.2 Based on the limited available evidence, only a very small number of passengers are likely to benefit from the carriage of automated external defibrillators (AED) on aeroplanes. However, many operators carry them because they offer the only effective treatment for cardiac fibrillation. The likelihood of use, and therefore of potential benefit to a passenger, is greatest in aircraft carrying a large number of passengers, over long duration sector lengths. The carriage of AEDs should be determined by operators on the basis of a risk assessment taking into account the particular needs of the operation.

2. Number of first-aid and universal precaution kits

2.1 First-aid kits

The number of first-aid kits should be appropriate to the number of passengers which the aeroplane is authorized to carry:

Passenger	*First-aid kits*
0 – 100	1
101 – 200	2
201 – 300	3
301 – 400	4
401 – 500	5
More than 500	6

2.2 Universal precaution kits

For routine operations, one or two universal precaution kits should be carried on aircraft that are required to operate with at least one cabin crew member. Additional kit(s) should be made available at times of increased public health risk, such as during an outbreak of a serious communicable disease having pandemic potential. Such kits may be used to clean up any potentially infectious body contents such as blood, urine, vomit and faeces and to protect the cabin crew members who are assisting potentially infectious cases of suspected communicable disease.

3. Location

3.1 First-aid and universal precaution kits should be distributed as evenly as practicable throughout the passenger cabins. They should be readily accessible to cabin crew members.

3.2 The medical kit, when carried, should be stored in an appropriate secure location.

4. Contents

4.1 The following provides guidance on typical contents of first-aid, universal precaution and medical kits.

4.1.1 *First-aid kit:*

— List of contents
— Antiseptic swabs (10/pack)
— Bandage: adhesive strips
— Bandage: gauze 7.5 cm × 4.5 m
— Bandage: triangular; safety pins
— Dressing: burn 10 cm × 10 cm
— Dressing: compress, sterile 7.5 cm × 12 cm
— Dressing: gauze, sterile 10.4 cm × 10.4 cm
— Tape: adhesive 2.5 cm (roll)
— Steri-strips (or equivalent adhesive strip)
— Hand cleanser or cleansing towelettes
— Pad with shield, or tape, for eye
— Scissors: 10 cm (to be properly secured and stowed)
— Tape: Adhesive, surgical 1.2 cm × 4.6 m
— Tweezers: splinter
— Disposable gloves (multiple pairs)
— Thermometers (non-mercury)
— Mouth-to-mouth resuscitation mask with one-way valve
— First-aid manual, current edition
— Incident record form

The following suggested medications can be included in the first-aid kits; however, when the crew uses any of these medicines, it must be reported to the Civil Aviation Medical Assessor at the earliest:

— Mild to moderate analgesic
— Antiemetic
— Nasal decongestant
— Antacid
— Antihistamine

4.1.2 *Universal precaution kit:*

— Dry powder that can convert small liquid spill into a sterile granulated gel
— Germicidal disinfectant for surface cleaning
— Skin wipes
— Face/eye mask (separate or combined)
— Gloves (disposable)
— Protective apron
— Large absorbent towel
— Pick-up scoop with scraper
— Bio-hazard disposal waste bag
— Instructions

4.1.3 *Medical kit:*

Equipment

— List of contents
— Stethoscope
— Sphygmomanometer (electronic preferred)
— Airways, oropharyngeal (three sizes)
— Syringes (appropriate range of sizes)
— Needles (appropriate range of sizes)
— Intravenous catheters (appropriate range of sizes)
— Antiseptic wipes
— Gloves (disposable)
— Needle disposal box
— Urinary catheter
— System for delivering intravenous fluids
— Venous tourniquet
— Sponge gauze
— Tape – adhesive
— Surgical mask
— Emergency tracheal catheter (or large gauge intravenous cannula)

— Umbilical cord clamp
— Thermometers (non-mercury)
— Basic life support cards
— Bag-valve mask
— Flashlight and batteries

Medication

— Epinephrine 1:1 000
— Antihistamine – injectable
— Dextrose 50% (or equivalent) – injectable: 50 ml
— Nitroglycerin tablets, or spray
— Major analgesic
— Sedative anticonvulsant – injectable
— Antiemetic – injectable
— Bronchial dilator – inhaler
— Atropine – injectable
— Adrenocortical steroid – injectable
— Diuretic – injectable
— Medication for postpartum bleeding
— Sodium chloride 0.9% (minimum 250 ml)
— Acetyl salicylic acid (aspirin) for oral use
— Oral beta blocker

If a cardiac monitor is available (with or without an AED) add to the above list:

— Epinephrine 1:10 000 (can be a dilution of epinephrine 1:1 000)

Note.— The United Nations Conference for Adoption of a Single Convention on Narcotic Drugs in March 1961 adopted such a Convention, Article 32 of which contains special provisions concerning the carriage of drugs in medical kits of aircraft engaged in international flight.

APPENDIX 5

FSTD APPLICATION FORM

APPLICATION FOR PERMISSION TO USE A QUALIFIED FLIGHT SIMULATOR TRAINING DEVICE (FSTD) - AEROPLANES

(FOR-A Chapter 16, 16.22.2, 16.22.3)

Print in block letters clearly with black ink (hand written or printed).

PERMISSION NUMBER (for CAAN) _____

1. APPLICANT TYPE

AOC Holder……*complete section 2 a*

Ministry of Defense…*complete section 2 b*

Individual……. *complete section 2 c*

2. APPLICANT DETAILS (The Applicant is the person responsible for payment of the fees)

2a) AOC Holder

Registered Company Name in full

Registered Company Number

AOC Number

AOC issued by:

Office Address including phone, fax, email and website address

Authorized Representative of Company

This application to be signed by a Director or a person so authorized by the Company.

Title/Designation……..

First and Middle Names……

Surname……..

Telephone numbers (office and cell)……..

2b Ministry of Defense or other non AOC holder organization

Name of Organization…….

Address including telephone, fax, email and website address

Authorized Representative

This application to be signed by a person authorized by the organization named above to act on behalf of the same.

Title/Designation

First and Middle names

Last Name

2c Individuals

Title/Designation

First and Middle Names

Surname

Address including telephone, fax, email and website address

A copy of Flight Crew License must accompany the application.

3. PERMISSION DETAILS (Tick as applicable)

Type of Permission requested	Initial ☐ Renewal ☐

4. FSTD DETAILS (Tick or complete as applicable)

Current FSTD Qualification	UK CAA Qualified ☐ EASA Qualified ☐ FAA Qualified ☐ Any other Local Authority Qualified ☐ Name of local authority……
FSTD Type	FFS ☐ FTD ☐
FSTD Identification Code and Qualification Level	FSTD code …….. FSTD Qualification Level…… Other FSTD code…… Other FSTD Qualification Level……
Aircraft Type (If device is qualified for dual type, then mention the particular type or types requested; type includes all series within that type unless otherwise indicated)	

FSTD Location (indicate city and country)	
FSTD Operator (the FSTD Operator is the organization to whom the FSTD Qualification Certificate has been issued)	

5. <u>SCOPE OF PERMISSION</u> (Tick or complete the appropriate scope of the proposed approval)

The Permission will remain valid till the date of expiry of the Qualification Certificate and will be dependent upon the continued qualification of the FSTD to the qualification level specified and on the currency of the navigation database.

5.1 Requested start date of this Permission:

5.2 CAAN FOI shall conduct an inspection of the FSTD as mentioned in FOR-A Chapter 16.2.

5.3 What is the purpose of your application for the Permission?

a) Initial type training and check for issuance of a flight crew license ☐

b) Initial or recurrent training and check for the issuance of an Instrument Rating ☐

c) Recurrent training for renewal or revalidation of a flight crew license ☐

d) Pilot Proficiency Check for renewal or revalidation of a flight crew license ☐

e) Pilot Proficiency Check for issuance or renewal of ratings or DCP privilege ☐

f) 90 days currency of a particular type ☐

g) LOFT checks (includes Route Check) ☐

h) Low Visibility Operations (LVO) training and testing (tick as applicable)

CAT I ☐ CAT II ☐ CAT IIIA ☐ CAT IIIB ☐

5.4 List the parts of a PPC that may be conducted in the FSTD and for which approval can be granted.

5.5 Regarding an Initial application, are there any differences between the FSTD configuration and your aircraft which affect training delivery?

YES ☐ NO ☐

Regarding an application for renewal of the Permission, has there been any change(s) to the FSTD or associated user's aircraft since the last renewal that would affect an existing differences list?

YES ☐ NO ☐

5.6 Where differences/changes have been identified in paragraph 5.5, the list of said differences/changes must be provided with this application form along with any identified / associated mitigation

1. In the event that this application is withdrawn by the applicant, a cancellation charge may be levied.

2. All expenses for the FOI pursuant to the processing of the approval shall be borne by the applicant.

3. DECLARATION

I have read the above mentioned clauses and hereby declare to the best of my knowledge the particulars entered on this application are accurate. I understand that a Permission may be granted in accordance with the requirements of FOR-A Chapter 16 para 16.22.2 and the relevant elements of FOR, PELR, DCP Manual for the purpose of training or checking of flight crew only. I hereby enclose the charges payable.

Name of applicant…….

Signature of applicant and date……
Or
Signature of authorized representative and date……..

Company or Organization name……..

APPENDIX 6

RESERVED

APPENDIX 7

OPERATION OF AIRBORNE COLLISION AVOIDANCE SYSTEM (ACAS) EQUIPMENT

7.1 ACAS OVERVIEW

7.1.1 The information provided by an ACAS is intended to assist pilots in the safe operation of aircraft by providing advice on appropriate action to reduce the risk of collision. This is achieved through resolution advisories (RAs), which propose manoeuvres, and through traffic advisories (TAs), which are intended to prompt visual acquisition and to act as a warning that an RA may follow. TAs indicate the approximate positions of intruding aircraft that may later cause resolution advisories. RAs propose vertical manoeuvres that are predicted to increase or maintain separation from threatening aircraft. ACAS I equipment is only capable of providing TAs, while ACAS II is capable of providing both TAs and RAs. In this chapter, reference to ACAS means ACAS II.

7.1.2 ACAS indications shall be used by pilots in the avoidance of potential collisions, the enhancement of situational awareness, and the active search for, and visual acquisition of, conflicting traffic.

7.1.3 Nothing in the procedures specified in 7.2 hereunder shall prevent pilots-in-command from exercising their best judgement and full authority in the choice of the best course of action to resolve a traffic conflict or avert a potentia1 collision.

Note 1.— The ability of ACAS to fulfil its role of assisting pilots in the avoidance of potential collisions is dependent on the correct and timely response by pilots to ACAS indications. Operational experience has shown that the correct response by pilots is dependent on the effectiveness of the initial and recurrent training in ACAS procedures.

Note 2.— The normal operating mode of ACAS is TA/RA. The TA-only mode of operation is used in certain aircraft performance limiting conditions caused by in-flight failures or as otherwise promulgated by the appropriate authority.

Note 3.— ACAS Training Guidelines for Pilots are provided in the Attachment, "ACAS Training Guidelines for Pilots".

7.2 USE OF ACAS INDICATORS

The indications generated by ACAS shall be used by pilots in conformity with the following safety considerations:

a) pilots shall not manoeuvre their aircraft in response to traffic advisories (TAs) only;

Note 1.— TAs are intended to alert pilots to the possibility of a resolution advisory (RA), to enhance situational awareness, and to assist in visual acquisition of conflicting traffic. However, visually acquired traffic may not be the same traffic causing a TA. Visual perception of an encounter may be misleading, particularly at night.

Note 2.— The above restriction in the use of TAs is due to the limited bearing accuracy and to the difficulty in interpreting altitude rate from displayed traffic information.

b) on receipt of a TA, pilots shall use all available information to prepare for appropriate action if an RA occurs; and

c) in the event of an RA, pilots shall:

1) respond immediately by following the RA as indicated, unless doing so would jeopardize the safety of the aeroplane;

Note 1.— Stall warning, wind shear, and ground proximity warning system alerts have precedence over ACAS.

Note 2.— Visually acquired traffic may not be the same traffic causing an RA. Visual perception of an encounter may be misleading, particularly at night.

2) follow the RA even if there is a conflict between the RA and an air traffic control (ATC) instruction to manoeuvre;

3) not manoeuvre in the opposite sense to an RA;

Note.— In the case of an ACAS-ACAS coordinated encounter, the RAs complement each other in order to reduce the potential for collision. Manoeuvres, or lack of manoeuvres, that result in vertical rates opposite to the sense of an RA could result in a collision with the intruder aircraft.

4) as soon as possible, as permitted by flight crew workload, notify the appropriate ATC unit of any RA which requires a deviation from the current ATC instruction or clearance;

Note.— Unless informed by the pilot, ATC does not know when ACAS issues RAs. It is possible for ATC to issue instructions that are unknowingly contrary to ACAS RA indications. Therefore, it is important that ATC be notified when an ATC instruction or clearance is not being followed because it conflicts with an RA.

5) promptly comply with any modified RAs;

6) limit the alterations of the flight path to the minimum extent necessary to comply with the RAs;

7) promptly return to the terms of the ATC instruction or clearance when the conflict is resolved; and

8) notify ATC when returning to the current clearance.

Note.— Procedures in regard to ACAS-equipped aircraft and the phraseology to be used for the notification of manoeuvres in response to a resolution advisory are contained in the PANS-ATM (Doc 4444), Chapters 15 and 12 respectively.

7.3 HIGH VERTICAL RATE (HVR) ENCOUNTERS

Pilots should use appropriate procedures by which an aeroplane climbing or descending to an assigned altitude or flight level, especially with an autopilot engaged, may do so at a rate less than 8 m/s (or 1 500 ft/min) throughout the last 300 m (or 1 000 ft.) of climb or descent to the assigned altitude or flight level when the pilot is made aware of another aircraft at or approaching an adjacent altitude or flight level, unless otherwise instructed by ATC. These procedures are intended to avoid unnecessary ACAS II resolution advisories in aircraft at or approaching adjacent altitudes or flight levels. For commercial operations, these procedures should be specified by the operator. Detailed information on HVR encounters and guidance material concerning the development of appropriate procedures is contained in Attachment B to this part.

Attachment A to Appendix 7

ACAS TRAINING GUIDELINES FOR PILOTS

Note.— The acronym "ACAS" is used in this attachment to indicate "ACAS II".

1. INTRODUCTION

1.1 During the implementation of ACAS and the operational evaluations conducted by States, several operational issues were identified that were attributed to deficiencies in pilot training programmes. To address these deficiencies, a set of performance-based training objectives for ACAS pilot training was developed.

The training objectives cover:
theory of operation;
pre-flight operations;
general in-flight operations;
response to traffic advisories (TAs); and
response to resolution advisories (RAs).

The training objectives are further divided into the areas of: ACAS academic training; ACAS manoeuvre training; ACAS initial evaluation; and ACAS recurrent qualification.

1.2 ACAS academic training material has been divided into items that are considered essential training and those that are considered desirable. Those items that are deemed to be essential are a requirement for each ACAS operator. In each area, a list of objectives and acceptable performance criteria is defined. All manoeuvre training is considered essential.

1.3 In developing this material, no attempt was made to define how the training programme should be implemented. Instead, objectives were established that define the knowledge a pilot operating ACAS is expected to possess and the performance expected from a pilot who has completed ACAS training. Therefore, all pilots who operate ACAS equipment should receive the ACAS training described below.

2. ACAS ACADEMIC TRAINING

2.1 General

This training is typically conducted in a classroom environment. The knowledge demonstrations specified in this section may be achieved through the successful completion of written tests or providing correct responses to non-realtime computer-based training (CBT) questions.

2.2 Essential items

2.2.1 *Theory of operation.* The pilot must demonstrate an understanding of ACAS operation and the criteria used for issuing TAs and RAs. This training should address the following topics:

2.2.1.1 *System operation*

OBJECTIVE: Demonstrate knowledge of how ACAS functions.

CRITERIA: The pilot must demonstrate an understanding of the following functions:

a) Surveillance:

1) ACAS interrogates other transponder-equipped aircraft within a nominal range of 26 km (14 NM); and

2) ACAS surveillance range can be reduced in geographic areas with a large number of ground interrogators and/or ACAS-equipped aircraft. A minimum surveillance range of 8.5 km (4.5 NM) is guaranteed for ACAS aircraft that are airborne.

Note. If the operator's ACAS installation provides for the use of the Mode S extended squitter, the normal surveillance range may be increased beyond the nominal 14 NM. However, this information is not used for collision avoidance purposes.

b) Collision avoidance:

1) TAs can be issued against any transponder-equipped aircraft that responds to the ICAO Mode C interrogations, even if the aircraft does not have altitude-reporting capability;

Note. SSR transponders having only Mode A capability do not generate TAs. ACAS does not use Mode A interrogations; therefore, the Mode A transponder codes of nearby aircraft are not known to ACAS. In ICAO SARPs, Mode C minus the altitude is not considered Mode A because of the difference in the pulse intervals.

ACAS uses the framing pulses of replies to Mode C interrogations and will track and may display aircraft equipped with an operating Mode A/C transponder whether or not the altitude-reporting function has been enabled.

2) RAs can be issued only against aircraft that are reporting altitude and in the vertical plane only;

3) RAs issued against an ACAS-equipped intruder are coordinated to ensure that complementary RAs are issued;

4) failure to respond to an RA deprives the aircraft of the collision protection provided by its ACAS. Additionally, in ACAS-ACAS encounters, it also restricts the choices available to the other aircraft's ACAS and thus renders the other aircraft's ACAS less effective than if the first aircraft were not ACAS-equipped; and

5) manoeuvring in a direction opposite to that indicated by an RA is likely to result in further reduction in separation. This is particularly true in the case of an ACAS-ACAS coordinated encounter.

2.2.1.2 ***Advisory thresholds***

OBJECTIVE: Demonstrate knowledge of the criteria for issuing TAs and RAs.

CRITERIA: The pilot must be able to demonstrate an understanding of the methodology used by ACAS to issue TAs and RAs and the general criteria for the issuance of these advisories to include:

a) ACAS advisories are based on time to closest point of approach (CPA) rather than distance. The time must be short and vertical separation must be small, or projected to be small, before an advisory can be issued. The separation standards provided by air traffic services are different from those against which ACAS issues alerts;

b) thresholds for issuing a TA or RA vary with altitude. The thresholds are larger at higher altitudes;

c) TAs generally occur from 20 to 48 seconds prior to CPA. When ACAS is operated in TA-only mode, RAs will be inhibited;

d) RAs occur from 15 to 35 seconds before the projected CPA; and

e) RAs are chosen to provide the desired vertical separation at CPA. As a result, RAs can instruct a climb or descent through the intruder aircraft's altitude.

2.2.1.3 ***ACAS limitations***

OBJECTIVE: To verify that the pilot is aware of the limitations of ACAS.

CRITERIA: The pilot must demonstrate a knowledge and understanding of the ACAS limitations including:

a) ACAS will neither track nor display non-transponder-equipped aircraft, nor aircraft with an inoperable transponder, nor aircraft with a Mode A transponder;

b) ACAS will automatically fail if the input from the aircraft's barometric altimeter, radio altimeter, or transponder is lost;

Note. C In some installations, the loss of information from other on-board systems such as an inertial reference system (IRS) or attitude and heading reference system (AHRS) may result in an ACAS failure. Individual operators should ensure that their pilots are aware of what types of aircraft system failures will result in an ACAS failure.

c) some aircraft within 116 m (380 ft) above ground level (AGL) (nominal value) will not be displayed. If ACAS is able to determine that an aircraft below this altitude is airborne, it will be displayed;

d) ACAS may not display all proximate transponder-equipped aircraft in areas of high-density traffic; however, it will still issue RAs as necessary;

e) because of design limitations, the bearing displayed by ACAS is not sufficiently accurate to support the initiation of horizontal manoeuvres based solely on the traffic display;

f) because of design limitations, ACAS will neither display nor give alerts against intruders with a vertical speed in excess of 3 048 m/min (10 000 ft/min). In addition, the design implementation may result in some short-term errors in the tracked vertical speed of an intruder during periods of high vertical acceleration by the intruder; and

g) stall warnings, ground proximity warning system (GPWS) warnings and wind shear warnings take precedence over ACAS advisories. When either a GPWS or wind shear warning is active, ACAS will automatically switch to the TA-only mode of operation except that ACAS aural annunciations will be inhibited. ACAS will remain in TA-only mode for 10 seconds after the GPWS or wind shear warning is removed.

2.2.1.4 *ACAS inhibits*

OBJECTIVE: To verify that the pilot is aware of the conditions under which certain functions of ACAS are inhibited.

CRITERIA: The pilot must demonstrate a knowledge and understanding of the various ACAS inhibits including:

a) increase descent RAs are inhibited below 442 (±30) m (1 450 (±100) ft) AGL;

b) descend RAs are inhibited below 335 (±30) m (1 100 (±100) ft) AGL;

c) all RAs are inhibited below 305 (±30) m (1 000 (±100) ft) AGL;

d) all ACAS aural annunciations are inhibited below 152 (±30) m (500 (±100) ft) AGL. This includes the aural annunciation for TAs; and

e) altitude and configuration under which climb and increase climb RAs are inhibited. ACAS can still issue climb and increase climb RAs when operating at the aircraft=s maximum altitude or certified ceiling. However, if aeroplane performance at maximum altitude is not sufficient to enable compliance

with the climb rate required by a climb RA, the response should still be in the required sense but not beyond the extent permitted by aeroplane performance limitations.

Note.— In some aircraft types, climb or increase climb RAs are never inhibited.

2.2.2 *Operating procedures*. The pilot must demonstrate the knowledge required to operate ACAS and interpret the information presented by ACAS. This training should address the following topics:

2.2.2.1 *Use of controls*

OBJECTIVE: To verify that the pilot can properly operate all ACAS and display controls.

CRITERIA: Demonstrate the proper use of controls including:

a) aircraft configuration required to initiate a self-test;

b) steps required to initiate a self-test;

c) recognizing when the self-test is successful and when it is unsuccessful. When the self-test is unsuccessful, recognizing the reason for the failure, and, if possible, correcting the problem;

d) recommended usage of traffic display range selection. Low ranges are used in the terminal area, and the higher display ranges are used in the en-route environment and in the transition between the terminal and en-route environment;

e) if available, recommended usage of the "Above/Below" mode selector. "Above" mode should be used during climb, and "Below" mode should be used during descent;

f) recognition that the configuration of the traffic display, i.e. range and "Above/Below" selection, does not affect the ACAS surveillance volume;

g) selection of lower ranges on the traffic display to increase display resolution when an advisory is issued;

h) if available, proper selection of the display of absolute or relative altitude and the limitations of using the absolute display option if a barometric correction is not provided to ACAS; and

i) proper configuration to display the appropriate ACAS information without eliminating the display of other needed information.

Note.— The wide variety of display implementations makes it difficult to establish more definitive criteria. When the training programme is developed, these general criteria should be expanded to cover specific details for an operators specific display implementation.

2.2.2.2 ***Display interpretation***

OBJECTIVE: To verify that a pilot understands the meaning of all information that can be displayed by ACAS.

CRITERIA: The pilot must demonstrate the ability to properly interpret information displayed by ACAS including:

a) other traffic, i.e. traffic within the selected display range that is not proximate traffic, or causing a TA or RA to be issued;

b) proximate traffic, i.e. traffic that is within 11 km (6 NM) and · 366 m (1 200 ft);

c) non-altitude reporting traffic;

d) no bearing TAs and RAs;

e) off-scale TAs and RAs. The selected range should be changed to ensure that all available information on the intruder is displayed;

f) traffic advisories. The minimum available display range that allows the traffic to be displayed should be selected to provide the maximum display resolution;

g) resolution advisories (traffic display). The minimum available display range of the traffic display that allows the traffic to be displayed should be selected to provide the maximum display resolution;

h) resolution advisories (RA display). Pilots should demonstrate knowledge of the meaning of the red and green areas or the meaning of pitch or flight path angle cues displayed on the RA display. For displays using red and green areas, pilots should demonstrate knowledge of when the green areas will and will not be displayed. Pilots should also demonstrate an understanding of the RA display limitations, i.e. if a vertical speed tape is used and the range of the tape is less than 762 m/min (2 500 ft/min), how an increase rate RA will be displayed; and

i) if appropriate, awareness that navigation displays oriented ATrack-Up@ may require a pilot to make a mental adjustment for drift angle when assessing the bearing of proximate traffic.

Note.C The wide variety of display implementations will require the tailoring of some criteria. When the training programme is developed, these criteria should be expanded to cover details for an operators specific display implementation.

2.2.2.3 ***Use of the TA-only mode***

OBJECTIVE: To verify that a pilot understands the appropriate times to select the TA-only mode of operation and the limitations associated with using this mode.

CRITERIA: The pilot must demonstrate the following:

a) knowledge of the operator=s guidance for the use of TA-only mode;

b) reasons for using this mode and situations in which its use may be desirable. These include operating in known close proximity to other aircraft such as when visual approaches are being used to closely spaced parallel runways or taking off towards aircraft operating in a VFR corridor. If TA-only mode is not selected when an airport is conducting simultaneous operations from parallel runways separated by less than 366 m (1 200 ft), and to some intersecting runways, RAs can be expected. If an RA is received in these situations, the response should comply with the operators approved procedures; and

c) the TA aural annunciation is inhibited below 152 m (· 30) m (500 ft (· 100 ft)) AGL. As a result, TAs issued below 152 m (500 ft) AGL may not be noticed unless the TA display is included in the routine instrument scan.

2.2.2.4 *Crew coordination*

OBJECTIVE: To verify that pilots adequately brief other crew members on how ACAS advisories will be handled.

CRITERIA: Pilots must demonstrate that their pre-flight briefing addresses the procedures that will be used in responding to TAs and RAs including:

a) division of duties between the pilot flying and the pilot not flying, including a clear definition of whether the pilot flying or the pilot-in-command will fly the aircraft during a response to an RA;

b) expected call-outs;

c) communications with ATC; and

d) conditions under which an RA may not be followed and who will make this decision.

Note 1.C Different operators have different procedures for conducting pre-flight briefings and for responding to ACAS advisories. These factors should be taken into consideration when implementing the training programme.

Note 2.C The operator must specify the conditions under which an RA need not be followed, reflecting advice published by the local Civil Aviation Authorities. This should not be an item left to the discretion of a crew.

Note 3.— This portion of the training may be combined with other training such as crew resource management (CRM).

2.2.2.5 *Reporting requirements*

OBJECTIVE: To verify that the pilot is aware of the requirements for reporting RAs to the controller and other authorities.

CRITERIA: The pilot must demonstrate the following:
a) the use of the phraseology contained in the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444); and

b) where information can be obtained regarding the need for making written reports to various States when an RA is issued. Various States have different reporting requirements and the material available to the pilot should be tailored to the airlines operating environment.

2.3 Desirable items

2.3.1 *Advisory thresholds*

OBJECTIVE: Demonstrate knowledge of the criteria for issuing TAs and RAs.

CRITERIA: The pilot must be able to demonstrate an understanding of the methodology used by ACAS to issue TAs and RAs and the general criteria for the issuance of these advisories to include:

a) the TA altitude threshold is 259 m (850 ft) below FL 420 and 366 m (1 200 ft) above FL 420;

b) when the vertical separation at CPA is projected to be less than the ACAS-desired separation, an RA requiring a change to the existing vertical speed will be issued. The ACAS-desired separation varies from 91 m (300 ft) at low altitude to a maximum of 213 m (700 ft) above FL 300;

c) when the vertical separation at CPA is projected to be greater than the ACAS-desired separation, an RA that does not require a change to the existing vertical speed will be issued. This separation varies from 183 to 244 m (600 to 800 ft); and

d) RA fixed-range thresholds vary between 0.4 km (0.2 NM) at low altitude and 2 km (1.1 NM) at high altitude. These fixed-range thresholds are used to issue RAs in encounters with slow closure rates.

3. ACAS MANOEUVRE TRAINING

3.1 When training pilots to properly respond to ACAS-displayed information, TAs and RAs are most effective when accomplished in a flight simulator equipped with an ACAS display and controls similar in appearance and operation to those in the aircraft. If a simulator is utilized, CRM aspects of responding to TAs and RAs should be practised during this training.

3.2 If an operator does not have access to an ACAS-equipped simulator, the initial ACAS evaluation should be conducted by means of an interactive CBT with an ACAS display and controls similar in appearance and operation to those in the aircraft the pilot will fly. This interactive CBT should depict scenarios in which real-time responses must be made. The pilot should be informed whether or not the responses made were correct. If the response was incorrect or inappropriate, the CBT should show what the correct response should be.

3.3 The scenarios in the manoeuvre training should include initial RAs that require a change in vertical speed; initial RAs not requiring a change in vertical speed; maintain rate RAs; altitude crossing RAs; increase rate RAs; RA reversals; weakening RAs; RAs issued while the aircraft is at a maximum altitude, and multi-aircraft encounters. In all scenarios, excursions should be limited to the extent required by the RA. The scenarios should be concluded with a return to the original flight profile. The scenarios should also include demonstrations of the consequences of not responding to RAs, slow or late responses, and manoeuvring opposite to the direction called for by the displayed RA as follows:

3.3.1 ***TA responses***

OBJECTIVE: To verify that the pilot properly interprets and responds to TAs.

CRITERIA: The pilot must demonstrate:

a) proper division of responsibilities between the pilot flying and the pilot not flying. The pilot flying should continue to fly the aeroplane and be prepared to respond to any RA that might follow. The pilot not flying should provide updates on the traffic location shown on the ACAS traffic display and use this information to help visually acquire the intruder;

b) proper interpretation of the displayed information. Visually search for the traffic causing the TA at a location shown on the traffic display. Use should be made of all information shown on the display, note being taken of the bearing and range of the intruder (amber circle), whether it is above or below (data tag), and its vertical speed direction (trend arrow);

c) other available information is used to assist in visual acquisition. This includes ATC Aparty-line@ information, traffic flow in use, etc.;

d) because of the limitations described in 2.2.1.3 e), that no manoeuvres are made based solely on the information shown on the ACAS display; and

e) when visual acquisition is attained, right of way rules are used to maintain or attain safe separation. No unnecessary manoeuvres are initiated. The limitations of making manoeuvres based solely on visual acquisition are understood.

3.3.2 ***RA responses***

OBJECTIVE: To verify THAT the pilot properly interprets and responds to RAs.

CRITERIA: The pilot MUST demonstrate:

a) proper division of responsibilities between the pilot flying and the pilot not flying. The pilot flying should respond to the RA with positive control inputs, when required, while the pilot not flying is providing updates on the traffic location, checking the traffic display and monitoring the response to the RA. Proper CRM should be used. If the operator's procedures require the pilot-in-command to fly all RAs, transfer of aircraft control should be demonstrated;

b) proper interpretation of the displayed information. The pilot recognizes the intruder causing the RA to be issued (red square on display). The pilot responds appropriately;

c) for RAs requiring a change in vertical speed, initiation of a response in the proper direction within five seconds of the RA being displayed. Pilot actions must focus on tasks related to manoeuvring the aeroplane in response to the RA and flight crew coordination, avoiding distractions that may interfere with a correct and timely response. After initiating the manoeuvre, and as soon as possible, as permitted by flight workload, ATC is notified using the standard phraseology if the manoeuvre requires a deviation from the current ATC instruction or clearance;

Note.— Part III, Chapter 3, 3.2 c) 1), states that in the event of an RA, pilots should respond immediately and manoeuvre as indicated, unless doing so would jeopardize the safety of the aeroplane.

d) for RAs not requiring a change in vertical speed, focus on tasks associated with following the RA, including preparedness for a modification to the initially displayed RA where a change in vertical speed may be required. Distractions that may interfere with a correct and timely response must be avoided;

e) recognition of and the proper response to modifications to the initially displayed RA:

1) for increase rate RAs, the vertical speed is increased within 2 1/2 seconds of the RA being displayed;

2) for RA reversals, the manoeuvre is initiated within 2 1/2 seconds of the RA being displayed;

3) for RA weakenings, the vertical speed is modified to initiate a return towards level flight within 2 ½ seconds of the RA being displayed; and

4) for RAs that strengthen, the manoeuvre to comply with the revised RA is initiated within 2 1/2 seconds of the RA being displayed;

f) recognition of altitude crossing encounters and the proper response to these RAs;

g) for RAs that do not require a change in vertical speed, the vertical speed needle or pitch angle remains outside the red area on the RA display;

h) for maintain rate RAs, the vertical speed is not reduced. Pilots should recognize that a maintain rate RA may result in crossing through the intruder's altitude;

i) that if a justified decision is made to not follow an RA, the resulting vertical rate is not in a direction opposite to the sense of the displayed RA;

j) that the deviation from the current clearance is minimized by levelling the aircraft when the RA weakens and when "Clear of Conflict" is annunciated, executing a prompt return to the current clearance; and notifying ATC as soon as possible, as permitted by flight crew workload;

k) that when possible, an ATC clearance is complied with while responding to an RA. For example, if the aircraft can level at the assigned altitude while responding to a reduce climb or reduce descent RA, it should be done;

l) that when simultaneous conflicting instructions to manoeuvre are received from ATC and an RA, the RA is followed and, as soon as possible, as permitted by flight crew workload, ATC is notified using the standard phraseology;

m) a knowledge of the ACAS multi-aircraft logic and its limitations, and that ACAS can optimize separation from two aircraft by climbing or descending towards one of them. For example, ACAS considers as intruders only aircraft that it finds to be a threat when selecting an RA. As such, it is possible for ACAS to issue an RA against one intruder, which results in a manoeuvre towards another intruder that is not classified as a threat. If the second intruder becomes a threat, the RA will be modified to provide separation from that intruder;

n) a knowledge of the consequences of not responding to an RA and manoeuvring in the direction opposite to the RA; and

o) that a prompt response is made when a climb RA is issued while the aircraft is at the maximum altitude.

4. ACAS INITIAL EVALUATION

4.1 The pilot's understanding of the academic training items should be assessed by means of a written test or interactive CBT that records correct and incorrect responses to questions.

4.2 The pilot's understanding of the manoeuvre training items should be assessed in a flight simulator equipped with an ACAS display and controls similar in appearance and operation to those in the aircraft the pilot will fly, and the results assessed by a qualified instructor, inspector, or check pilot. The range of scenarios should include: initial RAs requiring a change in vertical speed; initial RAs that do not require a change in vertical speed; maintain rate RAs; altitude crossing RAs; increase rate RAs; RA reversals; weakening RAs; RAs issued while the aircraft is at the maximum altitude, and multi-aircraft encounters. In all scenarios, excursions should be limited to the extent required by the RA. The

scenarios should be concluded with a return to the original flight profile. The scenarios should also include demonstrations of the consequences of not responding to RAs, slow or late responses, and manoeuvring opposite to the direction called for by the displayed RA.

4.3 If an operator does not have access to an ACAS-equipped simulator, the initial ACAS evaluation should be conducted by means of an interactive CBT with an ACAS display and controls similar in appearance and operation to those in the aircraft the pilot will fly. This interactive CBT should depict scenarios in which real-time responses must be made, and a record should be made of whether or not each response was correct. The CBT should include all types of RAs described in 4.2.

5. ACAS RECURRENT TRAINING

5.1 ACAS recurrent training ensures that pilots maintain the appropriate ACAS knowledge and skills. ACAS recurrent training should be integrated into and/or conducted in conjunction with other established recurrent training programmes. An essential item of recurrent training is the discussion of any significant issues and operational concerns that have been identified by the operator.

5.2 ACAS monitoring programmes periodically publish findings from their analyses of ACAS events. The results of these analyses typically discuss technical and operational issues related to the use and operation of ACAS. This information is available from ICAO or directly from the monitoring programmes. ACAS recurrent training programmes should address the results of monitoring programmes in both the academic and simulator portions of recurrent training visits.

Note.C ACAS monitoring programmes are carried out by some States and international organizations including the United States' Federal Aviation Administration (FAA) and the European Organisation for the Safety of Air Navigation (EUROCONTROL).

5.3 Recurrent training should include both academic and manoeuvre training and address any significant issues identified by line operating experience, system changes, procedural changes, or unique characteristics such as the introduction of new aircraft/ display systems or operations in airspace where high numbers of TAs and RAs have been reported.

5.4 Pilots should fly all scenarios once every four years.

5.5 Pilots should complete all scenarios once every two years if CBT is used.

Attachment B to Appendix 7

ACAS HIGH VERTICAL RATE (HVR) ENCOUNTERS

1. ACAS PERFORMANCE DURING HIGH VERTICAL RATE (HVR) ENCOUNTERS

1.1 As of 2006, data collected by ACAS monitoring programmes continue to show that a large percentage of ACAS RAs are a result of climbing or descending aircraft maintaining a high vertical speed while approaching their ATC-assigned altitude. Changes have been made to the ACAS SARPs and guidance material (see Annex 10, Volume I) that have been effective in reducing the frequency of occurrence for these types of RAs, but these types of RAs continue to occur with a high degree of regularity in airspace throughout the world. It has been determined that no further changes are feasible within ACAS to address this issue without resulting in an unacceptable degradation of the safety provided by ACAS.

1.2 Modern aircraft and their flight guidance systems (autopilots, flight management systems, and autothrottles) are designed to fly specific flight profiles that provide fuel and time-efficient flight paths. An integral concept of the design of the flight guidance systems includes allowing an aircraft to quickly climb to higher, more efficient operating altitudes and to remain at these altitudes as long as possible, which results in descents also being made with high vertical speeds. For economic benefits, the high vertical speeds used in a climb or descent are retained as long as feasible before initiating a smooth capture of the aircraft's assigned altitude.

1.3 The design of the flight guidance systems can result in vertical speeds in excess of 15 m/s (or 3 000 ft/min) until they are within 150 m (or 500 ft) of the aircraft's assigned altitude. When a climbing or descending aircraft maintains a vertical speed in excess of 15 m/s (or 3 000 ft/min) until it is within 150 m (or 500 ft) of the aircraft's assigned altitude, it is less than 30 seconds away from being at the adjacent IFR altitude, which may be occupied by an ACAS-equipped aircraft flying level at that altitude. If the intruder aircraft is horizontally within the protected area provided by ACAS, there is a high probability that an RA against the climbing or descending aircraft will be issued just as the intruder aircraft begins to reduce its vertical speed to capture its assigned altitude.

1.4 Figure 1 provides a representation of the encounter geometry of this scenario. ACAS typically issues a climb RA, which calls for a climb at 8 m/sec (or 1 500 ft/min). Depending on the altitude of the level aircraft, this RA will typically be issued when the intruder aircraft is approximately 150 m (or 500 ft) below its assigned altitude and the vertical speed of the intruder is in excess of 15 m/s (or 3 000 ft/min).

1.5 ACAS in the level aircraft is tracking a climbing/descending (intruder) aircraft and is using replies to its interrogations to determine the intruder's altitude and its vertical speed. The ACAS track is updated once per second. The intruding aircraft's track information, along with the track of the level ACAS aircraft (own aircraft), is used within ACAS to determine if the intruder aircraft is currently a threat or will be in the near future.

1.6 In determining whether the intruder aircraft will be a threat in the future, ACAS projects the existing vertical speed of the intruder and own aircraft, to estimate the vertical separation that will exist at the closest point of horizontal approach during the encounter. These projections use the current vertical speed of both aircraft, and ACAS is not aware of the intruder aircraft's intent to level at an adjacent altitude above or below its own aircraft's current altitude. Should this projection be less than the ACAS desired vertical separation, an RA will be issued.

1.7 Should the intruder aircraft continue to climb/descend with the high vertical speed until it is 15 to 25 seconds from being at the same altitude as the level ACAS aircraft (again depending on the ACAS aircraft's altitude), ACAS will issue an RA calling for the own aircraft to manoeuvre to increase vertical separation from the intruder aircraft.

2. OPERATIONAL IMPACTS OF RAs RESULTING FROM HVR ENCOUNTERS

2.1 Shortly after ACAS issues the RA (climb RA for the encounter geometry shown in Figure -1), the intruder aircraft begins reducing its vertical rate to capture its assigned altitude.

2.2 While the intruder aircraft is initiating its level-off, the ACAS aircraft has started responding to its RA and may have left its assigned altitude. Both pilots and controllers agree that RAs issued in this encounter geometry are unwelcome. The RAs can be disruptive to a controller's current traffic flow and plans, and thus represent an increase in their workload. The response to the RA can also result in a loss of standard ATC separation if another aircraft is above the ACAS aircraft.

2.3 Pilots have reported that these types of RAs decrease their confidence in the performance of ACAS. These RAs typically occur repeatedly in the same geographic area, and repeated RAs of this type result in pilots being reluctant to follow the RA. This can be potentially hazardous in the event that the intruder aircraft passes through its assigned altitude.

3. FREQUENCY OF OCCURRENCE

3.1 ACAS monitoring shows that the frequency of occurrence is dependent on how airspace is structured and managed. Data collected during 2001 indicate that up to 70 per cent of the RAs issued are caused by the intruder aircraft maintaining a high vertical speed while approaching its assigned altitude. Depending on the airspace structure and the flow of traffic, it is possible to have several of these RAs issued within one hour, although airspace containing a lower density of traffic will have relatively few RAs of this type. Some air traffic service providers have been able to change their traffic

flows and/or operational procedures to reduce the occurrence of these types of RAs, but these types of RAs continue to occur with a high degree of regularity in airspace throughout the world.

3.2 HVR RAs have been observed in both terminal and en-route airspace, although because of the previously higher vertical separation above FL 290 in non-RVSM airspace, very few RAs of this type have been observed above FL 290 in the past. With the current reduced separation, it is possible that HVR RAs may occur more frequently above FL 290 in RVSM airspace. Many HVR RAs occur in close proximity to large airports where departures are kept below arriving aircraft until some distance from the airport before being allowed to climb to higher altitudes, and a large percentage of these RAs occur in geographic areas where there is a concentration of climbing and descending aircraft.

4. ACAS FEATURES THAT REDUCE THE LIKELIHOOD OF RAs BEING ISSUED IN THESE SITUATIONS

4.1 ACAS recognizes HVR encounters, such as that shown in Figure -1. When this encounter geometry is detected, the issuance of RAs can be delayed by up to ten seconds. This delay allows additional time for the intruder aircraft to initiate a level-off and for ACAS to then detect this level-off. However, when the intruder aircraft maintains a vertical speed in excess of 15 m/s (or 3 000 ft/min) until it is within 150 m (or 500 ft) of its assigned altitude, even this 10-second delay may be insufficient for ACAS to detect the level-off, and an RA may be issued. Safety studies have shown that further delays in issuing the RA result in unacceptable degradation in the safety provided by ACAS.

4.2 Consideration has also been given to providing ACAS with information regarding the intruder aircraft's intent. However, this is not considered to be a viable approach to reducing these types of RAs while retaining the existing level of safety provided by ACAS. Currently, it has not been possible to identify any additional changes to ACAS that will provide a further reduction in the frequency of these potentially disruptive RAs.

5. OPERATOR-SPECIFIED PROCEDURES

5.1 Due to the operational impacts on pilots and controllers caused by these types of RAs, and the continued existence of these RAs and the constraints on further modifications to ACAS, operators should specify procedures by which an aeroplane climbing or descending to an assigned altitude or flight level with an autopilot engaged may do so at a rate less than 8 m/sec (or 1 500 ft/min) within 300 m (or 1 000 ft) of the assigned level. Such procedural changes should provide an immediate operational benefit to both pilots and controllers by reducing the occurrence of HVR RAs.

5.2 The implementation of such procedures will not completely eliminate these RAs, but in the absence of other solutions, such as the redesign of airspace, their implementation will reduce the frequency of these undesirable RAs until a technical solution can be developed. Options that operators should consider include flying the entire climb or descent at a preselected rate, modifying the climb or descent in the latter stage and employing use of less than economic climb thrust in lower airspace.

5.3 A recommended procedure would call for a climbing or descending aircraft to adjust its vertical rate when approaching an assigned altitude or flight level, *and* when the pilot is aware that there is an aircraft at or approaching an adjacent altitude or flight level. The crew can be made aware of the

presence of that aircraft by several means, including information provided by an air traffic controller, an ACAS TA or by visual acquisition. When a crew of an intruder aircraft becomes aware that another aircraft is at or approaching an adjacent altitude or flight level, it is recommended that the vertical speed of the intruder aircraft be reduced to less than 8 m/s (or 1 500 ft/min) when approaching an altitude that is 300 m (or 1 000 ft) above or below the assigned altitude or flight level.

Note.— There is no intent in this recommendation to require a modification in vertical speed for every level-off. This is not necessary and would introduce a significant increase in pilot workload.

5.4 When the autopilot is in the altitude capture mode, subsequent vertical mode changes such as the selection of a vertical speed mode may cause some autopilots either to cancel the altitude capture or to not properly capture the selected altitude. Altitude deviations represent a significant percentage of pilot deviations, and the performance of the autopilot during any altitude capture should be closely monitored in accordance with existing procedures.

5.5 Additional tasks may be required during some level-off manoeuvres. However, the procedure is a recommendation, not a requirement. Further, the procedure does not suggest that adjustments to the aircraft's vertical speed be made unless the pilot is aware that traffic is at an adjacent altitude.

5.6 The operator should specify procedures that the pilot may use to reduce vertical speed when an autopilot is engaged, as appropriate for the type of aircraft. Also, the operator should consider authorizing pilots to use a modest vertical speed throughout a climb or descent when the vertical interval is not large — such as a change of altitude in a holding pattern — specifying how this should be accomplished.

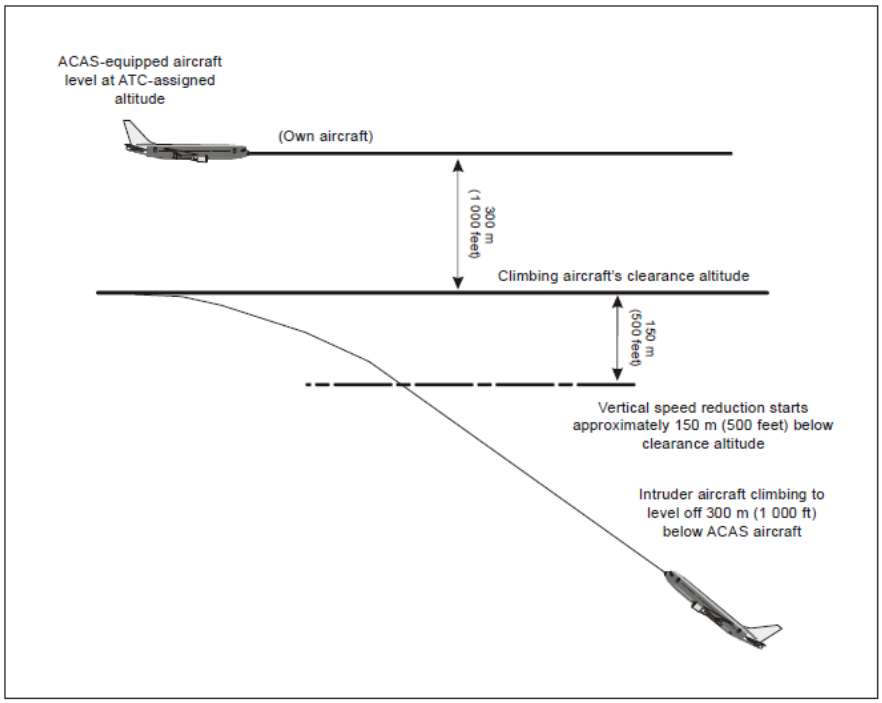


Figure -1. Representative HVR encounter geometry

Attachment C to Appendix 7

PILOT/OBSERVER RA REPORT

GENERAL				
AIR OPERATOR				
PILOT				
OBSERVER				
Contact Phone Number				
RADAR				
FLIGHT No.				
AIRCRAFT REGN No.				
AICRAFT TYPE				
Point of Departure				
Destination				
Date and Time of event in UTC				
Own aircraft altitude				
Own aircraft position	FIR:	VOR:	Radial:	DME:
	OR			
	Lattitude:		Longitude:	
PHASE OF FLIGHT				
Check appropriate box	Take off	Climb	Cruise	Descent
	Hold	Final	Missed Approach	
Clearance (*indicate in feet or Flight Level)*				
TA INFORMATION				
TA issued ?	Yes:		No:	
Visual contact prior to RA?	Yes:		No:	
ATS advisory?	Yes:		No:	

RA INFORMATION				
Intruder Bearing	o'clock			
Intruder Range	Nautical miles			
Relative altitude	Feet			
Type of RA	*("climb", "crossing climb", "VSL 500", "descend", etc.)*			
Did you follow the RA?	Yes:	No:		
If applicable, did ATS instruction conflict with the RA?	Yes:	No:		
Was RA necessary?	Yes:	No:		
GENERAL INFORMATION				
Flight Conditions *(check appropriate box)*	IMC	VMC	DAY	NIGHT
Visibility	kilometres			
Air Traffic Service provided				
Aerodrome/Approach control				
Flight Information				

REMARKS

The report should be forwarded to

(i) the DG, CAAN, Babar Mahal, Kathmandu, phone 01-426326
(ii) the concerned Tower (copy)

Appendix 8

FLIGHT RECORDERS

(Chapter 6, 6.3, 6.18 refers)

The material in this Appendix concerns flight recorders intended for installation in aeroplanes engaged in international air navigation. Crash protected flight recorders comprise one or more of the following: a flight data recorder (FDR), a cockpit voice recorder (CVR), an airborne image recorder (AIR), a data link recorder (DLR).

When image or data link information is required to be recorded on a crash-protected flight recorder, it is permissible to record it on either the CVR or the FDR.

Lightweight flight recorders comprise one or more of the following: an aircraft data recording system (ADRS), a cockpit audio recording system (CARS), an airborne image recording system (AIRS), a data link recording system (DLRS).

When image or data link information is required to be recorded on a lightweight flight recorder, it is permissible to record it on either the CARS or the ADRS.

1. GENERAL REQUIREMENTS

1.1 Non-deployable flight recorder containers shall be painted a distinctive orange colour.

1.2 Non-deployable crash-protected flight recorder containers shall:

a) carry reflective material to facilitate their location; and
b) have securely attached an automatically activated underwater locating device operating at a frequency of 37.5 kHz. At the earliest practicable date, but not later than 1 January 2018, this device shall operate for a minimum of 90 days.

1.3 Automatic deployable flight recorder containers shall:

a) be painted a distinctive orange colour, however the surface visible from outside the aircraft may be of another colour;
b) carry reflective material to facilitate their location; and
c) have an integrated automatically activated ELT.

1.4 The flight recorder systems shall be installed so that:

a) the probability of damage to the recordings is minimized;
b) there is an aural or visual means for pre-flight checking that the flight recorder systems are operating properly; and

c) if the flight recorder systems have an erasure device, the installation shall be designed to prevent operation of the device during flight time or crash impact; and

d) for aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2023, a flight crew-operated erase function shall be provided on the flight deck which, when activated, modifies the recording of a CVR and AIR so that it cannot be retrieved using normal replay or copying techniques. The installation shall be designed to prevent activation during flight. In addition, the probability of an inadvertent activation of an erase function during an accident shall also be minimized.

Note.— The erase function is intended to prevent access to CVR and AIR recordings by normal replay or copying means, but would not prevent accident investigation authorities access to such recordings by specialized replay or copying techniques.

1.5 The crash-protected flight recorders shall be installed so that they receive electrical power from a bus that provides the maximum reliability for operation of the flight recorders without jeopardizing service to essential or emergency loads.

1.6 The lightweight flight recorders shall be connected to a power source having the characteristics which ensure proper and reliable recording in the operational environment.

1.7 Means shall be provided for an accurate time correlation between the flight recorder systems recordings.

1.8 The manufacturer shall provide the appropriate certificating authority with the following information in respect of the flight recorder systems:

a) manufacturer's operating instructions, equipment limitations and installation procedures;
b) parameter origin or source and equations which relate counts to units of measurement; and
c) manufacturer's test reports.

2. FLIGHT DATA RECORDER (FDR) AND AIRCRAFT DATA RECORDING SYSTEMS (ADRS)

2.1 Start and stop logic

The FDR or ADRS shall start to record prior to the aeroplane moving under its own power and record continuously until the termination of the flight when the aeroplane is no longer capable of moving under its own power.

2.2 Parameters to be recorded

Note.— In previous editions of Annex 6, Part I, types of recorders were defined to capture the first evolutions of FDRs.

2.2.1 The parameters that satisfy the requirements for FDRs are listed in Table A8-1. The number of parameters to be recorded shall depend on aeroplane complexity. The parameters without an asterisk (*) are mandatory parameters which shall be recorded regardless of aeroplane complexity. In addition, the parameters designated by an asterisk (*) shall be recorded if an information data source for the

parameter is used by aeroplane systems or the flight crew to operate the aeroplane. However, other parameters may be substituted with due regard to the aeroplane type and the characteristics of the recording equipment.

2.2.2 If further FDR recording capacity is available, recording of the following additional information shall be considered:

a) operational information from electronic display systems, such as electronic flight instrument systems (EFIS), electronic centralized aircraft monitor (ECAM) and engine indication and crew alerting system (EICAS). Use the following order of priority:

1) parameters selected by the flight crew relating to the desired flight path, e.g. barometric pressure setting, selected altitude, selected airspeed, decision height, and autoflight system engagement and mode indications if not recorded from another source;

2) display system selection/status, e.g. SECTOR, PLAN, ROSE, NAV, WXR, COMPOSITE, COPY, ETC.;

3) warnings and alerts; and

4) the identity of displayed pages for emergency procedures and checklists; and

b) retardation information including brake application for use in the investigation of landing overruns and rejected take-offs.

2.2.3 The parameters that satisfy the requirements for flight path and speed as displayed to the pilot(s) are listed below. The parameters without an (*) are mandatory parameters which shall be recorded. In addition, the parameters designated by an (*) shall be recorded if an information source for the parameter is displayed to the pilot and is practicable to record:

— Pressure altitude
— Indicated airspeed or calibrated airspeed
— Heading (primary flight crew reference)
— Pitch attitude
— Roll attitude
— Engine thrust/power
— Landing-gear status*
— Total or outside air temperature*
— Time*
— Navigation data*: drift angle, wind speed, wind direction, latitude/longitude
— Radio altitude*

2.2.4 The parameters that satisfy the requirements for ADRS are the first 7 parameters listed in Table A8-3.

2.2.5 If further ADRS recording capacity is available, the recording of any parameters from 8 onwards defined in Table A8-3 shall be considered.

2.3 Additional information

2.3.1 The measurement range, recording interval and accuracy of parameters on installed equipment shall be verified by methods approved by the appropriate certificating authority.

2.3.2 Documentation concerning parameter allocation, conversion equations, periodic calibration and other serviceability/maintenance information shall be maintained by the operator. The documentation needs to be sufficient to ensure that accident investigation authorities have the necessary information to read out the data in engineering units.

3. COCKPIT VOICE RECORDER (CVR) AND COCKPIT AUDIO RECORDING SYSTEM (CARS)

3.1 Start and stop logic

The CVR or CARS shall start to record prior to the aeroplane moving under its own power and record continuously until the termination of the flight when the aeroplane is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the CVR or CARS shall start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight.

3.2 Signals to be recorded

3.2.1 The CVR shall record simultaneously on four separate channels, or more, at least the following:

a) voice communication transmitted from or received in the aeroplane by radio;
b) aural environment on the flight deck;
c) voice communication of flight crew members on the flight deck using the aeroplane's interphone system, if installed;
d) voice or audio signals identifying navigation or approach aids introduced in the headset or speaker; and
e) voice communication of flight crew members using the passenger address system, if installed.

3.2.2 The preferred CVR audio allocation should be as follows:

a) pilot-in-command audio panel;
b) co-pilot audio panel;
c) additional flight crew positions and time reference; and
d) cockpit area microphone.

3.2.3 The CARS shall record simultaneously on two separate channels, or more, at least the following:

a) voice communication transmitted from or received in the aeroplane by radio;
b) aural environment on the flight deck; and
c) voice communication of flight crew members on the flight deck using the aeroplane's interphone system, if installed.

3.2.4 The preferred CARS audio allocation should be as follows:

a) voice communication; and
b) aural environment on the flight deck.

4. AUTOMATIC DEPLOYABLE FLIGHT RECORDER (ADFR)

4.1 Operation

The following requirements shall apply to an ADFR:

— deployment shall take place when the aeroplane structure has been significantly deformed;
— deployment shall take place when an aeroplane sinks in water;
— ADFR shall not be capable of manual deployment;
— the ADFR shall be able to float on water;
— the ADFR deployment shall not compromise the safe continuation of the flight;
— the ADFR deployment shall not significantly reduce the chance of survival of the recorder and of successful transmission by its ELT;
— the ADFR deployment shall not release more than one piece;
— an alert shall be made to the flight crew when the ADFR is no longer captive to the aircraft;
— the flight crew shall have no means to disable ADFR deployment when the aircraft is airborne;
— the ADFR shall contain an integrated ELT, which shall activate automatically during the deployment sequence. Such ELT may be of a type that is activated in-flight and provides information from which a position can be determined; and

— the integrated ELT of an ADFR shall satisfy the same requirements as an ELT required to be installed on an aeroplane. The integrated ELT shall at least have the same performance as the fixed ELT to maximize detection of the transmitted signal.

Note 1.— Refer to the Manual on Location of Aircraft in Distress and Flight Recorder Data Recovery *(Doc 10054) for more information on ADFR.*

Note 2.— If an integrated ELT of a type that is activated in flight is used within an ADFR, it could be a means to comply with the requirements of Chapter 6, 6.18.

5. DATA LINK RECORDER (DLR)

5.1 Applications to be recorded

5.1.1 Where the aircraft flight path is authorized or controlled through the use of data link messages, all data link messages, both uplinks (to the aircraft) and downlinks (from the aircraft), shall be recorded on the aircraft. As far as practicable, the time the messages were displayed to the flight crew and the time of the responses shall be recorded.

Note.— Sufficient information to derive the content of the data link communications message and the time the messages were displayed to the flight crew is needed to determine an accurate sequence of events on board the aircraft.

5.1.2 Messages applying to the applications listed in Table A8-2 shall be recorded. Applications without the asterisk (*) are mandatory applications which shall be recorded regardless of the system complexity. Applications with an (*) shall be recorded only as far as is practicable given the architecture of the system.

6. FLIGHT CREW-MACHINE INTERFACE RECORDINGS

6.1 Start and stop logic

The AIR or AIRS shall start to record prior to the aeroplane moving under its own power and record continuously until the termination of the flight when the aeroplane is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the AIR or AIRS shall start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight.

6.2 Classes

6.2.1 A Class A AIR or AIRS captures the general cockpit area in order to provide data supplemental to conventional flight recorders.

Note 1.— To respect crew privacy, the cockpit area view may be designed as far as practical to exclude the head and shoulders of crew members whilst seated in their normal operating position.

Note 2.— There are no provisions for Class A AIR or AIRS in this document.

6.2.2 A Class B AIR or AIRS captures data link message displays.

6.2.3 A Class C AIR or AIRS captures instruments and control panels.

Note.— A Class C AIR or AIRS may be considered as a means for recording flight data where it is not practical or is prohibitively expensive to record on an FDR or an ADRS, or where an FDR is not required.

6.3 Applications to be recorded

6.3.1 The operation of switches and selectors and the information displayed to the flight crew from electronic displays shall be captured by sensors or other electronic means.

6.3.2 The recording of operation of switches and selectors by the flight crew shall include the following:

— any switch or selector that will affect the operation and the navigation of the aircraft; and
— selection of normal and alternate systems.

6.3.3 The recording of the information displayed to the flight crew from electronic displays shall include the following:

— primary flight and navigation displays;

— aircraft system monitoring displays;
— engine indication displays;
— traffic, terrain, and weather displays;
— crew alerting systems displays;

7. INSPECTIONS OF FLIGHT RECORDER SYSTEMS

7.1 Prior to the first flight of the day, the built-in test features for the flight recorders and flight data acquisition unit (FDAU), when installed, shall be monitored by manual and/or automatic checks.

7.2 FDR systems or ADRS, CVR systems or CARS, and AIR systems or AIRS shall have recording inspection intervals of one year; subject to the approval from the appropriate regulatory authority, this period may be extended to two years provided these systems have demonstrated a high integrity of serviceability and self-monitoring. DLR systems or DLRS shall have recording inspection intervals of two years; subject to the approval from the appropriate regulatory authority, this period may be extended to four years provided these systems have demonstrated high integrity of serviceability and self-monitoring.

7.3 Recording inspections shall be carried out as follows:

a) an analysis of the recorded data from the flight recorders shall ensure that the recorder operates correctly for the nominal duration of the recording;

b) the FDR or ADRS recording from a complete flight shall be examined in engineering units to evaluate the validity of all recorded parameters. Particular attention shall be given to parameters from sensors dedicated to the FDR or ADRS. Parameters taken from the aircraft's electrical bus system need not be checked if their serviceability can be detected by other aircraft systems;

c) the readout facility shall have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals;

d) an examination of the recorded signal on the CVR or CARS shall be carried out by replay of the CVR or CARS recording. While installed in the aircraft, the CVR or CARS shall record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards;

e) where practicable, during the examination, a sample of in-flight recordings of the CVR or CARS shall be examined for evidence that the intelligibility of the signal is acceptable; and

f) an examination of the recorded images on the AIR or AIRS shall be carried out by replay of the AIR or AIRS recording. While installed in the aircraft, the AIR or AIRS shall record test images from each aircraft source and from relevant external sources to ensure that all required images meet recording quality standards.

g) an examination of the recorded messages on the DLR or DLRS shall be carried out by replay of the DLR or DLRS recording.

7.4 A flight recorder system shall be considered unserviceable if there is a significant period of poor quality data, unintelligible signals, or if one or more of the mandatory parameters is not recorded correctly.

7.5 A report of the recording inspection shall be made available on request to regulatory authorities for monitoring purposes.

7.6 Calibration of the FDR system:

a) for those parameters which have sensors dedicated only to the FDR and are not checked by other means, recalibration shall be carried out at least every five years or in accordance with the recommendations of the sensor manufacturer to determine any discrepancies in the engineering conversion routines for the mandatory parameters and to ensure that parameters are being recorded within the calibration tolerances; and

b) when the parameters of altitude and airspeed are provided by sensors that are dedicated to the FDR system, there shall be a recalibration performed as recommended by the sensor manufacturer, or at least every two years.

Table A8-1. Parameter characteristics for flight data recorders

Serial No.	Parameter	Applicability	Measurement Range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
1	Time (UTC when available, otherwise relative time count or GNSS time sync)		24 hours	4	±0.125%/h	1 s
2	Pressure-altitude		–300 m (–1 000 ft) to maximum certificated altitude of aircraft +1 500 m (+5 000 ft)	1	±30 m to ±200 m (±100 ft to ±700 ft)	1.5 m (5 ft)
3	Indicated airspeed or calibrated airspeed		95 km/h (50 kt) to max VSo *(Note 1)* VSo to 1.2 VD *(Note 2)*	1	±5%	1 kt (0.5 kt recommended)
4	Heading (primary flight crew reference)		360°	1	±2°	0.5°
5	Normal acceleration *(Note 8)*	Application for type certification is submitted to a Contracting State before 1 January 2016	–3 g to +6 g	0.125	±1% of maximum range excluding datum error of ±5%	0.004 g
		Application for type certification is submitted to a Contracting State on or after 1 January 2016	–3 g to +6 g	0.0625	±1% of maximum range excluding datum error of ±5%	0.004 g
6	Pitch attitude		±75° or usable range whichever is greater	0.25	±2°	0.5°
7	Roll attitude		±180°	0.25	±2°	0.5°
8	Radio transmission keying		On-off (one discrete)	1		

Serial No.	Parameter	Applicability	Measurement Range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
9	Power on each engine *(Note 3)*		Full Range	1 (per engine)	±2%	0.2% of full range or the resolution required to operate the aircraft
10*	Trailing edge flap and cockpit control selection		Full range or each discrete position	2	±5% or as pilot's indicator	0.5% of full range or the resolution required to operate the aircraft
11*	Leading edge flap and cockpit control selection		Full range or each discrete position	2	±5% or as pilot's indicator	0.5% of full range or the resolution required to operate the aircraft
12*	Thrust reverser position		Stowed, in transit, and reverse	1 (per engine)		
13*	Ground spoiler/speed brake selection (selection and position)		Full range or each discrete position	1	±2% unless higher accuracy uniquely required	0.2% of full range
14	Outside air temperature		Sensor range	2	±2°C	0.3°C
15*	Autopilot/auto throttle/AFCS mode and engagement status		A suitable combination of discretes	1		
16	Longitudinal acceleration (Note 8)	Application for type certification submitted to a Contracting State before 1 January 2016	±1 g	0.25	±0.015 g excluding a datum error of ±0.05 g	0.004 g
		Application for type certification submitted to a Contracting State on or after 1 January 2016	±1 g	0.0625	±0.015 g excluding a datum error of ±0.05 g	0.004 g

Serial No.	Parameter	Applicability	Measurement Range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
17	Lateral acceleration *(Note 8)*	Application for type certification submitted to a Contracting State before 1 January 2016	±1 g	0.25	±0.015 g excluding a datum error of ±0.05 g	0.004 g
		Application for type certification submitted to a Contracting State on or after 1 January 2016	±1 g	0.0625	±0.015 g excluding a datum error of ±0.05 g	0.004 g
18	Pilot input and/or Control surface position primary controls (pitch, roll, yaw) (Notes 4 and 8)	Application for type certification submitted to a Contracting State before 1 January 2016	Full range	0.25	±2° unless higher accuracy uniquely required	0.2% of full range or as installed
		Application for type certification submitted to a Contracting State on or after 1 January 2016	Full range	0.125	±2° unless higher accuracy uniquely required	0.2% of full range or as installed
19	Pitch trim position		Full range	1	±3% unless higher accuracy uniquely required	0.3% of full range or as installed
20*	Radio altitude		–6 m to 750 m (–20 ft to 2 500 ft)	1	±0.6 m (±2 ft) or ±3% whichever is greater below 150 m (500 ft) and ±5% above 150 m (500 ft)	0.3 m (1 ft) below 150 m (500 ft) 0.3 m (1 ft) + 0.5% of full range above 150 m (500 ft)
21*	Vertical beam deviation (ILS/GNSS/GLS glide path, MLS elevation, IRNAV/IAN vertical deviation)		Signal range	1	±3%	0.3% of full range

Serial No.	Parameter	Applicability	Measurement Range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
22*	Horizontal beam deviation (ILS/GNSS/GLS localizer, MLS azimuth, IRNAV/IAN lateral deviation)		Signal range	1	±3%	0.3% of full range
23	Marker beacon passage		Discrete	1		
24	Master warning		Discrete	1		
25	Each NAV receiver frequency selection (Note 5)		Full range	4	As installed	
26*	DME 1 and 2 distance (includes Distance to runway threshold (GLS) and Distance to missed approach point (IRNAV/IAN)) (Notes 5 and 6)		0 – 370 km (0 – 200 NM)	4	As installed	1 852 m (1 NM)
27	Air/ground status		Discrete	1		
28*	GPWS/TAWS/GCAS status (selection of terrain display mode including pop-up display status) and (terrain alerts, both cautions and warnings, and advisories) and (on/off switch position)		Discrete	1		
29*	Angle of attack		Full range	0.5	As installed	0.3 % of full range
30*	Hydraulics, each system (low pressure)		Discrete	2		0.5% of full range
31*	Navigation data (latitude/longitude, Ground speed and drift angle) *(Note 7)*		As installed	1	As installed	
32*	Landing gear and gear selector position		Discrete	4	As installed	

Serial No.	Parameter	Applicability	Measurement Range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
33*	Groundspeed		As installed	1	Data should be obtained from the most accurate system	1 kt
34	Brakes (left and right brake pressure, left and right brake pedal position)		(Maximum metered brake range, discretes or full range)	1	±5%	2% of full range
35*	Additional engine parameters (EPR, N1, indicated vibration level, N2, EGT, fuel flow, fuel cut-off lever position, N3, engine fuel metering valve position)	Engine fuel metering valve position: Application for type certification is submitted to a Contracting State on or after 1 January 2023	As installed	Each engine each second	As installed	2% of full range
36*	TCAS/ACAS (traffic alert and collision avoidance system)		Discretes	1	As installed	
37*	Wind shear warning		Discrete	1	As installed	
38*	Selected barometric setting (pilot, copilot)		As installed	64	As installed	0.1 mb (0.01 in-Hg)
39*	Selected altitude (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
40*	Selected speed (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
41*	Selected Mach (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
42*	Selected vertical speed (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection

Serial No.	Parameter	Applicability	Measurement Range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
43*	Selected heading (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
44*	Selected flight path (all pilot selectable modes of operation) (course/DSTRK, path angle, final approach path (IRNAV/IAN))			1	As installed	
45*	Selected decision height		As installed	64	As installed	Sufficient to determine crew selection
46*	EFIS display format (pilot, co-pilot)		Discrete(s)	4	As installed	
47*	Multifunction/ engine/alerts display format		Discrete(s)	4	As installed	
48*	AC electrical bus status		Discrete(s)	4	As installed	
49*	DC electrical bus status		Discrete(s)	4	As installed	
50*	Engine bleed valve position		Discrete(s)	4	As installed	
51*	APU bleed valve position		Discrete(s)	4	As installed	
52*	Computer failure		Discrete(s)	4	As installed	
53*	Engine thrust command		As installed	2	As installed	
54*	Engine thrust target		As installed	4	As installed	2% of full range
55*	Computed centre of gravity		As installed	64	As installed	1% of full range
56*	Fuel quantity in CG trim tank		As installed	64	As installed	1% of full range
57*	Head up display in use		As installed	4	As installed	
58*	Para visual display on/off		As installed	1	As installed	
59*	Operational stall protection, stick shaker and pusher activation		As installed	1	As installed	

Serial No.	Parameter	Applicability	Measurement Range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording Resolution
60*	Primary navigation system reference (GNSS, INS, VOR/DME, MLS, Loran C, localizer glideslope)		As installed	4	As installed	
61*	Ice detection		As installed	4	As installed	
62*	Engine warning each engine vibration		As installed	1	As installed	
63*	Engine warning each engine over temperature		As installed	1	As installed	
64*	Engine warning each engine oil pressure low		As installed	1	As installed	
65*	Engine warning each engine over speed		As installed	1	As installed	
66*	Yaw trim surface position		Full range	2	±3% unless higher accuracy uniquely required	0.3% of full range
67*	Roll trim surface position		Full range	2	±3% unless higher accuracy uniquely required	0.3% of full range
68*	Yaw or sideslip angle		Full range	1	±5%	0.5°
69*	De-icing and/or antiicing systems selection		Discrete(s)	4		
70*	Hydraulic pressure (each system)		Full range	2	±5%	100 psi
71*	Loss of cabin pressure		Discrete	1		
72*	Cockpit trim control input position, Pitch		Full range	1	±5%	0.2% of full range or as installed
73*	Cockpit trim control input position, Roll		Full range	1	±5%	0.2% of full range or as installed
74*	Cockpit trim control input position, Yaw		Full range	1	±5%	0.2% of full range or as installed

Serial No.	Parameter	Applicability	Measurement Range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording Resolution
75*	All cockpit flight control input forces (control wheel, control column, rudder pedal)		Full range (±311 N (±70 lbf), ± 378 N (±85 lbf), ± 734 N (±165 lbf))	1	±5%	0.2% of full range or as installed
76*	Event marker		Discrete	1		
77*	Date		365 days	64		
78*	ANP or EPE or EPU		As installed	4	As installed	
79*	Cabin pressure altitude	Application for type certification submitted to a Contracting State on or after 1 January 2023	As installed (0 ft to 40 000 ft recommended)	1	As installed	100 ft
80*	Aeroplane computed weight	Application for type certification submitted to a Contracting State on or after 1 January 2023	As installed	64	As installed	1% of full range
81*	Flight director command	Application for type certification submitted to a Contracting State on or after 1 January 2023	Full range	1	± 2°	0.5°
82*	Vertical speed	Application for type certification submitted to a Contracting State on or after 1 January 2023	As installed	0.25	As installed (32 ft/min recommended)	16 ft/min

Notes.—

1. VSo stalling speed or minimum steady flight speed in the landing configuration is in Section "Abbreviations and Symbols".
2. VD design diving speed.
3. Record sufficient inputs to determine power.

4. For aeroplanes with control systems in which movement of a control surface will back drive the pilot's control, ''or'' applies. For aeroplanes with control systems in which movement of a control surface will not back drive the pilot's control, ''and'' applies. In aeroplanes with split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately. In aeroplanes with independent pilot input on primary controls, each pilot input on primary controls needs to be recorded separately.
5. If signal available in digital form.
6. Recording of latitude and longitude from INS or other navigation system is a preferred alternative.
7. If signals readily available.
8. It is not intended that aeroplanes issued with an individual certificate of airworthiness before 1 January 2016 be modified to meet the measurement range, maximum sampling and recording interval, accuracy limits or recording resolution description detailed in this Appendix.

Table A8-2. Description of Applications for Data Link Recorders

Item No.	Application type	Application description	Recording content
1	Data link initiation	This includes any applications used to log on to or initiate data link service. In FANS-1/A and ATN, these are ATS facilities notification (AFN) and context management (CM) respectively.	C
2	Controller/pilot communication	This includes any application used to exchange requests, clearances, instructions and reports between the flight crew and controllers on the ground. In FANS-1/A and ATN, this includes the CPDLC application. It also includes applications used for the exchange of oceanic (OCL) and departure clearances (DCL) as well as data link delivery of taxi clearances.	C
3	Addressed surveillance	This includes any surveillance application in which the ground sets up contracts for delivery of surveillance data. In FANS-1/A and ATN, this includes the automatic dependent surveillance — contract (ADS-C) application. Where parametric data are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.	C
4	Flight information	This includes any service used for delivery of flight information to specific aircraft. This includes, for example, data link aviation weather report service (D-METAR), data link-automatic terminal service (D-ATIS), digital Notice to Airmen (D-NOTAM) and other textual data link services.	C
5	Aircraft broadcast surveillance	This includes elementary and enhanced surveillance systems, as well as automatic dependent surveillance — broadcast (ADS-B) output data. Where parametric data sent by the aeroplane are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.	M*
6	Aeronautical operational control data	This includes any application transmitting or receiving data used for aeronautical operational control purposes (per the ICAO definition of operational control).	M*

Key:
C: Complete contents recorded.
M: Information that enables correlation to any associated records stored separately from the aeroplane.
*: Applications to be recorded only as far as is practicable given the architecture of the system.

Table A8-3. Parameter Characteristics for Aircraft Data Recording Systems

No.	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
1	Heading a) Heading (Magnetic or True)	±180º	1	±2°	0.5°	Heading is preferred, if not available, yaw rate shall be recorded
	b) Yaw rate	±300º/s	0.25	±1% + drift of 360°/h	2°/s	
2	Pitch a) Pitch attitude	±90º	0.25	±2º	0.5°	Pitch attitude is preferred, if not available, pitch rate shall be recorded
	b) Pitch rate	±300º/s	0.25	±1% + drift of 360°/h	2°/s	
3	Roll a) Roll attitude	±180º	0.25	±2º	0.5°	Roll attitude is preferred, if not available, roll rate shall be recorded
	b) Roll rate	±300º/s	0.25	±1% + drift of 360°/h	2°/s	
4	Positioning system: a) Time	24 hours	1	±0.5 s	0.1 s	UTC time preferred where available.
	b) Latitude/longitude	Latitude: ±90° Longitude:±180°	2 (1 if available)	As installed (0.00015° recommended)	0.00005°	
	c) Altitude	–300 m (–1 000 ft) to maximum certificated altitude of aeroplane +1 500 m (5 000 ft)	2 (1 if available)	As installed (±15 m (±50 ft) recommended)	1.5 m (5 ft)	

No.	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
4	d) Ground speed	0–1 000 kt	2 (1 if available)	As installed (±5 kt recommended)	1 kt	
	e) Track	0–360º	2 (1 if available)	As installed (± 2º recommended)	0.5°	
	f) Estimated error	Available range	2 (1 if available)	As installed	As installed	Shall be recorded if readily available
5	Normal acceleration	–3 g to + 6 g (*)	0.25 (0.125 if available)	As installed (± 0.09 g excluding a datum error of ±0.45 g recommended)	0.004 g	
6	Longitudinal acceleration	±1 g (*)	0.25 (0.125 if available)	As installed (±0.015 g excluding a datum error of ±0.05 g recommended)	0.004 g	
7	Lateral acceleration	±1 g (*)	0.25 (0.125 if available)	As installed (±0.015 g excluding a datum error of ±0.05 g recommended)	0.004 g	
8	External static pressure (or pressure altitude)	34.4 mb (3.44 in-Hg) to 310.2 mb (31.02 in-Hg) or available sensor range	1	As installed (±1 mb (0.1 in-Hg) or ±30 m (±100 ft) to ±210 m (±700 ft) recommended)	0.1 mb (0.01 in-Hg) or 1.5 m (5 ft)	
9	Outside air temperature (or total air temperature)	–50° to +90°C or available sensor range	2	As installed (±2°C recommended)	1°C	
10	Indicated air speed	As the installed pilot display measuring system or available sensor range	1	As installed (±3 % recommended)	1 kt (0.5 kt recommended)	
11	Engine RPM	Full range including overspeed condition	Each engine each second	As installed	0.2% of full range	

No.	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
12	Engine oil pressure	Full range	Each engine each second	As installed (5% of full range recommended)	2% of full range	
13	Engine oil temperature	Full range	Each engine each second	As installed (5% of full range recommended)	2% of full range	
14	Fuel flow or pressure	Full range	Each engine each second	As installed	2% of full range	
15	Manifold pressure	Full range	Each engine each second	As installed	0.2% of full range	
16	Engine thrust/power/torque parameters required to determine propulsive thrust/power*	Full range	Each engine each second	As installed	0.1% of full range	* Sufficient parameters e.g. EPR/N1 or torque/Np as appropriate to the particular engine shall be recorded to determine power in both normal and reverse thrust. A margin for possible overspeed should be provided.
17	Engine gas generator speed (Ng)	0-150%	Each engine each second	As installed	0.2% of full range	
18	Free power turbine speed (Nf)	0-150%	Each engine each second	As installed	0.2% of full range	
19	Coolant temperature	Full range	1	As installed (±5°C recommended)	1° C	
20	Main voltage	Full range	Each engine each second	As installed	1 Volt	
21	Cylinder head temperature	Full range	Each cylinder each second	As installed	2% of full range	
22	Flaps position	Full range or each discrete position	2	As installed	0.5°	
23	Primary flight control surface position	Full range	0.25	As installed	0.2 % of full range	
24	Fuel quantity	Full range	4	As installed	1% of full range	

No.	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
25	Exhaust gas temperature	Full range	Each engine each second	As installed	2% of full range	
26	Emergency voltage	Full range	Each engine each second	As installed	1 Volt	
27	Trim surface position	Full range or each discrete position	1	As installed	0.3% of full range	
28	Landing gear position	Each discrete position*	Each gear every two seconds	As installed		* Where available, record up-and-locked and down and-locked position
29	Novel/unique aircraft features	As required	As required	As required	As required	

APPENDIX 9

LOCATION OF AN AEROPLANE IN DISTRESS

(Chapter 6, 6.18, refers)

1. PURPOSE AND SCOPE

Location of an aeroplane in distress aims at establishing, to a reasonable extent, the location of an accident site within a 6 NM radius.

2. OPERATION

2.1 An aeroplane in distress shall automatically activate the transmission of information from which its position can be determined by the operator and the position information shall contain a time stamp. It shall also be possible for this transmission to be activated manually. The system used for the autonomous transmission of position information shall be capable of transmitting that information in the event of aircraft electrical power loss, at least for the expected duration of the entire flight.

Note.— Guidance on the location of an aeroplane in distress is provided in Attachment K of Annex 6 Part I.

2.2 An aircraft is in a distress condition when it is in a state that, if the aircraft behaviour event is left uncorrected, can result in an accident. Autonomous transmission of position information shall be active when an aircraft is in a distress condition. This will provide a high probability of locating an accident site to within a 6 NM radius. The operator shall be alerted when an aircraft is in a distress condition with an acceptable low rate of false alerts. In case of a triggered transmission system, initial transmission of position information shall commence immediately or no later than five seconds after the detection of the activation event.

Note 1.— Aircraft behaviour events can include, but are not limited to, unusual attitudes, unusual speed conditions, collision with terrain and total loss of thrust/propulsion on all engines and ground proximity warnings.

Note 2.— A distress alert can be triggered using criteria that may vary as a result of aircraft position and phase of flight. Further guidance regarding in-flight event detection and triggering criteria may be found in the EUROCAE ED-237, Minimum Aviation System Performance Specification (MASPS) for Criteria to Detect In-Flight Aircraft Distress Events to Trigger Transmission of Flight Information.

2.3 When an aircraft operator or an air traffic service unit (ATSU) has reason to believe that an aircraft is in distress, coordination shall be established between the ATSU and the aircraft operator.

2.4 The State of the Operator shall identify the organizations that will require the position information of an aircraft in an emergency phase. These shall include, as a minimum:

a) air traffic service unit(s) (ATSU); and

b) SAR rescue coordination centre(s) (RCC) and sub-centres.

Note 1.— Refer to Annex 11 for emergency phase criteria.

Note 2.— Refer to Annex 12 for required notifications in the event of an emergency phase.

2.5 When autonomous transmission of position information has been activated, it shall only be able to be deactivated using the same mechanism that activated it.

2.6 The accuracy of position information shall, as a minimum, meet the position accuracy requirements established for ELTs.

APPENDIX 10

Regulated Take-off and Landing Mass

1. GENERAL

1.1 The Regulated Takeoff and Landing Mass for each airfield to which the operator operates shall be calculated from the Airplane Flight Manual for a given temperature and wind condition.

1.2 For STOL operations, take-off and landing mass must be provided for wind calm, 5 knots head/tail wind and 10 knots head/tailwind conditions.

1.3 Guidance material on the use of the templates must be included for the flight crew and other operations personnel using the templates and must be a part of the initial and recurrent trainings. All operators to use the following Templates as standard. The fields indicated are the minimum information required, any other information required may be made to suit individual aircraft or Type needs.

1.4 Reference material must be quoted when providing the data for the required fields eg. Airplane Flight Manual, Chapter no. etc.

1.5 When a particular aeroplane is fitted with special equipment or is configured separately in comparison to other aeroplanes of the same type in the fleet that significantly impacts the take-off and landing weights, the Regn. No. of this aeroplane and its associated data must be provided separately.

1.6 When providing the data, all the necessary corrections demanded by the Performance Charts or the Tables of the AFM must be performed and only the net sum is to be provided.

1.7 Taking 70 percent of the given Runway field length for the ground roll should ensure reaching 50 feet above the end of the runway for take-off in most STOL fields under optimum conditions.

TEMPLATE (for STOL operations)

Aircraft Type/Series	Regn. No.	Acft. configuration: (for Takeoff/Landing)
Runway Designation	Runway slope	Runway length =
		2/3 of runway length =
Name of Aerodrome and elevation:		

Temperature OAT °C	Runway surface : mention Clay, Gravel or Bitumen					
	Wind : calm		Wind : 5 knots Headwind		Wind : 5 knots Tailwind	
	Regulated Take-off Weight	Regulated Landing Weight	Regulated Take-off Weight	Regulated Landing Weight	Regulated Take-off Weight	Regulated Landing Weight
	lbs or kgs	lbs or kgs	lbs or kgs	lbs or kgs	lbs or kgs	lbs or kgs
-5						
0						
+5						
+10						
+15						
+20						
+25						
+30						
+35						
+40						

APPENDIX 11

TEST LANDING

1. GENERAL

1.1 Conditions for a TEST LANDING.

a) Test Landings to a particular airfield shall be done by an operator when it introduces a new type or a variant of the type of aeroplane into the country that results in a significant change of performance or when that particular type although previously operated in the country, has previously never been tested in a particular airfield. Only concerned CAAN and Operator's personnel shall be onboard.

b) In the case of STOL fields, for single-engined aeroplanes:

(i) where an operator performs an initial Test Landing first to a CAT A or CAT B STOL field, then to a CAT C STOL field, a CAAN observer must be onboard for every Test Landing.

(ii) where an operator first conducts Test Landings first to CAT C STOL fields, then applies for normal flights to CAT A or B STOL fields, a CAAN observer must be present for every CAT C airfield and further Test Landings are not required for CAT A or B STOL fields provided that the operator has demonstrated successful Test Landings at a minimum of two CAT C STOL fields. Normal flights to CAT A and B airfields may be permitted provided the Regulated Take-off and Landing Weights and the SOP to such airfields submitted to the DG, CAAN is approved.

c) In the case of STOL fields, for multi-engined aeroplanes, a CAAN observer shall be onboard for every Test Landing to every STOL field.

1.2 Test Landings shall be conducted using the attached Test Landing Form.

TEST LANDING REPORT

1. DATE: **TIME:**

2. AERODROME INFORMATION

Name of aerodrome:	
ICAO designator:	
Three-letter code (if available):	
District:	
State:	

Runway length:	
Runway designation:	
Elevation:	
Coordinates:	

3. AIRCRAFT INFORMATION

Operator:	
Type of aircraft:	
Registration Number:	
Take-off weight:	
Landing weight:	

4. WEATHER INFORMATION

Wind information (direction and speed):	
Weather condition:	
QNH:	
Temperature in degrees Celsius:	

5. CREW

PIC	
SIC	
Any other crew	

6. COMPANY PERSONNEL OTHER THAN FLIGHT CREW

NAME	DESIGNATION & DEPARTMENT

7. CAAN PERSONNEL

NAME	DESIGNATION & DEPARTMENT

8. CAAN TEAM OBSERVATIONS:

A. Obstructions/obstacles:

_____
_____
_____
_____
_____
_____

B. Runway conditions:

_____
_____
_____
_____
_____

9. RECOMMENDATIONS:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Signature of all concerned

APPENDIX 12

ALTIMETRY SYSTEM PERFORMANCE REQUIREMENTS FOR OPERATIONS IN RVSM AIRSPACE

(Chapter 7, 7.2.7, refers)

1. In respect of groups of aeroplanes that are nominally of identical design and build with respect to all details that could influence the accuracy of height-keeping performance, the height-keeping performance capability shall be such that the total vertical error (TVE) for the group of aeroplanes shall have a mean no greater than 25 m (80 ft) in magnitude and shall have a standard deviation no greater than $28 - 0.013z^2$ for $0 \leq z \leq 25$ when z is the magnitude of the mean TVE in metres, or $92 - 0.004z^2$ for $0 \leq z \leq 80$ where z is in feet. In addition, the components of TVE shall have the following characteristics:

   a) the mean altimetry system error (ASE) of the group shall not exceed 25 m (80 ft) in magnitude;
   b) the sum of the absolute value of the mean ASE and of three standard deviations of ASE shall not exceed 75 m (245 ft); and
   c) the differences between cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

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

   a) the ASE of the aeroplane shall not exceed 60 m (200 ft) in magnitude under all flight conditions; and
   b) the differences between the cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

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APPENDIX 13

AEROPLANE PERFORMANCE OPERATING LIMITATIONS

1. PURPOSE AND SCOPE

The purpose of this Attachment is to provide guidance as to the level of performance intended by the provisions of Chapter 5 as applicable to turbine-powered subsonic transport type aeroplanes over 5 700 kg maximum certificated take-off mass having two or more engines. However, where relevant, it can be applied to all subsonic turbine-powered or piston-engine aeroplanes having two, three or four engines. Piston-engine aeroplanes having two, three or four engines which cannot comply with this Attachment may continue to be operated in accordance with Examples 1 or 2 of this Attachment.

Note.— This Attachment is not intended for application to aeroplanes having short take-off and landing (STOL) or vertical take-off and landing (VTOL) capabilities.

2. DEFINITIONS

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

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.)

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.

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).

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.

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.

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

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.

Net gradient. The net gradient of climb throughout these requirements is the expected gradient of climb diminished by the manoeuvre performance (i.e. that gradient of climb necessary to provide power to manoeuvre) 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).

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.

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.

Take-off distance available (TODA). The length of the take-off run available plus the length of the clearway, if provided.

Take-off run available (TORA). The length of runway declared available and suitable for the ground run of an aeroplane taking off.

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.

TAS (True airspeed). The speed of the aeroplane relative to undisturbed air.

V_{S_o}. A stalling speed or minimum steady flight speed in the landing configuration. (*Note.— See Example 1, 2.4.)*

V_{S_1}. A stalling speed or minimum steady flight speed. (*Note.— See Example 1, 2.5.)*

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", "V1", "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.

3. GENERAL

3.1 The provisions of 4 to 7 should be complied with, unless deviations therefrom are specifically authorized by the DG, CAAN on the grounds that the special circumstances of a particular case make a literal observance of these provisions unnecessary for safety.

3.2 Compliance with 4 to 7 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 DG, CAAN if necessary to show compliance with 4 to 7. When applying the factors prescribed in this Attachment, account may be taken of any operational factors already incorporated in the flight manual data to avoid double application of factors.

3.3 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.

Note.— See the Airworthiness Manual *(Doc 9760) for the related airworthiness performance guidance material.*

4. AEROPLANE TAKE-OFF PERFORMANCE LIMITATIONS

4.1 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.

4.2 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.

4.3 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 4.3.1 to 4.3.3 inclusive is shown.

4.3.1 The take-off run required should not exceed the take-off run available.

4.3.2 The accelerate-stop distance required should not exceed the accelerate-stop distance available.

4.3.3 The take-off distance required should not exceed the take-off distance available.

4.3.4 When showing compliance with 4.3 the same value of V_1 for the continued and discontinued take-off phases should be used.

4.4 When showing compliance with 4.3 the following parameters should be taken into account:

a) the pressure altitude at the aerodrome;
b) the ambient temperature at the aerodrome;
c) the runway surface condition and the type of the runway surface;
d) the runway slope in the direction of the take-off;
e) the runway slope;
f) not more than 50 per cent of the reported headwind component or not less than 150 per cent of the reported tailwind component; and
g) the loss, if any, of runway length due to alignment of the aeroplane prior to take-off.

4.5 Credit is not taken for the length of the stopway or the length of the clearway unless they comply with the relevant specifications in Annex 14, Volume I.

5. TAKE-OFF OBSTACLE CLEARANCE LIMITATIONS

5.1 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 5.1.1 to 5.1.3 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°, except as provided in 5.1.4. 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.

5.1.1 Where the intended track does not include any change of heading greater than 15°,

a) for operations conducted in VMC by day, or
b) 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 5.1.1 a),

obstacles at a distance greater than 300 m (1 000 ft) on either side of the intended track need not be cleared.

5.1.2 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 5.1.1 b); 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.

5.1.3 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 (3 000 ft) on either side of the intended track need not be cleared.

5.1.4 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 State of the Operator 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 5.1. The use of bank angles greater than those mentioned above should be subject to the approval from the State of the Operator.

6. EN-ROUTE LIMITATIONS

6.1 General

At no point along the intended track is an aeroplane having three or more engines to be more than 90 minutes at normal cruising speed away from an aerodrome at which the distance specifications for alternate aerodromes (see 7.3) are complied with and where it is expected that a safe landing can be made, unless it complies with 6.3.1.1.

6.2 One engine inoperative

6.2.1 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 6.2.1.1 or 6.2.1.2 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.

6.2.1.1 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.

6..2.1.2 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 7.3, the net flight path clearing 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 provisions of 6.2.1.2.1 to 6.2.1.2.5 inclusive are applied.

6.2.1.2.1 The engine is assumed to fail at the most critical point along the route, allowance being made for indecision and navigational error.

6.2.1.2.2 Account is taken of the effects of winds on the flight path.

6.2.1.2.3 Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with satisfactory fuel reserves, if a safe procedure is used.

6.2.1.2.4 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.

6.2.1.2.5 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.

6.3 Two engines inoperative — aeroplanes with three or more engines

6.3.1 Aeroplanes which do not comply with 6.1 should comply with 6.3.1.1.

6.3.1.1 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 6.3.1.1.1 to 6.3.1.1.5 inclusive apply.

6.3.1.1.1 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 7.3) is complied with and where it is expected that a safe landing can be made.

6.3.1.1.2 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.

6.3.1.1.3 Fuel jettisoning is permitted to an extent consistent with 6.3.1.1.4, if a safe procedure is used.

6.3.1.1.4 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.

6.3.1.1.5 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.

7. LANDING LIMITATIONS

7.1 Aerodrome of destination — dry runways

7.1.1 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:

a) for turbo jet powered aeroplanes, within 60 per cent of the landing distance available; and
b) for turbo-propeller aeroplanes, within 70 per cent of the landing distance available.

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 7.1.1.1 and with either 7.1.1.2 or 7.1.1.3.

7.1.1.1 It is assumed that the aeroplane is landed on the most favourable runway and in the most favourable direction in still air.

7.1.1.2 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).

7.1.1.3 If full compliance with 7.1.1.2 is not shown, the aeroplane may be taken off if a destination alternate aerodrome is designated which permits compliance with 7.3.

7.1.1.4 When showing compliance with 7.1.1 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 ±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.

7.2 Aerodrome of destination — wet or contaminated runways

7.2.1 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 7.1.

7.2.2 A landing distance on a wet runway shorter than that required by 7.2.1 but not less than that required by 7.1 may be used if the flight manual includes specific additional information about landing distance on wet runways.

7.2.3 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 7.2.1; or
b) the landing distance determined in accordance with contaminated landing distance data with a safety margin acceptable to the DG, CAAN.

7.2.4 If compliance with 7.2.3 is not shown, the aeroplane may take off if a destination alternate aerodrome is designated for which compliance is shown with 7.2.3 and 7.3.

7.2.5 When showing compliance with 7.2.2 and 7.2.3, the criteria of 7.1 should be applied accordingly. However, 7.1.1 a) and b) need not be applied to the wet and contaminated runway landing distance determination required by 7.2.2 and 7.2.3.

7.3 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 7.1 and either 7.2.1 or 7.2.2, 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.

7.4 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 DG, CAAN, 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.

APPENDIX 14

LIGHTS TO BE DISPLAYED BY AEROPLANES

(Chapter 6, 6.10, refers)

1. TERMINOLOGY

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

Angles of coverage.

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

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

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

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

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

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

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

Under command. An aeroplane on the surface of the water is “under command” when it is able to execute manoeuvres as required by the International Regulations for Preventing Collisions at Sea for the purpose of avoiding other vessels.

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

Vertical planes. Planes perpendicular to the horizontal plane.

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

2. NAVIGATION LIGHTS TO BE DISPLAYED IN THE AIR

Note.— The lights specified herein are intended to meet the requirements of ICAO Annex 2 for navigation lights.

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

a) a red light projected above and below the horizontal plane through angle of coverage L;
b) a green light projected above and below the horizontal plane through angle of coverage R;
c) a white light projected above and below the horizontal plane rearward through angle of coverage A.

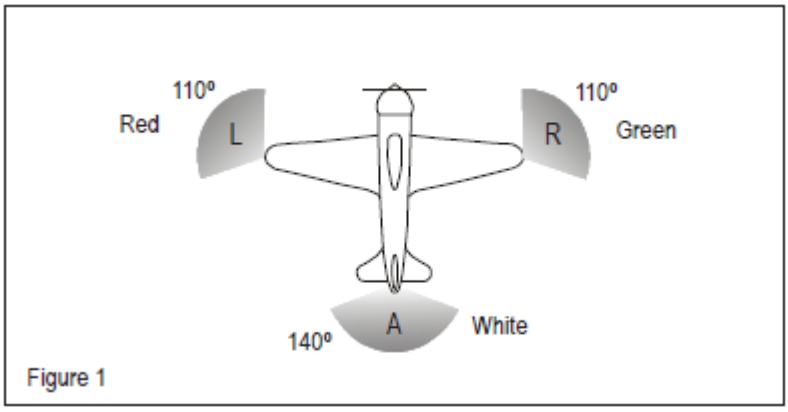


Figure 1

3. LIGHTS TO BE DISPLAYED ON THE WATER

3.1 General

Note.— The lights specified herein are intended to meet the requirements of Annex 2 for lights to be displayed by aeroplanes on the water.

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

a) when under way;
b) when towing another vessel or aeroplane;
c) when being towed;
d) when not under command and not making way;
e) when making way but not under command;
f) when at anchor;
g) when aground.

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

3.2 When under way

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

a) a red light projected above and below the horizontal through angle of coverage L;
b) a green light projected above and below the horizontal through angle of coverage R;
c) a white light projected above and below the horizontal through angle of coverage A; and
d) a white light projected through angle of coverage F.

The lights described in 3.2 a), b) and c) should be visible at a distance of at least 3.7 km (2 NM). The light described in 3.2 d) should be visible at a distance of 9.3 km (5 NM) when fitted to an aeroplane of 20 m or more in length or visible at a distance of 5.6 km (3 NM) when fitted to an aeroplane of less than 20 m in length.

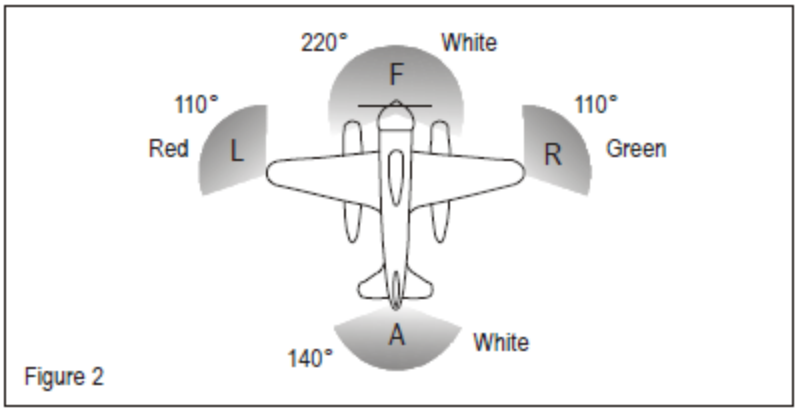


Figure 2

3.3 When towing another vessel or aeroplane

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

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

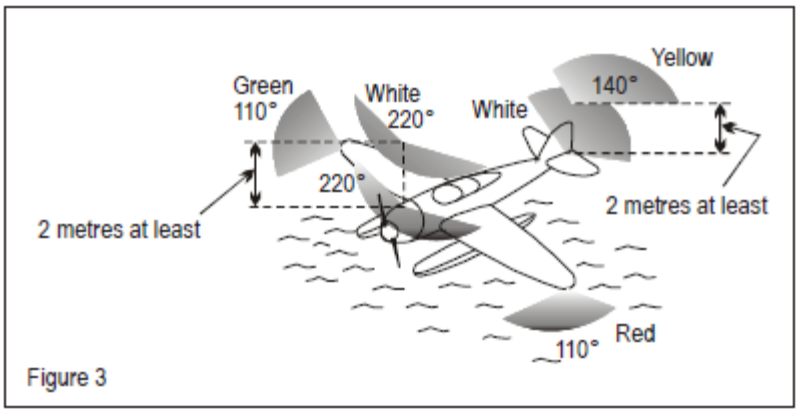


Figure 3

3.4 When being towed

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

3.5 When not under command and not making way

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

3.6 When making way but not under command

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

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

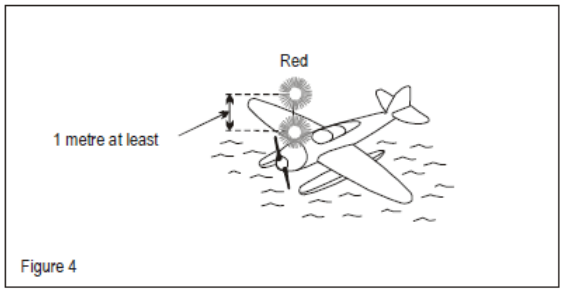


Figure 4

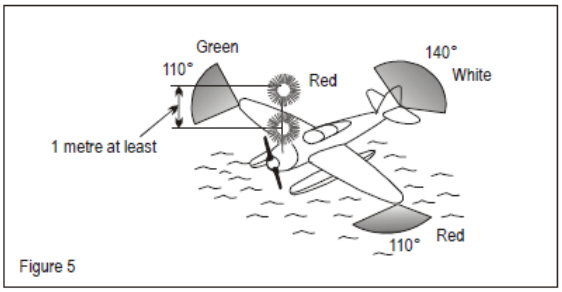


Figure 5

3.7 When at anchor

a) If less than 50 m in length, where it can best be seen, a steady white light (Figure 6), visible all around the horizon at a distance of at least 3.7 km (2 NM).

b) If 50 m or more in length, where they can best be seen, a steady white forward light and a steady white rear light (Figure 7) both visible all around the horizon at a distance of at least 5.6 km (3 NM).

c) If 50 m or more in span a steady white light on each side (Figures 8 and 9) to indicate the maximum span and visible, so far as practicable, all around the horizon at a distance of at least 1.9 km (1 NM).

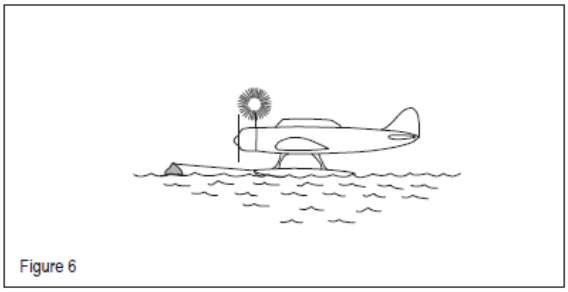


Figure 6

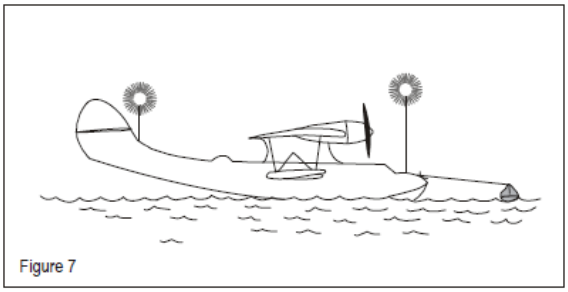
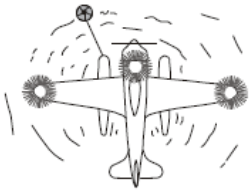
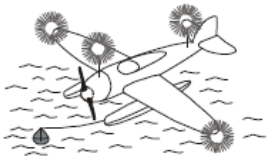


Figure 7



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

Figure 8



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

Figure 9

3.8 When aground

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

APPENDIX 15

CONTROLLED REST ON FLIGHT DECK

1. Background

Controlled rest on the flight deck is an effective fatigue mitigation tool for flight crews and is a way of managing unavoidable excessive tiredness in-flight. This involves the use of short sleep periods (naps) by one pilot, during low workload phase of the cruise segment, whilst seated at the controls of the aircraft, and the other pilot performing duties of PF and PM.

Controlled rest is not a substitute for proper pre-flight sleep or for normal crew augmentation, but intended as a response to unexpected fatigue experienced during operations. Controlled rest is one more element in a fatigue management program and another line of defense to manage fatigue risks.

2. Procedures for Controlled Rest

2.1 Controlled Rest shall be used on a flight sector with a minimum duration of 3 hours.

2.2 Controlled Rest shall not be used as a scheduling tool or a means of deferring duty or extending a flight duty period

2.3 Only one flight crew must take Controlled Rest at the discretion of the PIC and at a time in his/her operating seat.

2.4 Controlled Rest must be used during periods of low workload in cruise flight when weather conditions are benign and weather-related deviation is not required or expected.

2.5 Controlled Rest shall commence after reaching Top of Climb (TOC) and will terminate 30 minutes before planned Top of Descent.

2.6 Controlled Rest shall not be longer than 40 minutes with another 20 minutes for operational orientation before resuming flight deck duties; these 20 minutes may be part of 30 minutes prior to TOD as mentioned in 2.5 above.

2.7 Controlled Rest shall not be used over the flight segments that require the use of decompression escape routes, while manual fuel transfer/fuel balancing is taking place or any other operational requirement wherein a pilot crosscheck is required.

2.8 The PIC should brief on criteria under which rest is to be terminated. Any flight crew depending on the circumstances may terminate the rest at any time.

2.9 Prior to undertaking Controlled Rest, a short period of time shall be allowed for rest preparation (approximately 5 minutes). This should include an operational briefing, completion of tasks in progress, and attention to any physiological needs of either crew member.

2.10 The resting pilot shall keep his seat belt and harnesses fastened and move the seat aft to such a position that unintentional interference with the controls is minimized.

2.11 The non-resting pilot must not leave his seat for any reason, including physiological breaks.

2.12 During Controlled Rest, the non-resting pilot shall keep his seat belt and harness fastened; wear a headset with the cockpit audio speaker adjusted to normal volume.
2.13 The resting pilot may use equipment such as eyeshades, earplugs and neck support.
2.14 On flight sectors longer than 3 hours, subject to the conditions above, flight crew may take more than one rest period.

3. Flight Path Management

3.1 During Controlled Rest, the non-resting pilot must perform the duties of the PF and the PM, be able to exercise control of the aircraft at all times and maintain full situational awareness of his surroundings.
3.2 The autopilot and auto-thrust systems shall be operational.
3.3 LNAV / NAV is the preferred lateral mode during controlled rest.
3.4 FMS / FMGS manipulations must be kept to a minimum.
3.5 Altitude changes are not permitted during controlled rest.
3.6 In the event of any abnormal condition, the non-resting pilot shall immediately awake the resting pilot.
3.7 Any system intervention which would normally require a cross check according to multi crew principles must be avoided until the resting crew member resumes his duties.

4. Flight Deck - Cabin Communication

4.1 The operator must establish procedures to monitor alertness of non-resting flight crew members during controlled rest. The PIC shall inform the Cabin Crew In-Charge of the intention of the flight crew member to take controlled rest, and of the time of the end of that rest.

4.2 The CCIC must establish a frequent check on the flight crew by means of the interphone system. Preferably, and in order not to disturb the resting crew member, the non-resting flight crew member should call the cabin crew approximately every 20 minutes (night) or 30 minutes (day). The CCIC shall call the non-resting flight crew member or shall make a physical check if no communication has been established in the given time.

5. Post Rest Period Management

At the end of a controlled rest period, the non-resting crew member shall conduct a full operational briefing to the flight crew member who was resting, which should include at least the following:

5.1 Route progress, ETAs, estimated and actual FOB figures.
5.2 Aircraft status.
5.3 En-route and terminal weather.
5.4 Operational occurrences during the rest period.

APPENDIX 16

ARTICLE 83 bis AGREEMENT SUMMARY

(Chapter 6, 6.1.5.4, refers)

Note.— Chapter 6, 6.1.5.1, requires a certified true copy of the agreement summary to be carried on board.

1. Purpose and scope

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

2. Article 83 *bis* agreement summary

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

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

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

Notes.—
1. dd/mm/yyyy.
2. dd/mm/yyyy or N/A if not applicable.
3. Square brackets indicate information that needs to be provided.

ATTACHMENT A

SIGNALS FOR USE IN THE EVENT OF INTERCEPTION

Reference to Chapter 3, 3.19

1. Signals initiated by intercepting aircraft and responses by intercepted aircraft

Series	INTERCEPTING Aircraft Signals	Meaning	INTERCEPTED Aircraft Responds	Meaning
1.	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. *Note 1.— Meteorological conditions or terrain may require the intercepting aircraft to reverse the positions and direction of turn given above in Series 1.* *Note 2.— If the intercepted aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of racetrack patterns and to rock the aircraft each time it passes the intercepted aircraft.*	You have been intercepted. Follow me. .	DAY or NIGHT — Rocking aircraft, flashing navigational lights at irregular intervals and following.	Understood, will comply.
2	DAY or NIGHT — An abrupt breakaway manoeuvre 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		Understood, will comply
3.	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 area. In the case of helicopters, the intercepting helicopter makes a landing approach, coming to hover near to the landing area.	Land at this aerodrome		Understood, will comply

2. Signals initiated by intercepted aircraft and responses by intercepting aircraft

Series	INTERCEPTING Aircraft Signals	Meaning	INTERCEPTED Aircraft Responds	Meaning
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 (1 000 ft) but not exceeding 600 m (2 000 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.	Understood
6..	DAY or NIGHT — Irregular flashing of all available lights.	In distress.	DAY or NIGHT — Use Series 2 signals prescribed for intercepting aircraft.	Understood

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ATTACHMENT B.

AUTOMATIC LANDING SYSTEMS, HEAD-UP DISPLAY (HUD) OR EQUIVALENT DISPLAYS AND VISION SYSTEMS

Supplementary to Chapter 4, 4.2.8.1.1, and Chapter 6, 6.24

INTRODUCTION

The material in this attachment provides guidance for certified automatic landing systems, HUD or equivalent displays and vision systems intended for operational use in aeroplanes engaged in international air navigation. These systems and hybrid systems may be installed and operated to reduce workload, improve guidance, reduce flight technical error and enhance situational awareness and/or obtain operational credits. Automatic landing systems, HUD or equivalent displays and vision systems may be installed separately or together as part of a hybrid system. Any operational credit for their use requires a specific approval from the DG, CAAN.

Note 1.— "Vision systems" is a generic term referring to the existing systems designed to provide images, i.e. enhanced vision systems (EVS), synthetic vision systems (SVS) and combined vision systems (CVS).

Note 2.— Operational credit can be granted only within the limits of the airworthiness approval.

Note 3.— Currently, operational credit has been given only to vision systems containing an image sensor providing a real-time image of the actual external scene on the HUD.

Note 4.— More detailed information and guidance on automatic landing systems, HUD or equivalent displays and vision systems is contained in the Manual of All-Weather Operations *(Doc 9365). This manual should be consulted in conjunction with this attachment.*

1. HUD AND EQUIVALENT DISPLAYS

1.1 General

1.1.1 A HUD presents flight information into the pilot's forward external field of view without significantly restricting that external view.

1.1.2 Flight information should be presented on a HUD or an equivalent display, as required for the intended use.

1.2 Operational applications

1.2.1 Flight operations with a HUD can improve situational awareness by combining flight information located on head-down displays with the external view to provide pilots with more immediate awareness of relevant flight parameters and situation information while they continuously view the external scene. This improved situational awareness can also reduce errors in flight operations and improve the pilot's ability to transition between instrument and visual references as meteorological conditions change.

1.2.2 A HUD may be used to supplement conventional flight deck instrumentation or as a primary flight display if certified for this purpose.

1.2.3 An approved HUD may:

a) qualify for operations with reduced visibility or reduced RVR; or

b) replace some parts of the ground facilities such as touchdown zone and/or centre line lights.

1.2.4 The functions of a HUD may be provided by a suitable equivalent display. However, before such systems can be used, the appropriate airworthiness approval should be obtained.

1.3 HUD training

Training and recent experience requirements for operations using HUD or equivalent displays should be established by the State of the Operator. Training programmes should be approved by the State of the Operator and the implementation of the training should be subject to oversight by that State. The training should address all flight operations for which the HUD or equivalent display is used.

2. VISION SYSTEMS

2.1 General

2.1.1 Vision systems can display electronic real-time images of the actual external scene achieved through the use of image sensors, i.e. EVS, or display synthetic images, which are derived from the on-board avionic systems, i.e. SVS. Vision systems can also consist of a combination of these two systems, called combined vision systems (i.e. CVS) . Such a system may display electronic real-time images of the external scene using the EVS component of the system. The information from vision systems may be displayed head-up and/or head-down. Operational credit may be granted to vision systems which are appropriately qualified.

2.1.2 Light emitting diode (LED) lights may not be visible to infrared-based vision systems. Operators of such vision systems will need to acquire information about the LED implementation programmes at aerodromes where they intend to operate. More details about the consequences of LED lights are contained in the *Manual of All-Weather Operations* (Doc 9365).

2.2 Operational applications

2.2.1 Flight operations with EVS allow the pilot to view an image of the external scene obscured by darkness or other visibility restrictions. The use of EVS will also allow acquisition of an image of the external scene earlier than with natural, unaided vision, hence providing for a smoother transition to references by natural vision. The improved acquisition of an image of the external scene may improve situational awareness. It may also qualify for operational credit if the information from the vision system is presented to the pilots in a suitable way and the necessary airworthiness approval and specific approval by the State of the Operator have been obtained for the combined system.

2.2.2 Vision system imagery may also enable pilots to detect other aircraft on the ground, terrain or obstructions on or adjacent to runways or taxiways.

2.3 Operational concepts

2.3.1 Instrument approach operations include an instrument phase and a visual phase. The instrument phase ends at the published MDA/H or DA/H unless a missed approach is initiated. Using the EVS or CVS does not change the applicable MDA/H or DA/H. The continued approach to landing from MDA/H or DA/H will be conducted using visual references. This also applies to operations with vision systems. The difference is that the visual references will be acquired by use of an EVS or CVS, natural vision or the vision system in combination with natural vision (see Figure H-1).

2.3.2 Down to a defined height in the visual segment, typically at or above 30 m (100 ft), the visual references may be acquired solely by means of the vision system. The defined height depends on the airworthiness approval and specific approval by the State of the Operator. Below this height the visual references should be solely based on natural vision. In the most advanced applications, the vision system may be used down to touchdown without the requirement for natural vision acquisition of visual references. This means that such a vision system may be the sole means of acquiring visual references and can be used without natural vision.

2.4 Vision systems training

Training and recent experience requirements should be established by the State of the Operator. Training programmes should be approved by the State of the Operator and the implementation of the training should be subject to oversight by that State. Training should address all flight operations for which the vision system is used.

2.5 Visual references

2.5.1 In principle, the required visual references do not change due to the use of an EVS or CVS, but those references are allowed to be acquired by means of either vision system until a certain height during the approach as described in 2.3.1.

2.5.2 Examples of regulations of requirements are provided in the *Manual of All-Weather Operations* (Doc 9365).

3. HYBRID SYSTEMS

A hybrid system generically means that two or more systems are combined. The hybrid system typically has improved performance compared to each of the component systems, which in turn may qualify for operational credit. The inclusion of more systems in the hybrid system normally enhances the performance of the system. The *Manual of All-Weather Operations* (Doc 9365) contains some examples of hybrid systems.

4. OPERATIONAL CREDITS

4.1 Aerodrome operating minima are expressed in terms of minimum visibility/RVR and MDA/H or DA/H. When aerodrome operating minima are established, the combined capability of the aeroplanes equipment and on-ground infrastructure should be taken into account. Better equipped aeroplanes may be able to operate into lower natural visibility conditions, lower DA/H and/or operate with less ground infrastructure. Operational credit means that the aerodrome operating minima may be reduced in case of suitably equipped aeroplanes. Another way to grant operational credit is to allow visibility requirements to be fulfilled, wholly or partly, by means of the on-board systems. HUD, automatic landing or vision systems, which were not available at the time when the criteria for aerodrome operating minima were originally established.

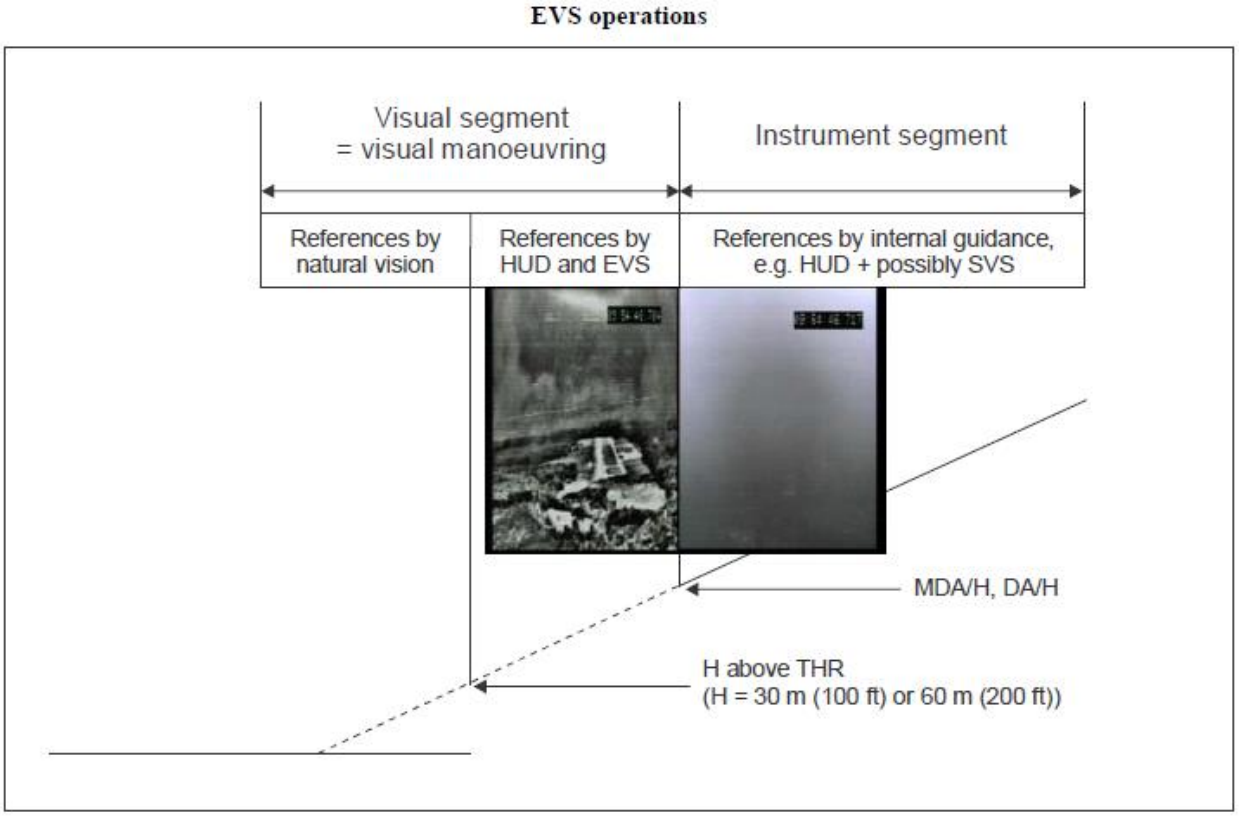


Figure H-1. EVS operations — transition from instrument to visual references

4.2 The granting of operational credits does not affect the classification (i.e. Type or Category) of an instrument approach procedure since they are designed to support instrument approach operations conducted using aeroplanes with the minimum equipment prescribed.

4.3 The relation between the procedure design and the operation can be described as follows. The OCA/H is the end product of the procedure design which does not contain any RVR or visibility values. Based on the OCA/H and all the other elements such as available runway visual aids, the operator will establish MDA/H or DA/H and RVR/visibility, i.e. the aerodrome operating minima. The values derived should not be less than those prescribed by the State of the Aerodrome.

5. OPERATIONAL PROCEDURES

In accordance with Chapter 6, 6.24.2 the operator should develop suitable operational procedures associated with the use of an automatic landing system, a HUD or an equivalent display, vision systems and hybrid systems. These procedures should be included in the operations manual and cover at least the following:

a) limitations;
b) operational credits;
c) flight planning;
d) ground and airborne operations;
e) crew resource management;
f) standard operating procedures; and
g) ATS flight plans and communication.

6. APPROVALS

6.1 General

Note.— When the application for a specific approval relates to operational credits for systems not including a vision system, the guidance on approvals in this attachment may be used to the extent applicable as determined by the State of the Operator.

6.1.1 The operator that wishes to conduct operations with an automatic landing system, a HUD or an equivalent display, a vision system or a hybrid system will need to obtain certain approvals as prescribed in the relevant SARPs. The extent of the approvals will depend on the intended operation and the complexity of the equipment.

6.1.2 Systems that are not used for an operational credit or otherwise critical to the aerodrome operating minima, e.g. vision systems used to enhance situational awareness may be used without a specific approval. However, the standard operating procedures for these systems should be specified in the operations manual. An example of this type of operation may include an EVS or an SVS on a head-down display that is used only for situational awareness of the surrounding area of the aeroplane during ground operations where the display is not in the pilot's primary field of view.

For enhanced situational awareness, the installation and operational procedures need to ensure that the operation of the vision system does not interfere with normal procedures or the operation or use of other aeroplane systems. In some cases, modifications to these normal procedures for other aeroplane systems or equipment may be necessary to ensure compatibility.

6.1.3 The Standard in Chapter 6, 6.24.1, requires that the use of an automatic landing system, a HUD or an equivalent display, EVS, SVS or CVS or any combination of those systems into a hybrid system, should be approved by the State of the Operator when those systems are used "for the safe operation of an aeroplane". When operational credits are granted by the State of the Operator as per the Standard in Chapter 4, 4.2.8.1.1, the use of that system becomes essential for the safety of such operations and is subject to a specific approval. The use of these systems solely for enhanced situational awareness, reduced flight technical error and/or reduced workload is an important safety feature, but does not require a specific approval.

6.1.4 Any operational credit that has been granted should be reflected in the operation specifications for the type or individual aeroplane as applicable.

6.2 Specific approvals for operational credit

6.2.1 To obtain a specific approval for operational credit, the operator will need to specify the desired operational credit and submit a suitable application. The content of a suitable application should include:

a) *Applicant details. The AOC holder's company name, AOC number and email.*

b) *Aircraft details.* Aircraft make(s), model(s) and registration mark(s).

c) *Operator's vision system compliance list.* The contents of the compliance list are included in the *Manual of All-Weather Operations* (Doc 9365). The compliance list should include the information that is relevant to the specific approval requested and the registration marks of the aircraft involved. If more than one type of aircraft/fleet is included in a single application, a completed compliance list should be included for each aircraft/fleet.

d) *Documents to be included with the application.* Copies of all documents to which the operator has made references should be included in the application. There should be no need to send complete manuals; only the relevant sections/pages should be required. Additional guidance material can be found in the *Manual of All-Weather Operations* (Doc 9365).

e) *Name, title and signature.*

6.2.2 The following items should be covered in a vision systems compliance list:

a) reference documents used in compiling the submission for approval;
b) flight manual;
c) feedback and reporting of significant problems;
d) requested operational credit and resulting aerodrome operating minima;

e) operations manual entries including MEL and standard operating procedures;
f) safety risk assessments;
g) training programmes; and
h) continuing airworthiness.

Expanded guidance on these items is contained in the *Manual of All-Weather Operations* (Doc 9365).

ATTACHMENT C.

GUIDANCE FOR OPERATIONS BY TURBINE-ENGINED AEROPLANES BEYOND 60 MINUTES TO AN EN-ROUTE ALTERNATE AERODROME INCLUDING EXTENDED DIVERSION TIME OPERATIONS (EDTO)

(Supplementary to Chapter 4, 4.7)

1. INTRODUCTION

1.1 The purpose of this Attachment is to provide guidance on the general provisions relating to operations by turbine engine aeroplanes beyond 60 minutes' flying time to an en-route alternate aerodrome and extended diversion time operations contained in Chapter 4, 4.7. The guidance will also assist States in establishing a threshold time and approving the maximum diversion time for a given operator with a specific aeroplane type. The provisions in Chapter 4, 4.7, are divided into:

a) the basic provisions that apply to all aeroplanes operating beyond 60 minutes to an en-route alternate aerodrome; and

b) provisions to fly beyond a threshold time, and up to a maximum diversion time, approved by the DG, CAAN, that may be different for each operator/aeroplane type combination.

This Attachment provides guidance on the means of achieving the required level of safety envisaged.

1.2 Similar to the threshold time, the maximum diversion time is the range (expressed in time) from a point on a route to an en-route alternate aerodrome up to which approval has been granted by the DG, CAAN. When approving the operator's maximum diversion time, CAAN will need to consider not only the capable range of the aircraft, taking into consideration any limitation of the aeroplane's type certificate, but also the operator's previous experience on similar aircraft types and routes.

1.3 The material in this Attachment is organized to address guidance on operations beyond 60 minutes to an en-route alternate aerodrome for all aeroplanes with turbine engines (Section 2) and guidance for extended diversion time operations (Section 3). The EDTO section is further divided into general provisions (Section 3.1), provisions that apply to aeroplanes with more than two engines (Section 3.2) and provisions that apply to aeroplanes with two engines (Section 3.3). The sections on aeroplanes with two engines and more than two engines are organized in exactly the same way. It should be noted that these sections may appear to be similar and thus repetitive; however there are requirement differences based on the aeroplane type. The reader should see Sections 2 and 3.1 and then either 3.2 for aeroplanes with more than two engines or 3.3 for aeroplanes with two engines.

2. OPERATIONS BY AEROPLANES WITH TURBINE ENGINES BEYOND 60 MINUTES TO AN EN-ROUTE ALTERNATE AERODROME

2.1 General

2.1.1 All provisions for operations by aeroplanes with turbine engines beyond 60 minutes to an en-route alternate aerodrome also apply to extended diversion time operations (EDTO). Figure C-1 illustrates generically the integration of operations beyond 60 minutes to an en-route alternate aerodrome and EDTO.

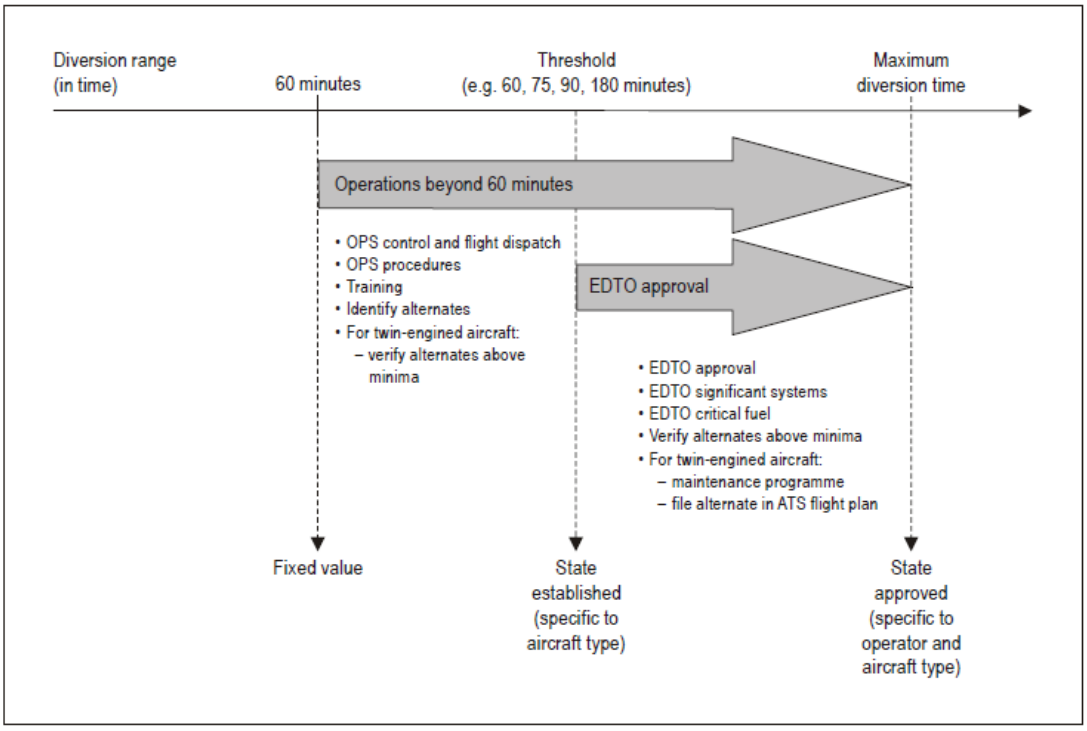


Figure C-1. Generic EDTO graphical representation

2.1.2 In applying the requirements for aeroplanes with turbine engines in Chapter 4, 4.7, it should be understood that:

a) operational control refers to the exercise, by the operator, of responsibility for the initiation, continuation, termination or diversion of a flight;

b) flight dispatch procedures refer to the method of control and supervision of flight operations. This does not imply a specific requirement for licensed flight dispatchers or a full flight following system;

c) operating procedures refer to the specification of organization and methods established to exercise operational control and flight dispatch procedures in the appropriate manual(s) and should cover at least a description of responsibilities concerning the initiation, continuation, termination or diversion of each flight as well as the method of control and supervision of flight operations; and

d) training programme refers to the training for pilots and flight operations officers/flight dispatchers in operations covered by this and following sections.

2.1.3 Aeroplanes with turbine engines operating beyond 60 minutes to an en-route alternate aerodrome are not required to have specific additional approval by the DG, CAAN except if they engage in extended diversion time operations.

2.2 Conditions to be used when converting diversion times to distances

2.2.1 For the purpose of this guidance, an approved one-engine-inoperative (OEI) speed or approved all-engines operative (AEO) speed is any speed within the certified flight envelope of the aeroplane.

2.2.2 *Determination of the 60-minute distance — aeroplanes with two turbine engines*

2.2.2.1 For determining whether a point on the route is beyond 60 minutes to an en-route alternate, the operator should select an approved OEI speed. The distance is calculated from the point of the diversion followed by cruise for 60 minutes, in ISA and still-air conditions, as shown in Figure C-2. For the purposes of computing distances, credit for driftdown may be taken.

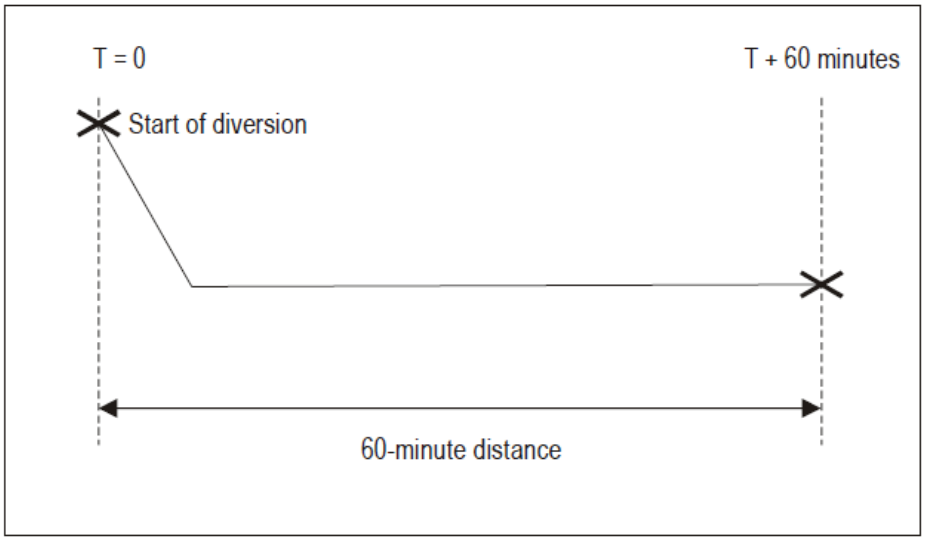


Figure C-2. Sixty-minute distance — aeroplanes with two turbine engines

2.2.3 *Determination of the 60-minute distance — aeroplanes with more than two turbine engines*

2.2.3.1 For determining whether a point on the route is beyond 60 minutes to an en-route alternate, the operator should select an approved AEO speed. The distance is calculated from the point of the diversion followed by cruise for 60 minutes, in ISA and still-air conditions, as shown in Figure C-3.

2.3 Training

2.3.1 Training programmes should ensure that the requirements of Chapter 9, 9.4.3.2, are complied with such as, but not limited to, route qualification, flight preparation, concept of extended diversion time operations and criteria for diversions.

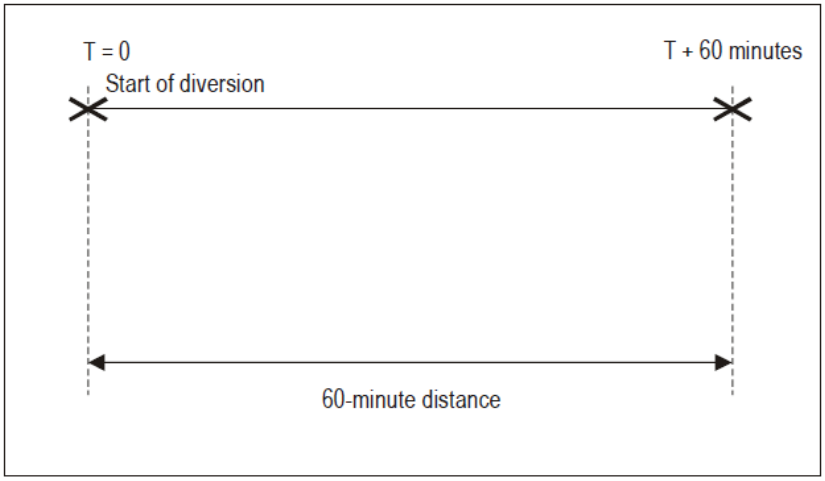


Figure C-3. Sixty-minute distance — aeroplanes with more than two turbine engines

2.4 Flight dispatch and operational requirements

2.4.1 In applying the general flight dispatch requirements of Chapter 4 particular attention should be paid to the conditions which might prevail any time that the operation is beyond 60 minutes to an en-route alternate aerodrome, e.g. systems degradation and reduced flight altitude.

For compliance with the requirement of Chapter 4, 4.7, at least the following aspects should be considered:

a) identify en-route alternate aerodromes;

b) ensure that, prior to departure, the flight crew is provided with the most up-to-date information on the identified enroute alternate aerodromes, including operational status and meteorological conditions and, in flight, make available means for the flight crew to obtain the most up-to-date weather information;

c) methods to enable two-way communications between the aeroplane and the operator's operational control centre;

d) ensure that the operator has a means to monitor conditions along the planned route including the identified alternate aerodromes and ensure that procedures are in place so that the flight crew are advised of any situation that may affect the safety of flight;

e) ensure that the intended route does not exceed the established aeroplane threshold time unless the operator is approved for EDTO operations;

f) pre-flight system serviceability including the status of items in the minimum equipment list;

g) communication and navigation facilities and capabilities;

h) fuel requirements; and

i) availability of relevant performance information for the identified en-route alternate aerodrome(s).

2.4.2 In addition, operations conducted by aeroplanes with two turbine engines require that, prior to departure and in flight, the meteorological conditions at identified en-route alternate aerodromes will be at or above the aerodrome operating minima required for the operation during the estimated time of use.

2.5 En-route alternate aerodromes

2.5.1 Aerodrome(s) to which an aircraft may proceed in the event that a diversion becomes necessary while en route, where the necessary services and facilities are available, where aircraft performance requirements can be met, and which are expected to be operational if required, need to be identified any time that the operation is beyond 60 minutes to an en-route alternate aerodrome.

Note.— En-route alternate aerodromes may also be the take-off and/or destination aerodromes.

3. EXTENDED DIVERSION TIME OPERATIONS (EDTO) REQUIREMENTS

3.1 Basic concept

3.1.1 In addition to the provisions in Section 2, this section addresses the provisions that apply to operations by aeroplanes 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 (extended diversion time operations).

3.1.2 *EDTO significant systems*

3.1.2.1 EDTO significant systems may be the aeroplane propulsion system and any other aeroplane systems whose failure or malfunctioning could adversely affect safety particular to an EDTO flight, or whose functioning is specifically important to continued safe flight and landing during an aeroplane EDTO diversion.

3.1.2.2 Many of the aeroplane systems that are essential for non-extended diversion time operations may need to be reconsidered to ensure that the redundancy level and/or reliability will be adequate to support the conduct of safe extended diversion time operations.

3.1.2.3 The maximum diversion time should not exceed the value of the EDTO significant system limitation(s), if any, for extended diversion time operations identified in the aeroplane flight manual, directly or by reference, reduced by an operational safety margin, commonly 15 minutes, specified by the CAAN.

3.1.2.4 The specific safety risk assessment to approve operations beyond the time limits of an EDTO significant time limited system per the provisions in Chapter 4, 4.7.2.3.1, should be based on the safety risk management guidance contained in the *Safety Management Manual (SMM)* (Doc 9859). Hazards should be identified and safety risks assessed according to predicted probability and the severity of the consequences based on the worst foreseeable situation. When addressing the following components of the specific safety risk assessment it should be understood that:

a) capabilities of the operator refer to the operator's quantifiable in-service experience, compliance record, aeroplane capability and overall operational reliability that:

1) are sufficient to support operations beyond the time limits of an EDTO significant time-limited system;

2) demonstrate the ability of the operator to monitor and respond to changes in a timely manner; and

3) there is an expectation that the operator's established processes, necessary for successful and reliable extended diversion time operations, can be successfully applied to such operations;

b) overall reliability of the aeroplane refers to:

1) quantifiable standards of reliability taking into account the number of engines, aircraft EDTO significant systems and any other factors that may affect operations beyond the time limits of a particular EDTO significant time-limited system; and

2) relevant data from the aeroplane manufacturer and data from the operator reliability programme used as a basis to determine overall reliability of the aeroplane and its EDTO significant systems;

c) reliability of each time-limited system refers to quantifiable standards of design, testing and monitoring that ensure the reliability of each particular EDTO significant time-limited system;

d) relevant information from the aeroplane manufacturer refers to technical data and characteristics of the aeroplane and worldwide fleet operational data provided by the manufacturer and used as a basis to determine overall reliability of the aeroplane and its EDTO significant systems; and

e) specific mitigation measures refer to the safety risk management mitigation strategies, which have manufacturer concurrence, that ensure an equivalent level of safety is maintained.

These specific mitigations shall be based on:

1) technical expertise (e.g. data, evidence) proving the operator's eligibility for an approval of operations beyond the time limit of the relevant EDTO significant system; and

2) an assessment of relevant hazards, their probability and the severity of the consequences that may adversely impact the safety of the operation of an aeroplane operated beyond the limit of a particular EDTO significant time-limited system.

3.1.3 *Threshold time*

3.1.3.1 It should be understood that the threshold time established in accordance with Chapter 4, 4.7, is not an operating limit. It is a flight time to an en-route alternate aerodrome, which is established by the CAAN as being the EDTO threshold beyond which particular consideration should be given to the aeroplane capability as well as the operator's relevant operational experience, before granting an EDTO approval.

3.1.4 *Maximum diversion time*

3.1.4.1 It should be understood that the maximum diversion time approved in accordance with Chapter 4, 4.7, should take into consideration the most limiting EDTO significant system time limitation, if any, indicated in the aeroplane flight manual (directly or by reference) for a particular aeroplane type and the operator's operational and EDTO experience, if any, with the aeroplane type or, if relevant, with another aeroplane type or model.

3.2 EDTO for aeroplanes with more than two turbine engines

3.2.1 *General*

3.2.1.1 In addition to the provisions in Sections 2 and 3.1 of this Attachment, this section addresses the provisions that apply in particular to aeroplanes with more than two turbine engines (see Figure C-4).

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

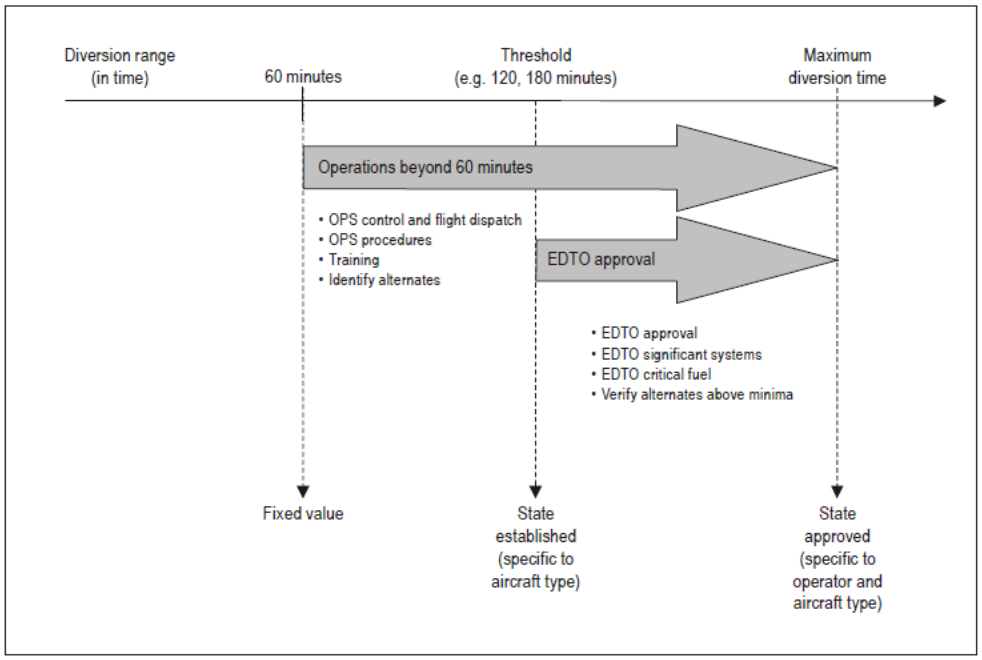


Figure C-4. Generic EDTO graphical representation for aeroplanes with more than two turbine engines

3.2.2 *Operational and diversion planning principles*

3.2.2.1 When planning or conducting extended diversion time operations, the operator and pilot-in-command should ensure that:

a) the minimum equipment list, the communications and navigation facilities, fuel and oil supply, en-route alternate aerodromes and aeroplane performance are appropriately considered;

b) if no more than one engine is shut down, the pilot-in-command may elect to continue beyond the nearest en-route alternate aerodrome (in terms of time) if the pilot-in-command determines that it is safe to do so. In making this decision the pilot-in-command should consider all relevant factors; and

c) in the event of a single or multiple failure of an EDTO significant system or systems (excluding engine failure), the aircraft can proceed to and land at the nearest available en-route alternate aerodrome where a safe landing can be made unless it has been determined that no substantial degradation of safety will result from any decision made to continue the planned flight.

3.2.2.2 EDTO critical fuel

3.2.2.2.1 An aeroplane with more than two engines engaged in EDTO operations should carry enough fuel to fly to an en-route alternate aerodrome as described in 3.2.6. This EDTO critical fuel corresponds to the additional fuel that may be required to comply with Chapter 4, 4.3.6.3 f) 2).

3.2.2.2.2 The following should be considered, using the anticipated mass of the aeroplane, in determining the corresponding EDTO critical fuel:

a) fuel sufficient to fly to an en-route alternate aerodrome, considering at the most critical point of the route, simultaneous engine failure and depressurization or depressurization alone, whichever is more limiting;

1) the speed selected for the diversions (i.e. depressurization, combined or not with an engine failure) may be different from the approved AEO speed used to determine the EDTO threshold and maximum diversion distance (see 3.2.8);

b) fuel to account for icing;

c) fuel to account for errors in wind forecasting;

d) fuel to account for holding an instrument approach and landing at the en-route alternate aerodrome;

e) fuel to account for deterioration in cruise fuel-burn performance; and

f) fuel to account for APU use (if required).

Note.— Guidance on EDTO critical fuel planning can be found in the Flight Planning and Fuel Management Manual *(Doc 9976).*

3.2.2.3 The following factors may be considered in determining if a landing at a given aerodrome is the more appropriate course of action:

a) aeroplane configuration, mass, systems status and fuel remaining;

b) wind and weather conditions en route at the diversion altitude, minimum altitudes en route and fuel consumption to the en-route alternate aerodrome;

c) runways available, runway surface condition and weather, wind and terrain in the proximity of the en-route alternate aerodrome;

d) instrument approaches and approach/runway lighting available and rescue and fire fighting services (RFFS) at the en-route alternate aerodrome;

e) the pilot's familiarity with that aerodrome and information about that aerodrome provided to the pilot by the operator; and

f) facilities for passenger and crew disembarkation and accommodation.

3.2.3 *Threshold time*

3.2.3.1 In establishing the appropriate threshold time and to maintain the required level of safety, it is necessary for States to consider that:

a) the airworthiness certification of the aeroplane type does not restrict operations beyond the threshold time, taking into account the aeroplane system design and reliability aspects;

b) specific flight dispatch requirements are met;

c) necessary in-flight operational procedures are established; and

d) the operator's previous experience on similar aircraft types and routes is satisfactory.

3.2.3.2 For determining whether a point on a route is beyond the EDTO threshold to an en-route alternate aerodrome, the operator should use the approved speed as described in 3.2.8.

3.2.4 *Maximum diversion time*

3.2.4.1 In approving the maximum diversion time, the State of the Operator should take into consideration the aeroplane's EDTO significant systems (e.g. limiting time limitation, if any, and relevant to that particular operation) for a particular aeroplane type and the operator's operational and EDTO experience with the aeroplane type or, if relevant, with another aeroplane type or model.

3.2.4.2 For determining the maximum diversion distance to an en-route alternate, the operator should use the approved speed as described in 3.2.8.

3.2.4.3 The operator's approved maximum diversion time should not exceed the most limiting EDTO significant system time limitation identified in the aeroplane flight manual, reduced by an operational safety margin, commonly 15 minutes, specified by the State of the Operator.

3.2.5 *EDTO significant systems*

3.2.5.1 In addition to the provisions in 3.1.1, this section addresses particular provisions for aeroplanes with more than two turbine engines.

3.2.5.2 Consideration of time limitations

3.2.5.2.1 For all operations beyond the EDTO threshold as determined by the DG, CAAN, the operator should consider, at time of dispatch and as outlined below, 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.

3.2.5.2.2 The operator should check that from any point on the route, the maximum diversion time does not exceed the most limiting EDTO significant system time limitation, reduced by an operational safety margin, commonly 15 minutes, specified by the CAAN.

3.2.5.2.3 The maximum diversion time subject to cargo fire suppression time limitations are considered part of the most limiting EDTO significant time limitations in 3.3.5.2.2.

3.2.5.2.4 For that purpose, the operator should consider the approved speed as described in 3.2.8.2 or consider adjusting that speed with forecast wind and temperature conditions for operations with longer threshold times (e.g. beyond 180 minutes) as determined by the CAAN.

3.2.6 *En-route alternate aerodromes*

3.2.6.1 In addition to the en-route alternate aerodrome provisions described in 2.5 the following apply:

a) for route planning purposes, identified en-route alternate aerodromes, which could be used if necessary, need to be located at a distance within the maximum diversion time from the route; and

b) in extended diversion time operations, before an aeroplane crosses its threshold time during flight, there should always be an en-route alternate aerodrome within the approved maximum diversion time whose conditions will be at or above the operator's established aerodrome operating minima for the operation during the estimated time of use. If any conditions, such as weather below landing minima, are identified that would preclude a safe approach and landing at that aerodrome during the estimated time of use, an alternative course of action should be determined such as selecting another en-route alternate aerodrome within the operator's approved maximum diversion time.

Note.— En route alternate aerodromes may also be the take-off and/or destination aerodromes.

3.2.7 *Operational approval procedure*

3.2.7.1 In approving the operator with a particular aeroplane type for extended diversion time operations, the State of the Operator should establish an appropriate threshold time and maximum diversion time and, in addition to the requirements previously set forth in this Attachment, ensure that:

a) specific operational approval is granted (by the State of the Operator);

b) the operator's past experience and compliance record is satisfactory and the operator has established the processes necessary for successful and reliable extended diversion time operations and shown that such processes can be successfully applied throughout such operations;

c) the operator's procedures are acceptable based on certified aeroplane capability and adequate to address continued safe operation in the event of degraded aeroplane systems;

d) the operator's crew training programme is adequate for the proposed operation;

e) documentation accompanying the authorization covers all relevant aspects; and

f) it has been shown (e.g. during the EDTO certification of the aeroplane) that the flight can continue to a safe landing under the anticipated degraded operating conditions which would arise from:

1) the most limiting EDTO significant system time limitation, if any, for extended diversion time operations identified in the aeroplane flight manual, directly or by reference; or

2) any other condition which the DG, CAAN considers to be equivalent in airworthiness and performance risk.

3.2.8 *Conditions to be used when converting diversion times to distances for the determination of the geographical area beyond threshold and within maximum diversion distances*

3.2.8.1 For the purpose of this guidance, an approved AEO speed is any all-engines-operative speed within the certified flight envelope of the aeroplane.

Note.— See 3.2.5.2.2 for operational considerations.

3.2.8.2 When applying for EDTO the operator should identify, and the approval shall be required from the DG, CAAN, the AEO speed(s), considering ISA and still-air conditions, that will be used to calculate the threshold and maximum diversion distances. The speed that will be used to calculate the maximum diversion distance may be different from the speed used to determine the 60-minute and EDTO thresholds.

3.2.8.3 Determination of the EDTO threshold

3.2.8.3.1 For determining whether a point on the route is beyond the EDTO threshold to an en-route alternate, the operator should use the approved speed (see 3.2.8.1 and 3.2.8.2). The distance is calculated from the point of the diversion followed by cruise for the threshold time as determined by the CAAN and shown in Figure C-5.

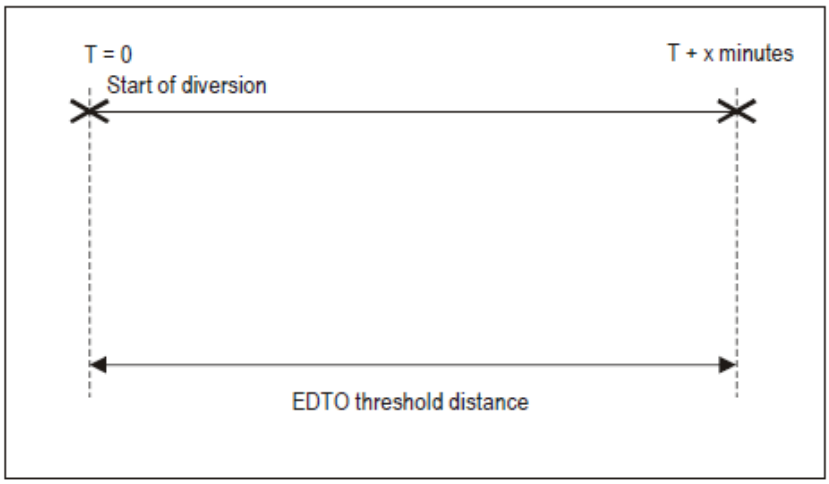


Figure C-5. Threshold distance — aeroplanes with more than two turbine engines

3.2.8.4 Determination of the maximum diversion time distance

3.2.8.4.1 For determining the maximum diversion time distance to an en-route alternate, the operator should use the approved speed (see 3.2.8.1 and 3.2.8.2). The distance is calculated from the point of the diversion followed by cruise for the maximum diversion time as approved by the DG, CAAN and shown in Figure C-6.

3.2.9 *Airworthiness certification requirements for extended diversion time operations beyond the threshold time*

3.2.9.1 There are no additional EDTO airworthiness certification requirements for aeroplanes with more than two engines.

3.2.10 *Maintaining operational approval*

3.2.10.1 In order to maintain the required level of safety on routes where these aeroplanes are permitted to operate beyond the established threshold time, it is necessary that:

a) specific flight dispatch requirements are met;

b) the necessary in-flight operational procedures are established; and

c) specific operational approval is granted by the State of the Operator.

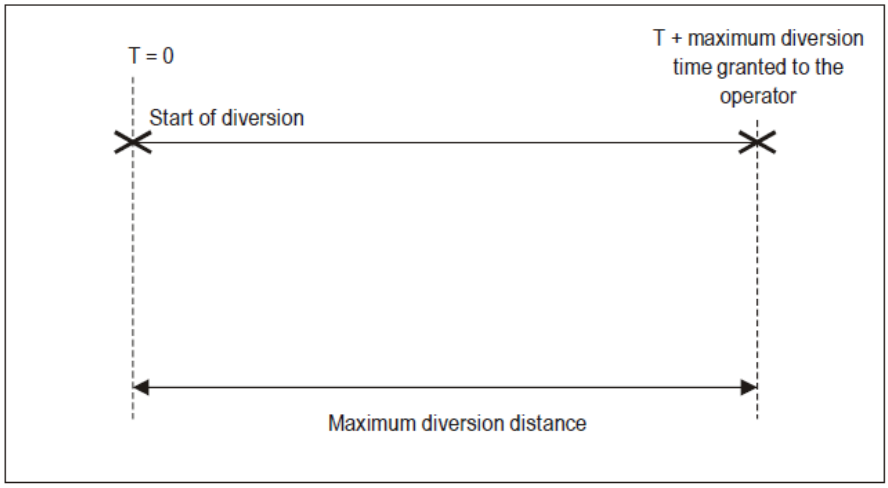


Figure C-6. Maximum diversion distance — aeroplanes with more than two turbine engines

3.2.11 *Airworthiness modifications and maintenance programme requirements*

3.2.11.1 There are no additional EDTO airworthiness or maintenance requirements for aeroplanes with more than two engines.

3.2.12 *Examples*

For some examples, refer to Attachment C **GUIDANCE FOR OPERATIONS BY TURBINE-ENGINED AEROPLANES BEYOND 60 MINUTES TO AN EN-ROUTE ALTERNATE AERODROME INCLUDING EXTENDED DIVERSION TIME OPERATIONS (EDTO)** of ICAO Annex 6, part I para 3.2.12.

3.3 EDTO for aeroplanes with two turbine engines

3.3.1 *General*

3.3.1.1 In addition to the provisions in Sections 2 and 3.1, this section addresses the provisions that apply in particular to aeroplanes with two turbine engines (see Figure C-7).

3.3.1.2 EDTO provisions for aeroplanes with two turbine engines do not differ from the previous provisions for extended range operations by aeroplanes with two turbine engines (ETOPS). Therefore, EDTO may be referred to as ETOPS in some documents.

3.3.2 *Operational and diversion planning principles*

3.3.2.1 When planning or conducting extended diversion time operations, the operator and pilot-in-command should normally ensure that:

a) the minimum equipment list, the communications and navigation facilities, fuel and oil supply, en-route alternate aerodromes or aeroplane performance are appropriately considered;

b) in the event of an aeroplane engine shutdown, the aircraft can proceed to and land at the nearest (in terms of the least flying time) en-route alternate aerodrome where a safe landing can be made; and

c) in the event of a single or multiple failure of an EDTO significant system or systems (excluding engine failure), the aircraft can proceed to and land at the nearest available en-route alternate aerodrome where a safe landing can be made unless it has been determined that no substantial degradation of safety will result from any decision made to continue the planned flight.

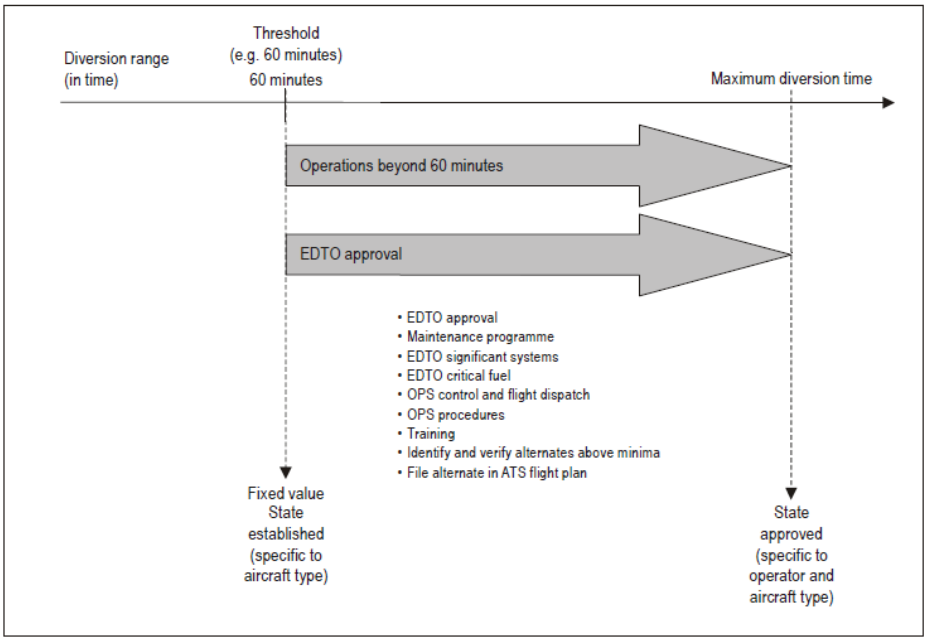


Figure C-7. Generic EDTO graphical representation for aeroplanes with two turbine engines

3.3.2.2 EDTO critical fuel

3.3.2.2.1 An aeroplane with two engines engaged in EDTO operations should carry enough fuel to fly to an en-route alternate aerodrome as described in 3.3.6. This EDTO critical fuel corresponds to the additional fuel that may be required to comply with Chapter 4, 4.3.6.3 f) 2).

3.3.2.2.2 The following should be considered, using the anticipated mass of the aeroplane, in determining the corresponding EDTO critical fuel:

a) fuel sufficient to fly to an en-route alternate aerodrome, considering at the most critical point of the route, failure of one engine or simultaneous engine failure and depressurization or depressurization alone, whichever is more limiting;

1) the speed selected for the all-engines-operative diversion (i.e. depressurization alone) may be different from the approved OEI speed used to determine the EDTO threshold and maximum diversion distance (see 3.3.8);

2) the speed selected for the OEI diversions (i.e. engine failure alone and combined engine failure and depressurization) should be the approved OEI speed used to determine the EDTO threshold and maximum diversion distance (see 3.3.8);

b) fuel to account for icing;

c) fuel to account for errors in wind forecasting;

d) fuel to account for holding an instrument approach and landing at the en-route alternate aerodrome;

e) fuel to account for deterioration in cruise fuel-burn performance; and

f) fuel to account for APU use (if required).

Note.— Guidance on EDTO critical fuel planning can be found in the Flight Planning and Fuel Management Manual *(Doc 9976).*

3.3.2.3 The following factors may be considered in determining if a landing at a given aerodrome is the more appropriate course of action:

a) aeroplane configuration, mass, systems status and fuel remaining;

b) wind and weather conditions en route at the diversion altitude, minimum altitudes en route and fuel consumption to the en-route alternate aerodrome;

c) runways available, runway surface condition and weather, wind and terrain in the proximity of the en-route alternate aerodrome;

d) instrument approaches and approach/runway lighting available and rescue and fire fighting services (RFFS) at the en-route alternate aerodrome;

e) the pilot's familiarity with that aerodrome and information about that aerodrome provided to the pilot by the operator; and

f) facilities for passenger and crew disembarkation and accommodation.

3.3.3 *Threshold time*

3.3.3.1 In establishing the appropriate threshold time and to maintain the required level of safety, it is necessary for States to consider that:

a) the airworthiness certification of the aeroplane type specifically permits operations beyond the threshold time, taking into account the aeroplane system design and reliability aspects;

b) the reliability of the propulsion system is such that the risk of double engine failure from independent causes is extremely remote;

c) any necessary special maintenance requirements are fulfilled;

d) specific flight dispatch requirements are met;

e) necessary in-flight operational procedures are established; and

f) the operator's previous experience on similar aircraft types and routes is satisfactory.

3.3.3.2 For determining whether a point on a route is beyond the EDTO threshold to an en-route alternate aerodrome, the operator should use the approved speed as described in 3.3.8.

3.3.4 *Maximum diversion time*

3.3.4.1 In approving the maximum diversion time, the State of the Operator should take into consideration the EDTO certified capability of the aeroplane, the aeroplane's EDTO significant systems (e.g. limiting time limitation, if any, and relevant to that particular operation) for a particular aeroplane type and the operator's operational and EDTO experience with the aeroplane type or, if relevant, with another aeroplane type or model.

3.3.4.2 For determining the maximum diversion distance to an en-route alternate, the operator should use the approved speed as described in 3.3.8.

3.3.4.3 The operator's approved maximum diversion time should not exceed the EDTO certified capability of the aeroplane or the most limiting EDTO significant system time limitation identified in the aeroplane flight manual, reduced by an operational safety margin, commonly 15 minutes, specified by the State of the Operator.

3.3.5 *EDTO significant systems*

3.3.5.1 In addition to the provisions in 3.1.1, this section addresses particular provisions for aeroplanes with two turbine engines.

3.3.5.1.1 The reliability of the propulsion system for the aeroplane/engine combination being certified is such that the risk of double engine failure from independent causes is assessed as provided for in the *Airworthiness Manual* (Doc 9760) and found acceptable to support the diversion time being approved.

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

3.3.5.2 Consideration of time limitations

3.3.5.2.1 For all operations beyond the EDTO threshold, as determined by the State of the Operator, the operator should consider, at time of dispatch and as outlined below, the EDTO certified capability of the aeroplane and 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.

3.3.5.2.2 The operator should check that from any point on the route, the maximum diversion time at the approved speed as described in 3.3.8.2 does not exceed the most limiting EDTO significant system time limitation, other than the cargo fire suppression system, reduced by an operational safety margin, commonly 15 minutes, specified by the State of the Operator.

3.3.5.2.3 The operator should check that from any point on the route, the maximum diversion time at all-engines operating cruise speed, considering ISA and still-air conditions, does not exceed the cargo fire suppression system time limitation, reduced by an operational safety margin, commonly 15 minutes, specified by the State of the Operator.

3.3.5.2.4 The operator should consider the approved speed as described in 3.3.5.2.2 and 3.3.5.2.3 or consider adjusting that speed with forecast wind and temperature conditions for operations with longer threshold times (e.g. beyond 180 minutes) as determined by the State of the Operator.

3.3.6 *En-route alternate aerodromes*

3.3.6.1 In addition to the en-route alternate aerodrome provisions described in 2.5, the following apply:

a) for route planning purposes, identified en-route alternate aerodromes, which could be used if necessary, need to be located at a distance within the maximum diversion time from the route; and

b) in extended diversion time operations, before an aeroplane crosses its threshold time during flight, there should always be an en-route alternate aerodrome within the approved maximum diversion time whose conditions will be at or above the operator's established aerodrome operating minima for the operation during the estimated time of use.

If any conditions, such as weather below landing minima, are identified that would preclude a safe approach and landing at that aerodrome during the estimated time of use, an alternative course of action should be determined such as selecting another en-route alternate aerodrome within the operator's approved maximum diversion time.

3.3.6.2 During flight preparation and throughout the flight the most up-to-date information on the identified en-route alternate aerodromes, including operational status and meteorological conditions, should be provided to the flight crew.

Note.— En route alternate aerodromes may also be the take-off and/or destination aerodromes.

3.3.7 *Operational approval procedure*

3.3.7.1 In approving the operator with a particular aeroplane type for extended diversion time operations, the State of the Operator should establish an appropriate threshold time and approve a maximum diversion time and, in addition to the requirements previously set forth in this Attachment, ensure that:

a) specific operational approval is granted (by the State of the Operator);

b) the operator's past experience and compliance record is satisfactory and the operator has established the processes necessary for successful and reliable extended diversion time operations and shown that such processes can be successfully applied throughout such operations;

c) the operator's procedures are acceptable based on certified aeroplane capability and adequate to address continued safe operation in the event of degraded aeroplane systems;

d) the operator's crew training programme is adequate for the proposed operation;

e) documentation accompanying the authorization covers all relevant aspects; and

f) it has been shown (e.g. during the EDTO certification of the aeroplane) that the flight can continue to a safe landing under the anticipated degraded operating conditions which would arise from:

1) the most limiting EDTO significant system time limitation, if any, for extended diversion time operations identified in the aeroplane flight manual, directly or by reference; or

2) total loss of engine-generated electric power; or

3) total loss of thrust from one engine; or

4) any other condition which the State of the Operator considers to be equivalent in airworthiness and performance risk.

3.3.8 *Conditions to be used when converting diversion times to distances for the determination of the geographical area beyond threshold and within maximum diversion distances*

3.3.8.1 For the purpose of this guidance, an approved OEI speed is any one-engine-inoperative speed within the certified flight envelope of the aeroplane.

Note.— See 3.3.5.2.2 for operational considerations.

3.3.8.2 When applying for EDTO the operator should identify, and the State of the Operator should approve, the OEI speed(s), considering ISA and still-air conditions, that will be used to calculate the threshold and maximum diversion distances. The identified speed that will be used to calculate the maximum diversion distance should be the same one used to determine fuel reserves for OEI diversions. This speed may be different from the speed used to determine the 60-minute and EDTO thresholds.

3.3.8.3 Determination of the EDTO threshold

3.3.8.3.1 For determining whether a point on the route is beyond the EDTO threshold to an en-route alternate, the operator should use the approved speed (see 3.3.8.1 and 3.3.8.2). The distance is calculated from the point of the diversion followed by cruise for the threshold time as determined by the State of the Operator and shown in Figure C-8. For the purposes of computing distances, credit for drift-down may be taken.

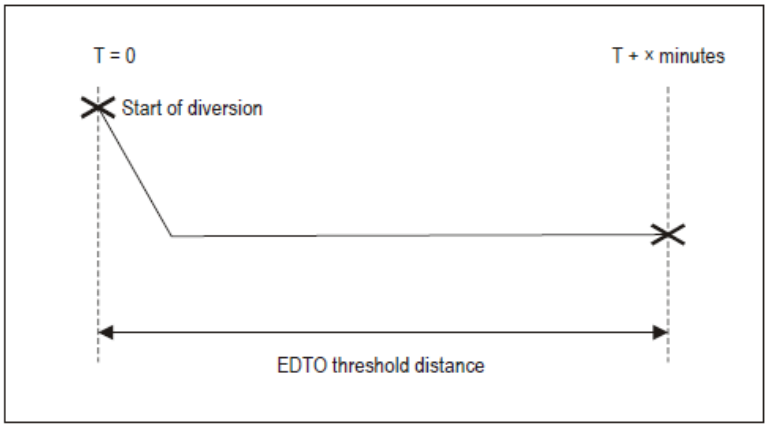


Figure C-8. Threshold distance — aeroplanes with two turbine engines

3.3.8.4 Determination of the maximum diversion time distance

3.3.8.4.1 For determining the maximum diversion time distance to an en-route alternate, the operator should use the approved speed (see 3.3.8.1 and 3.3.8.2). The distance is calculated from the point of the diversion followed by cruise for the maximum diversion time as approved by the State of the Operator and shown in Figure C-9. For the purposes of computing distances, credit for drift-down may be taken.

3.3.9 *Airworthiness certification requirements for extended diversion time operations beyond the threshold time*

3.3.9.1 During the airworthiness certification procedure for an aeroplane type intended for extended diversion time operations, special attention should be paid to ensure that the required level of safety will be maintained under conditions which may be encountered during such operations, e.g. flight for extended periods following failure of an engine and/or the aeroplane's EDTO significant systems. Information or procedures specifically related to extended diversion time operations should be incorporated into the aeroplane flight manual, the maintenance manual, the EDTO configuration, maintenance and procedure (CMP) document or other appropriate document.

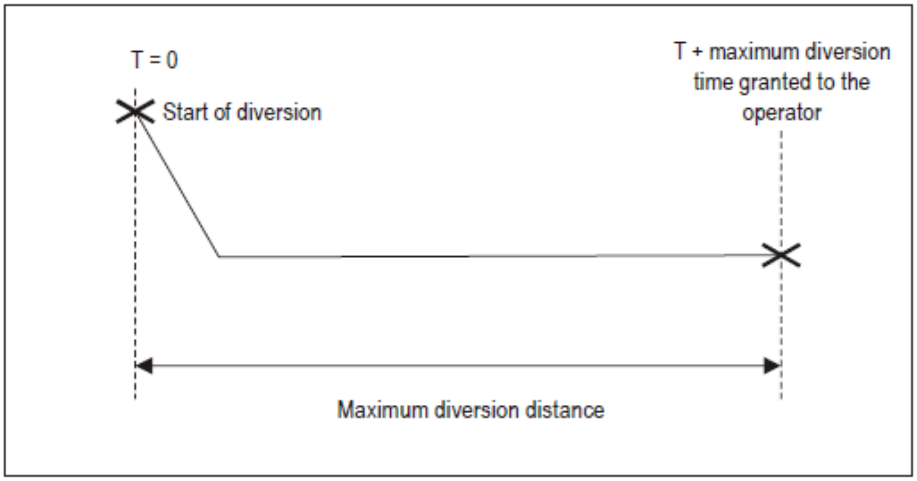


Figure C-9. Maximum diversion distance — aeroplanes with two turbine engines

3.3.9.2 Aeroplane manufacturers should supply data specifying the aeroplane's EDTO significant systems and, where appropriate, any time-limiting factors associated with those systems.

Note 1.— Criteria on aeroplane system performance and reliability for extended diversion time operations are contained in the Airworthiness Manual *(Doc 9760).*

Note 2.— EDTO may be referred to as ETOPS in some documents.

3.3.10 *Maintaining operational approval*

3.3.10.1 In order to maintain the required level of safety on routes where these aeroplanes are permitted to operate beyond the established threshold time, it is necessary that:

a) the airworthiness certification of the aeroplane type specifically permits operations beyond the threshold time, taking into account the aeroplane's system design and reliability aspects;

b) the reliability of the propulsion system is such that the risk of double engine failure from independent causes is extremely remote, assessed as provided for in the *Airworthiness Manual* (Doc 9760) and found acceptable to support the diversion time being approved;

c) any special maintenance requirements are fulfilled;

d) specific flight dispatch requirements are met;

e) the necessary in-flight operational procedures are established; and

f) specific operational approval is granted by the State of the Operator.

Note 1.— The airworthiness considerations applicable to extended diversion time operations are provided in the Airworthiness Manual *(Doc 9760), Part IV, Chapter 5.*

Note 2.— EDTO may be referred to as ETOPS in some documents.

3.3.11 *Airworthiness modifications and maintenance programme requirements*

3.3.11.1 Each operator's maintenance programme should ensure that:

a) the titles and numbers of all airworthiness modifications, additions and changes which were made to qualify aeroplane systems for extended diversion time operations are provided to the State of Registry and, where applicable, to the State of the Operator;

b) any changes to maintenance and training procedures, practices or limitations established in the qualification for extended diversion time operations are submitted to the State of the Operator and, where applicable, to the State of Registry before such changes are adopted;

c) a reliability monitoring and reporting programme is developed and implemented prior to approval and continued after approval;

d) prompt implementation of required modifications and inspections which could affect propulsion system reliability is undertaken;

e) procedures are established which prevent an aeroplane from being dispatched for an extended diversion time operation after engine shutdown or EDTO significant system failure on a previous flight until the cause of such failure has been positively identified and the necessary corrective action has been completed. Confirmation that such corrective action has been effective may, in some cases, require the successful completion of a subsequent flight prior to dispatch on an extended diversion time operation;

f) a procedure is established to ensure that the airborne equipment will continue to be maintained at the level of performance and reliability required for extended diversion time operations; and

g) a procedure is established to minimize scheduled or unscheduled maintenance during the same maintenance visit on more than one parallel or similar EDTO significant system. Minimization can be accomplished by staggering maintenance tasks, performing and/or supervising maintenance by a different technician, or verifying maintenance correction actions prior to the aeroplane entering an EDTO threshold.

Note.— The maintenance considerations applicable to extended diversion time operations are provided in the Airworthiness Manual *(Doc 9760).*

3.3.12 *Examples*

For some examples, refer to Attachment C **GUIDANCE FOR OPERATIONS BY TURBINE-ENGINED AEROPLANES BEYOND 60 MINUTES TO AN EN-ROUTE ALTERNATE AERODROME INCLUDING EXTENDED DIVERSION TIME OPERATIONS (EDTO)** of ICAO Annex 6, part I para 3.3.12.

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ATTACHMENT D

LIST OF FLIGHT OPERATIONS MANDATORY OCCURENCE REPORTS

(Refer to FOR (A) Chapter 3, para 3.3.7 and CAA Nepal Guidance on Occurrence Reporting. Occurrence Reporting form is available in NCAR chapter C9)

(1) (a) Risk of collision with an aircraft, terrain or other object or an unsafe situation when avoidance action would have been appropriate.

(b) An avoidance manoeuvre required to avoid a collision with an aircraft, terrain or other object.

(c) An avoidance manoeuvre to avoid other unsafe situations.

(2) Take-off or landing incidents, including precautionary or forced landings. Incidents such as under-shooting, overrunning or running off the side of runways. Take-offs, rejected take-offs, landings or attempted landings on a closed, occupied or incorrect runway. Runway incursions.

(3) Inability to achieve predicted performance during take-off or initial climb.

(4) Critically low fuel quantity or inability to transfer fuel or use total quantity of usable fuel.

(5) Loss of control (including partial or temporary loss of control) from any cause.

(6) Occurrences close to or above V_1 resulting from or producing a hazardous or potentially hazardous situation (e.g. rejected take-off, tail strike, engine power loss etc.).

(7) Go-around producing a hazardous or potentially hazardous situation.

(8) Unintentional significant deviation from airspeed, intended track or altitude. (more than 91 m (300 ft.)) from any cause.

(9) Descent below decision height/altitude or minimum descent height/altitude without the required visual reference.

(10) Loss of position awareness relative to actual position or to other aircraft.

(11) Breakdown in communication between flight crew (CRM) or between Flight crew and other parties (cabin crew, ATC, engineering).

(12) Heavy landing - a landing deemed to require a 'heavy landing check'.

(13) Exceedance of fuel imbalance limits.

(14) Incorrect setting of an SSR code or of an altimeter subscale.

(15) Incorrect programming of, or erroneous entries into, equipment used for navigation or performance calculations, or use of incorrect data.

(16) Incorrect receipt or interpretation of radiotelephony messages.

(17) Fuel system malfunctions or defects, which had an effect on fuel supply and/or distribution.

(18) Aircraft unintentionally departing a paved surface.

(19) Collision between an aircraft and any other aircraft, vehicle or other ground object.

(20) Inadvertent and/or incorrect operation of any controls.

(21) Inability to achieve the intended aircraft configuration for any flight phase (e.g. landing gear and doors, flaps, stabilizers, slats etc.).

(22) A hazard or potential hazard which arises as a consequence of any deliberate simulation of failure conditions for training, system checks or training purposes.

(23) Abnormal vibration.

(24) Operation of any primary warning system associated with manoeuvring of the aircraft e.g. configuration warning, stall warning (stick shake), over speed warning etc. unless:

(a) The crew conclusively established that the indication was false. Provided that the false warning did not result in difficulty or hazard arising from the crew response to the warning; or

(b) Operated for training or test purposes.

(25) GPWS/TAWS ‘warning’ when:

(a) the aircraft comes into closer proximity to the ground than had been planned or anticipated; or

(b) the warning is experienced in IMC or at night and is established as having been triggered by a high rate of descent (Mode 1); or

(c) the warning results from failure to select landing gear or land flap by the appropriate point on the approach (Mode 4); or

(d) any difficulty or hazard arises or might have arisen as a result of crew response to the 'warning' e .g. possible reduced separation from other traffic. This could include warning of any Mode or Type i.e. genuine, nuisance or false.

(26) GPWS/TAWS 'alert' when any difficulty or hazard arises or might have arisen as a result of crew response to the 'alert'.

(27) ACAS RAs.

(28) Jet or prop blast incidents resulting in significant damage or serious injury purposes.

B. Emergencies

(1) Fire, explosion, smoke or toxic or noxious fumes, even though fires were extinguished.

(2) The use of any non-standard procedure by the flight or cabin crew to deal with an emergency when:

(a) the procedure exists but is not used; or
(b) a procedure does not exist; or
(c) the procedure exists but is incomplete or inappropriate; or
(d) the procedure is incorrect; or
(e) the incorrect procedure is used.

(3) Inadequacy of any procedures designed to be used in an emergency, including when being used for maintenance, training or test purposes.

(4) An event leading to an emergency evacuation.

(5) De-pressurisation.

(6) The use of any emergency equipment or prescribed emergency procedures in order to deal with a situation.

(7) An event leading to the declaration of an emergency ('Mayday' or 'Pan').

(8) Failure of any emergency system or equipment, including all exit doors and lighting, to perform satisfactorily, including when being used for maintenance, training or test purposes.

(9) Events requiring any emergency use of oxygen by any crew member.

C. Crew Incapacitation

(1) Incapacitation of any member of the flight crew, including that which occurs prior to departure if it is considered that it could have resulted in incapacitation after takeoff.
(2) Incapacitation of any member of the cabin crew which renders them unable to perform essential emergency duties.

D. Injury

(1) Occurrences, which have or could have led to significant injury to passengers or crew but which are not considered reportable as an accident.

E. Meteorology

(1) A lightning strike which resulted in damage to the aircraft or loss or malfunction of any essential service.

(2) A hail strike which resulted in damage to the aircraft or loss or malfunction of any essential service.

(3) Severe turbulence encounter – an encounter resulting in injury to occupants or deemed to require a 'turbulence check' of the aircraft.

(4) A windshear encounter.

(5) Icing encounter resulting in handling difficulties, damage to the aircraft or loss or malfunction of any essential service.

F. Security

(1) Unlawful interference with the aircraft including a bomb threat or hijack.

(2) Difficulty in controlling intoxicated, violent or unruly passengers.

(3) Discovery of a stowaway.

G. Other Occurrences

(1) Repetitive instances of a specific type of occurrence which in isolation would not be considered 'reportable' but which due to the frequency at which they arise, form a potential hazard.

(2) A bird strike which resulted in damage to the aircraft or loss or malfunction of any essential service.

(3) Wake turbulence encounters.

(4) Any other occurrence of any type considered to have endangered or which might have endangered the aircraft or its occupants on board the aircraft or on the ground.

(5) Any passenger displaying unusual medical conditions including suspected communicable disease that is deemed to require the attention of medical personnel.

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ATTACHMENT E.

FLIGHT SAFETY DOCUMENTS SYSTEM

Supplementary to Chapter 3, 3.3.6

1. INTRODUCTION

1.1 The following material provides guidance on the organization and development of the operator's flight safety documents system. It should be understood that the development of a flight safety documents system is a complete process, and changes to each document comprising the system may affect the entire system. Guidelines applicable to the development of operational documents have been produced by government and industry sources and are available to operators. Nevertheless, it may be difficult for operators to make the best use of these guidelines, since they are distributed across a number of publications.

1.2 Furthermore, guidelines applicable to operational documents development tend to focus on a single aspect of documents design, for example, formatting and typography. Guidelines rarely cover the entire process of operational documents development. It is important for operational documents to be consistent with each other, and consistent with regulations, manufacturer requirements and Human Factors principles. It is also necessary to ensure consistency across departments as well as consistency in application. Hence the emphasis on an integrated approach, based on the notion of the operational documents as a complete system.

1.3 The guidelines in this Attachment address the major aspects of the operator's flight safety documents system development process, with the aim of ensuring compliance with Chapter 3, 3.3.6. The guidelines are based not only upon scientific research, but also upon current best industry practices, with an emphasis on a high degree of operational relevance.

2. ORGANIZATION

2.1 A flight safety documents system should be organized according to criteria which ensure easy access to information required for flight and ground operations contained in the various operational documents comprising the system and which facilitate management of the distribution and revision of operational documents.

2.2 Information contained in a flight safety documents system should be grouped according to the importance and use of the information, as follows:

a) time-critical information, e.g., information that can jeopardize the safety of the operation if not immediately available;

b) time-sensitive information, e.g., information that can affect the level of safety or delay the operation if not available in a short time period;

c) frequently used information;

d) reference information, e.g., information that is required for the operation but does not fall under b) or c) above; and

e) information that can be grouped based on the phase of operation in which it is used.

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

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

3. VALIDATION

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

4. DESIGN

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

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

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

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

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

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

5. DEPLOYMENT

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

6. AMENDMENT

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

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

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

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

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

6.3 A flight safety documents system should be reviewed:

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

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

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

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

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