COMMERCIAL AIR TRANSPORT

60CA-16
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INTRODUCTION

In exercise of the powers conferred by regulations 81, 84, 90, 91, 96, 119, 120, 121, 122, 123, 124, 125 and 202 of the Civil Aviation Regulations 2016 (“MCAR”), the Director General makes this Flight Operations Directive (“FOD”) – Commercial Air Transport (CAT).

This Directive contains the standards, requirements and procedures pertaining to the provision for Air Operations. The standards and requirements in this Directive are based mainly on standards and recommended practices (SARPs) stipulated in International Civil Aviation Organisation (ICAO) Annex 6 to the Chicago Convention – Operation of Aircraft.

This FOD is published by the Director General under section 240 of the Civil Aviation Act 1969 [Act 3] and come into operation on 12th September 2016.

Non-compliance with this Directive

Any person who contravenes any provision in this FOD commits an offence and shall on conviction be liable to the punishment under section 240 of the Civil Aviation Act 1969 [Act 3].

(Dato’ Sri Azharuddin Abdul Rahman)
Director General of Civil Aviation
12th September 2016
TABLE OF CONTENTS

(a) SubPart A – General Requirements
   Section 1 - Powered-driven Aircraft

(b) SubPart B – Operating Procedures
   Section 1 - Powered-driven Aircraft

(c) SubPart C – Aircraft Performance and Operating Limitations
   Section 1 – Aeroplanes
       Chapter 1 – General Requirements
       Chapter 2 – Performances Class A
       Chapter 3 – Performances Class B
       Chapter 4 – Performances Class C
   Section 2 – Helicopters
       Chapter 1 – General Requirements
       Chapter 2 – Performances Class 1
       Chapter 3 – Performances Class 2
       Chapter 4 – Performances Class 3
   Section 3 – Mass and Balance
       Chapter 1 – Powered-driven Aircraft

(d) SubPart D – Instrument, Data, Equipment
   Section 1 – Aeroplanes
   Section 2 – Helicopters
Appendices

Appendix 1 – Parameter Guidance for Aircraft Data Recording Systems

Appendix 2 – Description of Applications for Data Link Recorders
CIVIL AVIATION REGULATIONS 2016
FLIGHT OPERATIONS DIRECTIVE – COMMERCIAL AIR TRANSPORT

1.0 CITATION
This FOD may be cited as the Flight Operations Directive – Commercial Air Transport [60CA-16].

2.0 APPLICATION
2.1 The following persons shall be subject to this Directive:
   (a) operator; and
   (b) crew.

3.0 INTERPRETATION
In this FOD—
“complex powered-driven aircraft” means:
   (a) in the case of an aeroplane, those aeroplane—
      (i) with a MCTOM exceeding 5 700 kg;
      (ii) certificated for a MAPSC of more than nineteen;
      (iii) certificated for operation with a minimum crew of at least two pilots; or
      (iv) equipped with—
          (A) turbojet engine; or
(B) more than one turboprop engine;

(b) in the case of a helicopter, those helicopter certificated:

(i) for a MCTOM exceeding 3 175 kg;

(ii) for a MAPSC of more than nine; or

(iii) for operation with a minimum crew of at least two pilots.

“MAPSC” means maximum approved passenger seating configuration;

“MCTOM” means maximum certificated take-off mass;

“performance class A aeroplane” means multi-engined aeroplane powered by turbo-propeller engines with a MAPSC of more than nine or a MCTOM exceeding 5 700 kilograms, and all multi-engined turbo-jet powered aeroplanes;

“performance class B aeroplane” means aeroplanes powered by propeller engines with a MAPSC of nine or less and a MCTOM of 5 700 kilograms or less;

“performance class C aeroplane” means aeroplanes powered by reciprocating engines with a MAPSC of more than nine or a MCTOM 5 700 kilograms;

“performance class 1 helicopter” means a helicopter with performance such that, in case of engine failure, it is able to land on the rejected take-off area or safely continue the flight to an appropriate landing area;
“performance class 2 helicopter” means a helicopter with performance such that, in case of engine failure, it is able to safely continue the flight, except when the failure occurs prior to a defined point after take-off or after a defined point before landing, in which cases a forced landing may be required; and

“performance class 3 helicopter” means a helicopter with performance such that, in case of engine failure at any point in the flight profile, a forced landing must be performed.
SUBPART A

GENERAL REQUIREMENTS

SECTION 1

POWERED-DRIVEN AIRCRAFT

CAT GEN MPA.100 Crew responsibilities

(a) The crew member shall be responsible for the proper execution of his duties that are:

(1) related to the safety of the aircraft and its occupants; and

(2) specified in the instructions and procedures in the operations manual.

(b) The crew member shall:

(1) report to the pilot-in-command (PIC) any fault, failure, malfunction or defect which the crew member believes may affect the airworthiness or safe operation of the aircraft including emergency systems, if not already reported by another crew member;

(2) report to the PIC any incident that endangered, or could have endangered, the safety of the operation, if not already reported by another crew member;

(3) comply with the relevant requirements of the operator's occurrence reporting schemes;
(4) comply with all flight and duty time limitations (FTL) and rest requirements applicable to their activities;

(5) when undertaking duties for more than one operator:
   
   (i) maintain his individual records regarding flight and duty times and rest periods as referred to in applicable FTL requirements; and

   (ii) provide each operator with the data needed to schedule activities in accordance with the applicable FTL requirements.

(c) The crew member shall not perform duties on an aircraft:

   (1) when under the influence of psychoactive substances or alcohol or when unfit due to injury, fatigue, medication, sickness or other similar causes. DCA require 8 hours of abstinence from alcohol before flight and set a maximum limit of 0.004 % blood alcohol concentration (BAC);

   (2) until a reasonable time period has elapsed after deep water diving or following blood donation;

   (3) if applicable medical requirements are not fulfilled;

   (4) if he is in any doubt of being able to accomplish his assigned duties; or

   (5) if he knows or suspects that he is suffering from fatigue or feels otherwise unfit, to the extent that the flight may be endangered.
CAT.GEN.MPA.105  Responsibilities of the PIC

(a) The PIC, in addition to complying with CAT.GEN.MPA.100, shall:

(1) be responsible for the safety of all crew members, passengers and cargo on board, when the doors are closed.

(2) be responsible for the operation and safety of the aircraft:

(i) for aeroplanes, from the moment the aeroplane is first ready to move for the purpose of taxying prior to take-off, until the moment it finally comes to rest at the end of the flight and the engine(s) used as primary propulsion unit(s) is(are) shut down;

(ii) for helicopters, from the moment the engine(s) are started until the helicopter finally comes to rest at the end of the flight, with the engine(s) shut down and the rotor blades stopped;

(3) have authority to give all commands and take any appropriate actions for the purpose of securing the safety of the aircraft and of persons and/or property carried therein;

(4) have authority to disembark any person, or any part of the cargo, that may represent a potential hazard to the safety of the aircraft or its occupants;

(5) not allow a person to be carried in the aircraft who appears to be under the influence of alcohol or drugs to the extent that the safety of the aircraft or its occupants is likely to be endangered;
(6) have the right to refuse transportation of inadmissible passengers, deportees or persons in custody if their carriage increases the risk to the safety of the aircraft or its occupants;

(7) ensure that all passengers are briefed on the location of emergency exits and the location and use of relevant safety and emergency equipment;

(8) ensure that all operational procedures and checklists are complied with in accordance with the operations manual;

(9) not permit any crew member to perform any activity during critical phases of flight, except duties required for the safe operation of the aircraft;

(10) ensure that flight recorders:

   (i) are not disabled or switched off during flight; and

   (ii) in the event of a reportable occurrence:

       (A) are not intentionally erased;

       (B) are deactivated immediately after the flight is completed; and

       (C) are reactivated only with the agreement of the investigating authority;

(11) decide on acceptance of the aircraft with unserviceability in accordance with the configuration deviation list (CDL) or the minimum equipment list (MEL);
(12) ensure that the pre-flight inspection has been carried out in accordance with the regulation 85 of MCAR;

(13) be satisfied that relevant emergency equipment remains easily accessible for immediate use.

(b) The PIC, 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 considers necessary. In such cases he may deviate from rules, operational procedures and methods in the interest of safety.

(c) Whenever an aircraft in flight has manoeuvred in response to an airborne collision avoidance system (ACAS) resolution advisory (RA), the PIC shall submit an incident report to the DCA.

(d) Bird hazards and strikes.

(1) Whenever a potential bird hazard is observed, the PIC shall inform the air traffic service (ATS) unit as soon as flight crew workload allows.

(2) Whenever an aircraft for which the PIC is responsible suffers a bird strike that results in significant damage to the aircraft or the loss or malfunction of any essential service, the PIC shall submit to the DCA a Mandatory Occurrence Reporting (MOR) and a bird strike report within 48 hours upon landing.
**CAT.GEN.MPA.110  Authority of the PIC**

The operator shall take all reasonable measures to ensure that all persons carried in the aircraft obey all lawful commands given by the PIC for the purpose of securing the safety of the aircraft and of persons or property carried therein.

**CAT.GEN.MPA.115  Personnel or crew members other than cabin crew member in the passenger compartment**

The operator shall ensure that personnel or crew members, other than operating cabin crew member, carrying out their duties in the passenger compartment of an aircraft:

(a) are not confused by the passengers with operating cabin crew member;

(b) do not occupy required cabin crew member assigned stations;

(c) do not impede operating cabin crew member in their duties.

**CAT.GEN.MPA.120  Common language**

The operator shall ensure that all crew members can communicate with each other in a common language.

**CAT.GEN.MPA.125  Taxiing of aeroplanes**

The operator shall ensure that an aeroplane is only taxied on the movement area of an aerodrome if the person at the controls:

(a) is an appropriately qualified pilot; or

(b) has been designated by the operator and:

(1) is trained to taxi the aircraft;
(2) is trained to use the radiotelephony equipment;

(3) has received instruction in respect of aerodrome layout, routes, signs, marking, lights, air traffic control (ATC) signals and instructions, phraseology and procedures;

(4) is able to conform to the operational standards required for safe aeroplane movement at the aerodrome.

**CAT.GEN.MPA.130  Rotor engagement — helicopters**

A helicopter rotor shall only be turned under power for the purpose of flight with a qualified pilot at the controls.

**CAT.GEN.MPA.135  Admission to the flight crew compartment**

(a) The operator shall ensure that no person, other than a flight crew member assigned to a flight, is admitted to, or carried in, the flight crew compartment as required by ORO.SEC.110.

(b) The PIC shall ensure that:

(1) admission to the flight crew compartment does not cause distraction or interference with the operation of the flight; and

(2) all persons carried in the flight crew compartment are made familiar with the relevant safety procedures.
**CAT.GEN.MPA.145 Information on emergency and survival equipment carried**

The operator shall at all times have available for immediate communication to rescue coordination centres (RCCs) lists containing information on the emergency and survival equipment carried on board any of their aircraft.

**CAT.GEN.MPA.150 Ditching — aeroplanes**

The operator shall only operate an aeroplane with a MAPSC of more than 30 on overwater flights at a distance from land suitable for making an emergency landing, greater than 120 minutes at cruising speed, or 400 NM, whichever is less, if the aeroplane complies with the ditching provisions as may be prescribed by the Director General.

**CAT.GEN.MPA.180 Documents, manuals and information to be carried**

(a) The following documents, manuals and information shall be carried on each flight, as originals or copies unless otherwise specified:

(1) the aircraft flight manual (AFM), or equivalent document(s);

(2) the original certificate of registration;

(3) the original certificate of airworthiness (CofA);

(4) the noise certificate, including an English translation, where one has been provided by the authority responsible for issuing the noise certificate;

(5) a certified true copy of the Air Operator Certificate (AOC);

(6) the original Operations Specifications (Ops Specs) relevant to the aircraft type, issued with the AOC;
(7) the original aircraft radio licence;

(8) the third party liability insurance certificate(s);

(9) the journey log, or equivalent, for the aircraft;

(10) the aircraft technical log, in accordance with AN;

(11) details of the filed ATS flight plan;

(12) current and suitable aeronautical charts for the route of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted;

(13) procedures and visual signals information for use by intercepting and intercepted aircraft;

(14) information concerning search and rescue services for the area of the intended flight, which shall be easily accessible in the flight crew compartment;

(15) the current parts of the operations manual that are relevant to the duties of the crew members, which shall be easily accessible to the crew members;

(16) the Minimum Equipment List (MEL);
(17) appropriate notices to airmen (NOTAMs) and aeronautical information service (AIS) briefing documentation;

(18) appropriate meteorological information;

(19) cargo and/or passenger manifests, if applicable;

(20) mass and balance documentation;

(21) the operational flight plan;

(22) notification of special categories of passenger (SCPs) and special loads, if applicable; and

(23) any other documentation that may be pertinent to the flight or is required by the States concerned with the flight.

(b) Notwithstanding (a), for operations under visual flight rules (VFR) by day with other-than complex powered-driven aircraft taking off and landing at the same aerodrome or operating site within 24 hours, or remaining within a local area specified in the operations manual, the following documents and information may be retained at the aerodrome or operating site instead:

(1) noise certificate;

(2) aircraft radio licence;

(3) journey log, or equivalent;
(4) aircraft technical log;

(5) NOTAMs and AIS briefing documentation;

(6) meteorological information;

(7) notification of SCPs and special loads, if applicable; and

(8) mass and balance documentation.

(c) Notwithstanding (a), in case of loss or theft of documents specified in (a)(2) to (a)(8), the operation may continue until the flight reaches its destination or a place where replacement documents can be provided.

CAT.GEN.MPA.185 Information to be retained on the ground

(a) The operator shall ensure that at least for the duration of each flight or series of flights:

(1) information relevant to the flight and appropriate for the type of operation is preserved on the ground;

(2) the information is retained until it has been duplicated at the place at which it will be stored; or, if this is impracticable

(3) the same information is carried in the aircraft.
(b) The information referred to in (a) is as follows:

(1) a copy of the operational flight plan, where appropriate;

(2) copies of the relevant part(s) of the aircraft technical log;

(3) route-specific NOTAM documentation if specifically edited by the operator;

(4) mass and balance documentation if required; and

(5) special loads notification.

**CAT.GEN.MPA.190 Provision of documentation and records**

The PIC shall, within a reasonable time of being requested to do so by a person authorised by an authority, provide to that person the documentation required to be carried on board.

**CAT.GEN.MPA.195 Preservation, production and use of flight recorder recordings**

(a) Following a reportable occurrence, the operator of an aircraft shall preserve the original recorded data for a period of 60 days unless otherwise directed by the investigating authority.

(b) The operator shall conduct operational checks and evaluations of flight data recorder (FDR) recordings, cockpit voice recorder (CVR) recordings and data link recordings to ensure the continued serviceability of the recorders.

(c) The operator shall save the recordings for the period of operating time of the FDR as required by CAT.IDE.A.190 or CAT.IDE.H.190, except that, for the purpose of
testing and maintaining the FDR, up to 1 hour of the oldest recorded material at the time of testing may be erased.

(d) The operator shall keep and maintain up-to-date documentation that presents the necessary information to convert FDR raw data into parameters expressed in engineering units.

(e) The operator shall make available any flight recorder recording that has been preserved, if so determined by the DCA.
SUBPART B
OPERATING PROCEDURES

SECTION 1
POWERED-DRIVEN AIRCRAFT

CAT.OP.MPA.100  Use of air traffic services

(a)  The operator shall ensure that:

(1)  ATS appropriate to the airspace and the applicable rules of the air are used for all flights whenever available;

(2)  in-flight operational instructions involving a change to the ATS flight plan, when practicable, are coordinated with the appropriate ATS unit before transmission to an aircraft.

(b)  Notwithstanding (a), the use of ATS is not required unless mandated by air space requirements for:

(1)  operations under VFR by day of other-than-complex powered-driven aeroplanes:

(2)  helicopters with an MCTOM of 3 175 kg or less operated by day and over routes navigated by reference to visual landmarks; or

(3)  local helicopter operations, provided that search and rescue service arrangements can be maintained.
**CAT.OP.MPA.105  Use of aerodromes and operating sites**

(a) The operator shall only use aerodromes and operating sites that are adequate for the type(s) of aircraft and operation(s) concerned.

(b) The use of operating sites shall only apply to:

1. other-than-complex powered-driven aeroplane; and
2. helicopters.

**CAT.OP.MPA.106  Use of isolated aerodromes — aeroplanes**

(a) Using an isolated aerodrome as destination aerodrome with aeroplanes requires the prior approval by the DCA.

(b) An isolated aerodrome is one for which the alternate and final fuel reserve required to the nearest adequate destination alternate aerodrome is more than:

1. for aeroplanes with reciprocating engines, fuel to fly for 45 minutes plus 15% of the flying time planned to be spent at cruising level or 2 hours, whichever is less; or
2. for aeroplanes with turbine engines, fuel to fly for 2 hours at normal cruise consumption above the destination aerodrome, including final reserve fuel.

**CAT.OP.MPA.107  Adequate aerodrome**

The operator shall consider an aerodrome as adequate if, at the expected time of use, the aerodrome is available and equipped with necessary ancillary services such as air traffic
services (ATS), sufficient lighting, communications, weather reporting, navigation aids and emergency services.

**CAT.OP.MPA.110 Aerodrome operating minima**

(a) The operator shall establish aerodrome operating minima for each departure, destination or alternate aerodrome planned to be used. In the case of fly in or over any State other than Malaysia, these minima shall not be lower than those established for such aerodromes by the State in which the aerodrome is located, except when specifically approved by that State.

(b) The operator shall comply with the increment to the aerodrome operating minima as may be determined by the Director General.

(c) The use of a head-up display (HUD), head-up guidance landing system (HUDLS) or enhanced vision system (EVS) may allow operations with lower visibilities than the established aerodrome operating minima if approved in accordance with SPA.LVO.

(d) When establishing aerodrome operating minima, the operator shall take the following into account:

1. the type, performance and handling characteristics of the aircraft;

2. the composition, competence and experience of the flight crew;

3. the dimensions and characteristics of the runways/final approach and take-off areas (FATOs) that may be selected for use;
(4) the adequacy and performance of the available visual and non-visual ground aids;

(5) the equipment available on the aircraft for the purpose of navigation and/or control of the flight path during the take-off, the approach, the flare, the landing, rollout and the missed approach;

(6) for the determination of obstacle clearance, the obstacles in the approach, missed approach and the climb-out areas necessary for the execution of contingency procedures;

(7) the obstacle clearance altitude/height for the instrument approach procedures;

(8) the means to determine and report meteorological conditions; and

(9) the flight technique to be used during the final approach.

(e) The operator shall specify the method of determining aerodrome operating minima in the operations manual.

(f) The minima for a specific approach and landing procedure shall only be used if all the following conditions are met:

(1) the ground equipment shown on the chart required for the intended procedure is operative;

(2) the aircraft systems required for the type of approach are operative;
(3) the required aircraft performance criteria are met; and

(4) the crew is appropriately qualified.

**CAT.OP.MPA.115  Approach flight technique — aeroplanes**

(a) All approaches shall be flown as stabilised approaches unless otherwise approved by the DCA for a particular approach to a particular runway.

(b) Non-precision approaches

(1) The continuous descent final approach (CDFA) technique shall be used for all non-precision approaches.

(2) Notwithstanding (1), another approach flight technique may be used for a particular approach/runway combination if approved by the DCA. In such cases, the applicable minimum runway visual range (RVR):

(i) shall be increased by 200 m for Category A and B aeroplanes and by 400 m for Category C and D aeroplanes; or

(ii) for aerodromes where there is a public interest to maintain current operations and the CDFA technique cannot be applied, shall be established and regularly reviewed by the DCA taking into account the operator’s experience, training programme and flight crew qualification.

**CAT.OP.MPA.120  Airborne radar approaches (ARAs) for overwater operations — helicopters**

(a) An ARA shall only be undertaken if:
(1) the radar provides course guidance to ensure obstacle clearance; and

(2) either:

   (i) the minimum descent height (MDH) is determined from a radio altimeter; or

   (ii) the minimum descent altitude (MDA) plus an adequate margin is applied.

(b) ARAs to rigs or vessels under way shall only be conducted in multi-crew operations.

(c) The decision range shall provide adequate obstacle clearance in the missed approach from any destination for which an ARA is planned.

(d) The approach shall only be continued beyond decision range or below MDA/H when visual reference with the destination has been established.

**CAT.OP.MPA.125  Instrument departure and approach procedures**

(a) The PIC shall ensure that instrument departure and approach procedures established by the State of the aerodrome are used.

(b) Notwithstanding (a), the PIC may accept an ATC clearance to deviate from a published departure or arrival route, provided obstacle clearance criteria are observed and full account is taken of the operating conditions. In any case, the final approach shall be flown visually or in accordance with the established instrument approach procedures.
(c) Notwithstanding (a), the PIC may use procedures other than those referred to in (a) provided they have been approved by the State in which the aerodrome is located and are specified in the operations manual.

CAT.OP.MPA.130  Noise abatement procedures — aeroplanes

(a) Except for VFR operations of other-than-complex powered-driven aeroplanes, the operator shall establish appropriate operating departure and arrival/approach procedures for each aeroplane type taking into account the need to minimise the effect of aircraft noise.

(b) The procedures shall:

(1) ensure that safety has priority over noise abatement; and

(2) be simple and safe to operate with no significant increase in crew workload during critical phases of flight.

CAT.OP.MPA.131  Noise abatement procedures — helicopters

(a) The operator shall ensure that take-off and landing procedures take into account the need to minimise the effect of helicopter noise.

(b) The procedures shall:

(1) ensure that safety has priority over noise abatement; and

(2) be simple and safe to operate with no significant increase in crew workload during critical phases of flight.
CAT.OP.MPA.135 Routes and areas of operation — general

(a) The PIC shall ensure that operations are only conducted along routes, or within areas, for which:

(1) ground facilities and services, including meteorological services, adequate for the planned operation are provided;

(2) the performance of the aircraft is adequate to comply with minimum flight altitude requirements;

(3) the equipment of the aircraft meets the minimum requirements for the planned operation; and

(4) appropriate maps and charts are available.

(b) The PIC shall ensure that operations are conducted in accordance with any restriction on the routes or the areas of operation specified by the DCA.

(c) (a)(1) shall not apply to operations under VFR by day of other-than-complex powered-driven aircraft on flights that depart from and arrive at the same aerodrome or operating site.

CAT.OP.MPA.136 Routes and areas of operation — single-engine aeroplanes

The PIC shall ensure that operations of single-engine aeroplanes are only conducted along routes, or within areas, where surfaces are available that permit a safe forced landing to be executed.
CAT.OP.MPA.137  Routes and areas of operation — helicopters

The operator shall ensure that:

(a) for helicopters operated in performance class 3, surfaces are available that permit a safe forced landing to be executed, except when the helicopter has an approval to operate in accordance with CAT.POL.H.420;

(b) for helicopters operated in performance class 3 and conducting “coastal transit” operations, the operations manual contains procedures to ensure that the width of the coastal corridor, and the equipment carried, is consistent with the conditions prevailing at the time.

CAT.OP.MPA.140  Maximum distance from an adequate aerodrome for two-engine aeroplanes without an EDTO approval

(a) Unless approved by the DCA in accordance with Part-SPA, Subpart F, the operator shall not operate a two-engine aeroplane over a route that contains a point further from an adequate aerodrome, under standard conditions in still air, than:

(1) for performance class A aeroplanes with either:

   (i) a MAPSC of 20 or more; or

   (ii) a MCTOM of 45 500 kg or more,

   the distance flown in 60 minutes at the one-engine-inoperative (OEI) cruising speed determined in accordance with (b);

(2) for performance class A aeroplanes with:

   (i) an MAPSC of 19 or less; and
(ii) a MCTOM less than 45 500 kg,

the distance flown in 120 minutes or, subject to approval by the DCA, up to 180 minutes for turbo-jet aeroplanes, at the OEI cruise speed determined in accordance with (b);

(3) for performance class B or performance class C aeroplanes:

(i) the distance flown in 120 minutes at the OEI cruise speed determined in accordance with (b); or

(ii) 300 NM, whichever is less.

(b) The operator shall determine a speed for the calculation of the maximum distance to an adequate aerodrome for each two-engine aeroplane type or variant operated, not exceeding VMO (maximum operating speed) based upon the true airspeed that the aeroplane can maintain with one engine inoperative.

(c) The operator shall include the following data, specific to each type or variant, in the operations manual:

(1) the determined OEI cruising speed; and

(2) the determined maximum distance from an adequate aerodrome.

(d) To obtain the approval referred to in (a)(2), the operator shall provide evidence that:

(1) the aeroplane/engine combination holds an extended range operation with two-engine aeroplanes (EDTO/ETOPS) type design and reliability approval for the intended operation;
(2) a set of conditions has been implemented to ensure that the aeroplane and its engines are maintained to meet the necessary reliability criteria; and

(3) the flight crew and all other operations personnel involved are trained and suitably qualified to conduct the intended operation.

**CAT.OP.MPA.145 Establishment of minimum flight altitudes**

(a) The operator shall establish for all route segments to be flown:

(1) minimum flight altitudes that provide the required terrain clearance, taking into account the requirements of Subpart C; and

(2) a method for the flight crew to determine those altitudes.

(b) The method for establishing minimum flight altitudes shall be approved by DCA.

(c) Where the minimum flight altitudes established by the operator and a State overflown differ, the higher values shall apply.

**CAT.OP.MPA.150 Fuel policy**

(a) The operator shall establish a fuel policy for the purpose of flight planning and in-flight re-planning to ensure that every flight carries sufficient fuel for the planned operation and reserves to cover deviations from the planned operation. The fuel policy and any change to it require prior approval by DCA.

(b) The operator shall ensure that the planning of flights is based upon at least:

(1) procedures contained in the operations manual and:
(i) data provided by the aircraft manufacturer; or

(ii) current aircraft-specific data derived from a fuel consumption monitoring system; and

(2) the operating conditions under which the flight is to be conducted including:

(i) aircraft fuel consumption data;

(ii) anticipated masses;

(iii) expected meteorological conditions; and

(iv) air navigation services provider(s) procedures and restrictions.

(c) The operator shall ensure that the pre-flight calculation of usable fuel required for a flight includes:

(1) taxi fuel;

(2) trip fuel;

(3) reserve fuel consisting of:

(i) contingency fuel;

(ii) alternate fuel, if a destination alternate aerodrome is required;
(iii) final reserve fuel; and

(iv) additional fuel, if required by the type of operation; and

(4) extra fuel if required by the PIC.

(d) The operator shall ensure that in-flight re-planning procedures for calculating usable fuel required when a flight has to proceed along a route or to a destination aerodrome other than originally planned includes:

(1) trip fuel for the remainder of the flight; and

(2) reserve fuel consisting of:

   (i) contingency fuel;

   (ii) alternate fuel, if a destination alternate aerodrome is required;

   (iii) final reserve fuel; and

   (iv) additional fuel, if required by the type of operation; and

(3) extra fuel if required by the PIC.

Notes:

Contingency Fuel:

(1) 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 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 1,500 feet (450 m) above the destination aerodrome in standard conditions;

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

(2) Notwithstanding the provisions in (c)(1), (2), (3)(i), (ii), (iv) above, DCA 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:

(i) flight fuel calculations;

(ii) capabilities of the operator to include:

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

(B) the advanced use of alternate aerodromes; and

(iii) specific mitigation measures.
CAT.OP.MPA.151 Fuel policy — alleviations

(a) Notwithstanding CAT.OP.MPA.150 (b) to (d), for operations of performance class B aeroplanes the operator shall ensure that the pre-flight calculation of usable fuel required for a flight includes:

(1) taxi fuel, if significant;

(2) trip fuel;

(3) reserve fuel, consisting of:

   (i) contingency fuel that is not less than 5% of the planned trip fuel or, in the event of in-flight re-planning, 5% of the trip fuel for the remainder of the flight; and

   (ii) final reserve fuel to fly for an additional period of 45 minutes for reciprocating engines or 30 minutes for turbine engines;

(4) alternate fuel to reach the destination alternate aerodrome via the destination, if a destination alternate aerodrome is required; and

(5) extra fuel, if specified by the PIC.

(b) Notwithstanding CAT.OP.MPA.150 (b) to (d), for helicopters with an MCTOM of 3 175 kg or less, by day and over routes navigated by reference to visual landmarks or local helicopter operations, the fuel policy shall ensure that, on completion of the flight, or series of flights the final reserve fuel is not less than an amount sufficient for:

(1) 30 minutes flying time at normal cruising speed; or
(2) 20 minutes flying time at normal cruising speed when operating within an area providing continuous and suitable precautionary landing sites.

**CAT.OP.MPA.155  Carriage of special categories of passengers (SCPs)**

(a) Persons requiring special conditions, assistance and/or devices when carried on a flight shall be considered as SCPs including at least:

(1) persons with reduced mobility (PRMs) who are understood to be any person whose mobility is reduced due to any physical disability, sensory or locomotory, permanent or temporary, intellectual disability or impairment, any other cause of disability, or age;

(2) infants and unaccompanied children; and

(3) deportees, inadmissible passengers or prisoners in custody.

(b) SCPs shall be carried under conditions that ensure the safety of the aircraft and its occupants according to procedures established by the operator.

(c) SCPs shall not be allocated, nor occupy, seats that permit direct access to emergency exits or where their presence could:

(1) impede crew members in their duties;

(2) obstruct access to emergency equipment; or

(3) impede the emergency evacuation of the aircraft.
(d) The PIC shall be notified in advance when SCPs are to be carried on board.

**CAT.OP.MPA.160  Stowage of baggage and cargo**

The operator shall establish procedures to ensure that:

(a) only hand baggage that can be adequately and securely stowed is taken into the passenger compartment; and

(b) all baggage and cargo on board that might cause injury or damage, or obstruct aisles and exits if displaced, is stowed so as to prevent movement.

**CAT.OP.MPA.165  Passenger seating**

The operator shall establish procedures to ensure that passengers are seated where, in the event that an emergency evacuation is required, they are able to assist and not hinder evacuation of the aircraft.

**CAT.OP.MPA.170  Passenger briefing**

The PIC shall ensure that in an emergency during the flight, all passengers are instructed in the emergency action which they should take as follows:

(a) giving briefings and demonstrations relating to safety in a form that facilitates the application of the procedures applicable; and

(b) providing with a safety briefing card on which picture-type instructions indicate the operation of emergency equipment and exits likely to be used by passengers. Safety briefing cards shall be in *Bahasa Malaysia* and English language.
CAT.OP.MPA.175  Flight preparation

(a)  An operational flight plan shall be completed for each intended flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes/operating sites concerned.

(b)  The flight shall not be commenced unless the PIC is satisfied that:

(1)  all items concerning the airworthiness and registration of the aircraft, instrument and equipment, mass and centre of gravity (CG) location, baggage and cargo and aircraft operating limitations can be complied with;

(2)  the aircraft is not operated contrary to the provisions of the configuration deviation list (CDL);

(3)  the parts of the operations manual that are required for the conduct of the flight are available;

(4)  the documents, additional information and forms required to be available by CAT.GEN.MPA.180 are on board;

(5)  current maps, charts and associated documentation or equivalent data are available to cover the intended operation of the aircraft including any diversion that may reasonably be expected;

(6)  ground facilities and services required for the planned flight are available and adequate;
(7) the provisions specified in the operations manual in respect of fuel, oil, oxygen, minimum safe altitudes, aerodrome operating minima and availability of alternate aerodromes, where required, can be complied with for the planned flight; and

(8) any additional operational limitation can be complied with.

(c) Notwithstanding (a), an operational flight plan is not required for operations under VFR of:

(1) other-than-complex powered-driven aeroplanes taking off and landing at the same aerodrome or operating site; or

(2) helicopters with an MCTOM of 3 175 kg or less, by day and over routes navigated by reference to visual landmarks in a local area as specified in the operations manual.

**CAT.OP.MPA.180  Selection of aerodromes — aeroplanes**

(a) Where it is not possible to use the departure aerodrome as a take-off alternate aerodrome due to meteorological or performance reasons, the operator shall select another adequate take-off alternate aerodrome that is no further from the departure aerodrome than:

(1) for two-engine aeroplanes:

   (i) 1 hour flying time at an OEI cruising speed according to the AFM in still air standard conditions based on the actual take-off mass; or

   (ii) the EDTO diversion time approved in accordance with Part-SPA, Subpart F, subject to any MEL restriction, up to a maximum of 2
hours, at the OEI cruising speed according to the AFM in still air standard conditions based on the actual take-off mass;

(2) for three and four-engine aeroplanes, 2 hours flying time at the OEI cruising speed according to the AFM in still air standard conditions based on the actual take-off mass.

If the AFM does not contain an OEI cruising speed, the speed to be used for calculation shall be that which is achieved with the remaining engine(s) set at maximum continuous power.

(b) The operator shall select at least one destination alternate aerodrome for each instrument flight rules (IFR) flight unless the destination aerodrome is an isolated aerodrome or:

(1) the duration of the planned flight from take-off to landing or, in the event of in-flight re-planning in accordance with CAT.OP.MPA.150(d), the remaining flying time to destination does not exceed 6 hours; and

(2) two separate runways are available and usable at the destination aerodrome and the appropriate weather reports and/or forecasts for the destination aerodrome indicate that, for the period from 1 hour before until 1 hour after the expected time of arrival at the destination aerodrome, the ceiling will be at least 2 000 feet or circling height +500 feet, whichever is greater, and the ground visibility will be at least 5 km.

Note: Separate runways are two or more runways at the same aerodrome configured such that if one runway is closed, operations to the other runway(s) can be conducted.
(c) The operator shall select two destination alternate aerodromes when:

(1) the appropriate weather reports and/or forecasts for the destination aerodrome indicate that during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival, the weather conditions will be below the applicable planning minima; or

(2) no meteorological information is available.

(d) The operator shall specify any required alternate aerodrome(s) in the operational flight plan.

CAT.O普.MPA.181 Selection of aerodromes and operating sites — helicopters

(a) For flights under instrument meteorological conditions (IMC), the PIC shall select a take-off alternate aerodrome within 1 hour flying time at normal cruising speed if it would not be possible to return to the site of departure due to meteorological reasons.

(b) For IFR flights or when flying under VFR and navigating by means other than by reference to visual landmarks, the PIC shall specify at least one destination alternate aerodrome in the operational flight plan unless:

(1) the destination is a coastal aerodrome and the helicopter is routing from offshore;

(2) for a flight to any other land destination, the duration of the flight and the meteorological conditions prevailing are such that, at the estimated time of arrival at the site of intended landing, an approach and landing is possible under visual meteorological conditions (VMC);
(3) the site of intended landing is isolated and no alternate is available; in this case, a point of no return (PNR) shall be determined; or

(4) the DCA approved offshore helideck.

c) The operator may select off-shore destination alternate aerodromes when the following criteria are applied:

(1) an off-shore destination alternate aerodrome shall be used only after a PNR. Prior to the PNR, on-shore alternate aerodromes shall be used;

(2) OEL landing capability shall be attainable at the alternate aerodrome;

(3) to the extent possible, deck availability shall be guaranteed. The dimensions, configuration and obstacle clearance of individual helidecks or other sites shall be assessed in order to establish operational suitability for use as an alternate aerodrome by each helicopter type proposed to be used;

(4) weather minima shall be established taking accuracy and reliability of meteorological information into account;

(5) the MEL shall contain specific provisions for this type of operation; and

(6) an off-shore alternate aerodrome shall only be selected if the operator has established a procedure in the operations manual.

d) The operator shall select two destination alternate aerodromes when:
(1) the appropriate weather reports and/or forecasts for the destination aerodrome indicate that during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival, the weather conditions will be below the applicable planning minima; or

(2) no meteorological information is available for the destination aerodrome.

(e) The operator shall specify any required alternate aerodrome(s) in the operational flight plan.

**CAT.OP.MPA.185 Planning minima for IFR flights — aeroplanes**

(a) Planning minima for a take-off alternate aerodrome.

The operator shall only select an aerodrome as a take-off alternate aerodrome when the appropriate weather reports and/or forecasts indicate that, during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the aerodrome, the weather conditions will be at or above the applicable landing minima specified in accordance with CAT.OP.MPA.110. The ceiling shall be taken into account when the only approach operations available are non-precision approaches (NPA) and/or circling operations. Any limitation related to OEI operations shall be taken into account.

(b) Planning minima for a destination aerodrome other than an isolated destination aerodrome.

The operator shall only select the destination aerodrome when:

(1) the appropriate weather reports and/or forecasts indicate that, during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the aerodrome, the weather conditions will be at or above the applicable planning minima as follows:
(i) RVR/visibility (VIS) specified in accordance with CAT.OP.MPA.110; and

(ii) for an NPA or a circling operation, the ceiling at or above MDH;
or

(2) two destination alternate aerodromes are selected.

c) Planning minima for a destination alternate aerodrome, isolated aerodrome, fuel en-route alternate (fuel ERA) aerodrome, en-route alternate (ERA) aerodrome. The operator shall only select an aerodrome for one of these purposes when the appropriate weather reports and/or forecasts indicate that, during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the aerodrome, the weather conditions will be at or above the planning minima in Table 1.

<table>
<thead>
<tr>
<th>Planning Minima</th>
<th>Destination alternate aerodrome, isolated destination aerodrome, fuel ERA and ERA aerodrome</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of approach</strong></td>
<td><strong>Planning minima</strong></td>
</tr>
<tr>
<td>CAT II and III</td>
<td>CAT I RVR</td>
</tr>
</tbody>
</table>
| CAT I           | NPA RVR/VIS  
|                 | Ceiling shall be at or above MDH |
| NPA            | NPA RVR/VIS + 1 000 m  
|                 | Ceiling shall be at or above MDH + 200 feet |
| Circling       | Circling |

**Table 1**
CAT.OP.MPA.186 Planning minima for IFR flights — helicopters

(a) Planning minima for take-off alternate aerodrome(s).

The operator shall only select an aerodrome or landing site as a take-off alternate aerodrome when the appropriate weather reports and/or forecasts indicate that, during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the take-off alternate aerodrome, the weather conditions will be at or above the applicable landing minima specified in accordance with CAT.OP.MPA.110. The ceiling shall be taken into account when the only approach operations available are NPA operations. Any limitation related to OEI operations shall be taken into account.

(b) Planning minima for destination aerodrome and destination alternate aerodrome(s).

The operator shall only select the destination and/or destination alternate aerodrome(s) when the appropriate weather reports and/or forecasts indicate that, during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the aerodrome or operating site, the weather conditions will be at or above the applicable planning minima as follows:

(1) except as provided in CAT.OP.MPA.181 (d), planning minima for a destination aerodrome shall be:

(i) RVR/VIS specified in accordance with CAT.OP.MPA.110; and

(ii) for NPA operations, the ceiling at or above MDH;

(2) planning minima for destination alternate aerodrome(s) are as shown in Table 2.
<table>
<thead>
<tr>
<th>Type of approach</th>
<th>Planning minima</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT II and III</td>
<td>CAT I RVR</td>
</tr>
<tr>
<td>CAT I</td>
<td>CAT I + 200 feet / 400 m visibility</td>
</tr>
<tr>
<td>NPA</td>
<td>NPA RVR/VIS + 400 m</td>
</tr>
<tr>
<td></td>
<td>Ceiling shall be at or above MDH + 200 feet</td>
</tr>
</tbody>
</table>

**Table 2**

**CAT.OP.MPA.195**  Refuelling/de-fuelling with passengers embarking, on board or disembarking

(a) An aircraft shall not be refuelled/de-fuelled with Avgas (aviation gasoline) or wide-cut type fuel or a mixture of these types of fuel, when passengers are embarking, on board or disembarking.

(b) For all other types of fuel, necessary precautions shall be taken and the aircraft shall be properly manned by qualified personnel ready to initiate and direct an evacuation of the aircraft by the most practical and expeditious means available.

**CAT.OP.MPA.200**  Refuelling/de-fuelling with wide-cut fuel

Refuelling/de-fuelling with wide-cut fuel shall only be conducted if the operator has established appropriate procedures taking into account the high risk of using wide-cut fuel types.

**CAT.OP.MPA.205**  Push back and towing — aeroplanes

Push back and towing procedures specified by the operator shall be conducted in accordance with established aviation standards and procedures.
CAT.OP.MPA.210  Crew members at stations

(a)  Flight crew members.

(1) During take-off and landing each flight crew member required to be on duty in the flight crew compartment shall be at the assigned station.

(2) During all other phases of flight each flight crew member required to be on duty in the flight crew compartment shall remain at the assigned station, unless absence is necessary for the performance of duties in connection with the operation or for physiological needs, provided at least one suitably qualified pilot remains at the controls of the aircraft at all times.

(3) During all phases of flight each flight crew member required to be on duty in the flight crew compartment shall remain alert. If a lack of alertness is encountered, appropriate countermeasures shall be used. If unexpected fatigue is experienced, a controlled rest procedure, organised by the PIC, may be used if workload permits. Controlled rest taken in this way shall not be considered to be part of a rest period for purposes of calculating flight time limitations nor used to justify any extension of the duty period.

(b)  Cabin crew members.

During critical phases of flight, each cabin crew member shall be seated at the assigned station and shall not perform any activities other than those required for the safe operation of the aircraft.

CAT.OP.MPA.215  Use of headset — aeroplanes

(a) Each flight crew member required to be on duty in the flight crew compartment shall wear a headset with boom microphone or equivalent. The headset shall be used as the primary device for voice communications with ATS:

(1) when on the ground:
(i) when receiving the ATC departure clearance via voice communication; and

(ii) when engines are running;

(2) when in flight:
   (i) below transition altitude; or

   (ii) 15,000 feet, whichever is higher; and

(3) whenever deemed necessary by the PIC.

(b) In the conditions of (a), the boom microphone or equivalent shall be in a position that permits its use for two-way radio communications.

**CAT.OP.MPA.216 Use of headset — helicopters**

Each flight crew member required to be on duty in the flight crew compartment shall wear a headset with boom microphone, or equivalent, and use it as the primary device to communicate with ATS.

**CAT.OP.MPA.220 Assisting means for emergency evacuation**

The operator shall establish procedures to ensure that before taxying, take-off and landing and when safe and practicable to do so, all means of assistance for emergency evacuation that deploy automatically are armed.

**CAT.OP.MPA.225 Seats, safety belts and restraint systems**

(a) Crew members.
(1) During take-off and landing, and whenever decided by the PIC in the interest of safety, each crew member shall be properly secured by all safety belts and restraint systems provided.

(2) During other phases of the flight, each flight crew member in the flight crew compartment shall keep the assigned station safety belt fastened while at his/her station.

(b) Passengers.

(1) Before take-off and landing, and during taxying, and whenever deemed necessary in the interest of safety, the PIC shall be satisfied that each passenger on board occupies a seat or berth with his safety belt or restraint system properly secured.

(2) The operator shall make provisions for multiple occupancy of aircraft seats that is only allowed on specified seats. The PIC shall be satisfied that multiple occupancy does not occur other than by one adult and one infant who is properly secured by a supplementary loop belt or other restraint device.

Note: Infant is a child below the age of two years.

CAT.OP.MPA.230 Securing of passenger compartment and galley(s)

(a) The operator shall establish procedures to ensure that before taxiing, take-off and landing all exits and escape paths are unobstructed.
(b) The PIC shall ensure that before take-off and landing, and whenever deemed necessary in the interest of safety, all equipment and baggage are properly secured.

**CAT.OP.MPA.235  Life-jackets — helicopters**

The operator shall establish procedures to ensure that, when operating a helicopter over water more than 10 minutes from coastal or beyond autorotation distance, account is taken of the duration of the flight and conditions to be encountered when deciding if life-jackets are to be worn by all occupants.

**CAT.OP.MPA.240  Smoking on board**

The operator shall establish procedure in accordance to regulation 100 MCAR.

**CAT.OP.MPA.245  Meteorological conditions — all aircraft**

(a) On IFR flights the PIC shall only:

(1) commence take-off; or

(2) continue beyond the point from which a revised ATS flight plan applies in the event of in-flight re-planning, when information is available indicating that the expected weather conditions, at the time of arrival, at the destination and/or required alternate aerodrome(s) are at or above the planning minima.

(b) On IFR flights, the PIC shall only continue towards the planned destination aerodrome when the latest information available indicates that, at the expected time of arrival, the weather conditions at the destination, or at least one destination alternate aerodrome, are at or above the applicable aerodrome operating minima.
(c) On VFR flights, the PIC shall only commence take-off when the appropriate weather reports and/or forecasts indicate that the meteorological conditions along the part of the route to be flown under VFR will, at the appropriate time, be at or above the VFR limits.

**CAT.OP.MPA.246 Meteorological conditions — aeroplanes**

In addition to CAT.OP.MPA.245, on IFR flights with aeroplanes, the PIC shall only continue beyond:

(a) the decision point when using the reduced contingency fuel (RCF) procedure; or

(b) the pre-determined point when using the pre-determined point (PDP) procedure, when information is available indicating that the expected weather conditions, at the time of arrival, at the destination and/or required alternate aerodrome(s) are at or above the applicable aerodrome operating minima.

**CAT.OP.MPA.247 Meteorological conditions — helicopters**

In addition to CAT.OP.MPA.245:

(a) On VFR flights overwater out of sight of land with helicopters, the PIC shall only commence take-off when the appropriate weather reports and/or forecasts indicate that the cloud ceiling will be above 600 feet by day or 1200 feet by night.

(b) Notwithstanding (a), when flying between helidecks located in class G airspace where the overwater sector is less than 10 NM, VFR flights may be conducted when the limits are at, or better than, Table 3:
Minima for flying between helidecks located in class G airspace

<table>
<thead>
<tr>
<th></th>
<th>Day</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Height *</td>
<td>Visibility</td>
</tr>
<tr>
<td>Single-pilot</td>
<td>500 feet</td>
<td>3 km</td>
</tr>
<tr>
<td>Two pilots</td>
<td>500 feet</td>
<td>2 km **</td>
</tr>
</tbody>
</table>

Table 3

Note:
* The cloud base shall be such as to allow flight at the specified height, below and clear of cloud.

** Helicopters may be operated in flight visibility down to 800 m provided the destination or an intermediate structure is continuously visible.

*** Helicopters may be operated in flight visibility down to 1 500 m provided the destination or an intermediate structure is continuously visible.

(c) Flight with helicopters to a helideck or elevated FATO shall only be operated when the mean wind speed at the helideck or elevated FATO is reported to be less than 60 kt.

**CAT.OP.MPA.250**  Ice and other contaminants — ground procedures

(a) The operator shall establish procedures to be followed when ground de-icing and anti-icing and related inspections of the aircraft are necessary to allow the safe operation of the aircraft.

(b) The PIC shall only commence take-off if the aircraft is clear of any deposit that might adversely affect the performance or controllability of the aircraft, except as permitted under (a) and in accordance with the AFM.
CAT.OP.MPA.255  Ice and other contaminants — flight procedures

(a) The operator shall establish procedures for flights in expected or actual icing conditions.

(b) The PIC shall only commence a flight or intentionally fly into expected or actual icing conditions if the aircraft is certified and equipped to cope with such conditions.

(c) If icing exceeds the intensity of icing for which the aircraft is certified or if an aircraft not certified for flight in known icing conditions encounters icing, the PIC shall exit the icing conditions without delay, by a change of level and/or route, if necessary by declaring an emergency to ATC.

CAT.OP.MPA.260  Fuel and oil supply

The PIC shall only commence a flight or continue in the event of in-flight re-planning when satisfied that the aircraft carries at least the planned amount of usable fuel and oil to complete the flight safely, taking into account the expected operating conditions.

CAT.OP.MPA.265  Take-off conditions

Before commencing take-off, the PIC shall be satisfied that:

(a) according to the information available to him, the weather at the aerodrome or operating site and the condition of the runway or Final Approach and Take-off Area (FATO) intended to be used would not prevent a safe take-off and departure; and

(b) established aerodrome operating minima will be complied with.
**CAT.OP.MPA.270  Minimum flight altitudes**

The PIC or the pilot to whom conduct of the flight has been delegated shall not fly below specified minimum altitudes except when:

(a) necessary for take-off or landing; or

(b) descending in accordance with procedures approved by the DCA.

**CAT.OP.MPA.275  Simulated abnormal situations in flight**

The operator shall ensure that when carrying passengers or cargo the following are not simulated:

(a) abnormal or emergency situations that require the application of abnormal or emergency procedures; or

(b) flight in IMC by artificial means.

**CAT.OP.MPA.280  In-flight fuel management — aeroplanes**

The operator shall establish a procedure to ensure that in-flight fuel checks and fuel management are carried out according to the following criteria.

(a) In-flight fuel checks

(1) The PIC shall ensure that fuel checks are carried out in-flight at regular intervals. The usable remaining fuel shall be recorded and evaluated to:

(i) compare actual consumption with planned consumption;

(ii) check that the usable remaining fuel is sufficient to complete the flight, in accordance with (b); and
(iii) determine the expected usable fuel remaining on arrival at the destination aerodrome.

(2) The relevant fuel data shall be recorded.

(b) In-flight fuel management.

(1) The flight shall be conducted so that the expected usable fuel remaining on arrival at the destination aerodrome is not less than:

(i) the required alternate fuel plus final reserve fuel; or

(ii) the final reserve fuel if no alternate aerodrome is required.

(2) If an in-flight fuel check shows that the expected usable fuel remaining on arrival at the destination aerodrome is less than:

(i) the required alternate fuel plus final reserve fuel, the PIC shall take into account the traffic and the operational conditions prevailing at the destination aerodrome, at the destination alternate aerodrome and at any other adequate aerodrome in deciding whether to proceed to the destination aerodrome or to divert so as to perform a safe landing with not less than final reserve fuel; or

(ii) the final reserve fuel if no alternate aerodrome is required, the PIC shall take appropriate action and proceed to an adequate aerodrome so as to perform a safe landing with not less than final reserve fuel.

(3) The PIC 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.

(4) The PIC shall declare a situation of fuel emergency by broadcasting **MAYDAY MAYDAY MAYDAY FUEL**, when the calculated usable fuel predicted to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the planned final reserve fuel.

(5) Additional conditions for specific procedures.

(i) On a flight using the RCF procedure, to proceed to the destination 1 aerodrome, the PIC shall ensure that the usable fuel remaining at the decision point is at least the total of:

(A) trip fuel from the decision point to the destination 1 aerodrome;

(B) contingency fuel equal to 5% of trip fuel from the decision point to the destination 1 aerodrome;

(C) destination 1 aerodrome alternate fuel, if a destination 1 alternate aerodrome is required; and

(D) final reserve fuel.

(ii) On a flight using the PDP procedure to proceed to the destination aerodrome, the PIC shall ensure that the usable fuel remaining at the PDP is at least the total of:

(A) trip fuel from the PDP to the destination aerodrome;
(B) contingency fuel from the PDP to the destination aerodrome; and

(C) additional fuel.

**CAT.OP.MPA.281 In-flight fuel management — helicopters**

(a) The operator shall establish a procedure to ensure that in-flight fuel checks and fuel management are carried out.

(b) The PIC shall ensure that the amount of usable fuel remaining in flight is not less than the fuel required to proceed to an aerodrome or operating site where a safe landing can be made, with final reserve fuel remaining.

(c) The PIC shall declare an emergency when the actual usable fuel on board is less than final reserve fuel.

**CAT.OP.MPA.285 Use of supplemental oxygen**

The PIC shall ensure that flight crew members engaged in performing duties essential to the safe operation of an aircraft in flight use supplemental oxygen continuously whenever the cabin altitude exceeds 10 000 feet for a period of more than 30 minutes and whenever the cabin altitude exceeds 13 000 feet.

**CAT.OP.MPA.290 Ground proximity detection**

When undue proximity to the ground is detected by a flight crew member or by a ground proximity warning system, the pilot flying shall take corrective action immediately to establish safe flight conditions.
CAT.OP.MPA.295  Use of airborne collision avoidance system (ACAS)

The operator shall establish operational procedures and training programmes to ensure that when ACAS is installed and serviceable, it shall be used in accordance with regulation 90 MCAR.

CAT.OP.MPA.300  Approach and landing conditions

Before commencing an approach to land, the PIC shall be satisfied that, according to the information available to him, the weather at the aerodrome and the condition of the runway or FATO 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.

CAT.OP.MPA.305  Commencement and continuation of approach

(a)  The PIC or the pilot to whom conduct of the flight has been delegated may commence an instrument approach regardless of the reported RVR/VIS.

(b)  If the reported RVR/VIS is less than the applicable minimum the approach shall not be continued:

(1)  below 1 000 feet above the aerodrome; or

(2)  into the final approach segment in the case where the DA/H or MDA/H is more than 1 000 feet above the aerodrome.

(c)  Where the RVR is not available, RVR values may be derived by converting the reported visibility.

(d)  If, after passing 1 000 feet above the aerodrome, the reported RVR/VIS falls below the applicable minimum, the approach may be continued to DA/H or MDA/H.
(e) The approach may be continued below DA/H or MDA/H and the landing may be completed provided that the visual reference adequate for the type of approach operation and for the intended runway is established at the DA/H or MDA/H and is maintained.

(f) The touchdown zone RVR shall always be controlling. If reported and relevant, the midpoint and stop-end RVR shall also be controlling. The minimum RVR value for the midpoint shall be 125 m or the RVR required for the touchdown zone if less, and 75 m for the stop-end. For aircraft equipped with a rollout guidance or control system, the minimum RVR value for the midpoint shall be 75 m.

**CAT.OP.MPA.310 Operating procedures — threshold crossing height — aeroplanes**

The operator shall establish operational procedures designed to ensure that an aeroplane conducting precision approaches crosses the threshold of the runway by a safe margin, with the aeroplane in the landing configuration and attitude.

**CAT.OP.MPA.315 Flight hours reporting — helicopters**

The operator shall make available to DCA the hours flown for each helicopter operated during the previous calendar year.

**CAT.OP.MPA.320 Aircraft categories**

(a) Aircraft categories shall be based on the indicated airspeed at threshold (VAT) which is equal to the stalling speed (VSO) multiplied by 1.3 or one-g (gravity) stall speed (VS1g) multiplied by 1.23 in the landing configuration at the maximum certified landing mass. If both VSO and VS1g are available, the higher resulting VAT shall be used.
(b) The aircraft categories specified in the table below shall be used.

<table>
<thead>
<tr>
<th>Aircraft category</th>
<th>VAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Less than 91 knots</td>
</tr>
<tr>
<td>B</td>
<td>From 91 to 120 knots</td>
</tr>
<tr>
<td>C</td>
<td>From 121 to 140 knots</td>
</tr>
<tr>
<td>D</td>
<td>From 141 to 165 knots</td>
</tr>
<tr>
<td>E</td>
<td>From 166 to 210 knots</td>
</tr>
</tbody>
</table>

Table 4

(c) The landing configuration that is to be taken into consideration shall be specified in the operations manual.

(d) The operator may apply a lower landing mass for determining the VAT if approved by the DCA. Such a lower landing mass shall be a permanent value, independent of the changing conditions of day-to-day operations.
CAT.POL.A.100 Performance classes

(a) The aeroplane shall be operated in accordance with the applicable performance class requirements as specified in Chapter 2, Chapter 3 and Chapter 4 respectively.

(b) Where full compliance with the applicable requirements of this Section cannot be shown due to specific design characteristics, the operator shall apply approved performance standards that ensure a level of safety equivalent to that of the appropriate chapter.

CAT.POL.A.105 General

(a) The mass of the aeroplane:

(1) at the start of the take-off; or

(2) in the event of in-flight re-planning, at the point from which the revised operational flight plan applies, shall not be greater than the mass at which the requirements of the appropriate chapter can be complied with for the flight to be undertaken. Allowance may be made for expected reductions in mass as the flight proceeds and for fuel jettisoning.
(b) The approved performance data contained in the AFM shall be used to determine compliance with the requirements of the appropriate chapter, supplemented as necessary with other data as prescribed in the relevant chapter. The operator shall specify other data in the operations manual. When applying the factors prescribed in the appropriate chapter, account may be taken of any operational factors already incorporated in the AFM performance data to avoid double application of factors.

(c) Due account shall be taken of aeroplane configuration, environmental conditions and the operation of systems that have an adverse effect on performance.

(d) For performance purposes, a damp runway, other than a grass runway, may be considered to be dry.

(e) The operator shall take account of charting accuracy when assessing the take-off requirements of the applicable chapters.
CHAPTER 2

PERFORMANCE CLASS A AEROPLANE

CAT.POL.A.200  General

(a) The approved performance data in the AFM shall be supplemented as necessary with other data if the approved performance data in the AFM is insufficient in respect of items such as:

(1) accounting for reasonably expected adverse operating conditions such as take-off and landing on contaminated runways; and

(2) consideration of engine failure in all flight phases.

(b) For wet and contaminated runways, performance data determined in accordance with applicable standards on certification of large aeroplanes or equivalent shall be used.

(c) The use of other data referred to in (a) and equivalent requirements referred to in (b) shall be specified in the operations manual.

CAT.POL.A.205  Take-off

(a) The take-off mass shall not exceed the maximum take-off mass specified in the AFM for the pressure altitude and the ambient temperature at the aerodrome of departure.

(b) The following requirements shall be met when determining the maximum permitted take-off mass:

(1) the accelerate-stop distance shall not exceed the accelerate-stop distance available (ASDA);
(2) the take-off distance shall not exceed the take-off distance available, with a clearway distance not exceeding half of the take-off run available (TORA);

(3) the take-off run shall not exceed the TORA;

(4) a single value of $V_1$ shall be used for the rejected and continued take-off; and

(5) on a wet or contaminated runway, the take-off mass shall not exceed that permitted for a take-off on a dry runway under the same conditions.

(c) When showing compliance with (b), the following shall be taken into account:

(1) the pressure altitude at the aerodrome;

(2) the ambient temperature at the aerodrome;

(3) the runway surface condition and the type of runway surface;

(4) the runway slope in the direction of take-off;

(5) not more than 50% of the reported headwind component or not less than 150% of the reported tailwind component; and

(6) the loss, if any, of runway length due to alignment of the aeroplane prior to take-off.
CAT.POL.A.210 Take-off obstacle clearance

(a) The net take-off flight path shall be determined in such a way that the aeroplane clears all obstacles by a vertical distance of at least 35 feet or by a horizontal distance of at least 90 m plus 0.125 × D, where D is the horizontal distance the aeroplane has travelled from the end of the take-off distance available (TODA) or the end of the take-off distance if a turn is scheduled before the end of the TODA. For aeroplanes with a wingspan of less than 60 m, a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m, plus 0.125 × D may be used.

(b) When showing compliance with (a):

(1) The following items shall be taken into account:

   (i) the mass of the aeroplane at the commencement of the take-off run;

   (ii) the pressure altitude at the aerodrome;

   (iii) the ambient temperature at the aerodrome; and

   (iv) not more than 50 % of the reported headwind component or not less than 150 % of the reported tailwind component.

(2) Track changes shall not be allowed up to the point at which the net take-off flight path has achieved a height equal to one half the wingspan but not less than 50 feet above the elevation of the end of the TORA. Thereafter, up to a height of 400 feet it is assumed that the aeroplane is banked by no more than 15°. Above 400 feet height bank angles greater than 15°, but not more than 25° may be scheduled.
(3) Any part of the net take-off flight path in which the aeroplane is banked by more than 15° shall clear all obstacles within the horizontal distances specified in (a), (b)(6) and (b)(7) by a vertical distance of at least 50 feet.

(4) Operations that apply increased bank angles of not more than 20° between 200 feet and 400 feet, or not more than 30° above 400 feet, shall be carried out in accordance with CAT.POL.A.240.

(5) Adequate allowance shall be made for the effect of bank angle on operating speeds and flight path including the distance increments resulting from increased operating speeds.

(6) For cases where the intended flight path does not require track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

   (i) 300 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or

   (ii) 600 m, for flights under all other conditions.

(7) For cases where the intended flight path requires track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

   (i) 600 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or

   (ii) 900 m, for flights under all other conditions.
(c) The operator shall establish contingency procedures to satisfy the requirements in (a) and (b) and to provide a safe route, avoiding obstacles, to enable the aeroplane to either comply with the en-route requirements of CAT.POL.A.215, or land at either the aerodrome of departure or at a take-off alternate aerodrome.

**CAT.POL.A.215  En-route — one-engine-inoperative (OEI)**

(a) The OEI en-route net flight path data shown in the AFM, appropriate to the meteorological conditions expected for the flight, shall allow demonstration of compliance with (b) or (c) at all points along the route. The net flight path shall have a positive gradient at 1 500 feet above the aerodrome where the landing is assumed to be made after engine failure. In meteorological conditions requiring the operation of ice protection systems, the effect of their use on the net flight path shall be taken into account.

(b) The gradient of the net flight path shall be positive at least 1 000 feet above all terrain and obstructions along the route within 9.3 km (5 NM) on either side of the intended track.

(c) The net flight path shall permit the aeroplane to continue flight from the cruising altitude to an aerodrome where a landing can be made in accordance with CAT.POL.A.225 or CAT.POL.A.230, as appropriate. The net flight path shall clear vertically, by at least 2 000 feet, all terrain and obstructions along the route within 9.3 km (5 NM) on either side of the intended track in accordance with the following:

(1) the engine is assumed to fail at the most critical point along the route;

(2) account is taken of the effects of winds on the flight path;
(3) fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with the required fuel reserves, if a safe procedure is used; and

(4) the aerodrome where the aeroplane is assumed to land after engine failure shall meet the following criteria:

   (i) the performance requirements at the expected landing mass are met; and

   (ii) weather reports and/or forecasts and field condition reports indicate that a safe landing can be accomplished at the estimated time of landing.

(d) The operator shall increase the width margins of (b) and (c) to 18.5 km (10 NM) if the navigational accuracy does not meet at least required navigation performance 5 (RNP5).

**CAT.POL.A.220 En-route — aeroplanes with three or more engines, two engines inoperative**

(a) At no point along the intended track shall an aeroplane having three or more engines be more than 90 minutes, at the all-engines long range cruising speed at standard temperature in still air, away from an aerodrome at which the performance requirements applicable at the expected landing mass are met, unless it complies with (b) to (f).

(b) The two-engines-inoperative en-route net flight path data shall allow the aeroplane to continue the flight, in the expected meteorological conditions, from the point where two engines are assumed to fail simultaneously to an aerodrome at which it is possible to land and come to a complete stop when using the prescribed procedure for a landing with two engines inoperative. The net flight path shall clear vertically, by at least 2 000 feet, all terrain and obstructions along
the route within 9.3 km (5 NM) on either side of the intended track. At altitudes and in meteorological conditions requiring ice protection systems to be operable, the effect of their use on the net flight path data shall be taken into account. If the navigational accuracy does not meet at least RNP5, the operator shall increase the width margin given above to 18.5 km (10 NM).

(c) The two engines shall be assumed to fail at the most critical point of that portion of the route where the aeroplane is more than 90 minutes, at the all-engines long range cruising speed at standard temperature in still air, away from an aerodrome at which the performance requirements applicable at the expected landing mass are met.

(d) The net flight path shall have a positive gradient at 1500 feet above the aerodrome where the landing is assumed to be made after the failure of two engines.

(e) Fuel jettisoning shall be permitted to an extent consistent with reaching the aerodrome with the required fuel reserves, if a safe procedure is used.

(f) The expected mass of the aeroplane at the point where the two engines are assumed to fail shall not be less than that which would include sufficient fuel to proceed to an aerodrome where the landing is assumed to be made, and to arrive there at least 1500 feet directly over the landing area and thereafter to fly level for 15 minutes.

**CAT.POL.A.225 Landing — destination and alternate aerodromes**

The landing mass of the aeroplane determined in accordance with CAT.POL.A.105 (a) shall not exceed the maximum landing mass specified for the altitude and the ambient temperature expected for the estimated time of landing at the destination aerodrome and alternate aerodrome.
CAT.POL.A.230  Landing — dry runways

(a) The landing mass of the aeroplane determined in accordance with CAT.POL.A.105 (a) for the estimated time of landing at the destination aerodrome and at any alternate aerodrome shall allow a full stop landing from 50 feet above the threshold:

(1) for turbo-jet powered aeroplanes, within 60 % of the landing distance available (LDA); and

(2) for turbo-propeller powered aeroplanes, within 70 % of the LDA.

(b) For steep approach operations, the operator shall use the landing distance data factored in accordance with (a), based on a screen height of less than 60 feet, but not less than 35 feet, and shall comply with CAT.POL.A.245.

(c) For short landing operations, the operator shall use the landing distance data factored in accordance with (a) and shall comply with CAT.POL.A.250.

(d) When determining the landing mass, the operator shall take the following into account:

(1) the altitude at the aerodrome;

(2) not more than 50 % of the headwind component or not less than 150 % of the tailwind component; and

(3) the runway slope in the direction of landing if greater than ±2 %.
(e) For dispatching the aeroplane it shall be assumed that:

(1) the aeroplane will land on the most favourable runway, in still air; and

(2) the aeroplane will land on the runway most likely to be assigned, considering the probable wind speed and direction, the ground handling characteristics of the aeroplane and other conditions such as landing aids and terrain.

(f) If the operator is unable to comply with (e)(1) for a destination aerodrome having a single runway where a landing depends upon a specified wind component, the aeroplane may be dispatched if two alternate aerodromes are designated that permit full compliance with (a) to (e). Before commencing an approach to land at the destination aerodrome, the PIC shall check that a landing can be made in full compliance with (a) to (d) and CAT.POL.A.225.

(g) If the operator is unable to comply with (e)(2) for the destination aerodrome, the aeroplane shall be only dispatched if an alternate aerodrome is designated that allows full compliance with (a) to (e).

**CAT.POLA.235  Landing — wet and contaminated runways**

(a) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be wet, the LDA shall be at least 115% of the required landing distance, determined in accordance with CAT.POLA.230.

(b) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be contaminated, the LDA shall be at least the landing distance determined in accordance with (a), or at least 115% of the landing distance determined in accordance with approved contaminated landing
distance data or equivalent, whichever is greater. The operator shall specify in the operations manual if equivalent landing distance data are to be applied.

(c) A landing distance on a wet runway shorter than that required by (a), but not less than that required by CAT.POL.A.230 (a), may be used if the AFM includes specific additional information about landing distances on wet runways.

(d) A landing distance on a specially prepared contaminated runway shorter than that required by (b), but not less than that required by CAT.POL.A.230 (a), may be used if the AFM includes specific additional information about landing distances on contaminated runways.

(e) For (b), (c) and (d), the criteria of CAT.POL.A.230 shall be applied accordingly, except that CAT.POL.A.230 (a) shall not be applied to (b) above.

CAT.POL.A.240 Approval of operations with increased bank angles

(a) Operations with increased bank angles require prior approval by DCA.

(b) To obtain the approval, the operator shall provide evidence that the following conditions are met:

1. the AFM contains approved data for the required increase of operating speed and data to allow the construction of the flight path considering the increased bank angles and speeds;

2. visual guidance is available for navigation accuracy;

3. weather minima and wind limitations are specified for each runway; and
(4) the flight crew has obtained adequate knowledge of the route to be flown and of the procedures to be used in accordance with Part-ORO, Subpart FC.

CAT.POL.A.245  Approval of steep approach operations

(a) Steep approach operations using glideslope angles of 4.5° or more and with screen heights of less than 60 feet, but not less than 35 feet, require prior approval of DCA.

(b) To obtain the approval, the operator shall provide evidence that the following conditions are met:

(1) the AFM states the maximum approved glideslope angle, any other limitations, normal, abnormal or emergency procedures for the steep approach as well as amendments to the field length data when using steep approach criteria;

(2) for each aerodrome at which steep approach operations are to be conducted:

(i) a suitable glide path reference system comprising at least a visual glide path indicating system shall be available;

(ii) weather minima shall be specified; and

(iii) the following items shall be taken into consideration:

(A) the obstacle situation;

(B) the type of glide path reference and runway guidance;
(C) the minimum visual reference to be required at decision height (DH) and MDA;

(D) available airborne equipment;

(E) pilot qualification and special aerodrome familiarisation;

(F) AFM limitations and procedures; and

(G) missed approach criteria.

**CAT.POL.A.250 Approval of short landing operations**

(a) Short landing operations require prior approval by DCA.

(b) To obtain the approval, the operator shall provide evidence that the following conditions are met:

1. the distance used for the calculation of the permitted landing mass may consist of the usable length of the declared safe area plus the declared LDA;

2. the State of the aerodrome has determined a public interest and operational necessity for the operation, either due to the remoteness of the aerodrome or to physical limitations relating to extending the runway;

3. the vertical distance between the path of the pilot’s eye and the path of the lowest part of the wheels, with the aeroplane established on the normal glide path, does not exceed 3 m;
(4) RVR/VIS minimum shall not be less than 1 500 m and wind limitations are specified in the operations manual;

(5) minimum pilot experience, training and special aerodrome familiarisation requirements are specified and met;

(6) the crossing height over the beginning of the usable length of the declared safe area is 50 feet;

(7) the use of the declared safe area is approved by the State of the aerodrome;

(8) the usable length of the declared safe area does not exceed 90 m;

(9) the width of the declared safe area is not less than twice the runway width or twice the wing span, whichever is greater, centred on the extended runway centre line;

(10) the declared safe area is clear of obstructions or depressions that would endanger an aeroplane undershooting the runway and no mobile object is permitted on the declared safe area while the runway is being used for short landing operations;

(11) the slope of the declared safe area does not exceed 5 % upward nor 2 % downward in the direction of landing; and

(12) additional conditions, if specified by the DCA, taking into account aeroplane type characteristics, orographic characteristics in the approach area,
available approach aids and missed approach/balked landing considerations.
CHAPTER 3

PERFORMANCE CLASS B AEROPLANE

CAT.POLA.300  General

(a) The operator shall not operate a single-engine aeroplane:

(1) at night; or

(2) in IMC except under special VFR.

(b) Notwithstanding the requirements in (a), an operator shall ensure that any single engine turbine-powered aeroplane flying at night or in instrument meteorological conditions complies with the airworthiness certification and the overall level of safety is provided by:

(1) the reliability of the turbine engine;

(2) the operator’s maintenance procedures, operating practices, flight dispatch procedures and crew training programmes; and

(3) equipment and other requirements provided in accordance with specified requirements.

(c) The operator shall treat two-engine aeroplanes that do not meet the climb requirements of CAT.POLA.340 as single-engine aeroplanes.
**CAT.POL.A.305  Take-off**

(a) The take-off mass shall not exceed the maximum take-off mass specified in the AFM for the pressure altitude and the ambient temperature at the aerodrome of departure.

(b) The un-factored take-off distance, specified in the AFM, shall not exceed:

1. when multiplied by a factor of 1.25, the take-off run available (TORA); or

2. when stop way and/or clearway is available, the following:
   
   (i) the TORA;

   (ii) when multiplied by a factor of 1.15, the take-off distance available (TODA); or

   (iii) when multiplied by a factor of 1.3, the ASDA.

(c) When showing compliance with (b), the following shall be taken into account:

1. the mass of the aeroplane at the commencement of the take-off run;

2. the pressure altitude at the aerodrome;

3. the ambient temperature at the aerodrome;

4. the runway surface condition and the type of runway surface;

5. the runway slope in the direction of take-off; and
(6) not more than 50 % of the reported headwind component or not less than 150 % of the reported tailwind component.

CAT.POL.A.310 Take-off obstacle clearance — multi-engine aeroplanes

(a) The take-off flight path of aeroplanes with two or more engines shall be determined in such a way that the aeroplane clears all obstacles by a vertical distance of at least 50 feet, or by a horizontal distance of at least 90 m plus 0.125 × D, where D is the horizontal distance travelled by the aeroplane from the end of the TODA or the end of the take-off distance if a turn is scheduled before the end of the TODA, except as provided in (b) and (c). For aeroplanes with a wingspan of less than 60 m, a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m plus 0.125 × D may be used. It shall be assumed that:

(1) the take-off flight path begins at a height of 50 feet above the surface at the end of the take-off distance required by CAT.POL.A.305 (b) and ends at a height of 1 500 feet above the surface;

(2) the aeroplane is not banked before the aeroplane has reached a height of 50 feet above the surface, and thereafter the angle of bank does not exceed 15°;

(3) failure of the critical engine occurs at the point on the all engine take-off flight path where visual reference for the purpose of avoiding obstacles is expected to be lost;

(4) the gradient of the take-off flight path from 50 ft to the assumed engine failure height is equal to the average all-engines gradient during climb and transition to the en-route configuration, multiplied by a factor of 0.77; and
(5) the gradient of the take-off flight path from the height reached in accordance with (a)(4) to the end of the take-off flight path is equal to the OEI en-route climb gradient shown in the AFM.

(b) For cases where the intended flight path does not require track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

(1) 300 m, if the flight is conducted under conditions allowing visual course guidance navigation, or if navigational aids are available enabling the pilot to maintain the intended flight path with the same accuracy; or

(2) 600 m, for flights under all other conditions.

(c) For cases where the intended flight path requires track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

(1) 600 m, for flights under conditions allowing visual course guidance navigation; or

(2) 900 m, for flights under all other conditions.

(d) When showing compliance with (a) to (c), the following shall be taken into account:

(1) the mass of the aeroplane at the commencement of the take-off run;

(2) the pressure altitude at the aerodrome;

(3) the ambient temperature at the aerodrome; and
not more than 50 % of the reported headwind component or not less than 150 % of the reported tailwind component.

CAT.POL.A.315  En-route — multi-engine aeroplanes

(a)  The aeroplane, in the meteorological conditions expected for the flight and in the event of the failure of one engine, with the remaining engines operating within the maximum continuous power conditions specified, shall be capable of continuing flight at or above the relevant minimum altitudes for safe flight stated in the operations manual to a point of 1 000 feet above an aerodrome at which the performance requirements can be met.

(b)  It shall be assumed that, at the point of engine failure:

   (1)  the aeroplane is not flying at an altitude exceeding that at which the rate of climb equals 300 feet per minute with all engines operating within the maximum continuous power conditions specified; and

   (2)  the en-route gradient with OEI shall be the gross gradient of descent or climb, as appropriate, respectively increased by a gradient of 0.5 %, or decreased by a gradient of 0.5 %.

CAT.POL.A.320  En-route — single-engine aeroplanes

(a)  In the meteorological conditions expected for the flight, and in the event of engine failure, the aeroplane shall be capable of reaching a place at which a safe forced landing can be made.

(b)  It shall be assumed that, at the point of engine failure:
(1) the aeroplane is not flying at an altitude exceeding that at which the rate of climb equals 300 feet per minute, with the engine operating within the maximum continuous power conditions specified; and

(2) the en-route gradient is the gross gradient of descent increased by a gradient of 0.5 %.

CAT.POL.A.325  Landing — destination and alternate aerodromes

The landing mass of the aeroplane determined in accordance with CAT.POL.A.105 (a) shall not exceed the maximum landing mass specified for the altitude and the ambient temperature expected at the estimated time of landing at the destination aerodrome and alternate aerodrome.

CAT.POL.A.330  Landing — dry runways

(a) The landing mass of the aeroplane determined in accordance with CAT.POL.A.105 (a) for the estimated time of landing at the destination aerodrome and at any alternate aerodrome shall allow a full stop landing from 50 feet above the threshold within 70 % of the LDA taking into account:

(1) the altitude at the aerodrome;

(2) not more than 50 % of the headwind component or not less than 150 % of the tailwind component;

(3) the runway surface condition and the type of runway surface; and

(4) the runway slope in the direction of landing.
(b) For steep approach operations, the operator shall use landing distance data factored in accordance with (a) based on a screen height of less than 60 feet, but not less than 35 feet, and comply with CAT.POL.A.345.

(c) For short landing operations, the operator shall use landing distance data factored in accordance with (a) and comply with CAT.POL.A.350.

(d) For dispatching the aeroplane in accordance with (a) to (c), it shall be assumed that:

(1) the aeroplane will land on the most favourable runway, in still air; and

(2) the aeroplane will land on the runway most likely to be assigned considering the probable wind speed and direction, the ground handling characteristics of the aeroplane and other conditions such as landing aids and terrain.

(e) If the operator is unable to comply with (d)(2) for the destination aerodrome, the aeroplane shall only be dispatched if an alternate aerodrome is designated that permits full compliance with (a) to (d).

CAT.POL.A.335  Landing — wet and contaminated runways

(a) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be wet, the LDA shall be equal to or exceed the required landing distance, determined in accordance with CAT.POL.A.330, multiplied by a factor of 1.15.

(b) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be contaminated, the landing distance shall
not exceed the LDA. The operator shall specify in the operations manual the landing distance data to be applied.

(c) A landing distance on a wet runway shorter than that required by (a), but not less than that required by CAT.POL.A.330 (a), may be used if the AFM includes specific additional information about landing distances on wet runways.

CAT.POL.A.340 Take-off and landing climb requirements

The operator of a two-engine aeroplane shall fulfil the following take-off and landing climb requirements.

(a) Take-off climb

(1) All engines operating

(i) The steady gradient of climb after take-off shall be at least 4 % with:

(A) take-off power on each engine;

(B) the landing gear extended, except that if the landing gear can be retracted in not more than 7 seconds, it may be assumed to be retracted;

(C) the wing flaps in the take-off position(s); and

(D) a climb speed not less than the greater of 1.1 VMC (minimum control speed on or near ground) and 1.2 VS1 (stall speed or minimum steady flight speed in the landing configuration).

(2) OEI
(i) The steady gradient of climb at an altitude of 400 ft above the take-off surface shall be measurably positive with:

(A) the critical engine inoperative and its propeller in the minimum drag position;

(B) the remaining engine at take-off power;

(C) the landing gear retracted;

(D) the wing flaps in the take-off position(s); and

(E) a climb speed equal to that achieved at 50 feet.

(ii) The steady gradient of climb shall be not less than 0.75% at an altitude of 1500 feet above the take-off surface with:

(A) the critical engine inoperative and its propeller in the minimum drag position;

(B) the remaining engine at not more than maximum continuous power;

(C) the landing gear retracted;

(D) the wing flaps retracted; and

(E) a climb speed not less than 1.2 VS1.
(b) Landing climb

(1) All engines operating

(i) The steady gradient of climb shall be at least 2.5% with:

(A) not more than the power or thrust that is available 8 seconds after initiation of movement of the power controls from the minimum flight idle position;

(B) the landing gear extended;

(C) the wing flaps in the landing position; and

(D) a climb speed equal to VREF (reference landing speed).

(2) OEI

(i) The steady gradient of climb shall be not less than 0.75% at an altitude of 1,500 feet above the landing surface with:

(A) the critical engine inoperative and its propeller in the minimum drag position;

(B) the remaining engine at not more than maximum continuous power;

(C) the landing gear retracted;

(D) the wing flaps retracted; and
(E) a climb speed not less than 1.2 VS1.

CAT.POL.A.345 Approval of steep approach operations

(a) Steep approach operations using glideslope angles of 4.5° or more and with screen heights of less than 60 feet, but not less than 35 feet, require prior approval by DCA.

(b) To obtain the approval, the operator shall provide evidence that the following conditions are met:

(1) the AFM states the maximum approved glideslope angle, any other limitations, normal, abnormal or emergency procedures for the steep approach as well as amendments to the field length data when using steep approach criteria; and

(2) for each aerodrome at which steep approach operations are to be conducted:

(i) a suitable glide path reference system, comprising at least a visual glide path indicating system, is available;

(ii) weather minima are specified; and

(iii) the following items are taken into consideration:

(A) the obstacle situation;

(B) the type of glide path reference and runway guidance;
(C) the minimum visual reference to be required at DH and MDA;

(D) available airborne equipment;

(E) pilot qualification and special aerodrome familiarisation;

(F) AFM limitations and procedures; and

(G) missed approach criteria.

**CAT.POL.A.350 Approval of short landing operations**

(a) Short landing operations require prior approval by DCA.

(b) To obtain the approval, the operator shall provide evidence that the following conditions are met:

   (1) the distance used for the calculation of the permitted landing mass may consist of the usable length of the declared safe area plus the declared LDA;

   (2) the use of the declared safe area is approved by the State of the aerodrome;

   (3) the declared safe area is clear of obstructions or depressions that would endanger an aeroplane undershooting the runway and no mobile object is permitted on the declared safe area while the runway is being used for short landing operations;

   (4) the slope of the declared safe area does not exceed 5 % upward nor 2 % downward slope in the direction of landing;
(5) the usable length of the declared safe area does not exceed 90 m;

(6) the width of the declared safe area is not less than twice the runway width, centred on the extended runway centreline;

(7) the crossing height over the beginning of the usable length of the declared safe area is not less than 50 feet;

(8) weather minima are specified for each runway to be used and are not less than the greater of VFR or NPA minima;

(9) pilot experience, training and special aerodrome familiarisation requirements are specified and met;

(10) additional conditions, if specified by the DCA, taking into account the aeroplane type characteristics, orographic characteristics in the approach area, available approach aids and missed approach/balked landing considerations.
CHAPTER 4

PERFORMANCE CLASS C AEROPLANE

CAT.POL.A.400  Take-off

(a) The take-off mass shall not exceed the maximum take-off mass specified in the AFM for the pressure altitude and the ambient temperature at the aerodrome of departure.

(b) For aeroplanes that have take-off field length data contained in their AFM that do not include engine failure accountability, the distance from the start of the take-off roll required by the aeroplane to reach a height of 50 feet above the surface with all engines operating within the maximum take-off power conditions specified, when multiplied by a factor of either:

1. 1.33 for aeroplanes having two engines;

2. 1.25 for aeroplanes having three engines; or

3. 1.18 for aeroplanes having four engines,

shall not exceed the take-off run available (TORA) at the aerodrome at which the take-off is to be made.

(c) For aeroplanes that have take-off field length data contained in their AFM which accounts for engine failure, the following requirements shall be met in accordance with the specifications in the AFM:

1. the accelerate-stop distance shall not exceed the ASDA;
(2) the take-off distance shall not exceed the take-off distance available (TODA), with a clearway distance not exceeding half of the TORA;

(3) the take-off run shall not exceed the TORA;

(4) a single value of V1 for the rejected and continued take-off shall be used; and

(5) on a wet or contaminated runway the take-off mass shall not exceed that permitted for a take-off on a dry runway under the same conditions.

(d) The following shall be taken into account:

(1) the pressure altitude at the aerodrome;

(2) the ambient temperature at the aerodrome;

(3) the runway surface condition and the type of runway surface;

(4) the runway slope in the direction of take-off;

(5) not more that 50 % of the reported headwind component or not less than 150 % of the reported tailwind component; and

(6) the loss, if any, of runway length due to alignment of the aeroplane prior to take-off.
CAT.POL.A.405  Take-off obstacle clearance

(a) The take-off flight path with OEl shall be determined such that the aeroplane clears all obstacles by a vertical distance of at least 50 feet plus 0.01 × D, or by a horizontal distance of at least 90 m plus 0.125 × D, where D is the horizontal distance the aeroplane has travelled from the end of the TODA. For aeroplanes with a wingspan of less than 60 m, a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m plus 0.125 × D may be used.

(b) The take-off flight path shall begin at a height of 50 feet above the surface at the end of the take-off distance required by CAT.POL.A.405 (b) or (c), as applicable, and end at a height of 1 500 feet above the surface.

(c) When showing compliance with (a), the following shall be taken into account:

1. the mass of the aeroplane at the commencement of the take-off run;
2. the pressure altitude at the aerodrome;
3. the ambient temperature at the aerodrome; and
4. not more than 50 % of the reported headwind component or not less than 150 % of the reported tailwind component.

(d) Track changes shall not be allowed up to that point of the take-off flight path where a height of 50 feet above the surface has been achieved. Thereafter, up to a height of 400 feet it is assumed that the aeroplane is banked by no more than 15°. Above 400 feet height bank angles greater than 15°, but not more than 25°, may be
scheduled. Adequate allowance shall be made for the effect of bank angle on operating speeds and flight path, including the distance increments resulting from increased operating speeds.

(e) For cases that do not require track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

(1) 300 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or

(2) 600 m, for flights under all other conditions.

(f) For cases that do require track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

(1) 600 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or

(2) 900 m, for flights under all other conditions.

(g) The operator shall establish contingency procedures to satisfy (a) to (f) and to provide a safe route, avoiding obstacles, to enable the aeroplane to either comply with the en-route requirements of CAT.POL.A.410, or land at either the aerodrome of departure or at a take-off alternate aerodrome.

**CAT.POL.A.410**  **En-route — all engines operating**

(a) In the meteorological conditions expected for the flight, at any point on its route or on any planned diversion therefrom, the aeroplane shall be capable of a rate of climb of at least 300 feet per minute with all engines operating within the maximum continuous power conditions specified at:
(1) the minimum altitudes for safe flight on each stage of the route to be flown, or of any planned diversion therefrom, specified in or calculated from the information contained in the operations manual relating to the aeroplane; and

(2) the minimum altitudes necessary for compliance with the conditions prescribed in CAT.POL.A.415 and 420, as appropriate.

**CAT.POL.A.415 En-route — OEI**

(a) In the meteorological conditions expected for the flight, in the event of any one engine becoming inoperative at any point on its route or on any planned diversion therefrom and with the other engine(s) operating within the maximum continuous power conditions specified, the aeroplane shall be capable of continuing the flight from the cruising altitude to an aerodrome where a landing can be made in accordance with CAT.POL.A.430 or CAT.POL.A.435, as appropriate. The aeroplane shall clear obstacles within 9.3 km (5 NM) either side of the intended track by a vertical interval of at least:

(1) 1 000 feet, when the rate of climb is zero or greater; or

(2) 2 000 feet, when the rate of climb is less than zero.

(b) The flight path shall have a positive slope at an altitude of 1 500 feet (450 m) above the aerodrome where the landing is assumed to be made after the failure of one engine.

(c) The available rate of climb of the aeroplane shall be taken to be 150 feet per minute less than the gross rate of climb specified.
(d) The width margins of (a) shall be increased to 18.5 km (10 NM) if the navigational accuracy does not meet at least RNP5.

(e) Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with the required fuel reserves, if a safe procedure is used.

**CAT.POL.A.420 En-route — aeroplanes with three or more engines, two engines inoperative**

(a) At no point along the intended track shall an aeroplane having three or more engines be more than 90 minutes, at the all-engines long range cruising speed at standard temperature in still air, away from an aerodrome at which the performance requirements applicable at the expected landing mass are met, unless it complies with (b) to (e).

(b) The two-engines-inoperative flight path shall permit the aeroplane to continue the flight, in the expected meteorological conditions, clearing all obstacles within 9.3 km (5 NM) either side of the intended track by a vertical interval of at least 2,000 feet, to an aerodrome at which the performance requirements applicable at the expected landing mass are met.

(c) The two engines are assumed to fail at the most critical point of that portion of the route where the aeroplane is more than 90 minutes, at the all-engines long range cruising speed at standard temperature in still air, away from an aerodrome at which the performance requirements applicable at the expected landing mass are met.

(d) The expected mass of the aeroplane at the point where the two engines are assumed to fail shall not be less than that which would include sufficient fuel to proceed to an aerodrome where the landing is assumed to be made, and to arrive
there at an altitude of at least 1,500 feet (450 m) directly over the landing area and thereafter to fly level for 15 minutes.

(e) The available rate of climb of the aeroplane shall be taken to be 150 feet per minute less than that specified.

(f) The width margins of (b) shall be increased to 18.5 km (10 NM) if the navigational accuracy does not meet at least RNP5.

(g) Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with the required fuel reserves, if a safe procedure is used.

**CAT.POLA.425  Landing — destination and alternate aerodromes**

The landing mass of the aeroplane determined in accordance with CAT.POLA.105 (a) shall not exceed the maximum landing mass specified in the AFM for the altitude and, if accounted for in the AFM, the ambient temperature expected for the estimated time of landing at the destination aerodrome and alternate aerodrome.

**CAT.POLA.430  Landing — dry runways**

(a) The landing mass of the aeroplane determined in accordance with CAT.POLA.105 (a) for the estimated time of landing at the destination aerodrome and any alternate aerodrome shall allow a full stop landing from 50 feet above the threshold within 70 % of the LDA taking into account:

(1) the altitude at the aerodrome;

(2) not more than 50 % of the headwind component or not less than 150 % of the tailwind component;
(3) the type of runway surface; and

(4) the slope of the runway in the direction of landing.

(b) For dispatching the aeroplane it shall be assumed that:

(1) the aeroplane will land on the most favourable runway in still air; and

(2) the aeroplane will land on the runway most likely to be assigned considering the probable wind speed and direction, the ground handling characteristics of the aeroplane and other conditions such as landing aids and terrain.

(c) If the operator is unable to comply with (b)(2) for the destination aerodrome, the aeroplane shall only be dispatched if an alternate aerodrome is designated that permits full compliance with (a) and (b).

**CAT.POLA.435  Landing — wet and contaminated runways**

(a) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be wet, the LDA shall be equal to or exceed the required landing distance, determined in accordance with CAT.POLA.430, multiplied by a factor of 1.15.

(b) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be contaminated, the landing distance shall not exceed the LDA. The operator shall specify in the operations manual the landing distance data to be applied.
SECTION 2
HELICOPTERS

CHAPTER 1
GENERAL REQUIREMENTS

CAT.POL.H.100  Applicability

(a) Helicopters shall be operated in accordance with the applicable performance class requirements as specified in Chapter 2, Chapter 3 and Chapter 4 respectively.

(b) Helicopters shall be operated in performance class 1 helicopter:

(1) when operated to/from aerodromes or operating sites located in a congested hostile environment, except when operated to/from a public interest site (PIS) in accordance with CAT.POL.H.225; or

(2) when having an MAPSC of more than 19, except when operated to/from a helideck in performance class 2 helicopter under an approval in accordance with CAT.POL.H.305.

(c) Unless otherwise prescribed by (b), helicopters that have an MAPSC of 19 or less but more than nine shall be operated in performance class 1 or 2 helicopter.

(d) Unless otherwise prescribed by (b), helicopters that have an MAPSC of nine or less shall be operated in performance class 1, 2 or 3 helicopter.

CAT.POL.H.105  General

(a) The mass of the helicopter:
(1) at the start of the take-off; or

(2) in the event of in-flight re-planning, at the point from which the revised operational flight plan applies, shall not be greater than the mass at which the applicable requirements of this Section can be complied with for the flight to be undertaken, taking into account expected reductions in mass as the flight proceeds and such fuel jettisoning as is provided for in the relevant requirement.

(b) The approved performance data contained in the RFM shall be used to determine compliance with the requirements of this Section, supplemented as necessary with other data as prescribed in the relevant requirement. The operator shall specify such other data in the operations manual. When applying the factors prescribed in this Section, account may be taken of any operational factors already incorporated in the RFM performance data to avoid double application of factors.

(c) When showing compliance with the requirements of this Section, account shall be taken of the following parameters:

(1) mass of the helicopter;

(2) the helicopter configuration;

(3) the environmental conditions, in particular:

(i) pressure altitude and temperature;

(ii) wind:

(A) except as provided in (C), for take-off, take-off flight path and landing requirements, accountability for wind shall be no
more than 50 % of any reported steady headwind component of 5 kt or more;

(B) where take-off and landing with a tailwind component is permitted in the RFM, and in all cases for the take-off flight path, not less than 150 % of any reported tailwind component shall be taken into account; and

(C) where precise wind measuring equipment enables accurate measurement of wind velocity over the point of take-off and landing, wind components in excess of 50 % may be established by the operator, provided that the operator demonstrates to the DCA that the proximity to the FATO and accuracy enhancements of the wind measuring equipment provide an equivalent level of safety;

(4) the operating techniques; and

(5) the operation of any systems that have an adverse effect on performance.

CAT.POL.H.110 Obstacle accountability

(a) For the purpose of obstacle clearance requirements, an obstacle located beyond the FATO, in the take-off flight path, or the missed approach flight path shall be considered if its lateral distance from the nearest point on the surface below the intended flight path is not further than the following:

(1) For operations under VFR:

(i) half of the minimum width defined in the RFM or, when no width is defined, “0.75 × D”, where D is the largest dimension of the helicopter when the rotors are turning;
(ii) plus, the greater of “0.25 × D” or “3 m”;

(iii) plus:

(A) 0.10 × distance DR for operations under VFR by day; or

(B) 0.15 × distance DR for operations under VFR at night.

(2) For operations under IFR:

(i) “1.5 D” or 30 m, whichever is greater, plus:

(A) 0.10 × distance DR, for operations under IFR with accurate course guidance;

(B) 0.15 × distance DR, for operations under IFR with standard course guidance; or

(C) 0.30 × distance DR for operations under IFR without course guidance.

(ii) When considering the missed approach flight path, the divergence of the obstacle accountability area only applies after the end of the take-off distance available.

(3) For operations with initial take-off conducted visually and converted to IFR/IMC at a transition point, the criteria required in (1) apply up to the transition point, and the criteria required in (2) apply after the transition point. The transition point cannot be located before the end of the take-off distance required for helicopters (TODRH) operating in performance class
1 or before the defined point after take-off (DPATO) for helicopters operating in performance class 2.

(b) For take-off using a back-up or a lateral transition procedure, for the purpose of obstacle clearance requirements, an obstacle located in the back-up or lateral transition area shall be considered if its lateral distance from the nearest point on the surface below the intended flight path is not further than:

1. half of the minimum width defined in the RFM or, when no width is defined, “0.75 × D”;

2. plus the greater of “0.25 × D” or “3 m”;

3. plus:
   (i) for operations under VFR by day 0.10 × the distance travelled from the back of the FATO, or
   (ii) for operations under VFR at night 0.15 × the distance travelled from the back of the FATO.

(c) Obstacles may be disregarded if they are situated beyond:

1. 7 × rotor radius (R) for day operations, if it is assured that navigational accuracy can be achieved by reference to suitable visual cues during the climb;

2. 10 × R for night operations, if it is assured that navigational accuracy can be achieved by reference to suitable visual cues during the climb;
(3) 300 m if navigational accuracy can be achieved by appropriate navigation aids; or

(4) 900 m in all other cases.
CHAPTER 2

PERFORMANCE CLASS 1 HELICOPTER

CAT.POL.H.200  General

Helicopters operated in performance class 1 helicopter shall be certified in Category A or equivalent as determined by DCA.

CAT.POL.H.205  Take-off

(a) The take-off mass shall not exceed the maximum take-off mass specified in the RFM for the procedure to be used.

(b) The take-off mass shall be such that:

(1) it is possible to reject the take-off and land on the FATO in case of the critical engine failure being recognised at or before the take-off decision point (TDP);

(2) the rejected take-off distance required (RTODRH) does not exceed the rejected take-off distance available (RTODAH); and

(3) the TODRH does not exceed the take-off distance available (TODAH).

(4) Notwithstanding (b)(3), the TODRH may exceed the TODAH if the helicopter, with the critical engine failure recognised at TDP can, when continuing the take-off, clear all obstacles to the end of the TODRH by a vertical margin of not less than 10.7 m (35 feet).
(c) When showing compliance with (a) and (b), account shall be taken of the appropriate parameters of CAT.POL.H.105 (c) at the aerodrome or operating site of departure.

(d) That part of the take-off up to and including TDP shall be conducted in sight of the surface such that a rejected take-off can be carried out.

(e) For take-off using a backup or lateral transition procedure, with the critical engine failure recognition at or before the TDP, all obstacles in the back-up or lateral transition area shall be cleared by an adequate margin.

**CAT.POL.H.210  Take-off flight path**

(a) From the end of the TODRH with the critical engine failure recognised at the TDP:

(1) The take-off mass shall be such that the take-off flight path provides a vertical clearance, above all obstacles located in the climb path, of not less than 35 feet (10.7 m) for operations under VFR and 35 feet (10.7 m) + 0.01 × distance DR for operations under IFR. Only obstacles as specified in CAT.POL.H.110 have to be considered.

(2) Where a change of direction of more than 15° is made, adequate allowance shall be made for the effect of bank angle on the ability to comply with the obstacle clearance requirements. This turn is not to be initiated before reaching a height of 200 feet (61 m) above the take-off surface unless it is part of an approved procedure in the RFM.

(b) When showing compliance with (a), account shall be taken of the appropriate parameters of CAT.POL.H.105 (c) at the aerodrome or operating site of departure.
CAT.POL.H.215  En-route — critical engine inoperative

(a) The mass of the helicopter and flight path at all points along the route, with the critical engine inoperative and the meteorological conditions expected for the flight, shall permit compliance with (1), (2) or (3):

(1) When it is intended that the flight will be conducted at any time out of sight of the surface, the mass of the helicopter permits a rate of climb of at least 50 feet/minute with the critical engine inoperative at an altitude of at least 1 000 feet (300 m), or 2 000 feet (600 m) in areas of mountainous terrain, above all terrain and obstacles along the route within 9.3 km (5 NM) on either side of the intended track.

(2) When it is intended that the flight will be conducted without the surface in sight, the flight path permits the helicopter to continue flight from the cruising altitude to a height of 1 000 feet (300 m) above a landing site where a landing can be made in accordance with CAT.POL.H.220. The flight path clears vertically, by at least 1 000 feet (300 m) or 2 000 feet (600 m) in areas of mountainous terrain, all terrain and obstacles along the route within 9.3 km (5 NM) on either side of the intended track. Drift-down techniques may be used.

(3) When it is intended that the flight will be conducted in VMC with the surface in sight, the flight path permits the helicopter to continue flight from the cruising altitude to a height of 1 000 feet (300 m) above a landing site where a landing can be made in accordance with CAT.POL.H.220, without flying at any time below the appropriate minimum flight altitude. Obstacles within 900 m on either side of the route need to be considered.

(b) When showing compliance with (a)(2) or (a)(3):

(1) the critical engine is assumed to fail at the most critical point along the route;
(2) account is taken of the effects of winds on the flight path;

(3) fuel jettisoning is planned to take place only to an extent consistent with reaching the aerodrome or operating site with the required fuel reserves and using a safe procedure; and

(4) fuel jettisoning is not planned below 1 000 feet (300 m) above terrain.

(c) The width margins of (a)(1) and (a)(2) shall be increased to 18.5 km (10 NM) if the navigational accuracy cannot be met for 95% of the total flight time.

**CAT.POL.H.220  Landing**

(a) The landing mass of the helicopter at the estimated time of landing shall not exceed the maximum mass specified in the RFM for the procedure to be used.

(b) In the event of the critical engine failure being recognised at any point at or before the landing decision point (LDP), it is possible either to land and stop within the FATO, or to perform a balked landing and clear all obstacles in the flight path by a vertical margin of 35 feet (10.7 m). Only obstacles as specified in CAT.POL.H.110 have to be considered.

(c) In the event of the critical engine failure being recognised at any point at or after the LDP, it is possible to:

(1) clear all obstacles in the approach path; and

(2) land and stop within the FATO.
(d) When showing compliance with (a) to (c), account shall be taken of the appropriate parameters of CAT.POL.H.105 (c) for the estimated time of landing at the destination aerodrome or operating site, or any alternate if required.

(e) That part of the landing from the LDP to touchdown shall be conducted in sight of the surface.

CAT.POL.H.225  Helicopter operations to/from a gazetted public interest area

(a) Operations to/from a gazetted public interest area may be conducted in performance class 2, without complying with CAT.POL.H.310 (b) or CAT.POL.H.325 (b), provided that all of the following are complied with:

(1) the size of the gazetted public interest area or obstacle environment does not permit compliance with the requirements for operation in performance class 1;

(2) the operation is conducted with a helicopter with an MAPSC of six or less;

(3) the operator complies with CAT.POL.H.305 (b)(2) and (b)(3);

(4) the helicopter mass does not exceed the maximum mass specified in the RFM for a climb gradient of 8 % in still air at the appropriate take-off safety speed (VTOSS) with the critical engine inoperative and the remaining engines operating at an appropriate power rating; and

(5) the operator has obtained prior approval for the operation from DCA. Before such operations take place in another State, the operator shall obtain an endorsement from the DCA of that State.
(b) Site-specific procedures shall be established in the operations manual to minimise the period during which there would be danger to helicopter occupants and persons on the surface in the event of an engine failure during take-off and landing.

(c) The operations manual shall contain for each PIS: a diagram or annotated photograph, showing the main aspects, the dimensions, the non-conformance with the requirements performance class 1, the main hazards and the contingency plan should an incident occur.
CHAPTER 3

PERFORMANCE CLASS 2 HELICOPTER

CAT.POL.H.300  General

Helicopters operated in performance class 2 helicopter shall be certified in Category A or equivalent as determined by DCA.

CAT.POL.H.305  Operations without an assured safe forced landing capability

(a) Operations without an assured safe forced landing capability during the take-off and landing phases shall only be conducted if the operator has been granted an approval by DCA.

(b) To obtain and maintain such approval the operator shall:

(1) conduct a risk assessment, specifying:

   (i) the type of helicopter; and

   (ii) the type of operations;

(2) implement the following set of conditions:

   (i) attain and maintain the helicopter/engine modification standard defined by the manufacturer;

   (ii) conduct the preventive maintenance actions recommended by the helicopter or engine manufacturer;

   (iii) include take-off and landing procedures in the operations manual, where they do not already exist in the AFM;
(iv) specify training for flight crew; and

(v) provide a system for reporting to the manufacturer loss of power, engine shutdown or engine failure events; and

(3) implement a usage monitoring system (UMS).

**CAT.POL.H.310 Take-off**

(a) The take-off mass shall not exceed the maximum mass specified for a rate of climb of 150 feet/min at 1000 feet (300 m) above the level of the aerodrome or operating site with the critical engine inoperative and the remaining engine(s) operating at an appropriate power rating.

(b) For operations other than those specified in CAT.POL.H.305, the take-off shall be conducted such that a safe forced landing can be executed until the point where safe continuation of the flight is possible.

(c) For operations in accordance with CAT.POL.H.305, in addition to the requirements of (a):

(1) the take-off mass shall not exceed the maximum mass specified in the RFM for an all engines operative out of ground effect (AEO OGE) hover in still air with all engines operating at an appropriate power rating; or

(2) for operations from a helideck:

(i) with a helicopter that has an MAPSC of more than 19; or
any helicopter operated from a helideck located in a hostile environment,

the take-off mass shall take into account: the procedure; deck-edge miss and drop down appropriate to the height of the helideck with the critical engine(s) inoperative and the remaining engines operating at an appropriate power rating.

(d) When showing compliance with (a) to (c), account shall be taken of the appropriate parameters of CAT.POL.H.105 (c) at the point of departure.

(e) That part of the take-off before the requirement of CAT.POL.H.315 is met shall be conducted in sight of the surface.

**CAT.POL.H.315  Take-off flight path**

From the defined point after take-off (DPATO) or, as an alternative, no later than 200 feet above the take-off surface, with the critical engine inoperative, the requirements of CAT.POL.H.210 (a)(1), (a)(2) and (b) shall be complied with.

**CAT.POL.H.320  En-route — critical engine inoperative**

The requirement of CAT.POL.H.215 shall be complied with.

**CAT.POL.H.325  Landing**

(a) The landing mass at the estimated time of landing shall not exceed the maximum mass specified for a rate of climb of 150 feet/min at 1 000 feet (300 m) above the level of the aerodrome or operating site with the critical engine inoperative and the remaining engine(s) operating at an appropriate power rating.

(b) If the critical engine fails at any point in the approach path:
(1) a balked landing can be carried out meeting the requirement of CAT.POL.H.315; or

(2) for operations other than those specified in CAT.POL.H.305, the helicopter can perform a safe forced landing.

(c) For operations in accordance with CAT.POL.H.305, in addition to the requirements of (a):

(1) the landing mass shall not exceed the maximum mass specified in the RFM for an AEO OGE hover in still air with all engines operating at an appropriate power rating; or

(2) for operations to a helideck:

(i) with a helicopter that has an MAPSC of more than 19; or

(ii) any helicopter operated to a helideck located in a hostile environment,
the landing mass shall take into account the procedure and drop down appropriate to the height of the helideck with the critical engine inoperative and the remaining engine(s) operating at an appropriate power rating.

(d) When showing compliance with (a) to (c), account shall be taken of the appropriate parameters of CAT.POL.H.105 (c) at the destination aerodrome or any alternate, if required.

(e) That part of the landing after which the requirement of (b)(1) cannot be met shall be conducted in sight of the surface.
CHAPTER 4
PERFORMANCE CLASS 3 HELICOPTER

CAT.POL.H.400 General

(a) Helicopters operated in performance class 3 helicopter shall be certified in Category A or equivalent as determined by the DCA, or Category B.

(b) Operations shall only be conducted in a non-hostile environment, except:
   (1) when operating in accordance with CAT.POL.H.420; or
   
   (2) for the take-off and landing phase, when operating in accordance with (c).

(c) Provided the operator is approved in accordance with CAT.POL.H.305, operations may be conducted to/from an aerodrome or operating site located outside a congested hostile environment without an assured safe forced landing capability:
   (1) during take-off, before reaching Vy (speed for best rate of climb) or 200 feet above the take-off surface; or
   
   (2) during landing, below 200 feet above the landing surface.

(d) Operations shall not be conducted:
   (1) out of sight of the surface;
   
   (2) at night;
   
   (3) when the ceiling is less than 600 feet; or
(4) when the visibility is less than 800 m.

**CAT.POL.H.405 Take-off**

(a) The take-off mass shall be the lower of:

(1) the MCTOM; or

(2) the maximum take-off mass specified for a hover in ground effect with all engines operating at take-off power, or if conditions are such that a hover in ground effect is not likely to be established, the take-off mass specified for a hover out of ground effect with all engines operating at take-off power.

(b) Except as provided in CAT.POL.H.400 (b), in the event of an engine failure the helicopter shall be able to perform a safe forced landing.

**CAT.POL.H.410 En-route**

(a) The helicopter shall be able, with all engines operating within the maximum continuous power conditions, to continue along its intended route or to a planned diversion without flying at any point below the appropriate minimum flight altitude.

(b) Except as provided in CAT.POL.H.420, in the event of an engine failure the helicopter shall be able to perform a safe forced landing.

**CAT.POL.H.415 Landing**

(a) The landing mass of the helicopter at the estimated time of landing shall be the lower of:
(1) the maximum certified landing mass; or

(2) the maximum landing mass specified for a hover in ground effect, with all engines operating at take-off power, or if conditions are such that a hover in ground effect is not likely to be established, the landing mass for a hover out of ground effect with all engines operating at take-off power.

(b) Except as provided in CAT.POL.H.400 (b), in the event of an engine failure, the helicopter shall be able to perform a safe forced landing.

**CAT.POL.H.420 Helicopter operations over a hostile environment located outside a congested area**

(a) Operations over a non-congested hostile environment without a safe forced landing capability with turbine-powered helicopters with an MAPSC of six or less shall only be conducted if the operator has been granted an approval by the DCA, following a safety risk assessment performed by the operator. Before such operations take place in another State, the operator shall obtain an endorsement from the authority of that State.

(b) To obtain and maintain such approval the operator shall:

(1) only conduct these operations in the areas and under the conditions specified in the approval;

(2) not conduct these operations under a HEMS approval;

(3) substantiate that helicopter limitations, or other justifiable considerations, preclude the use of the appropriate performance criteria; and
(4) be approved in accordance with CAT.POL.H.305 (b).

(c) Notwithstanding CAT.IDE.H.240, such operations may be conducted without supplemental oxygen equipment, provided the cabin altitude does not exceed 10 000 feet for a period in excess of 30 minutes and never exceeds 13 000 feet pressure altitude.
SECTION 3
MASS AND BALANCE

CHAPTER 1
POWERED-DRIVEN AIRCRAFT

CAT.POL.MAB.100  Mass and balance, loading

(a) During any phase of operation, the loading, mass and centre of gravity (CG) of the aircraft shall comply with the limitations specified in the AFM, or the operations manual if more restrictive.

(b) The operator shall establish the mass and the CG of any aircraft by actual weighing prior to initial entry into service and thereafter at intervals of 4 years if individual aircraft masses are used, or 9 years if fleet masses are used. The accumulated effects of modifications and repairs on the mass and balance shall be accounted for and properly documented. Aircraft shall be reweighed if the effect of modifications on the mass and balance is not accurately known.

(c) The weighing shall be accomplished by the manufacturer of the aircraft or by an approved maintenance organisation.

(d) The operator shall determine the mass of all operating items and crew members included in the aircraft dry operating mass by weighing or by using standard masses. The influence of their position on the aircraft’s CG shall be determined.

(e) The operator shall establish the mass of the traffic load, including any ballast, by actual weighing or by determining the mass of the traffic load in accordance with standard passenger and baggage masses.
(f) In addition to standard masses for passengers and checked baggage, the operator can use standard masses for other load items, if it demonstrates to the DCA that these items have the same mass or that their masses are within specified tolerances.

(g) The operator shall determine the mass of the fuel load by using the actual density or, if not known, the density calculated in accordance with a method specified in the operations manual.

(h) The operator shall ensure that the loading of:

(1) its aircraft is performed under the supervision of qualified personnel; and

(2) traffic load is consistent with the data used for the calculation of the aircraft mass and balance.

(i) The operator shall comply with additional structural limits such as the floor strength limitations, the maximum load per running metre, the maximum mass per cargo compartment and the maximum seating limit. For helicopters, in addition, the operator shall take account of in-flight changes in loading.

(j) The operator shall specify, in the operations manual, the principles and methods involved in the loading and in the mass and balance system that meet the requirements contained in (a) to (i). This system shall cover all types of intended operations.
The operator shall establish mass and balance data and produce mass and balance documentation prior to each flight specifying the load and its distribution. The mass and balance documentation shall enable the PIC to determine that the load and its distribution is such that the mass and balance limits of the aircraft are not exceeded. The mass and balance documentation shall contain the following information:

1. Aircraft registration and type;
2. Flight identification, number and date;
3. Name of the PIC;
4. Name of the person who prepared the document;
5. Dry operating mass and the corresponding CG of the aircraft;
   - for Performance Class B aeroplanes and for helicopters the CG position may not need to be on the mass and balance documentation if, for example, the load distribution is in accordance with a pre-calculated balance table or if it can be shown that for the planned operations a correct balance can be ensured, whatever the real load is.
6. Mass of the fuel at take-off and the mass of trip fuel;
7. Mass of consumables other than fuel, if applicable;
8. Load components including passengers, baggage, freight and ballast;
(9) Take-off mass, landing mass and zero fuel mass;

(10) Applicable aircraft CG positions; and

(11) The limiting mass and CG values.

The information above shall be available in flight planning documents or mass and balance systems. Some of this information may be contained in other documents readily available for use.

(b) Where mass and balance data and documentation is generated by a computerised mass and balance system, the operator shall verify the integrity of the output data.

(c) The person supervising the loading of the aircraft shall confirm by hand signature or equivalent that the load and its distribution are in accordance with the mass and balance documentation given to the PIC. The PIC shall indicate his/her acceptance by hand signature or equivalent.

(d) The operator shall specify procedures for last minute changes to the load to ensure that:

(1) any last minute change after the completion of the mass and balance documentation is brought to the attention of the PIC and entered in the flight planning documents containing the mass and balance documentation;

(2) the maximum last minute change allowed in passenger numbers or hold load is specified; and
(3) new mass and balance documentation is prepared if this maximum number is exceeded.

(e) The operator shall obtain approval from the DCA if he/she wishes to use an on-board integrated mass and balance computer system or a stand-alone computerised mass and balance system as a primary source for dispatch. The operator shall demonstrate the accuracy and reliability of that system.
SUBPART D
INSTRUMENT, DATA, EQUIPMENT

SECTION 1
AEROPLANES

CAT.IDE.A.100  Instruments and equipment — General

(a) Instruments and equipment required by this Subpart shall be approved in accordance with the applicable airworthiness requirements except for the following items:

1. Spare fuses;

2. Independent portable lights;

3. An accurate time piece;

4. Chart holder;

5. First-aid kits;

6. Emergency medical kit;

7. Megaphones;

8. Survival and signalling equipment;
(9) Sea anchors and equipment for mooring; and

(10) Child restraint devices.

(b) Instruments and equipment not required by this Subpart that do not need to be approved in accordance with the applicable airworthiness requirements, but are carried on a flight, shall comply with the following:

(1) the information provided by these instruments, equipment or accessories shall not be used by the flight crew to comply with CAT.IDE.A.330, CAT.IDE.A.335, CAT.IDE.A.340 and CAT.IDE.A.345; and

(2) the instruments and equipment shall not affect the airworthiness of the aeroplane, even in the case of failures or malfunction.

(c) If equipment is to be used by one flight crew member at his/her station during flight, it shall be readily operable from that station. When a single item of equipment is required to be operated by more than one flight crew member it shall be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

(d) Those instruments that are used by any flight crew member shall be so arranged as to permit the flight crew member to see the indications readily from his/her station, with the minimum practicable deviation from the position and line of vision that he/she normally assumes when looking forward along the flight path.

(e) All required emergency equipment shall be easily accessible for immediate use.
CAT.IDE.A.105  Minimum equipment for flight

A flight shall not be commenced when any of the aeroplane’s instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless the aeroplane is operated in accordance with the operator’s MEL.

CAT.IDE.A.110  Spare electrical fuses

(a) Aeroplanes shall be equipped with spare electrical fuses, of the ratings required for complete circuit protection, for replacement of those fuses that are allowed to be replaced in flight.

(b) The number of spare fuses that are required to be carried shall be the higher of:

   (1) 10 % of the number of fuses of each rating; or

   (2) Three fuses for each rating.

CAT.IDE.A.115  Operating lights

(a) Aeroplanes operated by day shall be equipped with:

   (1) an anti-collision light system;

   (2) lighting supplied from the aeroplane’s electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the aeroplane;

   (3) lighting supplied from the aeroplane’s electrical system to provide illumination in all passenger compartments; and
(4) An independent portable light for each required crew member readily accessible to crew members when seated at their designated stations.

(b) Aeroplanes operated at night shall in addition be equipped with:

(1) navigation/position lights;

(2) two landing lights or a single light having two separately energised filaments; and

(3) Lights to conform to the International Regulations for Preventing Collisions at Sea if the aeroplane is operated as a seaplane.

CAT.IDE.A.120 Equipment to clear windshield

Aeroplanes with a MCTOM of more than 5 700 kg shall be equipped at each pilot station with a means to maintain a clear portion of the windshield during precipitation.

CAT.IDE.A.125 Operations under VFR by day — flight and navigational instruments and associated equipment

(a) Aeroplanes operated under VFR by day shall be equipped with the following equipment, available at the pilot’s station:

(1) A means of measuring and displaying:

   (i) Magnetic heading;

   (ii) Time in hours, minutes, and seconds;

   (iii) Pressure altitude;
(iv) Indicated airspeed;

(v) Vertical speed;

(vi) Turn and slip;

(vii) Attitude;

(viii) Heading;

(ix) Outside air temperature; and

(x) Mach number whenever speed limitations are expressed in terms of Mach number.

(2) A means of indicating when the supply of power to the required flight instruments is not adequate.

(b) Whenever two pilots are required for the operation, an additional separate means of displaying the following shall be available for the second pilot:

(1) Pressure altitude;

(2) Indicated airspeed;

(3) Vertical speed;
(4) Turn and slip;

(5) Attitude; and

(6) Heading.

c) A means for preventing malfunction of the airspeed indicating systems due to condensation or icing shall be available for:

(1) aeroplanes with an MCTOM of more than 5 700 kg or an MAPSC of more than nine; and

(2) Aeroplanes first issued with an individual C of A on or after 1 April 1999.

d) Single engine aeroplanes first issued with an individual C of A before 22 May 1995 are exempted from the requirements of (a)(1)(vi), (a)(1)(vii), (a)(1)(viii) and (a)(1)(ix) if the compliance would require retrofitting.

**CAT.IDE.A.130 Operations under IFR or at night — flight and navigational instruments and associated equipment**

Aeroplanes operated under VFR at night or under IFR shall be equipped with the following equipment, available at the pilot’s station:

(a) A means of measuring and displaying:

(1) Magnetic heading;

(2) Time in hours, minutes and seconds;

(3) Indicated airspeed;
(4) Vertical speed;

(5) Turn and slip, or in the case of aeroplanes equipped with a standby means of measuring and displaying attitude, slip;

(6) Attitude;

(7) Stabilised heading;

(8) Outside air temperature; and

(9) Mach number whenever speed limitations are expressed in terms of Mach number.

(b) Two means of measuring and displaying pressure altitude.

(c) A means of indicating when the supply of power to the required flight instruments is not adequate.

(d) A means for preventing malfunction of the airspeed indicating systems required in (a) (3) and (h) (2) due to condensation or icing.

(e) A means of annunciating to the flight crew the failure of the means required in (d) for aeroplanes:

(1) issued with an individual C of A on or after 1 April 1998; or
(2) issued with an individual C of A before 1 April 1998 with a MCTOM of more than 5 700 kg, and with an MOPSC of more than nine.

(f) Except for propeller-driven aeroplanes with a MCTOM of 5 700 kg or less, two independent static pressure systems.

(g) One static pressure system and one alternate source of static pressure for propeller-driven aeroplanes with a MCTOM of 5 700 kg or less.

(h) Whenever two pilots are required for the operation, a separate means of displaying for the second pilot:

(1) Pressure altitude;

(2) Indicated airspeed;

(3) Vertical speed;

(4) Turn and slip;

(5) Attitude; and

(6) Stabilised heading.

(i) A standby means of measuring and displaying attitude capable of being used from either pilot’s station for aeroplanes with an MCTOM of more than 5 700 kg or an MAPSC of more than nine that:
(1) is powered continuously during normal operation and, after a total failure of the normal electrical generating system, is powered from a source independent from the normal electrical generating system;

(2) provides reliable operation for a minimum of 30 minutes after total failure of the normal electrical generating system, taking into account other loads on the emergency power supply and operational procedures;

(3) operates independently of any other means of measuring and displaying attitude;

(4) is operative automatically after total failure of the normal electrical generating system;

(5) is appropriately illuminated during all phases of operation, except for aeroplanes with an MCTOM of 5 700 kg or less, already registered in Malaysia on and after 1 April 1995 and equipped with a standby attitude indicator in the left-hand instrument panel;

(6) is clearly evident to the flight crew when the standby attitude indicator is being operated by emergency power; and

(7) where the standby attitude indicator has its own dedicated power supply, has an associated indication, either on the instrument or on the instrument panel, when this supply is in use.

(j) A chart holder in an easily readable position that can be illuminated for night operations.
CAT.IDE.A.135  Additional equipment for single-pilot operation under IFR

Aeroplanes operated under IFR with a single-pilot shall be equipped with an autopilot with at least altitude hold and heading mode.

CAT.IDE.A.140  Altitude alerting system

(a) The following aeroplanes shall be equipped with an altitude alerting system:

(1) turbine propeller powered aeroplanes with an MCTOM of more than 5 700 kg or having an MAPSC of more than nine; and

(2) aeroplanes powered by turbo-jet engines.

(b) The altitude alerting system shall be capable of:

(1) alerting the flight crew when approaching a preselected altitude; and

(2) alerting the flight crew by at least an aural signal, when deviating from a pre-selected altitude.

(c) Notwithstanding (a), aeroplanes with an MCTOM of 5 700 kg or less, having an MAPSC of more than nine, first issued with an individual C of A before 1 April 1972 and already registered in Malaysia on and after 1 April 1995 are exempted from being equipped with an altitude alerting system.

CAT.IDE.A.150  Terrain awareness warning system (TAWS)

(a) Turbine-powered aeroplanes having a MCTOM of more than 5 700 kg or an MAPSC of more than nine shall be equipped with a TAWS that meets the requirements for Class A equipment as specified in an acceptable standard.
(b) Reciprocating-engine-powered aeroplanes with an MCTOM of more than 5 700 kg or an MAPSC of more than nine shall be equipped with a TAWS that meets the requirement for Class B equipment as specified in an acceptable standard.

**CAT.IDE.A.155  Airborne collision avoidance system (ACAS)**

All turbine-powered aeroplanes with a MCTOM of more than 5 700 kg or an MAPSC of more than 19 shall be equipped with ACAS II. After 1 January 2017, all ACAS units shall have (TCAS) Version 7.1

**CAT.IDE.A.160  Airborne weather detecting equipment**

The following shall be equipped with airborne weather detecting equipment when operated at night or in IMC in areas where thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather detecting equipment, may be expected to exist along the route:

(a) Pressurised aeroplanes;

(b) Non-pressurised aeroplanes with an MCTOM of more than 5 700 kg; and

(c) Non-pressurised aeroplanes with an MAPSC of more than nine.

**CAT.IDE.A.165  Additional equipment for operations in icing conditions at night**

(a) Aeroplanes operated in expected or actual icing conditions at night shall be equipped with a means to illuminate or detect the formation of ice.

(b) The means to illuminate the formation of ice shall not cause glare or reflection that would handicap crew members in the performance of their duties.
CAT.IDE.A.170  Flight crew interphone system

Aeroplanes operated by more than one flight crew member shall be equipped with a flight crew interphone system, including headsets and microphones for use by all flight crew members.

CAT.IDE.A.175  Crew member interphone system

Aeroplanes with a MCTOM of more than 15 000 kg, or with an MAPSC of more than 19 shall be equipped with a crew member interphone system.

CAT.IDE.A.180  Public address system

Aeroplanes with an MAPSC of more than 19 shall be equipped with a public address system.

CAT.IDE.A.185  Cockpit voice recorder (CVR) and cockpit audio recording systems (CARS)

(a) All turbine-engine aeroplanes of a MCTOM of over 2250 kg, up to and including 5 700 kg, for which the application for type certification is submitted to DCA 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.

(b) All aeroplanes of a MCTOM of over 5 700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2003 shall be equipped with a CVR capable of retaining the information recorded during at least the last two hours of its operation.
(c) All aeroplanes of a MCTOM of over 5700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1987 shall be equipped with a CVR.

(d) All turbine-engine aeroplanes, for which the individual certificate of airworthiness was first issued before 1 January 1987, with a MCTOM of over 27000 kg that are of types of which the prototype was certificated by DCA after 30 September 1969 shall be equipped with a CVR.

(e) The use of magnetic tape and wire CVRs shall be discontinued by 1 January 2016.

(f) All CVRs shall be capable of retaining the information recorded during at least the last 30 minutes of their operation.

(g) From 1 January 2016, all CVRs shall be capable of retaining the information recorded during at least the last two hours of their operation.

(h) Cockpit voice recorder alternate power

(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.

(2) All aeroplanes of a MCTOM of over 27 000 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2018 shall be provided with an alternate power source, as defined in (h)(1), that powers the forward CVR in the case of combination recorders.

CAT.IDE.A.190 Flight data recorder (FDR) and aircraft data recording systems (ADRS)

(a) Types:

(1) Types I and IA FDR shall record the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power, configuration and operation.

(2) Types II and IIA FDRs shall record the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power and configuration of lift and drag devices.

(b) Operation:

(1) All turbine-engine aeroplanes of a MCTOM of 5 700 kg or less for which the application for type certification is submitted to DCA on or after 1 January 2016 shall be equipped with:

(i) a Type II FDR; or
(ii) a Class C Airborne Image Recorder (AIR) or Airborne Image Recording System (AIRS) capable of recording flight path and speed parameters displayed to the pilot(s); or

(iii) an Aircraft Data Recording System capable of recording the essential parameters defined in Appendix 1.

Note 1: “The application for type certification is submitted to DCA” 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 as:

A Class A AIR or AIRS captures the general cockpit area in order to provide data supplemental to conventional flight recorders.

Note 2A: 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 2B. There are no provisions for Class A AIR or AIRS in this document.

A Class B AIR or AIRS captures data link message displays.

A Class C AIR or AIRS captures instruments and control panels.
Note 2C: 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.

(2) All aeroplanes of a MCTOM 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 a Type I FDR.

(3) All aeroplanes of a MCTOM 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 a Type II FDR.

(4) All turbine-engine 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 5 700 kg, except those in (5), shall be equipped with an FDR which shall record time, altitude, airspeed, normal acceleration and heading.

(5) All turbine-engine aeroplanes, for which the individual certificate of airworthiness was first issued on or after 1 January 1987 but before 1 January 1989, with a MCTOM 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 Type II FDR.

(6) All turbine-engine aeroplanes, for which the individual certificate of airworthiness was first issued before 1 January 1987, with a MCTOM of over 5 700 kg shall be equipped with an FDR which shall record time, altitude, airspeed, normal acceleration and heading.
(7) All aeroplanes of a MCTOM of over 5 700 kg for which the individual certificate of airworthiness is first issued after 1 January 2005 shall be equipped with a Type IA FDR.

(8) All aeroplanes which are required to record normal acceleration, lateral acceleration and longitudinal acceleration 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 fitted with an FDR shall record those parameters at a maximum sampling and recording interval of 0.0625 seconds.

(9) All aeroplanes which are required to record pilot input and/or control surface position of primary controls (pitch, roll, yaw) 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 fitted with an FDR shall record those parameters at a maximum sampling and recording interval of 0.125 seconds.

Note: 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 independent moveable surfaces, each surface needs to be recorded separately. In aeroplanes with independent pilot input on primary controls, each pilot input on primary controls needs to be recorded separately.

(c) Discontinuation:

(1) The use of engraving metal foil FDRs shall be discontinued.
(2) The use of analogue FDRs using frequency modulation (FM) shall be discontinued.

(3) The use of photographic film FDRs shall be discontinued.

(4) The use of magnetic tape FDRs shall be discontinued by 1 January 2016.

(d) Duration:

All FDRs shall be capable of retaining the information recorded during at least the last 25 hours of their operation, except for the Type IIA FDR which shall be capable of retaining the information recorded during at least the last 30 minutes of its operation.

CAT.IDE.A.195 Data link recording

(a) Applicability:

(1) All aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2016, which utilize any of the data link communications applications listed in Appendix 2 and are required to carry a CVR, shall record on a flight recorder the data link communications messages.

(2) All aeroplanes which are modified on or after 1 January 2016 to install and utilize any of the data link communications applications listed in Appendix 2 and are required to carry a CVR shall record on a flight recorder the data link communications messages.
Note 1: Data link communications are currently conducted by either ATN-based or FANS 1/A-equipped aircraft.

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.

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

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

(d) Applications to be recorded:
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.

**CAT.IDE.A.200 Combination recorder**

(a) All aeroplanes of a MCTOM of over 5 700 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, should be equipped with two combination recorders (FDR/CVR).

(b) All aeroplanes of a MCTOM 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.

Note: The requirement may be satisfied by equipping the aeroplanes with two combination recorders (one forward and one aft) or separate devices.

**CAT.IDE.A.205 Seats, seat safety belts, restraint systems and child restraint devices**

(a) Aeroplanes shall be equipped with:

1. a seat or berth for each person on board who is aged 24 months or more;

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

3. a child restraint device (CRD) for each person on board younger than 24 months;

4. a safety harness on each seat for the minimum required cabin crew; and

5. a safety harness for each flight crew seat and observer seat in the flight crew compartment. The safety harness for each 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.

**CAT.IDE.A.210  Fasten seat belt and no smoking signs**

Aeroplanes in which not all passenger seats are visible from the flight crew seat(s) shall be equipped with a means of indicating to all passengers and cabin crew when seat belts shall be fastened and when smoking is not allowed.

**CAT.IDE.A.215  Internal doors and curtains**

Aeroplanes shall be equipped with:

(a) in the case of aeroplanes with an MAPSC of more than 19, a door between the passenger compartment and the flight crew compartment, with a placard indicating “crew only” and a locking means to prevent passengers from opening it without the permission of a member of the flight crew;

(b) a readily accessible means for opening each door that separates a passenger compartment from another compartment that has emergency exits;

(c) a means for securing in the open position any doorway or curtain separating the passenger compartment from other areas that need to be accessed to reach any required emergency exit from any passenger seat;

(d) a placard on each internal door or adjacent to a curtain that is the means of access to a passenger emergency exit, to indicate that it shall be secured open during take-off and landing; and
(e) a means for any member of the crew to unlock any door that is normally accessible to passengers and that can be locked by passengers.

**CAT.IDE.A.220  First-aid kit**

(a) Aeroplanes shall be equipped with first-aid kits, in accordance with Table 5.

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<th>Number of passenger seats installed</th>
<th>Number of first-aid kits required</th>
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<td>501 or more</td>
<td>6</td>
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</tbody>
</table>

**Table 5**

(b) First-aid kits shall be:

(1) readily accessible for use; and

(2) kept up to date.

**CAT.IDE.A.225  Emergency medical kit**

(a) Emergency medical kit for carriage where the aeroplane is authorized to carry more than 100 passengers on a sector length of more than two hours.
The commander shall ensure that drugs are only administered by appropriately qualified persons.

The emergency medical kit referred to in (a) shall be:

1. dust and moisture proof;
2. carried in a way that prevents unauthorised access; and
3. kept up to date.

**CAT. IDE. A.230  First-aid oxygen**

(a) Pressurised aeroplanes operated at pressure altitudes above 25,000 feet, in the case of operations for which a cabin crew member is required, shall be equipped with a supply of undiluted oxygen for passengers who, for physiological reasons, might require oxygen following a cabin depressurisation.

(b) The oxygen supply referred to in (a) shall be calculated using an average flow rate of at least 3 litres standard temperature pressure dry (STPD)/minute/person. This oxygen supply shall be sufficient for the remainder of the flight after cabin depressurisation when the cabin altitude exceeds 8000 feet but does not exceed 15,000 feet, for at least 2% of the passengers carried, but in no case for less than one person.

(c) There shall be a sufficient number of dispensing units, but in no case less than two, with a means for cabin crew to use the supply.

(d) The first-aid oxygen equipment shall be capable of generating a mass flow to each user of at least 4 litres STPD per minute.
CAT.IDE.A.235 Supplemental oxygen — pressurised aeroplanes

(a) Pressurised aeroplanes operated at pressure altitudes above 10 000 feet shall be equipped with supplemental oxygen equipment that is capable of storing and dispensing the oxygen supplies in accordance with Table 6.

(b) Pressurised aeroplanes operated at pressure altitudes above 25 000 feet shall be equipped with:

(1) quick donning types of masks for flight crew members;

(2) sufficient spare outlets and masks or portable oxygen units with masks distributed evenly throughout the passenger compartment, to ensure immediate availability of oxygen for use by each required cabin crew member;

(3) an oxygen dispensing unit connected to oxygen supply terminals immediately available to each cabin crew member, additional crew member and occupants of passenger seats, wherever seated; and

(4) a device to provide a warning indication to the flight crew of any loss of pressurisation.

(c) In the case of pressurised aeroplanes first issued with an individual C of A on or after 9 November 1998 and operated at pressure altitudes above 25 000 feet, or operated at pressure altitudes at, or below 25 000 feet under conditions that would not allow them to descend safely to 13 000 feet within four minutes, the individual oxygen dispensing units referred to in (b) (3) shall be automatically deployable.
(d) The total number of dispensing units and outlets referred to in (b) (3) and (c) shall exceed the number of seats by at least 10%. The extra units shall be evenly distributed throughout the passenger compartment.

(e) Notwithstanding (a), the oxygen supply requirements for cabin crew member(s), additional crew member(s) and passenger(s), in the case of aeroplanes not certified to fly at altitudes above 25 000 feet, may be reduced to the entire flying time between 10 000 feet and 13 000 feet cabin pressure altitudes for all required cabin crew members and for at least 10% of the passengers if, at all points along the route to be flown, the aeroplane is able to descend safely within four minutes to a cabin pressure altitude of 13 000 feet.

(f) The required minimum supply in Table 6, row 1 item (b) (1) and row 2, shall cover the quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certified operating altitude to 10 000 feet in 10 minutes and followed by 20 minutes at 10 000 feet.

(g) The required minimum supply in Table 6, row 1 item 1(b) (2), shall cover the quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certified operating altitude to 10 000 feet in 10 minutes followed by 110 minutes at 10 000 feet.

(h) The required minimum supply in Table 6, row 3, shall cover the quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certified operating altitude to 15 000 feet in 10 minutes.
## Oxygen minimum requirements for pressurised aeroplanes

<table>
<thead>
<tr>
<th>Supply for</th>
<th>Duration and cabin pressure altitude</th>
</tr>
</thead>
</table>
| (a) Occupants of flight crew compartment seats on flight crew compartment duty | (1) The entire flying time when the cabin pressure altitude exceeds 13 000 feet.  
(2) The remainder of the flying time when the cabin pressure altitude exceeds 10 000 feet but does not exceed 13 000 feet, after the initial 30 minutes at these altitudes, but in no case less than:  
(i) 30 minutes’ supply for aeroplanes certified to fly at altitudes not exceeding 25 000 feet; and  
(ii) 2 hours’ supply for aeroplanes certified to fly at altitudes of more than 25 000 feet. |
| (b) Required cabin crew members | (1) The entire flying time when the cabin pressure altitude exceeds 13 000 feet, but not less than 30 minutes’ supply.  
(2) The remainder of the flying time when the cabin pressure altitude exceeds 10 000 feet but does not exceed 13 000 feet, after the initial 30 minutes at these altitudes. |
| (c) 100 % of passengers(1) | The entire flying time when the cabin pressure altitude exceeds 15 000 feet, but in no case less than 10 minutes’ supply. |
(d) 30 % of passengers\(^{(1)}\)  The entire flying time when the cabin pressure altitude exceeds 14 000 feet but does not exceed 15 000 feet.

(e) 10 % of passengers\(^{(1)}\)  The remainder of the flying time when the cabin pressure altitude exceeds 10,000 feet but does not exceed 14 000 feet, after the initial 30 minutes at these altitudes.

\(^{(1)}\) Passenger numbers in Table 6 refer to passengers actually carried on board, including persons younger than 24 months.

### Table 6

**CAT.IDE.A.240  Supplemental oxygen — non-pressurised aeroplanes**

Non-pressurised aeroplanes operated at pressure altitudes above 10 000 feet shall be equipped with supplemental oxygen equipment capable of storing and dispensing the oxygen supplies in accordance with Table 7.

<table>
<thead>
<tr>
<th>Supply for</th>
<th>Duration and cabin pressure altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Occupants of flight crew compartment seats on flight crew compartment duty and crew members assisting flight crew in their duties</td>
<td>The entire flying time at pressure altitudes above 10 000 feet.</td>
</tr>
<tr>
<td>(b) Required cabin crew members</td>
<td>The entire flying time at pressure altitudes above 13 000 feet and for any period exceeding 30 minutes at pressure altitudes</td>
</tr>
</tbody>
</table>
### Table 7

<table>
<thead>
<tr>
<th>(c) Additional crew members and 100% of passengers(^{(1)})</th>
<th>The entire flying time at pressure altitudes above 13 000 feet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(d) 10% of passengers(^{(1)})</td>
<td>The entire flying time after 30 minutes at pressure altitudes above 10 000 feet but not exceeding 13 000 feet.</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Passenger numbers in Table 7 refer to passengers actually carried on board, including persons younger than 24 months

---

**CAT.IDE.A.245  Crew protective breathing equipment**

(a) All pressurised aeroplanes and those unpressurised aeroplanes with an MCTOM of more than 5 700 kg or having an MAPSC of more than 19 seats shall be equipped with protective breathing equipment (PBE) to protect the eyes, nose and mouth and to provide for a period of at least 15 minutes:

1. Oxygen for each flight crew member on duty in the flight crew compartment;

2. Breathing gas for each required cabin crew member, adjacent to his assigned station; and

3. Breathing gas from a portable PBE for one member of the flight crew, adjacent to his assigned station, in the case of aeroplanes operated with a flight crew of more than one and no cabin crew member.
(b) A PBE intended for flight crew use shall be installed in the flight crew compartment and be accessible for immediate use by each required flight crew member at his/her assigned station.

(c) A PBE intended for cabin crew use shall be installed adjacent to each required cabin crew member station.

(d) Aeroplanes shall be equipped with an additional portable PBE installed adjacent to the hand fire extinguisher referred to in CAT.IDE.A.250, or adjacent to the entrance of the cargo compartment, in case the hand fire extinguisher is installed in a cargo compartment.

(e) A PBE while in use shall not prevent the use of the means of communication referred to in CAT.IDE.A.170, CAT.IDE.A.175, CAT.IDE.A.270 and CAT.IDE.A.330.

CAT.IDE.A.250  Hand fire extinguishers

(a) Aeroplanes shall be equipped with at least one hand fire extinguisher in the flight crew compartment.

(b) At least one hand fire extinguisher shall be located in, or readily accessible for use in, each galley not located on the main passenger compartment.

(c) At least one hand fire extinguisher shall be available for use in each class A or class B cargo or baggage compartment and in each class E cargo compartment that is accessible to crew members in flight.

(d) The type and quantity of extinguishing agent for the required fire extinguishers shall be suitable for the type of fire likely to occur in the compartment where the
extinguisher is intended to be used and to minimise the hazard of toxic gas concentration in compartments occupied by persons.

(e) Aeroplanes shall be equipped with at least a number of hand fire extinguishers in accordance with Table 8, conveniently located to provide adequate availability for use in each passenger compartment.

<table>
<thead>
<tr>
<th>Number of hand fire extinguishers</th>
<th>MAPSC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7-30</td>
</tr>
<tr>
<td></td>
<td>31-60</td>
</tr>
<tr>
<td></td>
<td>61-200</td>
</tr>
<tr>
<td></td>
<td>201-300</td>
</tr>
<tr>
<td></td>
<td>301-400</td>
</tr>
<tr>
<td></td>
<td>401-500</td>
</tr>
<tr>
<td></td>
<td>501-600</td>
</tr>
<tr>
<td></td>
<td>601 or more</td>
</tr>
</tbody>
</table>

Table 8

**CAT.IDE.A.255 Crash axe and crowbar**

(a) Aeroplanes with an MCTOM of more than 5 700 kg or with an MAPSC of more than nine shall be equipped with at least one crash axe or crowbar located in the flight crew compartment.

(b) In the case of aeroplanes with an MAPSC of more than 200, an additional crash axe or crowbar shall be installed in or near the rearmost galley area.
(c) Crash axes and crowbars located in the passenger compartment shall not be visible to passengers.

CAT.IDE.A.260 Marking of break-in points

If areas of the aeroplane’s fuselage suitable for break-in by rescue crews in an emergency are marked, such areas shall be marked as shown in Figure 1.

Figure 1

CAT.IDE.A.265 Means for emergency evacuation

(a) Aeroplanes with passenger emergency exit sill heights of more than 6 feet (1.83 m) above the ground shall be equipped at each of those exits with a means to enable passengers and crew to reach the ground safely in an emergency.

(b) Notwithstanding (a), such means are not required at over-wing exits if the designated place on the aeroplane structure at which the escape route terminates is less than 6 feet (1.83 m) from the ground with the aeroplane on the ground, the landing gear extended, and the flaps in the take-off or landing position, whichever flap position is higher from the ground.

(c) Aeroplanes required to have a separate emergency exit for the flight crew for which the lowest point of the emergency exit is more than 6 feet (1.83 m) above
the ground shall have a means to assist all flight crew members in descending to reach the ground safely in an emergency.

(d) The heights referred to in (a) and (c) shall be measured:

(1) with the landing gear extended; and

(2) after the collapse of, or failure to extend of, one or more legs of the landing gear, in the case of aeroplanes with a type certificate issued after 31 March 2000.

CAT.IDE.A.270 Megaphones

Aeroplanes with an MAPSC of more than 60 and carrying at least one passenger shall be equipped with the following quantities of portable battery-powered megaphones readily accessible for use by crew members during an emergency evacuation:

(a) For each passenger deck:

<table>
<thead>
<tr>
<th>Passenger seating configuration</th>
<th>Number of megaphones</th>
</tr>
</thead>
<tbody>
<tr>
<td>61 to 99</td>
<td>1</td>
</tr>
<tr>
<td>100 or more</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 9

(b) For aeroplanes with more than one passenger deck, in all cases when the total passenger seating configuration is more than 60, at least one megaphone.

CAT.IDE.A.275 Emergency lighting and marking

Emergency lighting shall be provided and shall have the following characteristics:

(a) independence from main electrical supply;
(b) automatic activation upon loss of normal power/impact;

(c) visual indication of the path to emergency exits in smoke-filled cabin conditions;

(d) illumination both inside and outside the aeroplane during evacuation; and

(e) no additional hazard in the event of fuel spillage.

**CAT.IDE.A.280  Emergency locator transmitter (ELT)**

(a) Aeroplanes with an MAPSC of more than 19 shall be equipped with at least:

(1) two ELTs, one of which shall be automatic, in the case of aeroplanes first issued with an individual C of A after 1 July 2008; or

(2) one automatic ELT or two ELTs of any type, in the case of aeroplanes first issued with an individual C of A on or before 1 July 2008.

(b) Aeroplanes with an MAPSC of 19 or less shall be equipped with at least:

(1) one automatic ELT, in the case of aeroplanes first issued with an individual C of A after 1 July 2008; or

(2) one ELT of any type, in the case of aeroplanes first issued with an individual C of A on or before 1 July 2008.

(c) An ELT of any type shall be capable of transmitting simultaneously on 121.5 MHz and 406 MHz.
CAT.IDE.A.285  Flight over water

(a) The following aeroplanes shall be equipped with a life-jacket for each person on board or equivalent flotation device for each person on board younger than 24 months, stowed in a position that is readily accessible from the seat or berth of the person for whose use it is provided:

(1) landplanes operated over water at a distance of more than 50 NM from the shore or taking off or landing at an aerodrome where the take-off or approach path is so disposed over water that there would be a likelihood of a ditching; and

(2) seaplanes operated over water.

(b) Each life-jacket or equivalent individual flotation device shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

(c) Seaplanes operated over water shall be equipped with:

(1) a sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvring the seaplane on water, appropriate to its size, weight and handling characteristics; and

(2) equipment for making the sound signals as prescribed in the International Regulations for Preventing Collisions at Sea, where applicable.

(d) Aeroplanes operated over water at a distance away from land suitable for making an emergency landing, greater than that corresponding to:
(1) 120 minutes at cruising speed or 400 NM, whichever is the lesser, in the case of aeroplanes capable of continuing the flight to an aerodrome with the critical engine(s) becoming inoperative at any point along the route or planned diversions; or

(2) for all other aeroplanes, 30 minutes at cruising speed or 100 NM, whichever is the lesser, shall be equipped with the equipment specified in (e).

(e) Aeroplanes complying with (d) shall carry the following equipment:

(1) life-rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in an emergency, and being of sufficient size to accommodate all the survivors in the event of a loss of one raft of the largest rated capacity;

(2) a survivor locator light in each life-raft;

(3) life-saving equipment to provide the means for sustaining life, as appropriate for the flight to be undertaken; and

(4) at least two survival ELTs (ELT(S)).

**CAT.IDE.A.305 Survival equipment**

(a) Aeroplanes operated over areas in which search and rescue would be especially difficult shall be equipped with:

(1) signalling equipment to make the distress signals;

(2) at least one ELT(S); and
(3) additional survival equipment for the route to be flown taking account of the number of persons on board.

(b) The additional survival equipment specified in (a) (3) does not need to be carried when the aeroplane:

(1) remains within a distance from an area where search and rescue is not especially difficult corresponding to:

(i) 120 minutes at one-engine-inoperative (OEI) cruising speed for aeroplanes capable of continuing the flight to an aerodrome with the critical engine(s) becoming inoperative at any point along the route or planned diversion routes; or

(ii) 30 minutes at cruising speed for all other aeroplanes;

(2) remains within a distance no greater than that corresponding to 90 minutes at cruising speed from an area suitable for making an emergency landing, for aeroplanes certified in accordance with the applicable airworthiness standard.

**CAT.IDE.A.325  Headset**

(a) Aeroplanes shall be equipped with a headset with a boom or throat microphone or equivalent for each flight crew member at their assigned station in the flight crew compartment.

(b) Aeroplanes operated under IFR or at night shall be equipped with a transmit button on the manual pitch and roll control for each required flight crew member.
CAT.IDE.A.330  Radio communication equipment

(a) An aeroplane shall be provided with radio communication equipment capable of:

(1) conducting two-way communication for aerodrome control purposes;

(2) receiving meteorological information at any time during flight; and

(3) conducting two-way communication at any time during flight with at least one aeronautical station and with such other aeronautical stations and on such frequencies as may be prescribed by the DCA.

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

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

(c) For flights in defined portions of airspace or on routes where an RCP type has been prescribed, an aeroplane shall, in addition to the requirements specified in (a):

(1) be provided with communication equipment which will enable it to operate in accordance with the prescribed Required Communications Performance RCP type(s); and

(2) be authorized by the State of the Operator for operations in such airspace.
CAT.IDE.A.335  Audio selector panel

Aeroplanes operated under IFR shall be equipped with an audio selector panel operable from each required flight crew member station.

CAT.IDE.A.340  Radio equipment for operations under VFR over routes navigated by reference to visual landmarks

Aeroplanes operated under VFR over routes navigated by reference to visual landmarks shall be equipped with radio communication equipment necessary under normal radio propagation conditions to fulfil the following:

(a) communicate with appropriate ground stations;

(b) communicate with appropriate ATC stations from any point in controlled airspace within which flights are intended; and

(c) receive meteorological information.

CAT.IDE.A.345  Navigation equipment

(a) An aeroplane shall be provided with navigation equipment which will enable it to proceed:

(1) in accordance with its operational flight plan; and

(2) in accordance with the requirements of air traffic services;

except when, if not so precluded by the appropriate authority, navigation for flights under the visual flight rules is accomplished by visual reference to landmarks.
(b) For operations where a navigation specification for performance-based navigation has been prescribed, an aeroplane shall, in addition to the requirements specified in (a):

(1) be provided with navigation equipment which will enable it to operate in accordance with the prescribed navigation specification(s); and

(2) be authorized by the State of the Operator for such operations.

Note: Information on performance-based navigation, and guidance concerning the implementation and operational approval process, are contained in the Performance-based Navigation (PBN) Manual. This document also contains a comprehensive list of references to other documents produced by States and international bodies concerning navigation systems.

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

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

(2) has been authorized by the State of the Operator for the MNPS operations concerned.

Note: The prescribed minimum navigation performance specifications and the procedures governing their application are published in the Regional Supplementary Procedures.
(d) For flights in defined portions of airspace where, based on Regional Air Navigation Agreement, a reduced vertical separation minimum (RVSM) of 1 000 feet (300 m) is applied between FL 290 and FL 410 inclusive, an aeroplane:

(1) 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 ± 300 feet (90 m); and

   (iv) automatically reporting pressure-altitude;

(2) shall be authorized by the State of the Operator for operation in the airspace concerned; and

(3) shall demonstrate a vertical navigation performance in accordance with the Altimetry System requirement for operations in RVSM airspace.

(e) Prior to granting the RVSM approval required in accordance with (d)(2), the State shall be satisfied that:

(1) the vertical navigation performance capability of the aeroplane satisfies the Altimetry System requirement for operations in RVSM airspace;

(2) the operator has instituted appropriate procedures in respect of continued airworthiness (maintenance and repair) practices and programmes; and
(3) the operator has instituted appropriate flight crew procedures for operations in RVSM airspace.

Note: An RVSM 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.

(f) The State of the Operator, in consultation with the State of Registry if appropriate, shall ensure that, in respect of those aeroplanes mentioned in (d), adequate provisions exist for:

(1) receiving the reports of height-keeping performance issued by the monitoring agencies; and

(2) taking immediate corrective action for individual aircraft, or aircraft type groups, identified in such reports as not complying with the height-keeping requirements for operation in airspace where RVSM is applied.

(g) The operator that has been issued an RVSM approval shall establish a requirement which ensures that a minimum of two aeroplanes of each aircraft type grouping of the operator have their height-keeping performance monitored, at least once every two years or within intervals of 1 000 flight hours per aeroplane, whichever period is longer. If an operator aircraft type grouping consists of a single aeroplane, monitoring of that aeroplane shall be accomplished every two years or within intervals of 1 000 flight hours.

Note: Monitoring data from any regional monitoring programme be used to satisfy the requirement.
(h) All States that are responsible for airspace where RVSM has been implemented, or that have issued RVSM approvals to operators within their State, shall establish provisions and procedures which ensure that appropriate action will be taken in respect of aircraft and operators found to be operating in RVSM airspace without a valid RVSM approval.

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

Note 2: Guidance material relating to the approval for operation in RVSM airspace is contained in the Manual on Implementation of a 1 000 feet (300 m) Vertical Separation Minimum between FL 290 and FL 410 Inclusive.

(i) 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 (a) and, where applicable, (b), (c) and (d).

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 1 000 feet (300 m) Vertical Separation Minimum between FL 290 and FL 410 Inclusive.

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

**CAT.IDE.A.350  Transponder**

(a) Aeroplanes shall be equipped with a pressure altitude reporting secondary surveillance radar (SSR) transponder and any other SSR transponder capability required for the route being flown.

(b) 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 25 feet (7.62 m), or better.

(c) All aeroplanes shall be equipped with a data source that provides pressure-altitude information with a resolution of 25 feet (7.62 m), or better.

**CAT.IDE.A.355  Electronic navigation data management**

(a) The operator shall only use electronic navigation data products that support a navigation application meeting standards of integrity that are adequate for the intended use of the data.

(b) When the electronic navigation data products support a navigation application needed for an operation for which Part-SPA requires an approval, the operator shall demonstrate to the DCA that the process applied and the delivered products meet standards of integrity that are adequate for the intended use of the data.

(c) The operator shall continuously monitor the integrity of both the process and the products, either directly or by monitoring the compliance of third party providers.
(d) The operator shall ensure the timely distribution and insertion of current and unaltered electronic navigation data to all aeroplanes that require it.
SECTION 2

HELICOPTERS

CAT.IDE.H.100  Instruments and equipment — general

(a) Instruments and equipment required by this Subpart shall be approved in accordance with the applicable airworthiness requirements, except for the following items:

(1) Spare fuses;

(2) Independent portable lights;

(3) An accurate time piece;

(4) Chart holder;

(5) First-aid kit;

(6) Megaphones;

(7) Survival and signalling equipment;

(8) Sea anchors and equipment for mooring; and

(9) Child restraint devices.
(b) Instruments and equipment not required by this Subpart that do not need to be approved in accordance with the applicable airworthiness requirements but are carried on a flight, shall comply with the following:

(1) the information provided by these instruments, equipment or accessories shall not be used by the flight crew to comply with CAT.IDE.H.330, CAT.IDE.H.335, CAT.IDE.H.340 and CAT.IDE.H.345; and

(2) the instruments and equipment shall not affect the airworthiness of the helicopter, even in the case of failures or malfunction.

c) If equipment is to be used by one flight crew member at his station during flight, it shall be readily operable from that station. When a single item of equipment is required to be operated by more than one flight crew member it shall be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

d) Those instruments that are used by any flight crew member shall be so arranged as to permit the flight crew member to see the indications readily from his station, with the minimum practicable deviation from the position and line of vision that he normally assumes when looking forward along the flight path.

e) All required emergency equipment shall be easily accessible for immediate use.

**CAT.IDE.H.105  Minimum equipment for flight**

A flight shall not be commenced when any of the helicopter’s instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless:

(a) the helicopter is operated in accordance with the operator’s MEL; or
(b) the operator is approved by the competent authority to operate the helicopter within the constraints of the MEL.

**CAT.IDE.H.115  Operating lights**

(a) Helicopters operated under VFR by day shall be equipped with an anti-collision light system.

(b) Helicopters operated at night or under IFR shall, in addition to (a), be equipped with:

1. lighting supplied from the helicopter’s electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the helicopter;

2. lighting supplied from the helicopter’s electrical system to provide illumination in all passenger compartments;

3. an independent portable light for each required crew member readily accessible to crew members when seated at their designated stations;

4. navigation/position lights;

5. two landing lights of which at least one is adjustable in flight so as to illuminate the ground in front of and below the helicopter and the ground on either side of the helicopter; and

6. lights to conform with the International Regulations for Preventing Collisions at Sea if the helicopter is operating over water.
CAT.IDE.H.125  Operations under VFR by day—flight and navigational instruments and associated equipment

(a)  Helicopters operated under VFR by day shall be equipped with the following equipment, available at the pilot's station:

(1)  A means of measuring and displaying:

   (i)  Magnetic heading;

   (ii) Time in hours, minutes, and seconds;

   (iii) Pressure altitude;

   (iv)  Indicated airspeed;

   (v)   Vertical speed;

   (vi)  Slip; and

   (vii) Outside air temperature.

(2)  A means of indicating when the supply of power to the required flight instruments is not adequate.

(b)  Whenever two pilots are required for the operation, an additional separate means of displaying the following shall be available for the second pilot:

(1)  Pressure altitude;
(2) Indicated airspeed;

(3) Vertical speed; and

(4) Slip.

c) Helicopters with an MCTOM of more than 3 175 kg or any helicopter operating over water when out of sight of land or when the visibility is less than 1 500 m, shall be equipped with a means of measuring and displaying:

(1) Attitude; and

(2) Heading.

(d) A means for preventing malfunction of the airspeed indicating systems due to condensation or icing shall be available for helicopters with an MCTOM of more than 3 175 kg or MAPSC of more than nine.

CAT.IDE.H.130 Operations under IFR or at night — flight and navigational instruments and associated equipment

Helicopters operated under VFR at night or under IFR shall be equipped with the following equipment, available at the pilot’s station:

(a) A means of measuring and displaying:

(1) Magnetic heading;

(2) Time in hours, minutes and seconds;

(3) Indicated airspeed;
(4) Vertical speed;

(5) Slip;

(6) Attitude;

(7) Stabilised heading; and

(8) Outside air temperature.

(b) Two means of measuring and displaying pressure altitude. For single-pilot operations under VFR at night one pressure altimeter may be substituted by a radio altimeter.

(c) A means of indicating when the supply of power to the required flight instruments is not adequate.

(d) A means of preventing malfunction of the airspeed indicating systems required in (a) (3) and (h) (2) due to either condensation or icing.

(e) A means of annunciating to the flight crew the failure of the means required in (d) for helicopters:

(1) issued with an individual C of A on or after 1 August 1999; or

(2) issued with an individual C of A before 1 August 1999 with an MCTOM of more than 3175 kg, and with an MAPSC of more than nine.
A standby means of measuring and displaying attitude that:

1. is powered continuously during normal operation and, in the event of a total failure of the normal electrical generating system, is powered from a source independent of the normal electrical generating system;

2. operates independently of any other means of measuring and displaying attitude;

3. is capable of being used from either pilot’s station;

4. is operative automatically after total failure of the normal electrical generating system;

5. provides reliable operation for a minimum of 30 minutes or the time required to fly to a suitable alternate landing site when operating over hostile terrain or offshore, whichever is greater, after total failure of the normal electrical generating system, taking into account other loads on the emergency power supply and operational procedures;

6. is appropriately illuminated during all phases of operation; and

7. is associated with a means to alert the flight crew when operating under its dedicated power supply, including when operated by emergency power.

An alternate source of static pressure for the means of measuring altitude, airspeed and vertical speed.
(h) Whenever two pilots are required for the operation, a separate means for displaying for the second pilot:

1. Pressure altitude;

2. Indicated airspeed;

3. Vertical speed;

4. Slip;

5. Attitude; and


(i) For IFR operations, a chart holder in an easily readable position that can be illuminated for night operations.

**CAT.IDE.H.135 Additional equipment for single-pilot operation under IFR**

Helicopters operated under IFR with a single-pilot shall be equipped with an autopilot with at least altitude hold and heading mode.

**CAT.IDE.H.145 Radio altimeters**

(a) Helicopters on flights over water shall be equipped with a radio altimeter capable of emitting an audio warning below a pre-set height and a visual warning at a height selectable by the pilot, when operating:

1. out of sight of the land;
(2) in a visibility of less than 1500 m;

(3) at night; or

(4) at a distance from land corresponding to more than three minutes at normal cruising speed.

**CAT.IDE.H.160  Airborne weather detecting equipment**

Helicopters with an MAPSC of more than nine and operated under IFR or at night shall be equipped with airborne weather detecting equipment when current weather reports indicate that thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather detecting equipment, may be expected to exist along the route to be flown.

**CAT.IDE.H.165  Additional equipment for operations in icing conditions at night**

(a) Helicopters operated in expected or actual icing conditions at night shall be equipped with a means to illuminate or detect the formation of ice.

(b) The means to illuminate the formation of ice shall not cause glare or reflection that would handicap crew members in the performance of their duties.

**CAT.IDE.H.170  Flight crew interphone system**

Helicopters operated by more than one flight crew member shall be equipped with a flight crew interphone system, including headsets and microphones for use by all flight crew members.
CAT.IDE.H.175  Crew member interphone system

Helicopters shall be equipped with a crew member interphone system when carrying a crew member other than a flight crew member.

CAT.IDE.H.180  Public address system

(a) Helicopters with an MAPSC of more than nine shall be equipped with a public address system, with the exception of (b).

(b) Notwithstanding (a) helicopters with an MAPSC of more than nine and less than 20 are exempted from having a public address system, if:

(1) the helicopter is designed without a bulkhead between pilot and passengers; and

(2) the operator is able to demonstrate that when in flight, the pilot’s voice is audible and intelligible at all passengers’ seats.

CAT.IDE.H.185  Cockpit voice recorder (CVR)

(a) The following helicopter types shall be equipped with a cockpit voice recorder:

(1) all helicopters with an MCTOM of more than 7000 kg; and

(2) helicopters with an MCTOM of more than 3 175 kg and first issued with an individual C of A on or after 1 January 1987.

(b) The CVR shall be capable of retaining the data recorded during at least:

(1) the preceding two hours for helicopters referred to in (a) (1) and (a) (2), when first issued with an individual C of A on or after 1 January 2016;
(2) the preceding one hour for helicopters referred to in (a) (1), when first issued with an individual C of A on or after 1 August 1999 and before 1 January 2016;

(3) the preceding 30 minutes for helicopters referred to in (a) (1), when first issued with an individual C of A before 1 August 1999; or

(4) the preceding 30 minutes for helicopters referred to in (a) (2), when first issued with an individual C of A before 1 January 2016.

c) The CVR shall record with reference to a timescale:

(1) voice communications transmitted from or received in the flight crew compartment by radio;

(2) flight crew members' voice communications using the interphone system and the public address system, if installed;

(3) the aural environment of the flight crew compartment, including without interruption:

   (i) for helicopters first issued with an individual C of A on or after 1 August 1999, the audio signals received from each crew microphone;

   (ii) for helicopters first issued with an individual C of A before 1 August 1999, the audio signals received from each crew microphone, where practicable;

(4) voice or audio signals identifying navigation or approach aids introduced into a headset or speaker.
(d) The CVR shall start to record prior to the helicopter moving under its own power and shall continue to record until the termination of the flight when the helicopter is no longer capable of moving under its own power.

(e) In addition to (d), for helicopters referred to in (a) (2) issued with an individual C of A on or after 1 August 1999:

(1) the CVR shall start automatically to record prior to the helicopter moving under its own power and continue to record until the termination of the flight when the helicopter is no longer capable of moving under its own power; and

(2) depending on the availability of electrical power, the CVR 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.

(f) The CVR shall have a device to assist in locating it in water.

**CAT. IDE.H.190  Flight data recorder (FDR) and aircraft data recording systems (ADRS)**

(a) Types:

(1) A Type IV FDR shall record the parameters required to determine accurately the helicopter flight path, speed, attitude, engine power and operation.

(2) A Type IVA FDR shall record the parameters required to determine accurately the helicopter flight path, speed, attitude, engine power, operation and configuration.
(3) A Type V FDR shall record the parameters required to determine accurately the helicopter flight path, speed, attitude and engine power.

(b) Operation:

(1) All helicopters of a maximum certificated take-off mass of over 3 180 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2016 shall be equipped with a Type IVA FDR.

(2) All helicopters of a maximum certificated take-off mass of over 7 000 kg, or having a passenger seating configuration of more than nineteen, for which the individual certificate of airworthiness is first issued on or after 1 January 1989 shall be equipped with a Type IV FDR.

(c) Discontinuation:

(1) The use of engraving metal foil FDRs shall be discontinued.

(2) The use of photographic film FDRs shall be discontinued.

(3) The use of analogue FDRs using frequency modulation (FM) shall be discontinued by 1 January 2012.

(4) The use of magnetic tape FDRs shall be discontinued by 1 January 2016.

(d) Duration:

Types IV, IVA and V FDRs shall be capable of retaining the information recorded during at least the last ten hours of their operation.
CAT.IDE.H.195  Data link recording

(a)  Applicability:

(1) All helicopters for which the individual certificate of airworthiness is first issued on or after 1 January 2016, which utilize any of the data link communications applications listed in Appendix 2 and are required to carry a CVR, shall record on a flight recorder the data link communications messages.

(2) All helicopters which are modified on or after 1 January 2016 to install and utilize any of the data link communications applications listed in Appendix 2 and are required to carry a CVR shall record on a flight recorder the data link communications messages.

Note 1: Data link communications are currently conducted by either ATN-based or FANS 1/A-equipped helicopter.

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

(b)  Duration:

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

(c)  Correlation:

Data link recording shall be able to be correlated to the recorded cockpit audio.
(d) Applications to be recorded:

Where the helicopter flight path is authorized or controlled through the use of data link messages, all data link messages, both uplinks (to the helicopter) and downlinks (from the helicopter), shall be recorded on the helicopter. As far as practicable, the time the messages were displayed to the flight crew and the time of the responses shall to 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.

**CAT.IDE.H.200  Flight data and cockpit voice combination recorder**

Compliance with CVR and FDR requirements may be achieved by the carriage of one combination recorder.

**CAT.IDE.H.205  Seats, seat safety belts, restraint systems and child restraint devices**

(a) Helicopters shall be equipped with:

(1) a seat or berth for each person on board who is aged 24 months or more;

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

(3) for helicopters first issued with an individual C of A on or after 1 August 1999, a safety belt with upper torso restraint system for use on each passenger seat for each passenger aged 24 months or more;

(4) a child restraint device (CRD) for each person on board younger than 24 months;
(5) A seat belt with upper torso restraint system incorporating a device that will automatically restrain the occupant’s torso in the event of rapid deceleration on each flight crew seat;

(6) A seat belt with upper torso restraint system on each seat for the minimum required cabin crew.

(b) A seat belt with upper torso restraint system shall:

(1) have a single point release; and

(2) on flight crew seats and on the seats for the minimum required cabin crew include two shoulder straps and a seat belt that may be used independently.

**CAT.IDE.H.210  Fasten seat belt and no smoking signs**

Helicopters in which not all passenger seats are visible from the flight crew seat(s) shall be equipped with a means of indicating to all passengers and cabin crew when seat belts shall be fastened and when smoking is not allowed.

**CAT.IDE.H.220  First-aid kits**

(a) Helicopters shall be equipped with at least one first-aid kit.

(b) First-aid kits shall be:

(1) readily accessible for use;

(2) kept up to date.
CAT.IDE.H.240  Supplemental oxygen — non-pressurised helicopters

Non-pressurised helicopters operated at pressure altitudes above 10 000 feet shall be equipped with supplemental oxygen equipment capable of storing and dispensing the oxygen supplies in accordance with the tables 10 and 11.

<table>
<thead>
<tr>
<th>Supply for</th>
<th>Duration and cabin pressure altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Occupants of flight crew compartment seats on flight crew compartment</td>
<td>The entire flying time at pressure altitudes above 10 000 feet.</td>
</tr>
<tr>
<td>duty and crew members assisting flight crew in their duties</td>
<td></td>
</tr>
<tr>
<td>(b) Required cabin crew members</td>
<td>The entire flying time at pressure altitudes above 13 000 feet and for any period exceeding 30 minutes at pressure altitudes above 10 000 feet but not exceeding 13 000 feet.</td>
</tr>
<tr>
<td>(c) Additional crew members and 100 % of passengers(^{(1)})</td>
<td>The entire flying time at pressure altitudes above 13 000 feet.</td>
</tr>
<tr>
<td>(d) 10 % of passengers(^{(1)})</td>
<td>The entire flying time after 30 minutes at pressure altitudes above 10 000 feet but not exceeding 13 000 feet.</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Passenger numbers in Table 1 refer to passengers actually carried on board including persons younger than 24 months.
## Oxygen minimum requirements for other-than-complex non-pressurised helicopters

<table>
<thead>
<tr>
<th>Supply for</th>
<th>Duration and cabin pressure altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Occupants of flight crew compartment seats on flight crew compartment duty, crew members assisting flight crew in their duties, and required cabin crew members</td>
<td>The entire flying time at pressure altitudes above 13,000 feet and for any period exceeding 30 minutes at pressure altitudes above 10,000 feet but not exceeding 13,000 feet.</td>
</tr>
<tr>
<td>(b) Additional crew members and 100% of passengers(1)</td>
<td>The entire flying time at pressure altitudes above 13,000 feet.</td>
</tr>
<tr>
<td>(c) 10% of passengers(1)</td>
<td>The entire flying time after 30 minutes at pressure altitudes above 10,000 feet but not exceeding 13,000 feet.</td>
</tr>
</tbody>
</table>

(1) Passenger numbers in Table 2 refer to passengers actually carried on board including persons younger than 24 months.

### Table 11

**CAT.IDE.H.250  Hand fire extinguishers**

(a) Helicopters shall be equipped with at least one hand fire extinguisher in the flight crew compartment.

(b) At least one hand fire extinguisher shall be located in, or readily accessible for use in, each galley not located on the main passenger compartment.

(c) At least one hand fire extinguisher shall be available for use in each cargo compartment that is accessible to crew members in flight.
(d) The type and quantity of extinguishing agent for the required fire extinguishers shall be suitable for the type of fire likely to occur in the compartment where the extinguisher is intended to be used and to minimise the hazard of toxic gas concentration in compartments occupied by persons.

(e) The helicopter shall be equipped with at least a number of hand fire extinguishers in accordance with Table 12, conveniently located to provide adequate availability for use in each passenger compartment.

<table>
<thead>
<tr>
<th>Number of hand fire extinguishers</th>
<th>MAPSC</th>
<th>Number of extinguishers</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-30</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>31-60</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>61-200</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Table 12

**CAT.IDE.H.260  Marking of break-in points**

If areas of the helicopter’s fuselage suitable for break-in by rescue crews in an emergency are marked, such areas shall be marked as shown in Figure 2.

![Figure 2](image-url)
CAT.IDE.H.270  Megaphones

Helicopters with an MAPSC of more than 19 shall be equipped with one portable battery-powered megaphone readily accessible for use by crew members during an emergency evacuation.

CAT.IDE.H.275  Emergency lighting and marking

(a) Helicopters with an MAPSC of more than 19 shall be equipped with:

   (1) an emergency lighting system having an independent power supply to provide a source of general cabin illumination to facilitate the evacuation of the helicopter; and

   (2) emergency exit marking and locating signs visible in daylight or in the dark.

(b) Helicopters shall be equipped with emergency exit markings visible in daylight or in the dark when operated:

   (1) in performance class 1 or 2 on a flight over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed;

   (2) in performance class 3 on a flight over water at a distance corresponding to more than three minutes flying time at normal cruising speed.

CAT.IDE.H.280  Emergency locator transmitter (ELT)

(a) Helicopters shall be equipped with at least one automatic ELT.

(b) Helicopters operating in performance class 1 or 2 used in offshore operations on a flight over water in a hostile environment and at a distance from land
corresponding to more than 10 minutes flying time at normal cruising speed shall be equipped with an automatically deployable ELT (ELT (AD)).

(c) An ELT of any type shall be capable of transmitting simultaneously on 121.5 MHz and 406 MHz.

CAT.IDE.H.290 Life-jackets

(a) Helicopters shall be equipped with a life-jacket for each person on board or equivalent floatation device for each person on board younger than 24 months, stowed in a position that is readily accessible from the seat or berth of the person for whose use it is provided, when operated in:

(1) performance class 1 or 2 on a flight over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed;

(2) performance class 3 on a flight over water beyond auto rotational distance from land;

(3) performance class 2 or 3 when taking off or landing at an aerodrome or operating site where the take-off or approach path is over water.

(b) Each life-jacket or equivalent individual floatation device shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

CAT.IDE.H.295 Crew survival suits

Each crew member shall wear a survival suit when operating:

(a) in performance Class 1 or 2 on a flight over water in support of offshore operations, at a distance from land corresponding to more than 10 minutes flying
time at normal cruising speed, when the weather report or forecasts available to the commander indicate that the sea temperature will be less than plus 10 °C during the flight, or when the estimated rescue time exceeds the estimated survival time;

(b) in performance Class 3 on a flight over water beyond auto rotational distance or safe forced landing distance from land, when the weather report or forecasts available to the commander indicate that the sea temperature will be less than plus 10 °C during the flight.

CAT.IDE.H.300 Life-rafts, survival ELTs and survival equipment on extended overwater flights

Helicopters operated:

(a) in performance class 1 or 2 on a flight over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed;

(b) in performance class 3 on a flight over water at a distance corresponding to more than three minutes flying time at normal cruising speed, shall be equipped with:

(1) in the case of a helicopter carrying less than 12 persons, at least one life-raft with a rated capacity of not less than the maximum number of persons on board, stowed so as to facilitate its ready use in an emergency;

(2) in the case of a helicopter carrying more than 11 persons, at least two life-rafts, stowed so as to facilitate their ready use in an emergency, sufficient together to accommodate all persons capable of being carried on board and, if one is lost, the remaining life-raft(s) having, the overload capacity sufficient to accommodate all persons on the helicopter;

(3) at least one survival ELT (ELT(S)) for each required life-raft; and
(4) life-saving equipment, including means of sustaining life, as appropriate to the flight to be undertaken.

**CAT.IDE.H.305 Survival equipment**

Helicopters operated over areas in which search and rescue would be especially difficult shall be equipped with:

(a) signalling equipment to make distress signals;

(b) at least one ELT(S); and

(c) additional survival equipment for the route to be flown taking account of the number of persons on board.

**CAT.IDE.H.310 Additional requirements for helicopters conducting offshore operations in a hostile sea area**

Helicopters operated in offshore operations in a hostile sea area, at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed, shall comply with the following:

(a) When the weather report or forecasts available to the commander indicate that the sea temperature will be less than plus 10 °C during the flight, or when the estimated rescue time exceeds the calculated survival time, or the flight is planned to be conducted at night, all persons on board shall wear a survival suit.

(b) All life-rafts carried in accordance with CAT.IDE.H.300 shall be installed so as to be usable in the sea conditions in which the helicopter’s ditching, flotation and trim characteristics were evaluated in order to comply with the ditching requirements for certification.
(c) The helicopter shall be equipped with an emergency lighting system with an independent power supply to provide a source of general cabin illumination to facilitate the evacuation of the helicopter.

(d) All emergency exits, including crew emergency exits, and the means for opening them shall be conspicuously marked for the guidance of occupants using the exits in daylight or in the dark. Such markings shall be designed to remain visible if the helicopter is capsized and the cabin is submerged.

(e) All non-jettisonable doors that are designated as ditching emergency exits shall have a means of securing them in the open position so that they do not interfere with occupants’ egress in all sea conditions up to the maximum required to be evaluated for ditching and flotation.

(f) All doors, windows or other openings in the passenger compartment assessed as suitable for the purpose of underwater escape shall be equipped so as to be operable in an emergency.

(g) Life-jackets shall be worn at all times, unless the passenger or crew member is wearing an integrated survival suit that meets the combined requirement of the survival suit and life-jacket.

**CAT.IDE.H.315 Helicopters certified for operating on water — miscellaneous equipment**

Helicopters certified for operating on water shall be equipped with:

(a) a sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvring the helicopter on water, appropriate to its size, weight and handling characteristics; and
(b) equipment for making the sound signals prescribed in the International Regulations for Preventing Collisions at Sea, where applicable.

**CAT.IDE.H.320 All helicopters on flights over water — ditching**

(a) Helicopters shall be designed for landing on water or certified for ditching in accordance with the relevant airworthiness code when operated in performance class 1 or 2 on a flight over water in a hostile environment at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed.

(b) Helicopters shall be designed for landing on water or certified for ditching in accordance the relevant airworthiness code or fitted with emergency flotation equipment when operated in:

1. performance class 1 or 2 on a flight over water in a non-hostile environment at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed;

2. performance class 2, when taking off or landing over water, except in the case of helicopter emergency medical services (HEMS) operations, where for the purpose of minimising exposure, the landing or take-off at a HEMS operating site located in a congested environment is conducted over water;

3. performance class 3 on a flight over water beyond safe forced landing distance from land.

**CAT.IDE.H.325 Headset**

Whenever a radio communication and/or radio navigation system is required, helicopters shall be equipped with a headset with boom microphone or equivalent and a
transmit button on the flight controls for each required pilot and/or crew member at his assigned station.

**CAT.IDE.H.330  Radio communication equipment**

(a) Helicopters shall be equipped with the radio communication equipment required by the applicable airspace requirements.

(b) The radio communication equipment shall provide for communication on the aeronautical emergency frequency 121.5 MHz.

**CAT.IDE.H.335  Audio selector panel**

Helicopters operated under IFR shall be equipped with an audio selector panel operable from each required flight crew member station.

**CAT.IDE.H.340  Radio equipment for operations under VFR over routes navigated by reference to visual landmarks**

Helicopters operated under VFR over routes that can be navigated by reference to visual landmarks shall be equipped with radio communication equipment necessary under normal radio propagation conditions to fulfil the following:

(a) communicate with appropriate ground stations;

(b) communicate with appropriate ATC stations from any point in controlled airspace within which flights are intended; and

(c) receive meteorological information.
**CAT.IDE.H.345  Communication and navigation equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks**

(a) Helicopters operated under IFR or under VFR over routes that cannot be navigated by reference to visual landmarks shall be equipped with radio communication and navigation equipment in accordance with the applicable airspace requirements.

(b) Radio communication equipment shall include at least two independent radio communication systems necessary under normal operating conditions to communicate with an appropriate ground station from any point on the route, including diversions.

(c) Helicopters shall have sufficient 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 shall allow safe navigation in accordance with the flight plan.

(d) Helicopters operated on flights in which it is intended to land in IMC shall be equipped with suitable equipment capable of providing guidance to a point from which a visual landing can be performed for each aerodrome at which it is intended to land in IMC and for any designated alternate aerodromes.

**CAT.IDE.H.350  Transponder**

Helicopters shall be equipped with a pressure altitude reporting secondary surveillance radar (SSR) transponder and any other SSR transponder capability required for the route being flown.
# APPENDIX 1

Parameter Guidance for Aircraft Data Recording Systems

<table>
<thead>
<tr>
<th>No</th>
<th>Parameter name</th>
<th>Parameter category</th>
<th>Minimum recording range</th>
<th>Maximum recording interval in seconds</th>
<th>Minimum recording accuracy</th>
<th>Minimum recording resolution</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heading (Magnetic or True)</td>
<td>R*</td>
<td>±180 degrees</td>
<td>1</td>
<td>±2 degrees</td>
<td>0.5 degree</td>
<td>* If not available, record rates</td>
</tr>
<tr>
<td>2</td>
<td>Pitch attitude</td>
<td>E*</td>
<td>±90 degrees</td>
<td>0.25</td>
<td>±2 degrees</td>
<td>0.5 degree</td>
<td>* If not available, record rates</td>
</tr>
<tr>
<td>3</td>
<td>Roll attitude</td>
<td>E*</td>
<td>±180 degrees</td>
<td>0.25</td>
<td>±2 degrees</td>
<td>0.5 degree</td>
<td>* If not available, record rates</td>
</tr>
<tr>
<td>4</td>
<td>Yaw rate</td>
<td>E*</td>
<td>±300 degrees/s</td>
<td>0.25</td>
<td>±1% + drift of 360°/hr</td>
<td>2 degree/s</td>
<td>* Essential if no heading available</td>
</tr>
<tr>
<td>5</td>
<td>Pitch rate</td>
<td>E*</td>
<td>±300 degrees/s</td>
<td>0.25</td>
<td>±1% + drift of 360°/hr</td>
<td>2 degree/s</td>
<td>* Essential if no pitch attitude available</td>
</tr>
<tr>
<td>6</td>
<td>Roll rate</td>
<td>E*</td>
<td>±300 degrees/s</td>
<td>0.25</td>
<td>±1% + drift of 360°/hr</td>
<td>2 degree/s</td>
<td>* Essential if no roll attitude available</td>
</tr>
<tr>
<td>7</td>
<td>Positioning system: latitude/longitude</td>
<td>E</td>
<td>Latitude: ±90 degrees</td>
<td>2 (1 if available)</td>
<td>As installed</td>
<td>0.00005 degree</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Longitude: ±180 degrees</td>
<td></td>
<td>(0.00015 degree recommended)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Positioning system: estimated error</td>
<td>E*</td>
<td>Available range</td>
<td>2 (1 if available)</td>
<td>As installed</td>
<td>As installed</td>
<td>* If available</td>
</tr>
<tr>
<td>9</td>
<td>Positioning system: altitude</td>
<td>E</td>
<td>−1000 feet (−300 m) to</td>
<td>2 (1 if available)</td>
<td>As installed</td>
<td>5 feet (1.5 m)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>maximum certified altitude of aeroplane 5000 feet (+1500m)</td>
<td></td>
<td>(±15m (±50 feet) recommended)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Positioning system: time*</td>
<td>E</td>
<td>24 hours</td>
<td>1</td>
<td>±0.5 second</td>
<td>0.1 second</td>
<td>* UTC time preferred where available.</td>
</tr>
<tr>
<td>11</td>
<td>Positioning system: ground speed</td>
<td>E</td>
<td>0–1000 kt</td>
<td>2 (1 if available)</td>
<td>As installed</td>
<td>1 kt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(±50 kt recommended)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Positioning system: channel</td>
<td>E</td>
<td>0–360 degrees</td>
<td>2 (1 if available)</td>
<td>As installed</td>
<td>0.5 degrees</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Description</td>
<td>Measurement Method</td>
<td>Sensitivity</td>
<td>Accuracy Notes</td>
<td>Error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------------------</td>
<td>--------------------</td>
<td>--------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Normal acceleration</td>
<td>E</td>
<td>$-3 \text{ g} to +6 \text{ g}$ (*)</td>
<td>0.25 (0.125 if available)</td>
<td>As installed (±0.09 g excluding a datum error of ±0.45 g recommended)</td>
<td>0.004 g</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Longitudinal acceleration</td>
<td>E</td>
<td>±1 g (*)</td>
<td>0.25 (0.125 if available)</td>
<td>As installed (±0.015 g excluding a datum error of ±0.05 g recommended)</td>
<td>0.004 g</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Lateral acceleration</td>
<td>E</td>
<td>±1 g (*)</td>
<td>0.25 (0.125 if available)</td>
<td>As installed (±0.015 g excluding a datum error of ±0.05 g recommended)</td>
<td>0.004 g</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>External static pressure (or pressure altitude)</td>
<td>R</td>
<td>34.4 mb (3.44 in-Hg) to 310.2 mb (31.02 in-Hg) or available sensor range</td>
<td>1</td>
<td>As installed (±1 mb (0.1 in-Hg) or ±100 feet (±30 m) to ±700 feet (±210 m) recommended)</td>
<td>0.1 mb (0.01 in-Hg) or 1.5 m (5 feet)</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Outside air temperature (or total air temperature)</td>
<td>R</td>
<td>−50° to +90°C or available sensor range</td>
<td>2</td>
<td>As installed (±2°C recommended)</td>
<td>1°C</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Indicated air speed</td>
<td>R</td>
<td>As the installed pilot display measuring system or available sensor range</td>
<td>1</td>
<td>As installed (±3% recommended)</td>
<td>1 kt (0.5 kt recommended)</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Engine RPM</td>
<td>R</td>
<td>Full range including overspeed condition</td>
<td>Each engine each second</td>
<td>As installed (5% of full range recommended)</td>
<td>0.2% of full range</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Engine oil pressure</td>
<td>R</td>
<td>Full range</td>
<td>Each engine each second</td>
<td>As installed (5% of full range recommended)</td>
<td>2% of full range</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Engine oil temperature</td>
<td>R</td>
<td>Full range</td>
<td>Each engine each second</td>
<td>As installed (5% of full range recommended)</td>
<td>2% of full range</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Fuel flow or pressure</td>
<td>R</td>
<td>Full range</td>
<td>Each engine each second</td>
<td>As installed (5% of full range recommended)</td>
<td>2% of full range</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Description</td>
<td>R</td>
<td>Full range</td>
<td>Each engine each second</td>
<td>As installed</td>
<td>0.2% of full range</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------------------------------------------------------</td>
<td>----</td>
<td>------------</td>
<td>-------------------------</td>
<td>-------------</td>
<td>---------------------</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Manifold pressure</td>
<td>R</td>
<td>Full range</td>
<td>Each engine each second</td>
<td>As installed</td>
<td>0.2% of full range</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Engine thrust/power/torque parameters required to determine propulsive thrust/power*</td>
<td>R</td>
<td>Full range</td>
<td>Each engine each second</td>
<td>As installed</td>
<td>0.1% of full range</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* 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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Engine gas generator speed (Ng)</td>
<td>R</td>
<td>0-150%</td>
<td>Each engine each second</td>
<td>As installed</td>
<td>0.2% of full range</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Free power turbine speed (Nf)</td>
<td>R</td>
<td>0-150%</td>
<td>Each engine each second</td>
<td>As installed</td>
<td>0.2% of full range</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Coolant temperature</td>
<td>R</td>
<td>Full range</td>
<td>1</td>
<td>As installed</td>
<td>1 degree Celsius</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>(±5°C recommended)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Main voltage</td>
<td>R</td>
<td>Full range</td>
<td>Each engine each second</td>
<td>As installed</td>
<td>1 Volt</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Cylinder head temperature</td>
<td>R</td>
<td>Full range</td>
<td>Each cylinder each second</td>
<td>As installed</td>
<td>2% of full range</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Flaps position</td>
<td>R</td>
<td>Full range or each discrete position</td>
<td>2</td>
<td>As installed</td>
<td>0.5 degree</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Primary flight control surface position</td>
<td>R</td>
<td>Full range</td>
<td>0.25</td>
<td>As installed</td>
<td>0.2% of full range</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Fuel quantity</td>
<td>R</td>
<td>Full range</td>
<td>4</td>
<td>As installed</td>
<td>1% of full range</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Exhaust gas temperature</td>
<td>R</td>
<td>Full range</td>
<td>Each engine each second</td>
<td>As installed</td>
<td>2% of full range</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Emergency voltage</td>
<td>R</td>
<td>Full range</td>
<td>Each engine</td>
<td>As installed</td>
<td>1 Volt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trim surface position</td>
<td>R</td>
<td>Full range or each discrete position</td>
<td>1</td>
<td>As installed</td>
<td>0.3% of full range</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------------------</td>
<td>---</td>
<td>--------------------------------------</td>
<td>---</td>
<td>--------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Landing gear position</td>
<td>R</td>
<td>Each discrete position*</td>
<td>As installed</td>
<td>* Where available, record up-and-locked and down-and-locked position</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Novel/unique aircraft features</td>
<td>R</td>
<td>As required</td>
<td>As required</td>
<td>As required</td>
<td>As required</td>
<td></td>
</tr>
</tbody>
</table>

Key:

E: Essential parameters

R: Recommended parameters
APPENDIX 2

Description of Applications for Data Link Recorders

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Application type</th>
<th>Application description</th>
<th>Recording content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Data link initiation</td>
<td>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.</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>Controller/pilot communication</td>
<td>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.</td>
<td>C</td>
</tr>
<tr>
<td>3</td>
<td>Addressed surveillance</td>
<td>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.</td>
<td>C</td>
</tr>
<tr>
<td>4</td>
<td>Flight information</td>
<td>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</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Aircraft broadcast surveillance</td>
<td>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/helicopter are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.</td>
<td>M*</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>----</td>
</tr>
<tr>
<td>6</td>
<td>Aeronautical operational control data</td>
<td>This includes any application transmitting or receiving data used for aeronautical operational control purposes (per the ICAO definition of operational control).</td>
<td>M*</td>
</tr>
</tbody>
</table>

Key:

C: Complete contents recorded.

M: Information that enables correlation to any associated records stored separately from the aeroplane/helicopter.

* Applications to be recorded only as far as is practicable given the architecture of the system.