'মুজিব বর্ষে হোক শপথ
আকাশ চলাচল রাখবো নিরাপদ'
বাংলাদেশ বেসামরিক বিমান চলাচল কর্তৃপক্ষ
CIVIL AVIATION AUTHORITY OF BANGLADESH

30.31.0000.113.22.046.23/**396** Dated: 23-08-2023

To
All Operators

SUBJECT: **COMMENTS ON THE DRAFT ANO(AW) PART-IDE.**

Dear Sir,

CAAB has promulgated airworthiness requirements ANO(AW) Part-IDE on Instrument, Data & Equipment. The draft ANO is available in CAAB website (Notice Board).

2. You are requested to review the ANO(AW) Part-IDE and provide your comments within 24 September 2023 through **daw@caab.gov.bd.**

Thanking you.

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Cc:
Read file.

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INSTRUMENT, DATA & EQUIPMENTS

SCOPE & DEFINITION

This–ANO(AW) Part-IDE lays down in accordance with Section 14 of the Civil Aviation Act 2017 for governing Instrument, Data, Equipment to be installed on aircraft for issuance of Certificate of Airworthiness. ANO (AW) Part- IDE has the following subparts:

(a) Subpart-CAT for the aircraft engaged in Commercial Air Transportation;

(b) Subpart-GA for the General Aviation operation;

For the purpose of this Regulation, the following definitions shall apply:

1) For the purpose of **passenger** classification:

   (a) 'adult' means a person of an age of 12 years and above;
   (b) 'child/children' means persons who are of an age of two years and above but who are less than 12 years of age;
   (c) 'infant' means a person under the age of two years;

2) '**aircraft tracking'** means a ground based process that maintains and updates, at standardized intervals, a record of the four dimensional position of individual aircraft in flight;

3) '**aircraft tracking system'** means a system that relies on aircraft tracking in order to identify abnormal flight behaviour and provide alert;

4) '**take-off alternate aerodrome'**: an alternate aerodrome at which an aircraft would be able to land if it becomes necessary shortly after take-off and it is not possible to use the aerodrome of departure;

5) '**cabin crew member'** means an appropriately qualified crew member, other than a flight crew or technical crew member, who is assigned by an operator to perform duties related to the safety of passengers and flight during operations;

6) '**certification specifications'** (CS) means technical standards adopted by the Agency indicating means to show compliance with Regulation (EC) No 216/2008 and its Implementing Rules and which can be used by an organisation for the purpose of certification;

7) '**cockpit voice recorder (CVR)'** means a crash-protected flight recorder that uses a combination of microphones and other audio and digital inputs to collect and record the aural environment of the flight crew compartment and communications to, from and between the flight crew members;

8) **'crew member'** means a person assigned by an operator to perform duties on board an aircraft;

9) **'de-icing'**, in the case of ground procedures, means a procedure by which frost, ice, snow or slush is removed from an aircraft in order to provide uncontaminated surfaces;

10) **'flight data recorder (FDR)'** means a crash-protected flight recorder that uses a combination of data sources to collect and record parameters that reflect the state and performance of the aircraft;

11) **'GBAS landing system (GLS)'** means an approach landing system using ground based augmented global navigation satellite system (GNSS/GBAS) information to provide guidance to the aircraft based on its lateral and vertical GNSS position. It uses geometric altitude reference for its final approach slope;

12) **'HEMS operating base'** means an aerodrome at which the HEMS crew members and the HEMS helicopter may be on stand-by for HEMS operations;

13) **'HEMS operating site'** means a site selected by the commander during a HEMS flight for helicopter hoist operations, landing and take-off;

14) **'hostile environment'** means:
   (a) an area in which:
      (i) a safe forced landing cannot be accomplished because the surface is inadequate; or
      (ii) the helicopter occupants cannot be adequately protected from the elements; or
      (iii) search and rescue response/capability are not provided consistent with anticipated exposure; or
      (iv) there is an unacceptable risk of endangering persons or property on the ground;
   (b) in any case, the following areas:
      (i) for overwater operations, the open sea area north of 45 N and south of 45 S, unless any part is designated as non-hostile by the responsible authority of the State in which the operations take place; and
      (ii) those parts of a congested area without adequate safe forced landing areas;

15) **'maximum operational passenger seating configuration (MOPSC)'** means the maximum passenger seating capacity of an individual aircraft, excluding crew seats, established for operational purposes and specified in the operations manual. Taking as a baseline the maximum passenger seating configuration established during the certification process conducted for the type certificate (TC), supplemental type certificate (STC) or change to the TC or STC as relevant to the individual aircraft, the MOPSC may establish an equal or lower number of seats, depending on the operational constraints;

16) **'night'** The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise, as may be prescribed by the CAAB.

17) **'personnel-carrying device system (PCDS)'** means a system including one or more devices that is either attached to a hoist or cargo hook or mounted to the rotorcraft airframe during human external cargo (HEC) or helicopter hoist operations (HHO). The devices have the structural capability and features needed to transport occupants external to the helicopter e.g. a life safety harness with or without a quick release and strop with a connector ring, a rigid basket or a cage;

18) **'simple personnel carrying device system (simple 'PCDS')'** means a PCDS that complies with the following conditions:

(i) is designed to restrain no more than a single person (for instance, hoist or cargo hook operator, task specialist or photographer) inside the cabin, or to restrain no more than two persons outside the cabin;

(ii) is not a rigid structure such as a cage, a platform or a basket;

19) **'pilot-in-command'** The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight;

20) **'required navigation performance (RNP) specification'** means a navigation specification for PBN operations which includes a requirement for on-board navigation performance monitoring and alerting;

21) **'seaplane'** means a fixed wing aircraft which is designed for taking off and landing on water and includes amphibians operated as seaplanes;

22) **'visibility (VIS)'** means visibility for aeronautical purposes, which is the greater of:

(i) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background; and

(ii) the greatest distance at which lights in the vicinity of 1 000 candelas can be seen and identified against an unlit background;

SUBPART – CAT

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 under section, but carried on a flight, shall comply with the following requirements:

(1) the information provided by those instruments, equipment or accessories shall not be used by the flight crew members to comply with applicable airworthiness requirements or points CAT.IDE.A.330, CAT.IDE.A.335, CAT.IDE.A.340 and CAT.IDE.A.345;

(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.

AMC1 CAT.IDE.A.105 Minimum equipment for flight

Management of the status of certain instruments, equipment or functions

The operator should control and retain the status of the instruments, equipment or functions required for the intended operation, that are not controlled for the purpose of continuing airworthiness management.

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 energized filaments; and

(3) lights to conform with 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 an MCTOM of more than 5700 kg shall be equipped at each pilot station with a means to maintain a clear portion of the windshield during precipitation.

AMC1 CAT.IDE.A.120 Equipment to clear windshield

Means to maintain a clear portion of the windshield during precipitation

The means used to maintain a clear portion of the windshield during precipitation should be windshield wipers or an equivalent.

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) Barometric 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) Barometric 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 MOPSC of more than 9; and

(2) aeroplanes first issued with an individual CofA on or after 1 April 1999.

(d) Single engine aeroplanes first issued with an individual CofA 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.

AMC1 CAT.IDE.A.125 & CAT.IDE.A.130 Operations under VFR by day & operations under IFR or at night – flight and navigational instruments and associated equipment

Integrated instruments

(a) Individual equipment requirements may be met by combinations of instruments, by integrated flight systems or by a combination of parameters on electronic displays, provided

that the information so available to each required pilot is not less than that required in the applicable operational requirements, and the equivalent safety of the installation has been shown during type certification approval of the aeroplane for the intended type of operation.

(b) The means of measuring and indicating turn and slip, aeroplane attitude and stabilized aeroplane heading may be met by combinations of instruments or by integrated flight director systems, provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

AMC2 CAT.IDE.A.125 Operations under VFR by day — flight and navigational instruments and associated equipment

Local flights

For flights that do not exceed 60 minutes' duration, that take off and land at the same aerodrome and that remain within 50 NM of that aerodrome, an equivalent means of complying with CAT.IDE.A.125 (a)(1)(vi) may be:

(a) a turn and slip indicator;

(b) a turn coordinator; or

(c) both an attitude indicator and a slip indicator.

AMC1 CAT.IDE.A.125(a)(1)(i) & CAT.IDE.A.130(a)(1) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Means of measuring and displaying magnetic heading

The means of measuring and displaying magnetic direction should be a magnetic compass or equivalent.

AMC1 CAT.IDE.A.125(a)(1)(ii) & CAT.IDE.A.130(a)(2) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Means of measuring and displaying the time

An acceptable means of compliance is a clock displaying hours, minutes and seconds, with a sweep- second pointer or digital presentation.

AMC1 CAT.IDE.A.125(a)(1)(iii) & CAT.IDE.A.130(b) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Calibration of the means of measuring and displaying pressure altitude

The instrument measuring and displaying barometric altitude should be of a sensitive type calibrated in feet (ft), with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight.

AMC1 CAT.IDE.A.125(a)(1)(iv) & CAT.IDE.A.130(a)(3) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Calibration of the instrument indicating airspeed

The instrument indicating airspeed should be calibrated in knots (kt).

AMC1 CAT.IDE.A.125(a)(1)(ix) & CAT.IDE.A.130(a)(8) Operations under VFR by day & operations under IFR or at night – flight and navigational instruments and associated equipment

Means of displaying outside air temperature

(a) The means of displaying outside air temperature should be calibrated in degrees Celsius.

(b) The means of displaying outside air temperature may be an air temperature indicator that provides indications that are convertible to outside air temperature.

AMC1 CAT.IDE.A.125(b) & CAT.IDE.A.130(h) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment multi-pilot operations — duplicate instruments

Duplicate instruments should include separate displays for each pilot and separate selectors or other associated equipment where appropriate.

AMC1 CAT.IDE.A.125(c) & CAT.IDE.A.130(d) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment means of preventing malfunction due to condensation or icing

The means of preventing malfunction due to either condensation or icing of the airspeed indicating system should be a heated pitot tube or equivalent.

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 barometric 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 CofA on or after 1 April 1998; or

(2) issued with an individual CofA before 1 April 1998 with an MCTOM of more than 5 700 kg, and with an MOPSC of more than nine.

(f) Except for propeller-driven aeroplanes with an 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 an 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) Barometric 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 MOPSC 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 a Member State on 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.

AMC1 CAT.IDE.A.125 & CAT.IDE.A.130 Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Integrated instruments

(a) Individual equipment requirements may be met by combinations of instruments, by integrated flight systems or by a combination of parameters on electronic displays, provided that the information so available to each required pilot is not less than that required in the applicable operational requirements, and the equivalent safety of the installation has been shown during type certification approval of the aeroplane for the intended type of operation.

(b) The means of measuring and indicating turn and slip, aeroplane attitude and stabilized aeroplane heading may be met by combinations of instruments or by integrated flight director systems, provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

AMC1 CAT.IDE.A.125(a)(1)(i) & CAT.IDE.A.130(a)(1) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Means of measuring and displaying magnetic heading

The means of measuring and displaying magnetic direction should be a magnetic compass or equivalent.

AMC1 CAT.IDE.A.125(a)(1)(ii) & CAT.IDE.A.130(a)(2) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Means of measuring and displaying the time

An acceptable means of compliance is a clock displaying hours, minutes and seconds, with a sweep- second pointer or digital presentation.

AMC1 CAT.IDE.A.125(a)(1)(iv) & CAT.IDE.A.130(a)(3) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Calibration of the instrument indicating airspeed

The instrument indicating airspeed should be calibrated in knots (kt).

AMC1 CAT.IDE.A.130(a)(5) Operations under IFR or at night — flight and navigational instruments and associated equipment

Slip indicator

If only slip indication is provided, the means of measuring and displaying standby attitude should be certified according to applicable airworthiness requirements.

AMC1 CAT.IDE.A.125(a)(1)(ix) & CAT.IDE.A.130(a)(8) Operations under VFR by day & operations under IFR or at night – flight and navigational instruments and associated equipment

Means of displaying outside air temperature

(a) The means of displaying outside air temperature should be calibrated in degrees Celsius.

(b) The means of displaying outside air temperature may be an air temperature indicator that provides indications that are convertible to outside air temperature.

AMC1 CAT.IDE.A.125(a)(1)(iii) & CAT.IDE.A.130(b) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Calibration of the means of measuring and displaying pressure altitude

The instrument measuring and displaying barometric altitude should be of a sensitive type calibrated in feet (ft), with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight.

AMC2 CAT.IDE.A.130(b) Operations under IFR or at night – flight and navigational instruments and associated equipment
Altimeters — ifr or night operations

Except for unpressurised aeroplanes operating below 10 000 ft, the altimeters of aeroplanes operating under IFR or at night should have counter drum-pointer or equivalent presentation.

AMC1 CAT.IDE.A.125(c) & CAT.IDE.A.130(d) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Means of preventing malfunction due to condensation or icing

The means of preventing malfunction due to either condensation or icing of the airspeed indicating system should be a heated pitot tube or equivalent.

AMC1 CAT.IDE.A.130(e) Operations under IFR or at night – flight and navigational instruments and associated equipment

Means of indicating failure of the airspeed indicating system's means of preventing malfunction due to either condensation or icing

A combined means of indicating failure of the airspeed indicating system's means of preventing malfunction due to either condensation or icing is acceptable provided that it is visible from each

flight crew station and that there is a means to identify the failed heater in systems with two or more sensors.

AMC1 CAT.IDE.A.125(b) & CAT.IDE.A.130(h) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Multi-pilot operations — duplicate instruments

Duplicate instruments should include separate displays for each pilot and separate selectors or other associated equipment where appropriate.

AMC1 CAT.IDE.A.130(i)(5) Operations under IFR or at night – flight and navigational instruments and associated equipment

Illumination of standby means of measuring and displaying attitude

The standby means of measuring and displaying attitude should be illuminated so as to be clearly visible under all conditions of daylight and artificial lighting.

AMC1 CAT.IDE.A.130(j) Operations under IFR or at night — flight and navigational instruments and associated equipment

Chart holder

An acceptable means of compliance with the chart holder requirement is to display a pre-composed chart on an electronic flight bag (EFB).

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 MOPSC 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 preselected altitude.

CAT.IDE.A.150 Terrain awareness warning system

(a) Turbine-powered aeroplanes having an MCTOM of more than 5 700 kg or an MOPSC 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 MOPSC of more than nine shall be equipped with a TAWS that meets the requirement for Class B equipment as specified in an acceptable standard.

(c) Turbine-powered aeroplanes for which the individual certificate of airworthiness (CofA) was first issued after 1 January 2019 and having an MCTOM of 5 700 kg or less and an MOPSC of six to nine shall be equipped with a TAWS that meets the requirements for Class B equipment, as specified in an acceptable standard.

AMC1 CAT.IDE.A.150 Terrain awareness warning system (TAWS)

Excessive downwards glide slope deviation warning for class a taws

The requirement for a Class A TAWS to provide a warning to the flight crew for excessive downwards glide slope deviation should apply to all final approach glide slopes with angular vertical navigation (VNAV) guidance, whether provided by the instrument landing system (ILS), microwave landing system (MLS), satellite based augmentation system approach procedure with vertical guidance (SBAS APV (localiser performance with vertical guidance approach LPV)), ground-based augmentation system (GBAS (GPS landing system, GLS) or any other systems providing similar guidance. The same requirement should not apply to systems providing vertical guidance based on barometric VNAV.

CAT.IDE.A.155 Airborne collision avoidance system (ACAS)

Turbine-powered aeroplanes with an MCTOM of more than 5 700 kg or an MOPSC of more than 19 shall be equipped with ACAS II.

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 MOPSC of more than nine.

AMC1 CAT.IDE.A.160 Airborne weather detecting equipment

General

The airborne weather detecting equipment should be an airborne weather radar, except for propeller- driven pressurised aeroplanes with an MCTOM not more than 5,700 kg and an MOPSC of not more than 9, for which other equipment capable of detecting thunderstorms and other potentially hazardous weather conditions, regarded as detectable with airborne weather radar equipment, are also acceptable.

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.

AMC1 CAT.IDE.A.170 Flight crew interphone system

Type of flight crew interphone

The flight crew interphone system should not be of a handheld type.

CAT.IDE.A.175 Crew member interphone system

Aeroplanes with an MCTOM of more than 15 000 kg, or with an MOPSC of more than 19 shall be equipped with a crew member interphone system.

AMC1 CAT.IDE.A.175 Crew member interphone system

Specifications

The crew member interphone system should:

(a) operate independently of the public address system except for handsets, headsets, microphones, selector switches and signalling devices;

(b) in the case of aeroplanes where at least one cabin crew member is required, be readily accessible for use at required cabin crew member stations close to each separate or pair of floor level emergency exits;

(c) in the case of aeroplanes where at least one cabin crew member is required, have an alerting system incorporating aural or visual signals for use by flight and cabin crew;

(d) have a means for the recipient of a call to determine whether it is a normal call or an emergency call that uses one or a combination of the following:

  (1) lights of different colours;

  (2) codes defined by the operator (e.g. different number of rings for normal and emergency calls); or

  (3) any other indicating signal specified in the operations manual;

(e) provide two-way communication between:

  (1) the flight crew compartment and each passenger compartment, in the case of aeroplanes where at least one cabin crew member is required;

  (2) the flight crew compartment and each galley located other than on a passenger deck level, in the case of aeroplanes where at least one cabin crew member is required;

(3) the flight crew compartment and each remote crew compartment and crew member station that is not on the passenger deck and is not accessible from a passenger compartment; and

(4) ground personnel and at least two flight crew members. This interphone system for use by the ground personnel should be, where practicable, so located that the personnel using the system may avoid detection from within the aeroplane; and

(f) be readily accessible for use from each required flight crew station in the flight crew compartment.

CAT.IDE.A.180 Public address system

Aeroplanes with an MOPSC of more than 19 shall be equipped with a public address system.

AMC1 CAT.IDE.A.180 Public address system

Specifications

The public address system should:

(a) operate independently of the interphone systems except for handsets, headsets, microphones, selector switches and signalling devices;
(b) be readily accessible for immediate use from each required flight crew station;
(c) have, for each floor level passenger emergency exit that has an adjacent cabin crew seat, a microphone operable by the seated cabin crew member, except that one microphone may serve more than one exit, provided the proximity of exits allows unassisted verbal communication between seated cabin crew members;
(d) be operable within 10 seconds by a cabin crew member at each of those stations; and
(e) be audible at all passenger seats, lavatories, galleys, cabin crew seats and work stations, and other crew remote areas.

CAT.IDE.A.185 Cockpit voice recorder

(a) The following aeroplanes shall be equipped with a cockpit voice recorder (CVR):

(1) aeroplanes with an MCTOM of more than 5 700 kg; and

(2) multi-engined turbine-powered aeroplanes with an MCTOM of 5 700 kg or less, with an MOPSC of more than nine and first issued with an individual CofA on or after 1 January 1990.

(b) Until 31 December 2018, the CVR shall be capable of retaining the data recorded during at least:

(1) the preceding 2 hours in the case of aeroplanes referred to in (a)(1) when the individual CofA has been issued on or after 1 April 1998;

(2) the preceding 30 minutes for aeroplanes referred to in (a)(1) when the individual CofA has been issued before 1 April 1998; or

(3) the preceding 30 minutes, in the case of aeroplanes referred to in (a)(2).

(c) By 1 January 2019 at the latest, the CVR shall be capable of retaining the data recorded during at least:

(1) the preceding 25 hours for aeroplanes with an MCTOM of more than 27 000 kg and first issued with an individual CofA on or after 1 January 2022; or

(2) the preceding 2 hours in all other cases.

(d) By 1 January 2019 at the latest, the CVR shall record on means other than magnetic tape or magnetic wire.

(e) 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 aeroplanes first issued with an individual CofA on or after 1 April 1998, the audio signals received from each boom and mask microphone in use;

(ii) for aeroplanes referred to in (a)(2) and first issued with an individual CofA before 1 April 1998, the audio signals received from each boom and mask microphone, where practicable;

(4) voice or audio signals identifying navigation or approach aids introduced into a headset or speaker.

(f) The CVR shall start to record prior to the aeroplane moving under its own power and shall continue to record until the termination of the flight when the aeroplane is no longer capable of moving under its own power. In addition, in the case of aeroplanes issued with an individual CofA on or after 1 April 1998, the CVR shall start automatically to record prior to the aeroplane moving under its own power and continue to record until the termination of the flight when the aeroplane is no longer capable of moving under its own power.

(g) In addition to (f), 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, in the case of:

(1) aeroplanes referred to in (a)(1) and issued with an individual CofA on or after 1 April 1998;
or
(2) aeroplanes referred to in (a)(2).

(h) If the CVR is not deployable, it shall have a device to assist in locating it under water. By 16 June 2018 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the CVR is deployable, it shall have an automatic emergency locator transmitter.

(i) Aeroplanes with an MCTOM of over 27 000 kg and first issued with an individual CofA on or after 5 September 2022 shall be equipped with an alternate power source to which the

CVR and the cockpit-mounted area microphone are switched automatically in the event that all other power to the CVR is interrupted.

CAT.IDE.A.190 Flight data recorder

(a) The following aeroplanes shall be equipped with a flight data recorder (FDR) that uses a digital method of recording and storing data and for which a method of readily retrieving that data from the storage medium is available:

(1) aeroplanes with an MCTOM of more than 5 700 kg and first issued with an individual CofA on or after 1 June 1990;

(2) turbine-engined aeroplanes with an MCTOM of more than 5 700 kg and first issued with an individual CofA before 1 June 1990; and

(3) multi-engined turbine-powered aeroplanes with an MCTOM of 5 700 kg or less, with an MOPSC of more than nine and first issued with an individual CofA on or after 1 April 1998.

(b) The FDR shall record:

(1) time, altitude, airspeed, normal acceleration and heading and be capable of retaining the data recorded during at least the preceding 25 hours for aeroplanes referred to in (a)(2) with an MCTOM of less than 27 000 kg;

(2) the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power and configuration of lift and drag devices and be capable of retaining the data recorded during at least the preceding 25 hours, for aeroplanes referred to in (a)(1) with an MCTOM of less than 27 000 kg and first issued with an individual CofA before 1 January 2016;

(3) the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power, configuration and operation and be capable of retaining the data recorded during at least the preceding 25 hours, for aeroplanes referred to in (a)(1) and (a)(2) with an MCTOM of over 27 000 kg and first issued with an individual CofA before 1 January 2016;

(4) the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power and configuration of lift and drag devices and be capable of retaining the data recorded during at least the preceding 10 hours, in the case of aeroplanes referred to in (a)(3) and first issued with an individual CofA before 1 January 2016; or

(5) the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power, configuration and operation and be capable of retaining the data recorded during at least the preceding 25 hours, for aeroplanes referred to in (a)(1) and (a)(3) and first issued with an individual CofA on or after 1 January 2016.

(c) Data shall be obtained from aeroplane sources that enable accurate correlation with information displayed to the flight crew.

(d) The FDR shall start to record the data prior to the aeroplane being capable of moving under its own power and shall stop after the aeroplane is incapable of moving under its own

power. In addition, in the case of aeroplanes issued with an individual CofA on or after 1 April 1998, the FDR shall start automatically to record the data prior to the aeroplane being capable of moving under its own power and shall stop automatically after the aeroplane is incapable of moving under its own power.

(e) If the FDR is not deployable, it shall have a device to assist in locating it under water. By 16 June 2018 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the FDR is deployable, it shall have an automatic emergency locator transmitter.

AMC1.1 CAT.IDE.A.190 Flight data recorder

Operational performance requirements for aeroplanes first issued with an individual CofA on or after 1 January 2016 and before 1 January 2023

The FDR should record with reference to a timescale the list of parameters in Table 1 and Table 2, as applicable.

Table 1

FDR — all aeroplanes

No	Parameter
1a 1b 1c	Time; or Relative time count Global navigation satellite system (GNSS) time synchronisation
2	Pressure altitude
3a	Indicated airspeed; or Calibrated airspeed
4	Heading (primary flight crew reference) — when true or magnetic heading can be selected, the primary heading reference, a discrete indicating selection, should be recorded
5	Normal acceleration
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying and CVR/FDR synchronisation reference
9	Engine thrust/power
14	Total or outside air temperature
16	Longitudinal acceleration (body axis)
17	Lateral acceleration
18 18a 18b 18c	Primary flight control surface and/or primary flight control pilot input (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. For multiple or split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately. For aeroplanes that have a flight control break-away capability that allows either pilot to operate the controls independently, record both inputs): Pitch axis Roll axis Yaw axis
19	Pitch trim surface position
23	Marker beacon passage
24	Warnings — in addition to the master warning, each 'red' warning (including smoke warnings from other compartments) should be recorded when the warning condition cannot be determined from other parameters or from the CVR
25	Each navigation receiver frequency selection
27	Air—ground status. Air—ground status and a sensor of each landing gear if installed

Table 2

FDR — Aeroplanes for which the data source for the parameter is either used by aeroplane systems or is available on the instrument panel for use by the flight crew to operate the aeroplane

No	Parameter
10	Flaps
10a	Trailing edge flap position
10b	Flight crew compartment control selection
11	Slats
11a	Leading edge flap (slat) position
11b	Flight crew compartment control selection
12	Thrust reverse status
13	Ground spoiler and speed brake
13a	Ground spoiler position
13b	Ground spoiler selection
13c	Speed brake position
13d	Speed brake selection
15	Autopilot, autothrottle and automatic flight control system (AFCS) mode and engagement status
20	Radio altitude. For auto-land/Category III operations, each radio altimeter should be recorded.
21	Vertical deviation — the approach aid in use should be recorded. For auto-land/Category III operations, each system should be recorded.
21a	ILS/GPS/GLS glide path
21b	MLS elevation
21c	Integrated approach navigation (IAN)/integrated area navigation (IRNAV), vertical deviation
22	Horizontal deviation — the approach aid in use should be recorded. For auto land/Category III operations, each system should be recorded.
22a	ILS/GPS/GLS localiser
22b	MLS azimuth
22c	GNSS approach path/IRNAV lateral deviation
26	Distance measuring equipment (DME) 1 and 2 distances
26a	Distance to runway threshold (GLS)
26b	Distance to missed approach point (IRNAV/IAN)
28	Ground proximity warning system (GPWS)/terrain awareness warning system (TAWS)/ground collision avoidance system (GCAS) status:
28a	Selection of terrain display mode, including pop-up display status
28b	Terrain alerts, including cautions and warnings and advisories
28c	On/off switch position
29	Angle of attack
30	Low pressure warning (each system):
30a	Hydraulic pressure
30b	Pneumatic pressure
31	Ground speed
32	Landing gear:
32a	Landing gear position
32b	Gear selector position
33	Navigation data:
33a	Drift angle
33b	Wind speed
33c	Wind direction
33d	Latitude
33e	Longitude
33f	GNSS augmentation in use

No	Parameter
34	Brakes:
34a	Left and right brake pressure
34b	Left and right brake pedal position
35	Additional engine parameters (if not already recorded in parameter 9 of Table 1 of AMC1 CAT.IDE.190.A, and if the aeroplane is equipped with a suitable data source): Engine pressure ratio (EPR)
35a	N1
35b	Indicated vibration level
35c	N2
35d	Exhaust gas temperature (EGT) Fuel
35e	flow
35f	Fuel cut-off lever position
35g	N3
35h	
36	Traffic alert and collision avoidance system (TCAS)/airborne collision avoidance system (ACAS) — a suitable combination of discretes should be recorded to determine the status of the system:
36a	Combined control
36b	Vertical Control
36c	Up advisory
36d	Down advisory
36e	Sensitivity level
37	Wind shear warning
38	Selected barometric setting
38a	Pilot selected barometric setting
38b	Co-pilot selected barometric setting
39	Selected altitude (all pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically
40	Selected speed (all pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically
41	Selected Mach (all pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically
42	Selected vertical speed (all pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically
43	Selected heading (all pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically
44	Selected flight path (All pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically
44a	Course/desired track (DSTRK)
44b	Path angle
44c	Coordinates of final approach path (IRNAV/IAN)
45	Selected decision height — to be recorded for the aeroplane where the parameter is displayed electronically
46	Electronic flight instrument system (EFIS) display format:
46a	Pilot
46b	Co-pilot
47	Multi-function/engine/alerts display format
48	Alternating current (AC) electrical bus status — each bus
49	Direct current (DC) electrical bus status — each bus
50	Engine bleed valve position
51	Auxiliary power unit (APU) bleed valve position
52	Computer failure — (all critical flight and engine control systems)
53	Engine thrust command
54	Engine thrust target

No	Parameter
55	Computed centre of gravity (CG)
56	Fuel quantity in CG trim tank
57	Head up display in use
58	Para visual display on
59	Operational stall protection, stick shaker and pusher activation
60	Primary navigation system reference:
60a	GNSS
60b	Inertial navigational system (INS)
60c	VHF omnidirectional radio range (VOR)/distance measuring equipment (DME)
60d	MLS
60e	Loran C
60f	ILS
61	Ice detection
62	Engine warning — each engine vibration
63	Engine warning — each engine over temperature
64	Engine warning — each engine oil pressure low
65	Engine warning — each engine over speed
66	Yaw trim surface position
67	Roll trim surface position
68	Yaw or sideslip angle
69	De-icing and/or anti-icing systems selection
70	Hydraulic pressure — each system
71	Loss of cabin pressure
72	Trim control input position in the flight crew compartment, pitch — when mechanical means for control inputs are not available, displayed trim position or trim command should be recorded.
73	Trim control input position in the flight crew compartment, roll — when mechanical means for control inputs are not available, displayed trim position or trim command should be recorded.
74	Trim control input position in the flight crew compartment, yaw — when mechanical means for control inputs are not available, displayed trim position or trim command should be recorded.
75	All flight control input forces (for fly-by-wire flight control systems, where control surface position is a function of the displacement of the control input device only, it is not necessary to record this parameter):
75a	Control wheel
75b	Control column
75c	Rudder pedal
76	Event marker
77	Date
78	Actual navigation performance (ANP) or estimate of position error (EPE) or estimate of position uncertainty (EPU)

AMC1.2 CAT.IDE.A.190 Flight data recorder

Operational performance requirements for aeroplanes first issued with an individual CofA on or after 1 January 2023

(a) The FDR should, with reference to a timescale, record:

(1) the list of parameters in Table 1 below;

(2) the additional parameters listed in Table 2 below, when the information data source for the parameter is used by aeroplane systems or is available on the instrument panel for use by the flight crew to operate the aeroplane; and

(3) any dedicated parameters related to novel or unique design or operational characteristics of the aeroplane as determined by the Agency.

Table 1: FDR — All aeroplanes

No	Parameter
1a 1b 1c	Time; or Relative time count Global navigation satellite system (GNSS) time synchronisation
2	Pressure altitude (including altitude values displayed on each flight crew member's primary flight display, unless the aeroplane is type certified before 1 January 2023 and recording the values displayed at the captain position or the first officer position would require extensive modification)
3	Indicated airspeed or calibrated airspeed (including values of indicated airspeed or calibrated airspeed displayed on each flight crew member's primary flight display, unless the aeroplane is type certified before 1 January 2023 and recording the values displayed at the captain position or the first officer position would require extensive modification)
4	Heading (primary flight crew reference) — when true or magnetic heading can be selected as the primary heading reference, a discrete indicating selection should be recorded.
5	Normal acceleration
6	Pitch attitude — pitch attitude values displayed on each flight crew member's primary flight display should be recorded, unless the aeroplane is type certified before 1 January 2023 and recording the values displayed at the captain position or the first officer position would require extensive modification.
7	Roll attitude — roll attitude values displayed on each flight crew member's primary flight display should be recorded, unless the aeroplane is type certified before 1 January 2023 and recording the values displayed at the captain position or the first officer position would require extensive modification.
8	Manual radio transmission keying and CVR/FDR synchronisation reference
9 9a 9b	Engine thrust/power: Parameters required to determine propulsive thrust/power on each engine, in both normal and reverse thrust Flight crew compartment thrust/power lever position (for aeroplanes with non-mechanically linked engine controls in the flight crew compartment)
14	Total or outside air temperature
16	Longitudinal acceleration (body axis)
17	Lateral acceleration
18 18a 18b 18c	Primary flight control surface and/or primary flight control pilot input (For aeroplanes with control systems in which the movement of a control surface will back drive the pilot's control, 'or' applies. For aeroplanes with control systems in which the movement of a control surface will not back drive the pilot's control, 'and' applies. For multiple or split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately. For aeroplanes that have a flight control break-away capability that allows either pilot to operate the controls independently, record both inputs): Pitch axis Roll axis Yaw axis
19	Pitch trim surface position
23	Marker beacon passage
24	Warnings — In addition to the master warning, each 'red' warning that cannot be determined from other parameters or from the CVR and each smoke warning from other compartments should be recorded.
25	Each navigation receiver frequency selection
27	Air–ground status. Air–ground status and a sensor of each landing gear if installed

Table 2: FDR — Aeroplanes for which the data source for the parameter is either used by the aeroplane systems or is available on the instrument panel for use by the flight crew to operate the aeroplane

No	Parameter
10	Flaps:
10a	Trailing edge flap position
10b	Flight crew compartment control selection
11	Slats:
11a	Leading edge flap (slat) position
11b	Flight crew compartment control selection
12	Thrust reverse status
13	Ground spoiler and speed brake:
13a	Ground spoiler position
13b	Ground spoiler selection
13c	Speed brake position
13d	Speed brake selection
15	Autopilot, autothrottle and automatic flight control system (AFCS): mode and engagement status (showing which systems are engaged and which primary modes are controlling the flight path and speed of the aircraft)
20	Radio altitude. For auto-land/category III operations, each radio altimeter should be recorded.
21	Vertical deviation — the approach aid in use should be recorded. For auto-land/category III operations, each system should be recorded:
21a	ILS/GPS/GLS glide path
21b	MLS elevation
21c	Integrated approach navigation (IAN) /Integrated Area Navigation (IRNAV), vertical deviation
22	Horizontal deviation — the approach aid in use should be recorded. For auto-land/category III operations, each system should be recorded:
22a	ILS/GPS/GLS localiser
22b	MLS azimuth
22c	GNSS approach path/IRNAV lateral deviation
26	Distance measuring equipment (DME) 1 and 2 distances:
26a	Distance to runway threshold (GLS)
26b	Distance to missed approach point (IRNAV/IAN)
28	Ground proximity warning system (GPWS)/terrain awareness warning system (TAWS)/ground collision avoidance system (GCAS) status — a suitable combination of discretes unless recorder capacity is limited in which case a single discrete for all modes is acceptable:
28a	Selection of terrain display mode, including pop-up display status
28b	Terrain alerts, including cautions and warnings and advisories
28c	On/off switch position
29	Angle of attack
30	Low pressure warning (each system):
30a	Hydraulic pressure
30b	Pneumatic pressure
31	Ground speed
32	Landing gear:
32a	Landing gear position
32b	Gear selector position

No	Parameter
33	Navigation data:
33a	Drift angle
33b	Wind speed
33c	Wind direction
33d	Latitude
33e	Longitude
33f	GNSS augmentation in use
34	Brakes:
34a	Left and right brake pressure
34b	Left and right brake pedal position
35	Additional engine parameters (if not already recorded in parameter 9 of Table 1, and if the aeroplane is equipped with a suitable data source):
35a	Engine pressure ratio (EPR)
35b	N1
35c	Indicated vibration level
35d	N2
35e	Exhaust gas temperature (EGT)
35f	Fuel flow
35g	Fuel cut-off lever position
35h	N3
35i	Engine fuel metering valve position (or equivalent parameter from the system that directly controls the flow of fuel into the engine) – for aeroplanes type certified before 1 January 2023, to be recorded only if this does not require extensive modification.
36	Traffic alert and collision avoidance system (TCAS)/airborne collision avoidance system (ACAS) — a suitable combination of discretes should be recorded to determine the status of the system:
36a	Combined control
36b	Vertical control
36c	Up advisory
36d	Down advisory
36e	Sensitivity level
37	Wind shear warning
38	Selected barometric setting — to be recorded for the aeroplane where the parameter is displayed electronically:
38a	Pilot selected barometric setting
38b	Co-pilot selected barometric setting
39	Selected altitude (all pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically
40	Selected speed (all pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically
41	Selected Mach (all pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically
42	Selected vertical speed (all pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically
43	Selected heading (all pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically
44	Selected flight path (all pilot selectable modes of operation) — to be recorded for the aeroplane where the parameter is displayed electronically:
44a	Course/desired track (DSTRK)
44b	Path angle
44c	Coordinates of final approach path (IRNAV/IAN)
45	Selected decision height — to be recorded for the aeroplane where the parameter is displayed electronically

No	Parameter
46	Electronic flight instrument system (EFIS) display format, showing the display system status:
46a	Pilot
46b	Co-pilot
47	Multi-function/engine/alerts display format, showing the display system status
48	Alternating current (AC) electrical bus status — each bus
49	Direct current (DC) electrical bus status — each bus
50	Engine bleed valve(s) position
51	Auxiliary power unit (APU) bleed valve(s) position
52	Computer failure — all critical flight and engine control systems
53	Engine thrust command
54	Engine thrust target
55	Computed centre of gravity (CG)
56	Fuel quantity in CG trim tank
57	Head-up display in use
58	Paravisual display on
59	Operational stall protection, stick shaker and pusher activation
60	Primary navigation system reference:
60a	GNSS
60b	Inertial navigational system (INS)
60c	VHF omnidirectional radio range (VOR)/distance measuring equipment (DME)
60d	MLS
60e	Loran C
60f	ILS
61	Ice detection
62	Engine warning — each engine vibration
63	Engine warning — each engine over temperature
64	Engine warning — each engine oil pressure low
65	Engine warning — each engine overspeed
66	Yaw trim surface position
67	Roll trim surface position
68	Yaw or sideslip angle
69	De-icing and/or anti-icing systems selection
70	Hydraulic pressure — each system
71	Loss of cabin pressure
72	Trim control input position in the flight crew compartment, pitch — when mechanical means for control inputs are not available, displayed trim position or trim command should be recorded.
73	Trim control input position in the flight crew compartment, roll — when mechanical means for control inputs are not available, displayed trim position or trim command should be recorded.
74	Trim control input position in the flight crew compartment, yaw — when mechanical means for control inputs are not available, displayed trim position or trim command should be recorded.
75	All flight control input forces (for fly-by-wire flight control systems, where control surface position is a function of the displacement of the control input device only, it is not necessary to record this parameter):
75a	Control wheel input forces
75b	Control column input forces
75c	Rudder pedal input forces
76	Event marker
77	Date
78	Actual navigation performance (ANP) or estimate of position error (EPE) or estimate of position uncertainty (EPU)
79	Cabin pressure altitude – for aeroplanes type certified before 1 January 2023, to be recorded only if this does not require extensive modification
80	Aeroplane computed weight – for aeroplanes type certified before 1 January 2023, to be recorded only if this does not require extensive modification

No	Parameter
81	Flight director command:
81a	Left flight director pitch command – for aeroplanes type certified before 1 January 2023, to be recorded only if this does not require extensive modification
81b	Left flight director roll command – for aeroplanes type certified before 1 January 2023, to be recorded only if this does not require extensive modification
81c	Right flight director pitch command – for aeroplanes type certified before 1 January 2023, to be recorded only if this does not require extensive modification
81d	Right flight director roll command – for aeroplanes type certified before 1 January 2023, to be recorded only if this does not require extensive modification
82	Vertical speed – for aeroplanes type certified before 1 January 2023, to be recorded only if this does not require extensive modification

AMC2 CAT.IDE.A.190 Flight data recorder

Operational performance requirements for aeroplanes first issued with an individual CofA on or after 1 April 1998 and before 1 January 2016

(a) The FDR should record, with reference to a timescale:

(1) the parameters listed in Table 1a or Table 1b below, as applicable;

(2) the additional parameters listed in Table 2 below, for those aeroplanes with an MCTOM exceeding 27 000 kg;

(3) any dedicated parameters relating to novel or unique design or operational characteristics of the aeroplane as determined by the competent authority; and

(4) the additional parameters listed in Table 3 below, for those aeroplanes equipped with electronic display systems.

(b) The FDR of aeroplanes first issued with an individual CofA before 20 August 2002 and equipped with an electronic display system does not need to record those parameters listed in Table 3 for which:

(1) the sensor is not available;

(2) the aeroplane system or equipment generating the data needs to be modified; or

(3) the signals are incompatible with the recording system;

(c) The FDR of aeroplanes first issued with an individual CofA on or after 1 April 1998 but not later than 1 April 2001 is not required to comply with (b) above if:

(1) compliance with operational performance cannot be achieved without extensive modification to the aeroplane system and equipment other than the flight recording system; and

(2) the FDR of the aeroplane can comply with AMC4 CAT.IDE.A.190(a) except that parameter 15b in Table 1 of AMC4 CAT.IDE.A.190 need not be recorded.

(e) The parameters to be recorded should meet, as far as practicable, the performance specifications (ranges, sampling intervals, accuracy limits, and resolution in read-out) defined in Table 1 of AMC3 CAT.IDE.A.190.

(f) For aeroplanes with novel or unique design or operational characteristics, the additional parameters should be those required in accordance with applicable Certification Specifications during type or supplemental certification or validation.

Table 1a

FDR — Aeroplanes with an MCTOM of more than 5 700 kg

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated airspeed or calibrated airspeed
4	Heading
5	Normal acceleration
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying
9	Propulsive thrust/power on each engine and flight crew compartment thrust/power lever position if applicable
10	Trailing edge flap or flight crew compartment control selection
11	Leading edge flap or flight crew compartment control selection
12	Thrust reverse status
13	Ground spoiler position and/or speed brake selection
14	Total or outside air temperature
15	Autopilot, autothrottle and AFCS mode and engagement status
16	Longitudinal acceleration (body axis)
17	Lateral acceleration

Table 1b

FDR — Aeroplanes with an MCTOM 5 700 kg or below

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated airspeed or calibrated airspeed
4	Heading
5	Normal acceleration
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying
9	Propulsive thrust/power on each engine and flight crew compartment thrust/power lever position if applicable
10	Trailing edge flap or flight crew compartment control selection
11	Leading edge flap or flight crew compartment control selection
12	Thrust reverse status
13	Ground spoiler position and/or speed brake selection
14	Total or outside air temperature
15	Autopilot/autothrottle engagement status
16	Longitudinal acceleration (body axis)
17	Angle of attack (if a suitable sensor is available)

Table 2

FDR — Additional parameters for aeroplanes with an MCTOM of more than 27 000 kg

No	Parameter
18	Primary flight controls — control surface position and/or pilot input (pitch, roll, yaw)
19	Pitch trim position
20	Radio altitude
21	Vertical beam deviation (ILS or GLS glide path or MLS elevation)
22	Horizontal beam deviation (ILS localiser or GLS lateral deviation or MLS azimuth)

No	Parameter
23	Marker beacon passage
24	Warnings
25	Reserved (navigation receiver frequency selection or GLS channel is recommended)
26	Reserved (DME or GLS distance is recommended)
27	Landing gear squat switch status or air/ground status
28	Ground proximity warning system
29	Angle of attack
30	Low pressure warning (hydraulic and pneumatic power)
31	Groundspeed
32	Landing gear or gear selector position

Table 3

FDR — Aeroplanes equipped with electronic display systems

No	Parameter
33	Selected barometric setting (each pilot station)
34	Selected altitude
35	Selected speed
36	Selected Mach
37	Selected vertical speed
38	Selected heading
39	Selected flight path
40	Selected decision height
41	EFIS display format
42	Multi-function/engine/alerts display format

AMC3 CAT.IDE.A.190 Flight data recorder

Performance specifications for the parameters to be recorded for aeroplanes first issued with an individual CofA on or after 1 April 1998 and before 1 January 2016

Table 1: FDR

No	Parameter	Range	Sampling interval in seconds	Accuracy limits (sensor input compared to FDR readout)	Recommended resolution in readout	Remarks
1a or	Time	24 hours	4	± 0.125 % per hour	1 second	(a) UTC time preferred where available.
1b	Relative time count	0 to 4 095	4	± 0.125 % per hour		(b) Counter increments every 4 seconds of system operation.
2	Pressure altitude	-1 000 ft to maximum certificated altitude of aircraft +5 000 ft	1	±100 ft to ±700 ft ED-112	5 ft	Should be obtained from air data computer when installed.
3	Indicated airspeed or calibrated airspeed	50 kt or minimum value installed pitot static system to Max VS0 Max VS0 to 1.2 VD	1	±5 % ±3 %	1 kt (0.5 kt recommended)	Should be obtained from air data computer when installed. VS0: stalling speed or minimum steady flight speed in the landing configuration VD design diving speed

No	Parameter	Range	Sampling interval in seconds	Accuracy limits (sensor input compared to FDR readout)	Recommended resolution in readout	Remarks
4	Heading	360 degrees	1	±2 degrees	0.5 degrees	
5	Normal acceleration	-3 g to +6 g	0.125	1 % of maximum range excluding a datum error of 5 %	0.004 g	The recording resolution may be rounded from 0.004 g to 0.01 g provided that one sample is recorded at full resolution at least every 4 seconds.
6	Pitch attitude	±75 degrees	0.25	±2 degrees	0.5 degrees	
7	Roll attitude	±180 degrees	0.5	±2 degrees	0.5 degrees	
8	Manual radio transmission keying	Discrete	1	-	-	Preferably each crew member but one discrete acceptable for all transmissions provided that the replay of a recording made by any required recorder can be synchronised in time with any other required recording to within 1 second.
9a	Propulsive thrust/power on each engine	Full range	Each engine each second	±2 %	0.2 % of full range	Sufficient parameters, e.g. EPR/N, or Torque/NP as appropriate to the particular engine must be recorded to determine power in both normal and reverse thrust. A margin for possible overspeed should be provided.
9b	Flight crew compartment thrust/power lever position	Full range	Each lever each second	±2 % or sufficient to determine any gated position	2 % of full range	Parameter 9b must be recorded for aeroplanes with non-mechanically linked cockpit-engine controls, otherwise recommended.
10	Trailing edge flap or flight crew compartment control selection	Full range or each discrete position	2	±3° or as pilot's indicator and sufficient to determine each discrete position	0.5 % of full range	Flap position and cockpit control may be sampled at 4-second intervals so as to give a data point each 2 seconds.
11	Leading edge flap or flight crew compartment control selection	Full range or each discrete position	1	±3° or as pilot's indicator and sufficient to determine each discrete position	0.5 % of full range	Left and right sides, or flap position and cockpit control may be sampled at 2-second intervals so as to give a data point each second.
12	Thrust reverser status	Turbo-jet: stowed, in transit and reverse Turbo-prop: reverse	Each reverser each second	-	-	Turbo-jet: 2 discretes enable the 3 states to be determined Turbo-prop: 1 discrete
13	Ground spoiler and/or speed brake selection	Full range or each discrete position	0.5	±2º unless higher accuracy uniquely required	0.2 % of full range	Sufficient to determine use of the cockpit selector and the activation and positions of the surfaces
14	Outside air temperatures or total air temperature	-50°C to +90°C or available sensor range	2	±2ºC	0.3ºC	
15	Autopilot/ Autothrottle/AFCS mode and engagement status	A suitable combination of discretes	1	-	-	Discretes should show which systems are engaged and which primary modes are controlling the flight path and speed of the aircraft.

No	Parameter	Range	Sampling interval in seconds	Accuracy limits (sensor input compared to FDR readout)	Recommended resolution in readout	Remarks
16	Longitudinal acceleration (Body axis)	± 1 g	0.25	±1.5 % of maximum range excluding a datum error of ±5 %	0.004 g	The recording resolution may be rounded from 0.004 g to 0.01 g provided that one sample is recorded at full resolution at least every 4 seconds.
17	Lateral acceleration	±1 g	0.25	±1.5 % of maximum range excluding a datum error of ±5 %	0.004 g	The recording resolution may be rounded from 0.004 g to 0.01 g provided that one sample is recorded at full resolution at least every 4 seconds.
18	Primary flight controls, control surface positions and/or* pilot input	Full range	1	±2º unless higher accuracy uniquely required	0.2 % of full range	*For aeroplanes that can demonstrate the capability of deriving either the control input or control movement (one from the other) for all modes of operation and flight regimes, the 'or' applies. For aeroplanes with non- mechanical control systems, the 'and' applies. Where the input controls for each pilot can be operated independently, both inputs will need to be recorded. For multiple or split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface
18a	Pitch axis		0.25			
18b	Roll axis		0.25			
18c	Yaw axis		0.5			
19	Pitch trim position	Full range	1	±3 % unless higher accuracy uniquely required	0.3 % of full range	Where dual surfaces are provided it is permissible to record each surface alternately.
20	Radio altitude	-20 ft to +2 500 ft	1	As installed ±2 ft or ±3 % whichever is greater below 500 ft and ±5 % above 500 ft recommended.	1 ft below 500 ft, 1 ft +0.5 % of full range above 500 ft	For auto-land/category III operations, each radio altimeter should be recorded, but arranged so that at least one is recorded each second.
21	Vertical beam deviation		1	As installed ±3 % recommended	0.3 % of full range	Data from all of the ILS, GLS and MLS systems need not to be recorded at the same time. The approach aid in use should be recorded. For auto-land/ category III operations, each radio altimeter should be recorded, but arranged so that at least one is recorded each second.
21a	ILS or GLS glide path	±0.22 DDM or available sensor range as installed				
21b	MLS elevation	0.9° to 30°				
22	Horizontal beam deviation	Signal range	1	As installed ±3 % recommended	0.3 % of full range	See parameter 21 remarks.

No	Parameter	Range	Sampling interval in seconds	Accuracy limits (sensor input compared to FDR readout)	Recommended resolution in readout	Remarks
22a	ILS localiser or GLS lateral deviation	±0.22 DDM or available sensor range as installed				
22b	MLS azimuth	±62°				
23	Marker beacon passage	Discrete	1	—	—	A single discrete is acceptable for all markers.
24	Warnings	Discretes	1	–	–	A discrete must be recorded for the master warning. Each 'red' warning (including lavatory smoke) should be recorded when the warning condition cannot be determined from other parameters or from the cockpit voice recorder.
25	Reserved	–	–	–	–	
26	Reserved	–	–	–	–	
27	Landing gear squat switch status	Discrete(s)	1 (0.25 recommended for main gears)	–	–	Discretes should be recorded for the nose and main landing gears.
28	Ground proximity warning system (GPWS)	Discrete	1	–	–	A suitable combination of discretes unless recorder capacity is limited in which case a single discrete for all modes is acceptable.
29	Angle of attack	As installed	0.5	As installed	0.3 % of full range	If left and right sensors are available, each may be recorded at 1-second intervals so as to give a data point each half second.
30	Low pressure warning	Discrete(s) or available sensor range	2	-	0.5 % of full range	Each essential system to be recorded.
30a	Hydraulic power					
30b	Pneumatic power					
31	Groundspeed	As installed	1	Data should be obtained from the most accurate system	1 kt	
32	Landing gear or gear selector	Discrete(s)	4	-	–	A suitable combination of discretes should be recorded.
33	Selected barometric setting (each pilot station)	As installed	64	As installed	1 mb	Where practicable, a sampling interval of 4 seconds is recommended
33a	Pilot					
33b	Co-pilot					
34	Selected altitude	As installed	1	As installed	100 ft	Where capacity is limited, a sampling interval of 64 seconds is permissible.
34a	Manual					
34b	Automatic					
35	Selected speed	As installed	1	As installed	1 kt	Where capacity is limited, a sampling interval of 64 seconds is permissible.
35a	Manual					

No	Parameter	Range	Sampling interval in seconds	Accuracy limits (sensor input compared to FDR readout)	Recommended resolution in readout	Remarks
35b	Automatic					
36	Selected Mach	As installed	1	As installed	0.01	Where capacity is limited, a sampling interval of 64 seconds is permissible.
36a	Manual					
36b	Automatic					
37	Selected vertical speed	As installed	1	As installed	100 ft/min	Where capacity is limited, a sampling interval of 64 seconds is permissible.
37a	Manual					
37b	Automatic					
38	Selected heading	360 degrees	1	As installed	1 degree	Where capacity is limited, a sampling interval of 64 seconds is permissible.
39	Selected flight path		1	As installed		Where capacity is limited, a sampling interval of 64 seconds is permissible.
39a	Course/DSTRK	360 degrees				
39b	Path Angle	As installed				
40	Selected decision height	0-500 ft	64	As installed	1 ft	
41	EFIS display format	Discrete(s)	4	–	–	Discretes should show the display system status e.g. off, normal, fail, composite, sector, plan, rose, nav aids, wxr, range, copy.
41a	Pilot					
41b	Co-pilot					
42	Multifunction/Engine/ Alerts display format	Discrete(s)	4	–	–	Discretes should show the display system status e.g. off, normal, fail, and the identity of display pages for emergency procedures and checklists. Information in checklists and procedures need not be recorded.

AMC4 CAT.IDE.A.190 Flight data recorder

List of parameters to be recorded for aeroplanes first issued with an individual CofA on or after 1 June 1990 up to and including 31 March 1998

(a) The FDR should, with reference to a timescale, record:

(1) the parameters listed in Table 1 below; and

(2) the additional parameters listed in Table 2 below for those aeroplanes with an MCTOM exceeding 27 000 kg.

(b) The FDR of aeroplanes having an MCTOM of 27 000 kg or below does not need to record parameters 14 and 15b of Table 1 below if any of the following conditions are met:

(1) the sensor is not readily available;

(2) sufficient capacity is not available in the flight recorder system; or

(3) a change is required in the equipment that generates the data.

(c) The FDR of aeroplanes having an MCTOM exceeding 27 000 kg does not need to record parameter 15b of Table 1 below, and parameters 23, 24, 25, 26, 27, 28, 29, 30 and 31 of Table2 below, if any of the following conditions are met:

(1) the sensor is not readily available;

(2) sufficient capacity is not available in the FDR system;

(3) a change is required in the equipment that generates the data; or

(4) for navigational data (NAV frequency selection, DME distance, latitude, longitude, ground speed and drift), the signals are not available in digital form.

(d) The FDR does not need to record individual parameters that can be derived by calculation from the other recorded parameters.

(e) The parameters to be recorded should meet, as far as practicable, the performance specifications (range, sampling intervals, accuracy limits, and resolution in read-out) defined in Table 1 of AMC5 CAT.IDE.A.190.

Table 1

Flight data recorder — Aeroplanes with an MCTOM of more than 5 700 kg

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated airspeed or calibrated airspeed
4	Heading
5	Normal acceleration
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying unless an alternate means to synchronise FDR and CVR recordings is provided
9	Power on each engine
10	Trailing edge flap or flight crew compartment control selection
11	Leading edge flap or flight crew compartment control selection
12	Thrust reverse position (for turbojet aeroplanes only)
13	Ground spoiler position and/or speed brake selection
14	Outside air temperature or total air temperature
15a 15b	Autopilot engagement status Autopilot operating modes, autothrottle and AFCS systems engagement status and operating modes.

Table 2

Flight data recorder — Additional parameters for aeroplanes with an MCTOM of more than 27000 kg

16	Longitudinal acceleration
17	Lateral acceleration
18	Primary flight controls — control surface position and/or pilot input (pitch, roll and yaw)
19	Pitch trim position
20	Radio altitude
21	Glide path deviation
22	Localiser deviation
23	Marker beacon passage
24	Master warning
25	NAV 1 and NAV 2 frequency selection
26	DME 1 and DME 2 distance

No	Parameter
27	Landing gear squat switch status
28	Ground proximity warning system (GPWS)
29	Angle of attack
30	Hydraulics, each system (low pressure)
31	Navigation data
32	Landing gear or gear selector position

AMC5 CAT.IDE.A.190 Flight data recorder

Performance specifications for the parameters to be recorded for aeroplanes first issued with an individual CofA up to and including 31 March 1998

Table 1: Flight data recorder

No	Parameter	Range	Sampling interval in seconds	Accuracy limits (sensor input compared to FDR readout)	Recommended resolution in readout	Remarks
1	Time or relative time count	24 hours	4	±0.125 % per hour	1 second	Coordinated universal time (UTC) preferred where available, otherwise elapsed time
2	Pressure altitude	-1 000 ft to maximum certificated altitude of aircraft +5 000 ft	1	±100 ft to ±700 ft	5 ft	
3	Indicated airspeed or calibrated airspeed	50 kt to max VS0 Max VS0 to 1.2 VD	1	±5 % ±3 %	1 kt	VS0 stalling speed or minimum steady flight speed in the landing configuration VD design diving speed
4	Heading	360 degrees	1	±2 degrees	0.5 degrees	
5	Normal acceleration	-3 g to +6 g	0.125 ±	±1 % of maximum range excluding a datum error of ±5 %	0.004 g	
6	Pitch attitude	±75 degrees	1	±2 degrees	0.5 degrees	
7	Roll attitude	±180 degrees	1	±2 degrees	0.5 degrees	
8	Manual radio transmission keying	Discrete	1	-	-	On-off (one discrete).
9	Power on each engine	Full range	Each engine each second	±2 %	0.2 % of full range	Sufficient parameters e.g. EPR/N, or Torque/NP as appropriate to the particular engine should be recorded to determine power.
10	Trailing edge flap or flight crew compartment control selection	Full range or each discrete position	2	±5 % or as pilot's indicator	0.5 % of full range	
11	Leading edge flap or flight crew compartment control selection	Full range or each discrete position	2	-	0.5 % of full range	
12	Thrust reverser position	Stowed, in transit and reverse	Each reverser each second	±2 % unless higher accuracy uniquely required	-	
13	Ground spoiler and/or speed brake selection	Full range or each discrete position	1	±2 degrees	0.2 % of full range	

No	Parameter	Range	Sampling interval in seconds	Accuracy limits (sensor input compared to FDR readout)	Recommended resolution in readout	Remarks
14	Outside air temperatures or total air temperature	Sensor range	2	-	0.3ºC	
15a 15b	Autopilot engagement status Autopilot operating modes, auto-throttle and AFCS systems engagement status and operating modes	A suitable combination of discretes	1		-	
16	Longitudinal acceleration	± 1 g	0.25	±1.5 % of maximum range excluding a datum error of ±5 %	0.004 g	
17	Lateral acceleration	±1 g	0.25	±1.5 % of maximum range excluding a datum error of ±5 %	0.004 g	
18	Primary flight controls, control surface positions and/or pilot input (pitch, roll, yaw)	Full range	1	±2 degrees unless higher accuracy uniquely required	0.2 % of full range	For aeroplanes with conventional control systems, 'or' applies. For aeroplanes with split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately. For aeroplanes with non-mechanical control systems, 'and' applies.
19	Pitch trim position	Full range	1	±3 % unless higher accuracy uniquely required	0.3 % of full range	
20	Radio altitude	-20 ft to +2 500 ft	1	±2 ft or ±3 % whichever is greater below 500 ft and ±5 % above 500 ft	1 ft below 500 ft, 1 ft +5 % of full range above 500 ft	As installed. Accuracy limits are recommended
21	Glide path deviation	Signal range	1	±3 %	0.3 % of full range	As installed. Accuracy limits are recommended
22	Localiser deviation	Signal range	1	±3 %	0.3 % of full range	As installed. Accuracy limits are recommended.
23	Marker beacon passage	Discrete	1	–	–	A single discrete is acceptable for all markers.
24	Master warning	Discrete	1	–	–	
25	NAV 1 and 2 frequency selection	Full range	4	As installed	–	
26	DME 1 and 2 distance	0-200 NM	4	As installed	–	Recording of latitude and longitude from INS or other navigation system is a preferred alternative.
27	Landing gear squat switch status	Discrete	1	–	–	
28	Ground proximity warning system (GPWS)	Discrete	1	–	–	
29	Angle of attack	Full range	0.5	As installed	0.3 % of full range	
30	Hydraulics	Discrete(s)	2	–	–	
31	Navigation data	As installed	1	As installed	–	
32	Landing gear or gear selector position	Discrete	4	As installed	–	

AMC6 CAT.IDE.A.190 Flight data recorder

List of parameters to be recorded for aeroplanes first issued with an individual CofA before 1 June 1990

(a) The FDR should, with reference to a timescale, record:

(1) the parameters listed in Table 1 below;

(2) the additional parameters 6 to 15b of Table 2 below, for aeroplanes with an MCTOM exceeding 5 700 kg but not exceeding 27 000 kg and first issued with an individual CofA on or after 1 January 1989, when the following conditions are met:

(i) sufficient capacity is available on a flight recorder system;

(ii) the sensor is readily available; and

(iii) a change is not required in the equipment that generates the data;

(3) the additional parameters from 6 to 15b of Table 2 below, for aeroplanes with a maximum certificated take-off mass exceeding 27 000 kg that are of a type first type certified after 30 September 1969; and

(4) the additional parameters listed in Table 2 below for aeroplanes with an MCTOM exceeding 27 000 kg and first issued with an individual CofA on or after 1 January 1987, when the following conditions are met:

(i) sufficient capacity is available on a flight recorder system;

(ii) the sensor is readily available; and

(iii) a change is not required in the equipment that generates the data.

(b) The FDR of aeroplanes with an MCTOM exceeding 27 000 kg that are of a type first type certified after 30 September 1969 does not need to record the parameters 13, 14 and 15b in Table 2 below, when any of the following conditions are met:

(1) sufficient capacity is not available on a flight recorder system;

(2) the sensor is not readily available; and

(3) a change is required in the equipment that generates the data.

(c) The parameters to be recorded should meet, as far as practicable, the performance specifications (range, sampling intervals, accuracy limits, and resolution in read-out) defined in Table 1 of AMC5 CAT.IDE.A.190).

(d) When so determined by the Agency, the FDR does not need to record individual parameters that can be derived by calculation from the other recorded parameters.

Table 1

Flight data recorder — aeroplanes with an MCTOM exceeding 5 700 kg

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated airspeed or calibrated airspeed
4	Heading
5	Normal acceleration

Table 2

Additional parameters for aeroplanes under conditions of AMC6 CAT.IDE.A.190, 1 & 2

No	Parameter
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying unless an alternate means to synchronise the FDR and CVR recordings is provided
9	Power on each engine
10	Trailing edge flap or flight crew compartment control selection
11	Leading edge flap or flight crew compartment control selection
12	Thrust reverse position (for turbojet aeroplanes only)
13	Ground spoiler position and/or speed brake selection
14	Outside air temperature (OAT) or total air temperature
15a 15b	Autopilot engagement status Autopilot operating modes, autothrottle and AFCS, systems engagement status and operating modes.
16	Longitudinal acceleration
17	Lateral acceleration
18	Primary flight controls — control surface position and/or pilot input (pitch, roll and yaw)
19	Pitch trim position
20	Radio altitude
21	Glide path deviation
22	Localiser deviation
23	Marker beacon passage
24	Master warning
25	NAV 1 and NAV 2 frequency selection
26	DME 1 and DME 2 distance
27	Landing gear squat switch status
28	Ground proximity warning system (GPWS)
29	Angle of attack
30	Hydraulics, each system (low pressure)
31	Navigation data (latitude, longitude, ground speed and drift angle)
32	Landing gear or gear selector position

CAT.IDE.A.191 Lightweight flight recorder

(a) Turbine-engined aeroplanes with an MCTOM of 2 250 kg or more and aeroplanes with an MOPSC of more than 9 shall be equipped with a flight recorder if all of the following conditions are met:

(1) they are not within the scope of point CAT.IDE.A.190(a);

(2) they are first issued with an individual CofA on or after 5 September 2022.

(b) The flight recorder shall record, by means of flight data or images, information that is sufficient to determine the flight path and aircraft speed.

(c) The flight recorder shall be capable of retaining the flight data and the images recorded during at least the preceding 5 hours.

(d) The flight recorder shall automatically start to record prior to the aeroplane being capable of moving under its own power and shall stop automatically after the aeroplane is no longer capable of moving under its own power.

(e) If the flight recorder records images or audio of the flight crew compartment, then a function shall be provided which can be operated by the commander and which modifies image and audio recordings made before the operation of that function, so that those recordings cannot be retrieved using normal replay or copying techniques.

AMC1 CAT.IDE.A.191 Lightweight flight recorder

Operational performance requirements

(a) If the flight recorder records flight data, it should record at least the following parameters:

1) pitch attitude or pitch rate,
2) roll attitude or roll rate,
3) heading (magnetic or true) or yaw rate,
4) latitude,
5) longitude,
6) positioning system: estimated error (if available),
7) pressure altitude or altitude from a positioning system,
8) time,
9) ground speed,
10) positioning system: track (if available),
11) normal acceleration,
12) longitudinal acceleration, and
13) lateral acceleration.

(b) If the flight recorder records images, it should capture views of the main instrument displays at the pilot station, or at both pilot stations when the aeroplane is certified for operation with a minimum crew of two pilots. The recorded image quality should allow reading the following indications during most of the flight:

1) magnetic heading,
2) time,
3) pressure altitude,
4) indicated airspeed,
5) vertical speed,
6) turn and slip,
7) attitude,
8) Mach number (if displayed),
9) stabilised heading, and
10) tachometer indication or equivalent indication of propulsive thrust or power.

(c) If the flight recorder records a combination of images and flight data, each flight parameter listed in (a) should be recorded as flight data or by means of images.

(d) The flight parameters listed in (a), which are recorded as flight data, should meet the performance specifications (range, sampling intervals, accuracy limits and resolution in read- out).

CAT.IDE.A.195 Data link recording

(a) Aeroplanes first issued with an individual CofA on or after 8 April 2014 that have the capability to operate data link communications and are required to be equipped with a CVR, shall record on a recorder, where applicable:

(1) data link communication messages related to ATS communications to and from the aeroplane, including messages applying to the following applications:

(i) data link initiation;

(ii) controller-pilot communication;

(iii) addressed surveillance;

(iv) flight information;

(v) as far as is practicable, given the architecture of the system, aircraft broadcast surveillance;

(vi) as far as is practicable, given the architecture of the system, aircraft operational control data; and

(vii) as far as is practicable, given the architecture of the system, graphics;

(2) information that enables correlation to any associated records related to data link communications and stored separately from the aeroplane; and

(3) information on the time and priority of data link communications messages, taking into account the system's architecture.

(b) The recorder shall use a digital method of recording and storing data and information and a method for retrieving that data. The recording method shall allow the data to match the data recorded on the ground.

(c) The recorder shall be capable of retaining data recorded for at least the same duration as set out for CVRs in CAT.IDE.A.185.

(d) If the recorder is not deployable, it shall have a device to assist in locating it under water. By 16 June 2018 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the recorder is deployable, it shall have an automatic emergency locator transmitter.

(e) The requirements applicable to the start and stop logic of the data link recorder are the same as the requirements applicable to the start and stop logic of the cockpit voice recorder (CVR) that are contained in point CAT.IDE.A.185.

AMC1 CAT.IDE.A.195 Data link recording

General

(a) As a means of compliance with CAT.IDE.A.195(a), the recorder on which the data link messages is recorded may be:

(1) the CVR;

(2) the FDR;

(3) a combination recorder when CAT.IDE.A.200 is applicable; or

(4) a dedicated flight recorder

(b) As a means of compliance with CAT.IDE.A.195(a)(2), the operator should enable correlation by providing information that allows an accident investigator to understand what data was provided to the aeroplane and, when the provider identification is contained in the message, by which provider.

(c) The timing information associated with the data link communications messages required to be recorded by CAT.IDE.A.195(a)(3) should be capable of being determined from the airborne- based recordings. This timing information should include at least the following:

(1) the time each message was generated;

(2) the time any message was available to be displayed by the crew;

(3) the time each message was actually displayed or recalled from a queue; and

(4) the time of each status change.

(d) The message priority should be recorded when it is defined by the protocol of the data link communication message being recorded.

(e) The expression 'taking into account the system architecture', in CAT.IDE.A.195(a)(3), means that the recording of the specified information may be omitted if the existing source systems involved would require a major upgrade. The following should be considered:

(1) the extent of the modification required;

(2) the down-time period; and

(3) equipment software development.

The intention is that new designs of source systems should include this functionality and support the full recording of the required information.

(f) Data link communications messages that support the applications in Table 1 below should be recorded.

Table 1: Applications

Item No	Application Type	Application Description	Required Recording Content
1	Data link initiation	This includes any application used to log on to, or initiate, a data link service. In future air navigation system (FANS)-1/A and air traffic navigation (ATN), these are ATS facilities notification (AFN) and context management (CM) respectively.	C

Item No	Application Type	Application Description	Required Recording Content
2	Controller/pilot communication	This includes any application used to exchange requests, clearances, instructions and reports between the flight crew and air traffic controllers. In FANS-1/A and ATN, this includes the controller pilot data link communications (CPDLC) application. It also includes applications used for the exchange of oceanic (OCL) and departure clearances (DCL) as well as data link delivery of taxi clearances.	C
3	Addressed surveillance	This includes any surveillance application in which the ground sets up contracts for delivery of surveillance data. In FANS-1/A and ATN, this includes the automatic dependent surveillance-contract (ADS-C) application.	C, F2
4	Flight information	This includes any application used for delivery of flight information data to specific aeroplanes. This includes for example, digital automatic terminal information service (D-ATIS), data link operational terminal information service (D-OTIS), digital weather information services (D-METAR or TWIP), data link flight information service (D-FIS), and Notice to Airmen (electronic NOTAM) delivery.	C
5	Aircraft broadcast surveillance	This includes elementary and enhanced surveillance systems, as well as automatic dependent surveillance-broadcast (ADS-B) output data.	
6	Aeronautical operational control (AOC) data	This includes any application transmitting or receiving data used for AOC purposes (in accordance with the ICAO definition of AOC). Such systems may also process AAC messages, but there is no requirement to record AAC messages.	M*
7	Graphics	This includes any application receiving graphical data to be used for operational purposes (i.e. excluding applications that are receiving such things as updates to manuals).	M* F1

Note: Definitions and acronyms

(a) The letters and expressions in Table 1 of AMC1 CAT.IDE.A.195 have the following meaning:

C: complete contents recorded

M: information that enables correlation with any associated records stored separately from the aeroplane.

*: Applications that are to be recorded only as far as is practicable, given the architecture of the system.

F1: graphics applications may be considered as AOC messages when they are part of a data link communications application service run on an individual basis by the operator itself in the framework of the operational control.

F2: where parametric data sent by the aeroplane, such as Mode S, is reported within the message, it should be recorded unless data from the same source is recorded on the FDR.

(b) The definitions of the applications type in Table 1 of AMC1 CAT.IDE.A.195 are described in Table 1 below.

Table 1
Definitions of applications type

Item No	Application Type	Messages	Comments
1	CM		CM is an ATN service
2	AFN		AFN is a FANS 1/A service
3	CPDLC		All implemented up and downlink messages to be recorded
4	ADS-C	ADS-C reports	All contract requests and reports recorded
		Position reports	Only used within FANS 1/A. Only used in oceanic and remote areas.
5	ADS-B	Surveillance data	Information that enables correlation with any associated records stored separately from the aeroplane.
6	D-FIS		D-FIS is an ATN service. All implemented up and downlink messages to be recorded
7	TWIP	TWIP messages	Terminal weather information for pilots
8	D-ATIS	ATIS messages	Data Link Application System Document (DLASD) for the 'ATIS' Data Link Service
9	OCL	OCL messages	Data Link Application System Document (DLASD) for 'Oceanic Clearance' Data Link Service
10	DCL	DCL messages	Data Link Application System Document (DLASD) for 'Departure Clearance' Data Link Service
11	Graphics	Weather maps & other graphics	Graphics exchanged in the framework of procedures within the operational control. Information that enables correlation with any associated records stored separately from the aeroplane.
12	AOC	Aeronautical operational control messages	Messages exchanged in the framework of procedures within the operational control. Information that enables correlation with any associated records stored separately from the aeroplane.
13	Surveillance	Downlinked aircraft parameters (DAP)	As defined in ICAO Annex 10 Volume IV (Surveillance systems and ACAS).

AAC aeronautical administrative communications
ADS-B automatic dependent surveillance — broadcast
ADS-C automatic dependent surveillance — contract
AFN aircraft flight notification
AOC aeronautical operational control
ATIS automatic terminal information service
ATSC air traffic service communication
CAP controller access parameters
CPDLC controller pilot data link communications
CM configuration/context management
D-ATIS digital ATIS
D-FIS data link flight information service
D-METAR data link meteorological airport report
DCL departure clearance
FANS Future Air Navigation System
FLIPCY flight plan consistency
OCL oceanic clearance
SAP system access parameters
TWIP terminal weather information for pilots

CAT.IDE.A.200 Combination recorder

Compliance with CVR and FDR requirements may be achieved by:

(a) one flight data and cockpit voice combination recorder in the case of aeroplanes required to be equipped with a CVR or an FDR;

(b) one flight data and cockpit voice combination recorder in the case of aeroplanes with an MCTOM of 5 700 kg or less and required to be equipped with a CVR and an FDR; or

(c) two flight data and cockpit voice combination recorders in the case of aeroplanes with an MCTOM of more than 5 700 kg and required to be equipped with a CVR and an FDR.

AMC1 CAT.IDE.A.200 Combination recorder

General

(a) When two flight data and cockpit voice combination recorders are installed, one should be located near the flight crew compartment, in order to minimise the risk of data loss due to a failure of the wiring that gathers data to the recorder. The other should be located at the rear section of the aeroplane, in order to minimise the risk of data loss due to recorder damage in the case of a crash.

(b) When two flight data and cockpit voice combination recorders are installed and an alternate power source is required for the CVR function, it is acceptable to provide this alternate power source only to the cockpit-mounted area microphone and to one recorder.

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 on each passenger seat and restraining belts for each berth except as specified in (3);

(3) a seat belt with upper torso restraint system on each passenger seat and restraining belts on each berth in the case of aeroplanes with an MCTOM of 5 700 kg or less and with an MOPSC of nine or less, having an individual CofA first issued on or after 8 April 2015;

(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:

(i) on each flight crew seat and on any seat alongside a pilot's seat;

(ii) on each observer seat located in the flight crew compartment;

(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 have:

(1) a single point release;

(2) on the seats for the minimum required cabin crew, two shoulder straps and a seat belt that may be used independently; and

(3) on flight crew members' seats and on any seat alongside a pilot's seat, either of the following:

(i) two shoulder straps and a seat belt that may be used independently;

(ii) a diagonal shoulder strap and a seat belt that may be used independently for the following aeroplanes:

(A) aeroplanes with an MCTOM of 5 700 kg or less and with an MOPSC of nine or less that are compliant with the emergency landing dynamic conditions defined in the applicable certification specification;

(B) aeroplanes with an MCTOM of 5 700 kg or less and with an MOPSC of nine or less that are not compliant with the emergency landing dynamic conditions defined in the applicable certification specification and having an individual CofA first issued before 28 October 2014;

AMC1 CAT.IDE.A.205 Seats, seat safety belts, restraint systems andmchild restraint devices

Child restraint devices (CRDs)

(a) A CRD is considered to be acceptable if it complies with applicable TSO, TC or STC requirements. ÷

(c) Location

(1) Forward-facing child seats may be installed on both forward-and rearward-facing passenger seats, but only when fitted in the same direction as the passenger seat on which they are positioned. Rearward-facing child seats should only be installed on forward-facing passenger seats. A child seat should not be installed within the radius of action of an airbag unless it is obvious that the airbag is de-activated or it can be demonstrated that there is no negative impact from the airbag.

(2) An infant/child in a CRD should be located in the vicinity of a floor level exit.

(3) An infant/child in a CRD should not hinder evacuation for any passenger.

(4) An infant/child in a CRD should neither be located in the row (where rows are existing) leading to an emergency exit nor located in a row immediately forward or aft of an emergency exit. A window passenger seat is the preferred location. An aisle passenger seat or a cross aisle passenger seat that forms part of the evacuation route to exits is not recommended. Other locations may be acceptable provided the access of neighbour passengers to the nearest aisle is not obstructed by the CRD.

(5) In general, only one CRD per row segment is recommended. More than one CRD per row segment is allowed if the infants/children are from the same family or travelling group provided the infants/children are accompanied by a responsible adult sitting next to them in the same row segment.

(6) A row segment is one or more seats side-by-side separated from the next row segment by an aisle.

(d) Installation

(1) CRDs tested and approved for use in aircraft should only be installed on a suitable passenger seat by the method shown in the manufacturer's instructions provided with each CRD and with the type of connecting device they are approved for the installation in aircraft. CRDs designed to be installed only by means of rigid bar

lower anchorages (ISOFIX or equivalent) should only be used on passenger seats equipped with such connecting devices and should not be secured by passenger seat lap belt.

(2) All safety and installation instructions should be followed carefully by the responsible adult accompanying the infant/child. Operators should prohibit the use of a CRD not installed on the passenger seat according to the manufacturer's instructions or not approved for use in aircraft.

(3) If a forward-facing child seat with a rigid backrest is to be fastened by a seat lap belt, the restraint device should be fastened when the backrest of the passenger seat on which it rests is in a reclined position. Thereafter, the backrest is to be positioned upright. This procedure ensures better tightening of the child seat on the aircraft seat if the aircraft seat is reclinable.

(4) The buckle of the adult safety belt must be easily accessible for both opening and closing, and must be in line with the seat belt halves (not canted) after tightening.

(5) Forward-facing restraint devices with an integral harness must not be installed such that the adult safety belt is secured over the infant.

(e) Operation

(1) Each CRD should remain secured to a passenger seat during all phases of flight unless it is properly stowed when not in use.

(2) Where a child seat is adjustable in recline, it must be in an upright position for all occasions when passenger restraint devices are required.

AMC2 CAT.IDE.A.205 Seats, seat safety belts, restraint systems and child restraint devices

Upper torso restraint system

(a) A restraint system, including a seat belt, two shoulder straps and additional straps is deemed to be compliant with the requirement for restraint systems with two shoulder straps.

(b) An upper torso restraint system which restrains permanently the torso of the occupant is deemed to be compliant with the requirement for an upper torso restraint system incorporating a device that will automatically restrain the occupant’s torso in the event of rapid deceleration.

(c) The use of the upper torso restraint independently from the use of the seat belt is intended as an option for the comfort of the occupant of the seat in those phases of flight where only the seat belt is required to be fastened. A restraint system including a seat belt and an upper torso restraint that both remain permanently fastened is also acceptable.

Seat belt

(d) A seat belt with a diagonal shoulder strap (three anchorage points) is deemed to be compliant with the requirement for a seat belt (two anchorage points).

AMC3 CAT.IDE.A.205 Seats, seat safety belts, restraint systems and child restraint devices

Seats for minimum required cabin crew

(a) Seats for the minimum required cabin crew members should be located near required floor level emergency exits, except if the emergency evacuation of passengers would be enhanced by seating cabin crew members elsewhere. In this case, other locations are acceptable.

(b) Such seats should be forward-or rearward-facing within 15° of the longitudinal axis of the aeroplane.

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 MOPSC 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 1.

Table 1
Number of first-aid kits required

Number of passenger seats	Number of first-aid kits
0-100	1
101-200	2
201-300	3
301-400	4
401-500	5
501 or more	6

(b) First-aid kits shall be:

(1) readily accessible for use; and

(2) kept up to date.

AMC1 CAT.IDE.A.220 First-aid kit

Content of first-aid kits

(a) First-aid kits should be equipped with appropriate and sufficient medications and instrumentation. However, these kits should be supplemented by the operator according to the characteristics of the operation (scope of operation, flight duration, number and demographics of passengers, number of decks, etc.).

(b) The following should be included in the first-aid kit:

(1) Equipment

(i) bandages (assorted sizes, including a triangular bandage);

(ii) burns dressings (unspecified);

(iii) wound dressings (large and small);

(iv) adhesive dressings (assorted sizes);

(v) adhesive tape;

(vi) adhesive wound closures;

(vii) safety pins;

(viii) safety scissors;

(ix) antiseptic wound cleaner;

(x) disposable resuscitation aid;

(xi) disposable gloves;

(xii) tweezers: splinter;

(xiii) thermometers (non-mercury); and

(xiv) surgical masks.

(2) Medications

(i) simple analgesic (including paediatric form);

(ii) antiemetic — non-injectable (including paediatric form);

(iii) nasal decongestant;

(iv) gastrointestinal antacid, in the case of aeroplanes carrying more than 9 passengers;

(v) anti-diarrhoeal medication, in the case of aeroplanes carrying more than 9 passengers; and

(vi) antihistamine (including paediatric form).

(3) Other content. The operator should make the instructions readily available. If an electronic format is available, then all instructions should be kept on the same device.

If a paper format is used, then the instructions should be kept in the same kit with the applicable equipment and medication. The instructions should include, as a minimum, the following:

(i) a list of contents in at least two languages (English and one other). This should include information on the effects and side effects of medications carried;

(ii) first-aid handbook, current edition;

(iii) Basic life support instructions cards (summarising and depicting the current algorithm for basic life support); and

(iv) medical incident report form.

(4) Additional equipment. The following additional equipment should be carried on board each aircraft equipped with a first-aid kit, though not necessarily in the first-aid kit. When operating multi-deck aircraft, operators should assess if the additional equipment is needed on each deck. The additional equipment should include, as a minimum:

(i) automated external defibrillator (AED) on all aircraft required to carry at least one cabin crew;

(ii) bag-valve masks (masks in three sizes: one for adults, one for children, and one for infants);

(iii) suitable airway management device (e.g. supraglottic airway devices, oropharyngeal or nasopharyngeal airways);

(iv) eye irrigator;

(v) biohazard disposal bags; and

(vi) basic delivery kit (including sterile umbilical cord scissors and a pair of cord clamps) on all aircraft required to carry at least one cabin crew.

AMC2 CAT.IDE.A.220 First-aid kit

Maintenance of first-aid kits

To be kept up to date, first-aid kits should be:

(a) inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use;

(b) replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant; and

(c) replenished after use in-flight at the first opportunity where replacement items are available.

CAT.IDE.A.225 Emergency medical kit

(a) Aeroplanes with an MOPSC of more than 30 shall be equipped with an emergency medical kit when any point on the planned route is more than 60 minutes flying time at normal

cruising speed from an aerodrome at which qualified medical assistance could be expected to be available.

(b) The commander shall ensure that drugs are only administered by appropriately qualified persons.

(c) 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.

AMC1 CAT.IDE.A.225 Emergency medical kit

Content of emergency medical kits

(a) Emergency medical kits should be equipped with appropriate and sufficient medications and instrumentation. However, these kits should be supplemented by the operator according to the characteristics of the operation (scope of operation, flight duration, number and demographics of passengers, number of decks, etc.).

(b) The following should be included in the emergency medical kit:

(1) Equipment

(i) sphygmomanometer — electronic recommended;

(ii) stethoscope;

(iii) syringes and needles;

(iv) intravenous cannulae (a sufficient supply of intravenous cannulae should be available, subject to the amount of intravenous fluids carried on board);

(v) tourniquet;

(vi) disposable gloves;

(vii) needle disposal box;

(viii) one or more urinary catheter(s), appropriate for either sex, and anaesthetic gel;

(ix) aspirator;

(x) blood glucose testing equipment;

(xi) scalpel;

(xii) pulse oximeter; and

(xiii) pneumothorax set.

(2) Instructions: the instructions should contain a list of contents (medications in trade names and generic names) in at least two languages (English and one other). This should include information on the effects and side effects of medications carried. There should also be basic instructions for use of the medications in the kit and guidance for conversion of units for the blood glucose test. The operator should make the instructions readily available. If an electronic format is available, then all instructions should be kept

on the same device. If a paper format is used, then the instructions should be kept in the same kit with the applicable equipment and medication.

(3) Medications

(i) coronary vasodilator e.g. glyceriltrinitrate-oral;

(j) antispasmodic;

(iii) epinephrine/adrenaline 1:1 000;

(iv) adrenocorticoid;

v) major analgesic;

(vi) diuretic — injectable;

(vii) antihistamine — oral and injectable (including paediatric form);

(viii) sedative/anticonvulsant — oral plus injectable and/or rectal sedative;

(ix) medication for hypoglycaemia (e.g. hypertonic glucose);

(x) antiemetic — injectable;

(xi) antibiotic — injectable form — Ceftriaxone or Cefotaxime;

(xii) bronchial dilator — inhaled (disposable collapsible spacer);

(xiii) IV fluids in appropriate quantity e.g. sodium chloride 0.9 % (minimum 250 ml); and

(xiv) acetylsalicylic acid — oral — for coronary use.

AMC2 CAT.IDE.A.225 Emergency medical kit

Carriage under secure conditions

The emergency medical kit should be kept either in the flight crew compartment or in another secure location in the cabin that prevents unauthorised access to it.

AMC3 CAT.IDE.A.225 Emergency medical kit

Access to the emergency medical kit

(a) When the actual situation on board so requires, the commander should limit access to the emergency medical kit.

(b) Drugs should be administered by medical doctors, qualified nurses, paramedics or emergency medical technicians.

(c) Medical students, student paramedics, student emergency medical technicians or nurses aides should only administer drugs if no person mentioned in (b) is on board the flight and appropriate advice has been received.

(d) Whenever allowed under the operator’s national legislation, drugs may be administered by suitably trained persons, other than medical doctors.

(e) Oral drugs should not be denied in medical emergency situations where no medically qualified persons are on board the flight.

AMC4 CAT.IDE.A.225 Emergency medical kit

Maintenance of emergency medical kit

To be kept up to date, the emergency medical kit should be:

(a) inspected periodically to confirm, to the extent possible, that the contents are maintained in the condition necessary for their intended use;

(b) replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant; and

(c) replenished after use-in-flight at the first opportunity where replacement items are available.

CAT.IDE.A.230 First-aid oxygen

(a) Pressurised aeroplanes operated at pressure altitudes above 25 000 ft, 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 sufficient for the remainder of the flight after cabin depressurisation when the cabin altitude exceeds 8 000 ft but does not exceed 15 000 ft, 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 person.

AMC1 CAT.IDE.A.230(d) First-aid oxygen

General

(a) The mass flow of oxygen should be in accordance with applicable design standard.

(b) The oxygen supply may be calculated by assuming an average flow rate of at least 3 litres standard temperature pressure dry (STPD)/minute/person, or equivalent, as demonstrated during the certification of the dispensing unit.

CAT.IDE.A.235 Supplemental oxygen – pressurised aeroplanes

(a) Pressurised aeroplanes operated at pressure altitudes above 10 000 ft shall be equipped with supplemental oxygen equipment that is capable of storing and dispensing the oxygen supplies in accordance with Table 1.

(b) Pressurised aeroplanes operated at pressure altitudes above 25 000 ft 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 CofA after 8 November 1998 and operated at pressure altitudes above 25 000 ft, or operated at pressure altitudes at, or below 25 000 ft under conditions that would not allow them to descend safely to 13 000 ft 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 ft, may be reduced to the entire flying time between 10 000 ft and 13 000 ft 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 ft.

(f) The required minimum supply in Table 1, 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 ft in 10 minutes and followed by 20 minutes at 10 000 ft.

(g) The required minimum supply in Table 1, 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 ft in 10 minutes followed by 110 minutes at 10 000 ft.

(h) The required minimum supply in Table 1, 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 ft in 10 minutes.

Table 1: Oxygen minimum requirements for pressurised aeroplanes

Supply for	**Duration and cabin pressure altitude**
1. Occupants of flight crew compartment seats on flight crew compartment duty	(a) The entire flying time when the cabin pressure altitude exceeds 13 000 ft. (b) The remainder of the flying time when the cabin pressure altitude exceeds 10 000 ft but does not exceed 13 000 ft, after the initial 30 minutes at these altitudes, but in no case less than: (1) 30 minutes' supply for aeroplanes certified to fly at altitudes not exceeding 25000 ft; and (2) 2 hours' supply for aeroplanes certified to fly at altitudes of more than 25000 ft.
2. Required cabin crew members	(a) The entire flying time when the cabin pressure altitude exceeds 13 000 ft, but not less than 30 minutes' supply.
	(b) The remainder of the flying time when the cabin pressure altitude exceedsn10 000 ft but does not exceed 13 000 ft, after the initial 30 minutes at these
3. 100 % of passengers(1)	The entire flying time when the cabin pressure altitude exceeds 15 000 ft, but in no case less than 10 minutes' supply.
4. 30 % of passengers(1)	The entire flying time when the cabin pressure altitude exceeds 14 000 ft but does not exceed 15 000 ft.
5. 10 % of passengers(1)	The remainder of the flying time when the cabin pressure altitude exceeds 10 000 ft but does not exceed 14 000 ft, after the initial 30 minutes at these altitudes.
Passenger numbers in Table 1 refer to passengers actually carried on board, including persons younger than 24 months.	

AMC1 CAT.IDE.A.235 Supplemental oxygen – pressurised aeroplanes

Determination of oxygen

(a) In the determination of the amount of supplemental oxygen required for the routes to be flown, it is assumed that the aeroplane will descend in accordance with the emergency procedures specified in the operations manual, without exceeding its operating limitations, to a flight altitude that will allow the flight to be completed safely (i.e. flight altitudes ensuring adequate terrain clearance, navigational accuracy, hazardous weather avoidance, etc.).

(b) The amount of supplemental oxygen should be determined on the basis of cabin pressure altitude, flight duration and on the assumption that a cabin pressurisation failure will occur at the pressure altitude or point of flight that is most critical from the standpoint of oxygen need.

(c) Following a cabin pressurisation failure, the cabin pressure altitude should be considered to be the same as the aeroplane pressure altitude unless it can be demonstrated to the competent authority that no probable failure of the cabin or pressurisation system will result in a cabin pressure altitude equal to the aeroplane pressure altitude. Under these circumstances, the demonstrated maximum cabin pressure altitude may be used as a basis for determination of oxygen supply.

AMC2 CAT.IDE.A.235 Supplemental oxygen – pressurised

Oxygen requirements for flight crew compartment seat occupants and cabin crew in addition to the required minimum number of cabin crew

(a) For the purpose of supplemental oxygen supply, flight crew compartment seat occupants who are:

(1) supplied with oxygen from the flight crew source of oxygen should be considered as flight crew members; and

(2) not supplied with oxygen by the flight crew source of oxygen should be considered as passengers.

(b) Cabin crew members in addition to the minimum number of cabin crew and additional crew members should be considered as passengers for the purpose of supplemental oxygen supply.

AMC1 CAT.IDE.A.235(c) Supplemental oxygen – pressurized aeroplanes

Aeroplanes without automatic deployable oxygen-dispensing units

(a) For CAT operations with single-engined turbine aeroplanes at night or IMC conditions aeroplanes first issued with an individual certificate of airworthiness (CofA) after 8 November 1998, operated at pressure altitudes at or below 25000 ft, and not fitted with automatic deployable oxygen-dispensing units, the flight crew should manage the descent in case of a loss of power in order to ensure that the cabin pressure altitude is not higher that 13 000 ft for more than 4 min.

(b) The operator should specify in the operations manual (OM) the aircraft capability in terms of cabin pressure leak rate in case of engine power loss, as well as the relevant procedures.

AMC1 CAT.IDE.A.235(e) Supplemental oxygen – pressurized aeroplanes

Aeroplanes not certified to fly above 25 000 ft

(a) With respect to CAT.IDE.A.235(e), the maximum altitude up to which an aeroplane can operate without a passenger oxygen system being installed and capable of providing oxygen to each cabin occupant, should be established using an emergency descent profile that takes into account the following conditions:

(1) 17 seconds' time delay for pilot's recognition and reaction, including mask donning, for trouble shooting and configuring the aeroplane for the emergency descent (emergency descent data/charts established by the aeroplane manufacturer and published in the aircraft flight manual (AFM), and/or the AFM should be used to ensure uniform application of the option); and

(2) maximum operational speed (VMO) or the airspeed approved in the AFM for emergency descent, (emergency descent data/charts established by the aeroplane manufacturer and published in the AFM, and/or AFM should be used to ensure uniform application of the option), whichever is the less;

(b) On routes where oxygen is necessary to be carried for 10 % of the passengers for the flight time between 10 000 ft and 13 000 ft, the oxygen should be provided either by:

(1) a plug-in or drop-out oxygen system with sufficient outlets and dispensing units uniformly distributed throughout the cabin so as to provide oxygen to each passenger at his/her own discretion when seated on his/her assigned seat; or

(2) portable bottles, when a cabin crew member is required on board such flight.

CAT.IDE.A.240 Supplemental oxygen – non-pressurised aeroplanes

Non-pressurised aeroplanes operated at pressure altitudes above 10 000 ft shall be equipped with supplemental oxygen equipment capable of storing and dispensing the oxygen supplies in accordance with Table 1.

Table 1: Oxygen minimum requirements for non-pressurised aeroplanes

Supply for	Duration and cabin pressure altitude
1. Occupants of flight crew compartment seats on flight crew compartment duty and crew members assisting flight crew in their duties	The entire flying time at pressure altitudes above 10000 ft.
2. Required cabin crew members	The entire flying time at pressure altitudes above 13000 ft and for any period exceeding 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
3. Additional crew members and 100 % of passengers(1)	The entire flying time at pressure altitudes above 13000 ft.
4. 10 % of passengers(1)	The entire flying time after 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
(1) Passenger numbers in Table 1 refer to passengers actually carried on board, including persons younger than 24 months.	

AMC1 CAT.IDE.A.240 Supplemental oxygen –non-pressurised aeroplanes

Amount of supplemental oxygen

The amount of supplemental oxygen for sustenance for a particular operation should be determined on the basis of flight altitudes and flight duration, consistent with the operating procedures, including emergency procedures, established for each operation and the routes to be flown, as specified in the operations manual.

CAT.IDE.A.245 Crew protective breathing equipment

(a) All pressurised aeroplanes and those unpressurised aeroplanes with an MCTOM of more than 5700 kg or having an MOPSC 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/her assigned station;
and

(3) breathing gas from a portable PBE for one member of the flight crew, adjacent to his/her 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 points CAT.IDE.A.250 (b) and (c), 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.

AMC1 CAT.IDE.A.245 Crew protective breathing equipment

Protective breathing equipment (PBE)

The supply for PBE for the flight crew members may be provided by the supplemental oxygen required in CAT.IDE.A.235 or CAT.IDE.A.240.

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 1, conveniently located to provide adequate availability for use in each passenger compartment.

Table 1

Number of hand fire extinguishers

MOPSC	Number of extinguishers
7-30	1
31-60	2
61-200	3
201-300	4
301-400	5
401-500	6
501-600	7
601 or more	8

AMC1 CAT.IDE.A.250 Hand fire extinguishers

Number, location and type

(a) The number and location of hand fire extinguishers should be such as to provide adequate availability for use, account being taken of the number and size of the passenger compartments, the need to minimise the hazard of toxic gas concentrations and the location of lavatories, galleys, etc. These considerations may result in a number of fire extinguishers greater than the minimum required.

(b) There should be at least one hand fire extinguisher installed in the flight crew compartment and this should be suitable for fighting both flammable fluid and electrical equipment fires. Additional hand fire extinguishers may be required for the protection of other compartments accessible to the crew in flight. Dry chemical fire extinguishers should not be used in the flight crew compartment, or in any compartment not separated by a partition from the flight crew compartment, because of the adverse effect on vision during discharge and, if conductive, interference with electrical contacts by the chemical residues.

(c) Where only one hand fire extinguisher is required in the passenger compartments, it should be located near the cabin crew member's station, where provided.

(d) Where two or more hand fire extinguishers are required in the passenger compartments and their location is not otherwise dictated by consideration of CAT.IDE.A.250(b), an extinguisher should be located near each end of the cabin with the remainder distributed throughout the cabin as evenly as is practicable.

(e) Unless an extinguisher is clearly visible, its location should be indicated by a placard or sign. Appropriate symbols may also be used to supplement such a placard or sign.

CAT.IDE.A.255 Crash axe and crowbar

(a) Aeroplanes with an MCTOM of more than 5 700 kg or with an MOPSC 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 MOPSC 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.

AMC1 CAT.IDE.A.255 Crash axe and crowbar

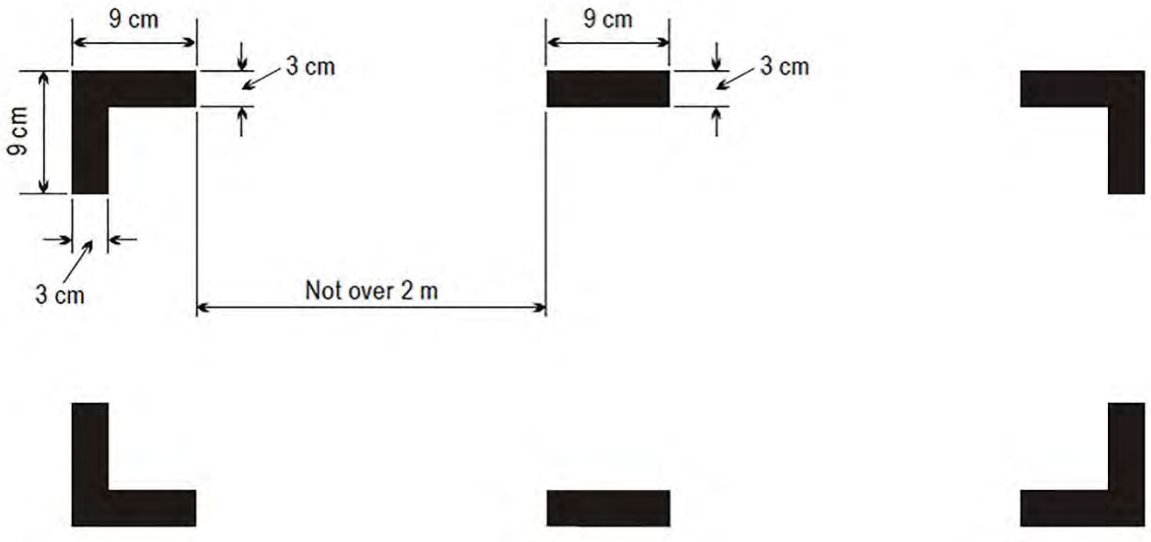
Storage of crash axes and crowbars

Crash axes and crowbars located in the passenger compartment should be stored in a position not 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:



AMC1 CAT.IDE.A.260 Marking of break-in points

Markings — colour and corners

(a) The colour of the markings should be red or yellow and, if necessary, should be outlined in white to contrast with the background.

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

CAT.IDE.A.265 Means for emergency evacuation

(a) Aeroplanes with passenger emergency exit sill heights of more than 1,83 m (6 ft) 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 overwing exits if the designated place on the aeroplane structure at which the escape route terminates is less than 1,83 m (6 ft) 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 1,83 m (6 ft) 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 MOPSC 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 1: Number of megaphones

Passenger seating configuration	Number of megaphones
61 to 99	1
100 or more	2

(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.

AMC1 CAT.IDE.A.270 Megaphones

Location of megaphones

(a) Where one megaphone is required, it should be readily accessible at the assigned seat of a cabin crew member or crew members other than flight crew.

(b) Where two or more megaphones are required, they should be suitably distributed in the passenger compartment(s) and readily accessible to crew members assigned to direct emergency evacuations.

(c) This does not necessarily require megaphones to be positioned such that they can be physically reached by a crew member when strapped in a cabin crew member’s seat.

CAT.IDE.A.275 Emergency lighting and marking

(a) Aeroplanes with an MOPSC of more than nine shall be equipped with an emergency lighting system having an independent power supply to facilitate the evacuation of the aeroplane.

(b) In the case of aeroplanes with an MOPSC of more than 19, the emergency lighting system, referred to in (a) shall include:

(1) sources of general cabin illumination;

(2) internal lighting in floor level emergency exit areas;

(3) illuminated emergency exit marking and locating signs;

(4) in the case of aeroplanes for which the application for the type certificate or equivalent was filed before 1 May 1972, when operated by night, exterior emergency lighting at all overwing exits and at exits where descent assist means are required;

(5) in the case of aeroplanes for which the application for the type certificate or equivalent was filed after 30 April 1972, when operated by night, exterior emergency lighting at all passenger emergency exits; and

(6) in the case of aeroplanes for which the type certificate was first issued on or after 31 December 1957, floor proximity emergency escape path marking system(s) in the passenger compartments.

(c) For aeroplanes with an MOPSC of 19 or less and type certified on the basis of the applicable certification specification, the emergency lighting system referred to in point (a) shall include the equipment referred to in points (1), (2) and (3) of point (b).

(d) Aeroplanes with an MOPSC of nine or less, operated at night, shall be equipped with a source of general cabin illumination to facilitate the evacuation of the aeroplane.

CAT.IDE.A.280 Emergency locator transmitter (ELT)

(a) The following aeroplanes shall be equipped with robust and automatic means to accurately determine, following an accident where the aeroplane is severely damaged, the location of the point of end of flight:

(1) all aeroplanes with an MCTOM of more than 27 000 kg, with an MOPSC of more than 19 and first issued with an individual CofA on or after 1 January 2023;

(2) all aeroplanes with an MCTOM of more than 45 500 kg and first issued with an individual CofA on or after 1 January 2023.

(b) Aeroplanes with an MOPSC of more than 19 shall be equipped with at least:

(1) two ELTs, one of which shall be automatic, or one ELT and one aircraft localisation means meeting the requirement of (a), in the case of aeroplanes first issued with an individual CofA after 1 July 2008; or

(2) one automatic ELT or two ELTs of any type or one aircraft localisation means meeting the requirement of (a), in the case of aeroplanes first issued with an individual CofA on or before 1 July 2008.

(c) Aeroplanes with an MOPSC of 19 or less shall be equipped with at least:

(1) one automatic ELT or one aircraft localisation means meeting the requirement of (a), in the case of aeroplanes first issued with an individual CofA after 1 July 2008; or

(2) one ELT of any type or one aircraft localisation means meeting the requirement of (a), in the case of aeroplanes first issued with an individual CofA on or before 1 July 2008.

(d) An ELT of any type shall be capable of transmitting simultaneously on 121,5 MHz and 406 MHz.

AMC1 CAT.IDE.A.280 Emergency locator transmitter (ELT)

Batteries

(a) All batteries used in ELTs should be replaced (or recharged if the battery is rechargeable) when the equipment has been in use for more than 1 cumulative hour or in the following cases:

(1) Batteries specifically designed for use in ELTs and having an airworthiness release certificate should be replaced (or recharged if the battery is rechargeable) before the end of their useful life in accordance with the maintenance instructions applicable to the ELT.

(3) The battery useful life (or useful life of charge) criteria in (1) do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

(b) The new expiry date for a replaced (or recharged) battery should be legibly marked on the outside of the equipment.

AMC2 CAT.IDE.A.280 Emergency locator transmitter (ELT)

Types of ELTs and general technical specifications

(a) The ELT required by this provision should be one of the following:

(1) Automatic fixed (ELT(AF)). An automatically activated ELT that is permanently attached to an aircraft and is designed to aid search and rescue (SAR) teams in locating the crash site.

(2) Automatic portable (ELT(AP)). An automatically activated ELT, that is rigidly attached to an aircraft before a crash, but is readily removable from the aircraft after a crash. It functions as an ELT during the crash sequence. If the ELT(AP) does not employ an integral antenna, the aircraft-mounted antenna may be disconnected and an auxiliary antenna (stored on the ELT case) attached to the ELT. The ELT can be tethered to a survivor or a life-raft. This type of ELT is intended to aid SAR teams in locating the crash site or survivor(s).

(3) Automatic deployable (ELT(AD)). An ELT that is rigidly attached to the aircraft before the crash and that is automatically deployed and activated by an impact, and, in some cases, also by water sensors. This type of ELT should float in water and is

intended to aid SAR teams in locating the crash site. The ELT(AD) may be either a stand-alone beacon or an inseparable part of a deployable recorder.

(4) Distress tracking ELT (ELT(DT)). An ELT that is designed to be activated upon automatic detection of conditions indicative of a distress situation. This type of ELT is intended to provide information prior to the crash, to aid SAR teams in locating the crash site and/or any survivor(s).

(5) Survival ELT (ELT(S)). An ELT that is removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by a survivor. An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed either to be tethered to a life-raft or a survivor. A water-activated ELT(S) is not an ELT(AP).

(b) To minimise the possibility of damage in the event of a crash impact, the ELT(AF), ELT(AP), ELT(AD), or ELT(DT) should be rigidly fixed to the aircraft structure, as far aft as practicable, with its antenna and connections arranged so as to maximise the probability of the signal being transmitted after a crash.

(c) Unless an automatic ELT is installed, the ELT(DT) should have capability C (crash survivability) and capability H1 (121.5-MHz homing signal).

(d) Any ELT carried should operate in accordance with the relevant provisions of ICAO Annex 10, Volume III communications systems and should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

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 the following:

(1) a sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvring the seaplane on water, appropriate to its size, mass and handling characteristics;

(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)).

(f) By 1 January 2019 at the latest, aeroplanes with an MCTOM of more than 27 000 kg and with an MOPSC of more than 19 and all aeroplanes with an MCTOM of more than 45 500 kg shall be fitted with a securely attached underwater locating device that operates at a frequency of 8,8 kHz ± 1 kHz, unless:

(1) the aeroplane is operated over routes on which it is at no point at a distance of more than 180 NM from the shore; or

(2) the aeroplane is equipped with robust and automatic means to accurately determine, following an accident where the aeroplane is severely damaged, the location of the point of end of flight.

AMC1 CAT.IDE.A.285 Flight over water

Life rafts and equipment for making distress signals

(a) The following should be readily available with each life-raft:

(1) means for maintaining buoyancy;

(2) a sea anchor:

(3) life-lines and means of attaching one life-raft to another;

(4) paddles for life-rafts with a capacity of six or less;

(5) means of protecting the occupants from the elements;

(6) a water-resistant torch;

(7) signalling equipment to make the pyrotechnic distress signals described in ICAO Annex 2, ‘Rules of the Air’;

(8) 100 g of glucose tablets for each four, or fraction of four, persons that the life-raft is designed to carry;

(9) at least 2 litres of drinkable water provided in durable containers or means of making sea water drinkable or a combination of both; and

(10) first-aid equipment.

(b) As far as practicable, items listed in (a) should be contained in a pack.

AMC1 CAT.IDE.A.285(e)(4) & CAT.IDE.A.305(a)(2) Flight over water & Survival equipment

Survival ELT

An ELT(AP) may be used to replace one required ELT(S) provided that it meets the ELT(S) requirements. A water-activated ELT(S) is not an ELT(AP).

AMC1 CAT.IDE.A.285(a) Flight over water

Accessibility of life-jackets

The life-jacket should be accessible from the seat or berth of the person for whose use it is provided, with a safety belt or restraint system fastened.

AMC2 CAT.IDE.A.285(a) Flight over water

Electric illumination of life-jackets

The means of electric illumination should be a survivor locator light as defined in the applicable TSO issued by FAA/EASA.

AMC1 CAT.IDE.A.285(f) Flight over water

Low-frequency underwater locating device

(a) The underwater locating device should be compliant applicable standard.

(b) The underwater locating device should not be installed in wings or empennage.

AMC2 CAT.IDE.A.285(f) Flight over water

Robust and automatic means to locate the point of end of flight after an accident

The 'robust and automatic means to accurately determine, following an accident where the aeroplane is severely damaged, the location of the point of end of flight' should comply with point CAT.IDE.A.280 (a).

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.

AMC1 CAT.IDE.A.305 Survival equipment

Additional survival equipment

(a) The following additional survival equipment should be carried when required:

(1) 2 litres of drinkable water for each 50, or fraction of 50, persons on board provided in durable containers;

(2) one knife;

(3) first-aid equipment; and

(4) one set of air/ground codes.

(b) In addition, when polar conditions are expected, the following should be carried:

(1) a means for melting snow;

(2) one snow shovel and one ice saw;

(3) sleeping bags for use by 1/3 of all persons on board and space blankets for the remainder or space blankets for all passengers on board; and

(4) one arctic/polar suit for each crew member.

(c) If any item of equipment contained in the above list is already carried on board the aeroplane in accordance with another requirement, there is no need for this to be duplicated.

AMC1 CAT.IDE.A.285(e)(4) & CAT.IDE.A.305(a)(2) Flight over water & Survival equipment

Survival ELT

An ELT(AP) may be used to replace one required ELT(S) provided that it meets the ELT(S) requirements. A water-activated ELT(S) is not an ELT(AP).

AMC1 CAT.IDE.A.305(b)(2) Survival equipment

Applicable airworthiness standard

The applicable airworthiness standard should be CS-25 or FAR-25.

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.

AMC1 CAT.IDE.A.325 Headset

General

(a) A headset consists of a communication device that includes two earphones to receive and a microphone to transmit audio signals to the aeroplane's communication system. To comply with the minimum performance requirements, the earphones and microphone should match the communication system's characteristics and the flight crew compartment environment. The headset should be sufficiently adjustable to fit the pilot's head. Headset boom microphones should be of the noise cancelling type.

(b) If the intention is to utilise noise cancelling earphones, the operator should ensure that the earphones do not attenuate any aural warnings or sounds necessary for alerting the flight crew on matters related to the safe operation of the aeroplane.

CAT.IDE.A.330 Radio communication equipment

(a) Aeroplanes 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.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 Communication, navigation and surveillance equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks

(a) Aeroplanes operated under IFR or under VFR over routes that cannot be navigated by reference to visual landmarks shall be equipped with radio communication, navigation and surveillance 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) Notwithstanding point (b), aeroplanes operated for short haul operations in the North Atlantic high-level (NAT HLA) airspace and not crossing the North Atlantic shall be equipped with at least one long range communication system, in case alternative communication procedures are published for the airspace concerned.

(d) Aeroplanes 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.

(e) Aeroplanes 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 aerodrome.

(f) For PBN operations the aircraft shall meet the airworthiness certification requirements for the appropriate navigation specification.

AMC1 CAT.IDE.A.345 Communication and navigation equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks

Two independent means of communication

Whenever two independent means of communication are required, each system should have an independent antenna installation, except where rigidly supported non-wire antennae or other antenna installations of equivalent reliability are used.

AMC2 CAT.IDE.A.345 Communication and navigation equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks

Acceptable number and type of communication and navigation equipment

(a) An acceptable number and type of communication and navigation equipment is:

(1) one VHF omnidirectional radio range (VOR) receiving system, one automatic direction finder (ADF) system, one distance measuring equipment (DME), except that an ADF system need not be installed provided that the use of ADF is not required in any phase of the planned flight;

(2) one instrument landing system (ILS) or microwave landing system (MLS) where ILS or MLS is required for approach navigation purposes;

(3) one marker beacon receiving system where a marker beacon is required for approach navigation purposes;

(4) area navigation equipment when area navigation is required for the route being flown (e.g. equipment required by ANO Part-SPA);

(5) an additional DME system on any route, or part thereof, where navigation is based only on DME signals;

(6) an additional VOR receiving system on any route, or part thereof, where navigation is based only on VOR signals; and

(7) an additional ADF system on any route, or part thereof, where navigation is based only on non-directional beacon (NDB) signals.

(b) Aeroplanes may be operated without the navigation equipment specified in (6) and (7) provided they are equipped with alternative equipment. The reliability and the accuracy of alternative equipment should allow safe navigation for the intended route.

(c) The operator conducting extended range operations with two-engined aeroplanes (ETOPS) should ensure that the aeroplanes have a communication means capable of communicating with an appropriate ground station at normal and planned contingency altitudes. For ETOPS routes where voice communication facilities are available, voice communications should be provided. For all ETOPS operations beyond 180 minutes, reliable communication technology, either voice-based or data link, should be installed. Where voice communication facilities are not available and where voice communication is not possible or is of poor quality, communications using alternative systems should be ensured.

(d) To perform IFR operations without an ADF system installed, the operator should consider the following guidelines on equipment carriage, operational procedures and training criteria.

(1) ADF equipment may only be removed from or not installed in an aeroplane intended to be used for IFR operations when it is not essential for navigation, and provided that alternative equipment giving equivalent or enhanced navigation capability is carried. This may be accomplished by the carriage of an additional VOR receiver or a GNSS receiver approved for IFR operations.

(2) For IFR operations without ADF, the operator should ensure that:

(i) route segments that rely solely on ADF for navigation are not flown;

(ii) ADF/NDB procedures are not flown;

(iii) the minimum equipment list (MEL) has been amended to take account of the non- carriage of ADF;

(iv) the operations manual does not refer to any procedures based on NDB signals for the aeroplanes concerned; and

(v) flight planning and dispatch procedures are consistent with the above mentioned criteria.

(3) The removal of ADF should be taken into account by the operator in the initial and recurrent training of flight crew.

(e) VHF communication equipment, ILS localiser and VOR receivers installed on aeroplanes to be operated in IFR should comply with the following FM immunity performance standards:

(1) ICAO Annex 10, Volume I - Radio Navigation Aids, and Volume III, Part II - Voice Communications Systems; and

AMC3 CAT.IDE.A.345 Communication and navigation equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks

Failure of a single unit

Required communication and navigation equipment should be installed such that the failure of any single unit required for either communication or navigation purposes, or both, will not result in the failure of another unit required for communications or navigation purposes.

AMC4 CAT.IDE.A.345 Communication and navigation equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks

Long range communication systems

(a) The long range communication system should be either a high frequency/HF-system or another two-way communication system if allowed by the relevant airspace procedures.

(b) When using one communication system only, the competent authority may restrict the minimum navigation performance specifications (MNPS) approval to the use of the specific routes.

CAT.IDE.A.350 Transponder

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.

AMC1 CAT.IDE.A.350 Transponder

SSR Transponder

(a) The secondary surveillance radar (SSR) transponders of aeroplanes being operated should comply with the applicable airspace requirements

(b) The SSR transponders should operate in accordance with the relevant provisions of Volume IV of ICAO Annex 10.

CAT.IDE.A.355 Management of aeronautical databases

(a) Aeronautical databases used on certified aircraft system applications shall meet data quality requirements that are adequate for the intended use of the data.

(b) The operator shall ensure the timely distribution and insertion of current and unaltered aeronautical databases to all aircraft that require them.

(c) Notwithstanding any other occurrence reporting requirements, operator shall report to the database provider instances of erroneous, inconsistent or missing data that might be reasonably expected to constitute a hazard to flight.

In such cases, the operator shall inform flight crew and other personnel concerned, and shall ensure that the affected data is not used.

AMC1 CAT.IDE.A.355 Management of aeronautical databases

Aeronautical databases

When the operator of an aircraft uses an aeronautical database that supports an airborne navigation application as a primary means of navigation used to meet the airspace usage requirements, the database provider should be an acceptable data services provider.

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) independent portable lights;

(2) an accurate time piece;

(3) chart holder;

(4) first-aid kit;

(5) megaphones;

(6) survival and signalling equipment;

(7) sea anchors and equipment for mooring;

(8) child restraint devices.

(b) Instruments and equipment not required under this subpart but carried on a flight, shall comply with the following requirements:

(1) the information provided by those instruments, equipment or accessories shall not be used by the flight crew members to comply with applicable airworthiness requirements points CAT.IDE.H.330, CAT.IDE.H.335, CAT.IDE.H.340 and CAT.IDE.H.345 of this ANO;

(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/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.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;

AMC1 CAT.IDE.H.105 Minimum equipment for flight

Management of the status of certain instruments, equipment or functions

The operator should control and retain the status of the instruments, equipment or functions required for the intended operation, that are not controlled for the purpose of continuing airworthiness management.

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 amphibious.

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) Barometric 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) Barometric 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 an MOPSC of more than nine.

AMC1 CAT.IDE.H.125 & CAT.IDE.H.130 Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Integrated instruments

(a) Individual equipment requirements may be met by combinations of instruments or by integrated flight systems or by a combination of parameters on electronic displays, provided that the information so available to each required pilot is not less than the required in the
(b) applicable operational requirements, and the equivalent safety of the installation has been shown during type certification approval of the helicopter for the intended type of operation.
(c) The means of measuring and indicating slip, helicopter attitude and stabilized helicopter heading may be met by combinations of instruments or byintegrated flight director systems, provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

AMC1 CAT.IDE.H.125(a)(1)(i) & CAT.IDE.H.130(a)(1) Operations under VFR by day & Operations under IFR or at night — flight and navigational instruments and associated equipment

Means of measuring and displaying magnetic heading

The means of measuring and displaying magnetic direction should be a magnetic compass or equivalent.

AMC1 CAT.IDE.H.125(a)(1)(ii) & CAT.IDE.H.130(a)(2) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Means of measuring and displaying the time

An acceptable means of compliance is a clock displaying hours, minutes and seconds, with a sweep- second pointer or digital presentation.

AMC1 CAT.IDE.H.125(a)(1)(iii) & CAT.IDE.H.130(b) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Calibration of the means of measuring and displaying pressure altitude

The instrument measuring and displaying pressure altitude should be of a sensitive type calibrated in feet (ft), with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight.

AMC1 CAT.IDE.H.125(a)(1)(iv) & CAT.IDE.H.130(a)(3) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Calibration of the instrument indicating airspeed

The instrument indicating airspeed should be calibrated in knots (kt).

AMC1 CAT.IDE.H.125(a)(1)(vii) & CAT.IDE.H.130(a)(8) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Outside air temperature

(a) The means of displaying outside air temperature should be calibrated in degrees Celsius.

(b) The means of displaying outside air temperature may be an air temperature indicator that provides indications that are convertible to outside air temperature.

AMC1 CAT.IDE.H.125(b) & CAT.IDE.H.130(h) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Multi-pilot operations — duplicate instruments

Duplicate instruments should include separate displays for each pilot and separate selectors or other associated equipment where appropriate.

AMC1 CAT.IDE.H.125(c)(2) & CAT.IDE.H.130(a)(7) Operations under VFR by day & Operations under IFR or at night – flight and navigational instruments and associated equipment

Stabilised heading

Stabilised heading should be achieved for VFR flights by a gyroscopic heading indicator, whereas for IFR flights, this should be achieved through a magnetic gyroscopic heading indicator.

AMC1 CAT.IDE.H.125(d) & CAT.IDE.H.130(d) Operations under VFR by day & Operations under IFR or at night operations – flight and navigational instruments and associated equipment

Means of preventing malfunction due to condensation or icing

The means of preventing malfunction due to either condensation or icing of the airspeed indicating system should be a heated pitot tube or equivalent.

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 barometric 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 CofA on or after 1 August 1999; or

(2) issued with an individual CofA before 1 August 1999 with an MCTOM of more than 3175 kg, and with an MOPSC of more than nine.

(f) 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.

(g) 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) Barometric altitude;

(2) Indicated airspeed;

(3) Vertical speed;

(4) Slip;

(5) Attitude; and

(6) Stabilised heading.

(i) For IFR operations, a chart holder in an easily readable position that can be illuminated for night operations.

Altimeters with counter drum-pointer or equivalent presentation are considered to be less susceptible to misinterpretation for helicopters operating above 10 000 ft.

AMC1 CAT.IDE.H.130(e) Operations under IFR or at night – flight and navigational instruments and associated equipment

Means of indicating failure of the airspeed indicating system's means of preventing malfunction due to either condensation or icing

A combined means of indicating failure of the airspeed indicating system's means of preventing malfunction due to either condensation or icing is acceptable provided that it is visible from each flight crew station and that there it is a means to identify the failed heater in systems with two or more sensors.

AMC1 CAT.IDE.H.130(f)(6) Operations under IFR or at night – flight and navigational instruments and associated equipment

Illumination of standby means of measuring and displaying attitude

The standby means of measuring and displaying attitude should be illuminated so as to be clearly visible under all conditions of daylight and artificial lighting.

AMC1 CAT.IDE.H.130(i) Operations under IFR or at night – flight and navigational instruments and associated equipment

Chart holder

An acceptable means of compliance with the chart holder requirement is to display a pre-composed chart on an electronic flight bag (EFB).

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 1 500 m;

(3) at night; or

(4) at a distance from land corresponding to more than three minutes at normal cruising speed.

AMC1 CAT.IDE.H.145 Radio altimeters

Audio warning device

(a) The audio warning should be a voice warning.

(b) The audio warning may be provided by a helicopter terrain awareness and warning system (HTAWS).

AMC2 CAT.IDE.H.145 Radio altimeters

Radio altimeter display

The radio altimeter should be of an analogue type display presentation that requires minimal interpretation for both an instantaneous impression of absolute height and rate of change of height.

CAT.IDE.H.160 Airborne weather detecting equipment

Helicopters with an MOPSC 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.

AMC1 CAT.IDE.H.160 Airborne weather detecting equipment

General

The airborne weather detecting equipment should be an airborne weather radar.

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.

AMC1 CAT.IDE.H.170 Flight crew interphone system

Type of flight crew interphone

The flight crew interphone system should not be of a handheld type.

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.

AMC1 CAT.IDE.H.175 Crew member interphone system

Specifications

The crew member interphone system should:

(a) operate independently of the public address system except for handsets, headsets, microphones, selector switches and signalling devices;

(b) in the case of helicopters where at least one cabin crew member is required, be readily accessible for use at required cabin crew stations close to each separate or pair of floor level emergency exits;

(c) in the case of helicopters where at least one cabin crew member is required, have an alerting system incorporating aural or visual signals for use by flight and cabin crew;

(d) have a means for the recipient of a call to determine whether it is a normal call or an emergency call that uses one or a combination of the following:

(1) lights of different colours;

(2) codes defined by the operator (e.g. different number of rings for normal and emergency calls); or

(3) any other indicating signal specified in the operations manual;

(e) provide a means of two-way communication between the flight crew compartment and each crew member station; and

(f) be readily accessible for use from each required flight crew station in the flight crew compartment.

CAT.IDE.H.180 Public address system

(a) Helicopters with an MOPSC of more than nine shall be equipped with a public address system, with the exception of (b).

(b) Notwithstanding (a) helicopters with an MOPSC 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.

AMC1 CAT.IDE.H.180 Public address system

Specifications

The public address system should:

(a) operate independently of the interphone systems except for handsets, headsets, microphones, selector switches and signalling devices;

(b) be readily accessible for immediate use from each required flight crew station;

(c) have, for each floor level passenger emergency exit that has an adjacent cabin crew seat, a microphone operable by the seated cabin crew member, except that one microphone may serve more than one exit, provided the proximity of exits allows unassisted verbal communication between seated cabin crew members;

(d) be operable within ten seconds by a cabin crew member at each of those stations;

(e) be audible at all passenger seats, lavatories, cabin crew seats and work stations and any other location or compartment that may be occupied by persons; and

(f) following a total failure of the normal electrical generating system, provide reliable operation for a minimum of ten minutes.

CAT.IDE.H.185 Cockpit voice recorder

(a) The following helicopter types shall be equipped with a cockpit voice recorder (CVR):

(1) all helicopters with an MCTOM of more than 7 000 kg; and

(2) helicopters with an MCTOM of more than 3 175 kg and first issued with an individual CofA 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 CofA on or after 1 January 2016;

(2) the preceding one hour for helicopters referred to in (a)(1), when first issued with an individual CofA 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 CofA before 1 August 1999; or

(4) the preceding 30 minutes for helicopters referred to in (a)(2), when first issued with an individual CofA before 1 January 2016.

(c) By 1 January 2019 at the latest, the CVR shall record on means other than magnetic tape or magnetic wire.

(d) 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 CofA on or after 1 August 1999, the audio signals received from each crew microphone;

(ii) for helicopters first issued with an individual CofA 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.

(e) 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.

(f) In addition to (e), for helicopters referred to in (a)(2) issued with an individual CofA 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.

(g) If the CVR is not deployable, it shall have a device to assist in locating it under water. By 1 January 2020 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the CVR is deployable, it shall have an automatic emergency locator transmitter.

CAT.IDE.H.190 Flight data recorder

(a) The following helicopters shall be equipped with an FDR that uses a digital method of recording and storing data and for which a method of readily retrieving that data from the storage medium is available:

(1) helicopters with an MCTOM of more than 3 175 kg and first issued with an individual CofA on or after 1 August 1999;

(2) helicopters with an MCTOM of more than 7 000 kg, or an MOPSC of more than nine, and first issued with an individual CofA on or after 1 January 1989 but before 1 August 1999.

(b) The FDR shall record the parameters required to determine accurately the:

(1) flight path, speed, attitude, engine power, operation and configuration and be capable of retaining the data recorded during at least the preceding 10 hours, for helicopters referred to in (a)(1) and first issued with an individual CofA on or after 1 January 2016;

(2) flight path, speed, attitude, engine power and operation and be capable of retaining the data recorded during at least the preceding eight hours, for helicopters referred to in (a)(1) and first issued with an individual CofA before 1 January 2016;

(3) flight path, speed, attitude, engine power and operation and be capable of retaining the data recorded during at least the preceding five hours, for helicopters referred to in (a)(2).

(c) Data shall be obtained from helicopter sources that enable accurate correlation with information displayed to the flight crew.

(d) The FDR shall automatically start to record the data prior to the helicopter being capable of moving under its own power and shall stop automatically after the helicopter is incapable of moving under its own power.

(e) If the FDR is not deployable, it shall have a device to assist in locating it under water. By 1 January 2020 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the FDR is deployable, it shall have an automatic emergency locator transmitter.

AMC1.1 CAT.IDE.H.190 Flight data recorder

Operational performance requirements for helicopters having an MCTOM of more than 3175 kg and first issued with an individual CofA on or after 1 January 2016 and before 1 January 2023

The FDR should, with reference to a timescale, record:

(1) the parameters listed in Table 1 below;

(2) the additional parameters listed in Table 2 below, when the information data source for the parameter is used by helicopter systems or is available on the instrument panel for use by the flight crew to operate the helicopter; and

(3) any dedicated parameters related to novel or unique design or operational characteristics of the helicopter as determined by the Agency.

Table 1

FDR — all helicopters

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated airspeed or calibrated airspeed
4	Heading
5	Normal acceleration
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying CVR/FDR synchronisation reference
9 9a 9b 9c 9d 9e	Power on each engine Free power turbine speed (NF) Engine torque Engine gas generator speed (NG) Flight crew compartment power control position Other parameters to enable engine power to be determined
10 10a 10b	Rotor: Main rotor speed Rotor brake (if installed)
11 11a 11b 11c 11d 11e 11f	Primary flight controls — Pilot input and/or control output position (if applicable) Collective pitch Longitudinal cyclic pitch Lateral cyclic pitch Tail rotor pedal Controllable stabiliser (if applicable) Hydraulic selection
12	Hydraulics low pressure (each system should be recorded)
13	Outside air temperature
18	Yaw rate or yaw acceleration
20	Longitudinal acceleration (body axis)

No	Parameter
21	Lateral acceleration
25	Marker beacon passage
26	Warnings — a discrete should be recorded for the master warning, gearbox low oil pressure and stability augmentation system failure. Other 'red' warnings should be recorded where the warning condition cannot be determined from other parameters or from the cockpit voice recorder.
27	Each navigation receiver frequency selection
37	Engine control modes

Table 2

Helicopters for which the data source for the parameter is either used by helicopter systems or is available on the instrument panel for use by the flight crew to operate the helicopter

No	Parameter
14	AFCS mode and engagement status
15	Stability augmentation system engagement (each system should be recorded)
16	Main gear box oil pressure
17 17a 17b 17c	Gear box oil temperature Main gear box oil temperature Intermediate gear box oil temperature Tail rotor gear box oil temperature
19	Indicated sling load force (if signals readily available)
22	Radio altitude
23 23a 23b 23c	Vertical deviation — the approach aid in use should be recorded. ILS glide path MLS elevation GNSS approach path
24 24a 24b 24c	Horizontal deviation — the approach aid in use should be recorded. ILS localiser MLS azimuth GNSS approach path
28	DME 1 & 2 distances
29 29a 29b 29c 29d 29e 29f	Navigation data Drift angle Wind speed Wind direction Latitude Longitude Ground speed
30	Landing gear or gear selector position
31	Engine exhaust gas temperature (T4)
32	Turbine inlet temperature (TIT/ITT)
33	Fuel contents
34	Altitude rate (vertical speed) — only necessary when available from cockpit instruments
35	Ice detection
36 36a 36b 36c 36d 36e	Helicopter health and usage monitor system (HUMS) Engine data Chip detector Track timing Exceedance discretes Broadband average engine vibration
38 38a 38b	Selected barometric setting — to be recorded for helicopters where the parameter is displayed electronically Pilot Co-pilot

No	Parameter
39	Selected altitude (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
40	Selected speed (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
41	Selected Mach (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
42	Selected vertical speed (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
43	Selected heading (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
44	Selected flight path (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
45	Selected decision height (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
46	EFIS display format
47	Multi-function/engine/alerts display format
48	Event marker

AMC1.2 CAT.IDE.H.190 Flight data recorder

Operational performance requirements for helicopters having an MCTOM of more than 3175 Kg and first issued with an individual CofA in or after 1January 2023

The FDR should, with reference to a timescale, record:

(1) the list of parameters in Table 1 below;

(2) the additional parameters listed in Table 2 below, when the information data source for the parameter is used by helicopter systems or is available on the instrument panel for use by the flight crew to operate the helicopter; and

(3) any dedicated parameters related to novel or unique design or operational characteristics of the helicopter as determined by the Agency.

Table 1: FDR — All helicopters

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated airspeed or calibrated airspeed
4	Heading
5	Normal acceleration
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying CVR/FDR synchronisation reference
9 9a 9b 9c 9d 9e	Power on each engine: Free power turbine speed (NF) Engine torque Engine gas generator speed (NG) Flight crew compartment power control position Other parameters to enable engine power to be determined
10 10a 10b	Rotor: Main rotor speed Rotor brake (if installed)

No	Parameter
11	Primary flight controls — pilot input or control output position if it is possible to derive either the control input or the control movement (one from the other) for all modes of operation and flight regimes. Otherwise, pilot input and control output position:
11a	Collective pitch
11b	Longitudinal cyclic pitch
11c	Lateral cyclic pitch
11d	Tail rotor pedal
11e	Controllable stabilator (if applicable)
11f	Hydraulic selection
12	Hydraulics low pressure (each system should be recorded)
13	Outside air temperature
18	Yaw rate or yaw acceleration
20	Longitudinal acceleration (body axis)
21	Lateral acceleration
25	Marker beacon passage
26	Warnings — including master warning, gearbox low oil pressure and stability augmentation system failure, and other 'red' warnings where the warning condition cannot be determined from other parameters or from the cockpit voice recorder
27	Each navigation receiver frequency selection
37	Engine control modes

***Table 2: FDR** - Helicopters for which the data source for the parameter is either used by the helicopter systems or is available on the instrument panel for use by the flight crew to operate the helicopter*

No	Parameter
14	AFCS mode and engagement status (showing which systems are engaged and which primary modes are controlling the flight path)
15	Stability augmentation system engagement (each system should be recorded)
16	Main gear box oil pressure
17	Gear box oil temperature:
17a	Main gear box oil temperature
17b	Intermediate gear box oil temperature
17c	Tail rotor gear box oil temperature
19	Indicated sling load force (if signals are readily available)
22	Radio altitude
23	Vertical deviation — the approach aid in use should be recorded:
23a	ILS glide path
23b	MLS elevation
23c	GNSS approach path
24	Horizontal deviation — the approach aid in use should be recorded:
24a	ILS localiser
24b	MLS azimuth
24c	GNSS approach path
28	DME 1 & 2 distances
29	Navigation data:
29a	Drift angle
29b	Wind speed
29c	Wind direction
29d	Latitude
29e	Longitude
29f	Ground speed
30	Landing gear or gear selector position
31	Engine exhaust gas temperature (T4)

No	Parameter
32	Turbine inlet temperature (TIT)/interstage turbine temperature ITT)
33	Fuel contents
34	Altitude rate (vertical speed) — only necessary when available from cockpit instruments
35	Ice detection
36	Helicopter health and usage monitor system (HUMS):
36a	Engine data
36b	Chip detector
36c	Track timing
36d	Exceedance discretes
36e	Broadband average engine vibration
38	Selected barometric setting — to be recorded for helicopters where the parameter is displayed electronically:
38a	Pilot
38b	Co-pilot
39	Selected altitude (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
40	Selected speed (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
41	Selected Mach (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
42	Selected vertical speed (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
43	Selected heading (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
44	Selected flight path (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
45	Selected decision height (all pilot selectable modes of operation) — to be recorded for the helicopters where the parameter is displayed electronically
46	EFIS display format (showing the display system status):
46a	Pilot
46b	First officer
47	Multi-function/engine/alerts display format (showing the display system status)
48	Event marker
49	Status of ground proximity warning system (GPWS)/terrain awareness warning system (TAWS)/ground collision avoidance system (GCAS):
49a	Selection of terrain display mode including pop-up display status — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
49b	Terrain alerts, both cautions and warnings, and advisories — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
49c	On/off switch position – for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
50	Traffic alert and collision avoidance system (TCAS)/airborne collision avoidance system (ACAS):
50a	Combined control — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
50b	Vertical control — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
50c	Up advisory — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
50d	Down advisory — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
50e	Sensitivity level — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification

No	Parameter
51	Primary flight controls — pilot input forces:
51a	Collective pitch — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
51b	Longitudinal cyclic pitch — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
51c	Lateral cyclic pitch — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
51d	Tail rotor pedal — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
52	Computed centre of gravity — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification
53	Helicopter computed weight — for helicopters type certified before 1 January 2023, to be recorded only if this does not require extensive modification

AMC2 CAT.IDE.H.190 Flight data recorder

List of parameters to be recorded for helicopters having an MCTOM of more than 3 175 kg and first issued with an individual CofA on or after 1 august 1999 and before 1 January 2016 and helicopters having an MCTOM of more than 7 000 kg or an MOPSC of more than 9 and first issued with an individual CofA on or after 1 January 1989 and before 1 August 1999

(a) The FDR should, with reference to a timescale, record:

(1) for helicopters with an MCTOM between 3 175 kg and 7 000 kg the parameters listed in Table 1 below;

(2) for helicopters with an MCTOM of more than 7 000 kg the parameters listed in Table 2 below;

(3) for helicopters equipped with electronic display systems, the additional parameters listed in Table 3 below; and

(4) any dedicated parameters relating to novel or unique design or operational characteristics of the helicopter.

(b) The FDR of helicopters with an MCTOM of more than 7 000 kg does not need to record parameter 19 of Table 2 below, if any of the following conditions are met:

(1) the sensor is not readily available; or

(2) a change is required in the equipment that generates the data.

(c) Individual parameters that can be derived by calculation from the other recorded parameters need not to be recorded, if agreed by the competent authority.

(d) The parameters should meet, as far as practicable, the performance specifications (range, sampling intervals, accuracy limits and resolution in read-out) defined in AMC3 CAT.IDE.H.190.

(f) For the purpose of this AMC, a sensor is considered ‘readily available’ when it is already available or can be easily incorporated.

Table 1

Helicopters with an MCTOM of 7 000 kg or less

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated airspeed or calibrated airspeed

No	Parameter
4	Heading
5	Normal acceleration
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying
9	Power on each engine (free power turbine speed and engine torque)/cockpit power control position (if applicable)
10a 10b	Main rotor speed Rotor brake (if installed)
11 11a 11b 11c 11d 11e 11f	Primary flight controls — pilot input and control output position (if applicable) Collective pitch Longitudinal cyclic pitch Lateral cyclic pitch Tail rotor pedal Controllable stabilizer Hydraulic selection
13	Outside air temperature
14	Autopilot engagement status
15	Stability augmentation system engagement
26	Warnings

Table 2

Helicopters with an MCTOM of more than 7 000 kg

No	Parameter
1	Time or relative time count
2	Pressure altitude
3	Indicated airspeed or calibrated airspeed
4	Heading
5	Normal acceleration
6	Pitch attitude
7	Roll attitude
8	Manual radio transmission keying
9	Power on each engine (free power turbine speed and engine torque)/cockpit power control position (if applicable)
10a 10b	Main rotor speed Rotor brake (if installed)
11 11a 11b 11c 11d 11e 11f	Primary flight controls — pilot input and control output position (if applicable) Collective pitch Longitudinal cyclic pitch Lateral cyclic pitch Tail rotor pedal Controllable stabiliser Hydraulic selection
12	Hydraulics low pressure
13	Outside air temperature
14	AFCS mode and engagement status
15	Stability augmentation system engagement
16	Main gear box oil pressure
17	Main gear box oil temperature
18	Yaw rate or yaw acceleration

No	Parameter
19	Indicated sling load force (if installed)
20	Longitudinal acceleration (body axis)
21	Lateral acceleration
22	Radio altitude
23	Vertical beam deviation (ILS glide path or MLS elevation)
24	Horizontal beam deviation (ILS localiser or MLS azimuth)
25	Marker beacon passage
26	Warnings
27	Reserved (navigation receiver frequency selection is recommended)
28	Reserved (DME distance is recommended)
29	Reserved (navigation data are recommended)
30	Landing gear or gear selector position

Table 3
Helicopters equipped with electronic display systems

No	Parameter
38	Selected barometric setting (each pilot station)
39	Selected altitude
40	Selected speed
41	Selected Mach
42	Selected vertical speed
43	Selected heading
44	Selected flight path
45	Selected decision height
46	EFIS display format
47	Multi-function/engine/alerts display format

AMC3 CAT.IDE.H.190 Flight data recorder

Performance specifications for the parameters to be recorded for helicopters having an MCTOM of more than 3175 kg and first issued with an individual CofA on or after 1 august 1999 and before 1 January 2016 and helicopters having an MCTOM of more than 7 000 kg or an MOPSC of more than 9 and first issued with an individual CofA on or after 1 January 1989 and before 1 August 1999

Table 1
Helicopters with an MCTOM of 7 000 kg or less

No	Parameter	Range	Sampling interval in seconds	Accuracy Limits (sensor input compared to FDR read out)	Minimum Resolution in read out	Remarks
1	Time or relative time count					
1a or	Time	24 hours	4	± 0.125 % per hour	1 second	(a) UTC time preferred where available.
1b	Relative Time Count	0 to 4 095	4	± 0.125 % per hour		(b) Counter increments every 4 seconds of system operation.

No	Parameter	Range	Sampling interval in seconds	Accuracy Limits (sensor input compared to FDR read out)	Minimum Resolution in read out	Remarks
2	Pressure altitude	-1 000 ft to 20 000 ft	1	±100 ft to ±700 ft	25 ft	
3	Indicated airspeed or calibrated airspeed	As the installed measuring system	1	± 5 % or ± 10 kt, whichever is greater	1 kt	
4	Heading	360 °	1	± 5°	1°	
5	Normal acceleration	- 3 g to + 6 g	0.125	± 0.2 g in addition to a maximum offset of±0.3g	0.01 g	The resolution may be rounded from 0.01 g to 0.05 g, provided that one sample is recorded at full resolution at least every 4 seconds.
6	Pitch attitude	100 % of usable	0.5	± 2 degrees	0.8 degree	
7	Roll attitude	± 60 ° or 100 % of usable range from installed system if greater	0.5	± 2 degrees	0.8 degree	.
8	Manual radio transmission keying	Discrete(s)	1	-	-	Preferably each crew member but one discrete acceptable for all transmissions.
9	Power on each engine	Full range	Each engine each second	± 5 %	1 % of full range	Sufficient parameters, e.g. Power Turbine Speed and Engine Torque should be recorded to enable engine power to be determined. A margin for possible overspeed should be provided. Data may be obtained from cockpit indicators used for aircraft certification. Parameter 9c is required for helicopters with non-mechanically linked cockpit-engine controls
9a	Power turbine speed	Maximum range				
9b	Engine torque	Maximum range				
9c	Cockpit power control position	Full range or each discrete position	Each control each second	±2 % or sufficient to determine any gated position	2 % of full range	
10	Rotor					
10a	Main rotor speed	Maximum range	1	± 5 %	1 % of full range	
10b	Rotor brake	Discrete	1	-		Where available
11	Primary flight controls - Pilot input and/or* control output position					* For helicopters that can demonstrate the capability of deriving either the control input or control movement (one from the other) for all modes of operation and flight regimes, the ‘or’ applies. For helicopters with non-mechanical control systems the ‘and’ applies. Where the input controls for each pilot can be operated independently, both inputs will need to be recorded.
11a	Collective pitch	Full range	0.5	± 3 %	1 % of full range	
11b	Longitudinal cyclic pitch		0.5			
11c	Lateral cyclic pitch		0.5			
11d	Tail rotor pedal		0.5			
11e	Controllable stabiliser		0.5			
11f	Hydraulic selection	Discretes	1	-	-	
12	Outside air temperature	Available range from installed system	2	± 2 °C	0.3°C	
13	Autopilot engagement status	Discrete(s)	1			Where practicable, discretes should show which primary modes are controlling the flight path of the helicopter

No	Parameter	Range	Sampling interval in seconds	Accuracy Limits (sensor input compared to FDR read out)	Minimum Resolution in read out	Remarks
14	Stability augmentation system	Discrete(s)	1			
15	Warnings	Discrete(s)	1	-	-	A discrete should be recorded for the master warning, low hydraulic pressure (each system) gearbox low oil pressure and SAS fault status. Other 'red' warnings should be recorded where the warning condition cannot be determined from other parameters or from the cockpit voice recorder.

Table 2

Helicopters with an MCTOM of more than 7 000 kg

No	Parameter	Range	Sampling interval in seconds	Accuracy Limits (sensor input compared to	Minimum Resolution in read out	Remarks
1	Time or relative time					
1a or	Time	24 hours	4	± 0.125 % per hour	1 second	(a) UTC time preferred where available.
1b	Relative time count	0 to 4095	4	± 0.125 % per hour		(b) Counter increments every 4 seconds of system operation.
2	Pressure altitude	-1 000 ft to maximum certificated altitude of aircraft +5 000 ft	1	± 100 ft to ± 700 ft	5 ft	Should be obtained from the air data computer when installed.
3	Indicated airspeed or calibrated airspeed	As the installed measuring system	1	± 3 %	1 kt	Should be obtained from the air data computer when installed.
4	Heading	360 degrees	1	± 2 degrees	0.5 degree	
5	Normal acceleration	-3 g to +6 g	0.125	1 % of range excluding a datum error of 5 %	0.004 g	The recording resolution may be rounded from 0.004 g to 0.01 g provided that one sample is recorded at full resolution at least every 4 seconds.
6	Pitch attitude	± 75 degrees	0.5	± 2 degrees	0.5 degree	
7	Roll attitude	± 180 degrees	0.5	± 2 degrees	0.5 degree	.
8	Manual radio transmission Keying and CVR/FDR synchronisation reference	Discrete(s)	1	-	-	Preferably each crew member but one discrete acceptable for all transmissions provided that the replay of a recording made by any required recorder can be synchronised in time with any other required recording to within 1 second.

No	Parameter	Range	Sampling interval in seconds	Accuracy Limits (sensor input compared to	Minimum Resolution in read out	Remarks
9	Power on each engine	Full range	Each engine each second	± 2 %	0.2 % of full range	Sufficient parameters e.g. Power Turbine Speed and engine torque should be recorded to enable engine power to be determined. A margin for possible overspeed should be provided.
9a	Free power turbine speed	0-130 %				
9b	Engine torque	Full range				
9c	Cockpit power control position	Full range or each discrete position	Each control each second	± 2 % or sufficient to determine any gated position	2 % of full range	Parameter 9c is required for helicopters with non-mechanically linked cockpit-engine controls
10 10a	Rotor Main rotor speed	50 to 130 %	0.5	2 %	0.3 % of full range	.
10b	Rotor brake	Discrete	1			Where available
11	Primary flight					* For helicopters that can demonstrate the capability of deriving either the control input or control movement (one from the other) for all modes of operation and flight regimes, the 'or' applies. For helicopters with non- mechanical control systems, the 'and' applies.
11a	Collective pitch	Full range	0.5	± 3 % unless higher accuracy is uniquely required	0.5 % of operating range	
11b	Longitudinal cyclic pitch		0.5			
11c	Lateral cyclic pitch		0.5			
11d	Tail rotor pedal		0.5			
11e	Controllable stabiliser		0.5			Where the input controls for each pilot can be operated independently, both inputs will need to be recorded.
11f	Hydraulic selection	Discrete(s)	1	-	-	
12	Hydraulics low pressure	Discrete(s)	1	-	-	Each essential system should be recorded.
13	Outside air temperature	-50° to +90°C or available sensor range	2	± 2°C	0.3°C	
14	AFCS mode and engagement status	A suitable combination of discretes	1	-	-	Discretes should show which systems are engaged and which primary modes are controlling the flight path of the helicopter.
15	Stability augmentation system engagement	Discrete	1	-	-	
16	Main gearbox oil pressure	As installed	1	As installed	6.895 kN/m² (1 psi)	
17	Main gearbox oil temperature	As installed	2	As installed	1°C	

No	Parameter	Range	Sampling interval in seconds	Accuracy Limits (sensor input compared to	Minimum Resolution in read out	Remarks
18	Yaw rate	± 400 degrees/second	0.25	± 1 %	2 degrees per second	An equivalent yaw acceleration is an acceptable alternative.
19	Indicated sling load force	0 to 200 % of maximum certified load	0.5	± 3 % of maximum certified load	0.5 % for maximum certified load	With reasonable practicability if sling load indicator is installed.
20	Longitudinal acceleration (body axis)	± 1 g	0.25	±1.5 % of range excluding a datum error of ±5 %	0.004 g	See comment to parameter 5.
21	Lateral acceleration	± 1 g	0.25	±1.5 % of range excluding a datum error of ±5 %	0.004 g	See comment to parameter 5.
22	Radio altitude	-20 ft to +2 500 ft	1	As installed. ± 2 ft or ± 3 % whichever is greater below 500 ft and m± 5 % above 500 ft	1 ft below 500 ft, 1 ft + 0.5 % of full range above 500 ft	
23	Vertical beam deviation		1	As installed ± 3 % recommended	0.3 % of full range	Data from both the ILS and MLS systems need not to be recorded at the same time. The approach aid in use should be recorded.
23a	ILS glide path	± 0.22 DDM or available sensor range as installed				
23b	MLS elevation	+0.9 to +30 degrees				
24	Horizontal beam deviation		1	As installed. ± 3 % recommended	0.3 % of full range	See comment to parameter 23
24a	ILS localiser	± 0.22 DDM or available sensor range as installed				
24b	MLS azimuth	± 62 degrees				
25	Marker beacon passage	Discrete	1	-	-	One discrete is acceptable for all markers.
26	Warnings	Discretes	1	-	-	A discrete should be recorded for the master warning, gearbox low oil pressure and SAS failure. Other ‘red’ warnings should be recorded where the warning condition cannot be determined from other parameters or from the cockpit voice recorder.
27	Reserved					
28	Reserved					
29	Reserved					
30	Landing gear or gear selector position	Discrete(s)	4	-	-	Where installed.

Table 3
Helicopters equipped with electronic display systems

No	Parameter	Range	Sampling interval in seconds	Accuracy Limits (sensor input compared to FDR read	Minimum Resolution in read out	Remarks
38	Selected barometric setting (each pilot station)	As installed	64	As installed	1 mb	Where practicable, a sampling interval of 4 seconds is recommended.
38a	Pilot					
38b	Co-pilot					
39	Selected altitude	As installed	1	As installed	100 ft	Where capacity is limited, a sampling interval of 64 seconds is permissible.
39a	Manual					
39b	Automatic					
40	Selected speed	As installed	1	As installed	1 kt	Where capacity is limited, a sampling interval of 64 seconds is permissible.
40a	Manual					
40b	Automatic					
41	Selected Mach	As installed	1	As installed	0.01	Where capacity is limited, a sampling interval of 64 seconds is permissible.
41a	Manual					
41b	Automatic					
42	Selected vertical speed	As installed	1	As installed	100 ft/min	Where capacity is limited, a sampling interval of 64 seconds is permissible.
42a	Manual					
42b	Automatic					
43	Selected heading	360 degrees	1	As installed	100 ft /min	Where capacity is limited, a sampling interval of 64 seconds is permissible.
44	Selected flight path		1	As installed		
44a	Course/DSTRK				1 degree	
44b	Path angle				0.1 degree	
45	Selected decision	0-500 ft	64	As installed	1ft	
46	EFIS display format	Discrete(s)	4	-	-	Discretes should show the display system status e.g. normal, fail, composite, sector, plan, rose, nav aids, wxr, range, copy
46a	Pilot					
46b	Co-pilot					
47	Multi-function/engine/alerts display format	Discrete(s)	4	-	-	Discretes should show the display system status, e.g. normal, fail, and the identity of the display pages for the emergency procedures and checklists. Information in checklists and procedures need not be recorded.

The term ‘where practicable’ used in the remarks column of Table 3 means that account should be taken of the following:

(a) if the sensor is already available or can be easily incorporated;

(b) sufficient capacity is available in the flight recorder system;

(c) for navigational data (nav frequency selection, DME distance, latitude, longitude, groundspeed and drift) the signals are available in digital form;

(d) the extent of modification required;

(e) the down-time period; and

(f) equipment software development.

CAT.IDE.H.191 Lightweight flight recorder

(a) Turbine-engined helicopters with an MCTOM of 2 250 kg or more shall be equipped with a flight recorder if all of the following conditions are met:

(1) they are not within the scope of point CAT.IDE.H.190(a);

(2) they are first issued with an individual CofA on or after 5 September 2022.

(b) The flight recorder shall record, by means of flight data or images, information that is sufficient to determine the flight path and aircraft speed.

(c) The flight recorder shall be capable of retaining the flight data and the images recorded during at least the preceding 5 hours.

(d) The flight recorder shall automatically start to record prior to the helicopter being capable of moving under its own power and shall stop automatically after the helicopter is no longer capable of moving under its own power.

(e) If the flight recorder records images or audio of the flight crew compartment, then a function shall be provided which can be operated by the commander and which modifies image and audio recordings made before the operation of that function, so that those recordings cannot be retrieved using normal replay or copying techniques.

AMC1 CAT.IDE.H.191 Lightweight flight recorder

Operational performance requirements

(a) If the flight recorder records flight data, it should record at least the following parameters:

(1) relative time count,

(2) pitch attitude or pitch rate,

(3) roll attitude or roll rate,

(4) heading (magnetic or true) or yaw rate,

(5) latitude,

(6) longitude,

(7) positioning system: estimated error (if available),

(8) pressure altitude or altitude from a positioning system,

(9) time,

(10) ground speed,

(11) positioning system: track (if available),

(12) normal acceleration,

(13) longitudinal acceleration, and

(14) lateral acceleration.

(b) If the flight recorder records images, it should capture views of the main instrument displays at the pilot station, or at both pilot stations when the helicopter is certified for operation with a minimum crew of two pilots. The recorded image quality should allow reading the following indications during most of the flight:

(1) magnetic or true heading,

(2) time (if presented on the front instrument panel),

(3) pressure altitude,

(4) indicated airspeed,

(5) vertical speed,

(6) slip,

(7) OAT,

(8) attitude (if displayed),

(9) stabilised heading (if displayed), and

(10) main rotor speed.

(c) If the flight recorder records a combination of images and flight data, each flight parameter listed in (a) should be recorded as flight data or by means of images.

CAT.IDE.H.195 Data link recording

(a) Helicopters first issued with an individual CofA on or after 8 April 2014 that have the capability to operate data link communications and are required to be equipped with a CVR, shall record on a recorder, where applicable:

(1) data link communication messages related to ATS communications to and from the helicopter, including messages applying to the following applications:

(i) data link initiation;

(ii) controller-pilot communication;

(iii) addressed surveillance;

(iv) flight information;

(v) as far as is practicable, given the architecture of the system, aircraft broadcast surveillance;

(vi) as far as is practicable, given the architecture of the system, aircraft operational control data;

(vii) as far as is practicable, given the architecture of the system, graphics;

(2) information that enables correlation to any associated records related to data link communications and stored separately from the helicopter; and

(3) information on the time and priority of data link communications messages, taking into account the system's architecture.

(b) The recorder shall use a digital method of recording and storing data and information and a method of readily retrieving that data shall be available. The recording method shall allow the data to match the data recorded on the ground.

(c) The recorder shall be capable of retaining data recorded for at least the same duration as set out for CVRs in CAT.IDE.H.185.

(d) If the recorder is not deployable, it shall have a device to assist in locating it under water. By 1 January 2020 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the recorder is deployable, it shall have an automatic emergency locator transmitter.

(e) The requirements applicable to the start and stop logic of the recorder are the same as the requirements applicable to the start and stop logic of the CVR contained in CAT.IDE.H.185(d) and (e).

AMC1 CAT.IDE.H.195 Data link recording

GENERAL

(a) The helicopter should be capable of recording the messages as specified in this AMC.

(b) As a means of compliance with CAT.IDE.H.195(a), the recorder on which the data link messages are recorded may be:

(1) the CVR;

(2) the FDR;

(3) a combination recorder when CAT.IDE.H.200 is applicable; or

(4) a dedicated flight recorder.

(c) As a means of compliance with CAT.IDE.H.195(a)(2), the operator should enable correlation by providing information that allows an accident investigator to understand what data were provided to the helicopter and, when the provider identification is contained in the message, by which provider.

(d) The timing information associated with the data link communications messages required to be recorded by CAT.IDE.H.195(a)(3) should be capable of being determined from the airborne- based recordings. This timing information should include at least the following:

(1) the time each message was generated;

(2) the time any message was available to be displayed by the crew;

(3) the time each message was actually displayed or recalled from a queue; and

(4) the time of each status change.

(e) The message priority should be recorded when it is defined by the protocol of the data link communication message being recorded.

(f) The expression 'taking into account the system architecture', in CAT.IDE.H.195(a)(3) means that the recording of the specified information may be omitted if the existing source systems involved would require a major upgrade. The following should be considered:

(1) the extent of the modification required;

(2) the down-time period; and

(3) equipment software development.

(g) The intention is that new designs of source systems should include this functionality and support the full recording of the required information.

(h) Data link communications messages that support the applications in Table 1 below should be recorded.

Table 1
Applications

Item No	Application Type	Application Description	Required Recording Content
1	Data link initiation	This includes any application used to log on to, or initiate, a data link service. In future air navigation system (FANS)-1/A and air traffic navigation (ATN), these are ATS facilities notification (AFN) and context management (CM), respectively.	C
2	Controller/pilot communication	This includes any application used to exchange requests, clearances, instructions and reports between the flight crew and air traffic controllers. In FANS-1/A and ATN, this includes the controller pilot data link communications (CPDLC) application. CPDLC includes the exchange of oceanic clearances (OCLs) and departure clearances (DCLs).	C
3	Addressed surveillance	This includes any surveillance application in which the ground sets up contracts for delivery of surveillance data. In FANS-1/A and ATN, this includes the automatic dependent surveillance-contract (ADS-C) application.	C, F2
4	Flight information	This includes any application used for delivery of flight information data to specific aeroplanes. This includes for example, data link-automatic terminal information service (D-ATIS), data link-operational terminal information service (D-OTIS), digital weather information services (D-METAR or TWIP), data link flight information service (D-FIS) and Notice to Airmen (D-NOTAM) delivery.	C
5	Aircraft broadcast surveillance	This includes elementary and enhanced surveillance systems, as well as automatic dependent surveillance-broadcast (ADS-B) output data.	M*, F2
6	Airlines operations centre (AOC) data	This includes any application transmitting or receiving data used for AOC purposes (in accordance with the ICAO definition of AOC). Such systems may also process AAC messages, but there is no requirement to record AAC messages	M*
7	Graphics	This includes any application receiving graphical data to be used for operational purposes (i.e. excluding applications that are receiving such things as updates to manuals).	M* F1

Note: Definitions and Acronyms

(a) The letters and expressions in Table 1 of AMC1 CAT.IDE.H.195 have the following meaning:

C: Complete contents recorded

M: Information that enables correlation with any associated records stored separately from the helicopter.

*: Applications that are to be recorded only as far as is practicable, given the architecture of the system.

F1: Graphics applications may be considered as AOC data when they are part of a data link communications application service run on an individual basis by the operator itself in the framework of the operational control.

F2: Where parametric data sent by the helicopter, such as Mode S, is reported within the message, it should be recorded unless data from the same source is recorded on the FDR.

(b) The definitions of the applications type in Table 1 of AMC1 CAT.IDE.H.195 are described in Table 1 below.

Table 1

Descriptions of the applications type

Item No	Application Type	Messages	Comments
1	CM		CM is an ATN service
2	AFN		AFN is a FANS 1/A service
3	CPDLC		All implemented up and downlink messages to be recorded
4	ADS-C	ADS-C reports	All contract requests and reports recorded
		Position reports	Only used within FANS 1/A. Only used in oceanic and remote areas.
5	ADS-B	Surveillance data	Information that enables correlation with any associated records stored separately from the helicopter.
6	D-FIS		D-FIS is an ATN service. All implemented up and downlink messages to be recorded
7	TWIP	TWIP messages	Terminal weather information for pilots
8	D-ATIS	ATIS messages	Data Link Application System Document (DLASD) for the 'ATIS' Data Link Service
9	OCL	OCL messages	Data Link Application System Document (DLASD) for 'Oceanic Clearance' Data Link Service
10	DCL	DCL messages	Data Link Application System Document (DLASD) for 'Departure Clearance' Data Link Service
11	Graphics	Weather maps & other graphics	Graphics exchanged in the framework of procedures within the operational control, as specified in Part-ORO. Information that enables correlation with any associated records stored separately from the aeroplane.
12	AOC	Aeronautical operational control messages	Messages exchanged in the framework of procedures within the operational control, as specified in Part-ORO. Information that enables correlation with any associated records stored separately from the helicopter.
13	Surveillance	Downlinked aircraft parameters	As defined in ICAO Annex 10 Volume IV (Surveillance systems and ACAS).

AAC aeronautical administrative communications
ADS-B automatic dependent surveillance — broadcast
ADS-C automatic dependent surveillance — contract
AFN aircraft flight notification
AOC aeronautical operational control
ATIS automatic terminal information service
ATSC air traffic service communication
CAP controller access parameters
CPDLC controller pilot data link communications
CM configuration/context management
D-ATIS data link ATIS
D-FIS data link flight information service

DCL	departure clearance
FANS	Future Air Navigation System
FLIPCY	flight plan consistency
OCL	oceanic clearance
SAP	system access parameters
TWIP	terminal weather information for pilots

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.

AMC1 CAT.IDE.H.200 Flight data and cockpit voice combination recorder

General

(a) A flight data and cockpit voice combination recorder is a flight recorder that records:

(1) all voice communications and the aural environment required by CAT.IDE.H.185 regarding CVRs; and

(2) all parameters required by CAT.IDE.H.190 regarding FDRs, with the same specifications required by those paragraphs.

(b) In addition, a flight data and cockpit voice combination recorder may record data link communication messages and related information required by CAT.IDE.H.195.

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 CofA 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.

AMC1 CAT.IDE.H.205 Seats, seat safety belts, restraint systems and child restraint devices

Child restraint devices (CRDs)

(a) A CRD is considered to be acceptable if acceptable if it complies with applicable TSO, TC or STC requirements:

(c) Location

(1) Forward-facing child seats may be installed on both forward-and rearward-facing passenger seats, but only when fitted in the same direction as the passenger seat on which they are positioned. Rearward-facing child seats should only be installed on forward-facing passenger seats. A child seat should not be installed within the radius of action of an airbag unless it is obvious that the airbag is de-activated or it can be demonstrated that there is no negative impact from the airbag.

(2) An infant/child in a CRD should be located in the vicinity of a floor level exit.

(3) An infant/child in a CRD should not hinder evacuation for any passenger.

(4) An infant/child in a CRD should neither be located in the row (where rows are existing) leading to an emergency exit nor located in a row immediately forward or aft of an emergency exit. A window passenger seat is the preferred location. An aisle passenger seat or a cross aisle passenger seat that forms part of the evacuation route to exits is not recommended. Other locations may be acceptable provided the access of neighbour passengers to the nearest aisle is not obstructed by the CRD.

(5) In general, only one CRD per row segment is recommended. More than one CRD per row segment is allowed if the infants/children are from the same family or travelling group provided the infants/children are accompanied by a responsible adult sitting next to them in the same row segment.

(6) A row segment is one or more seats side-by-side separated from the next row segment by an aisle.

(d) Installation

(1) CRDs tested and approved for use in aircraft should only be installed on a suitable passenger seat by the method shown in the manufacturer’s instructions provided with each CRD and with the type of connecting device they are approved for the installation in aircraft. CRDs designed to be installed only by means of rigid bar lower anchorages (ISOFIX or equivalent) should only be used on passenger seats equipped with such connecting devices and should not be secured by passenger seat lap belt.

(2) All safety and installation instructions must be followed carefully by the responsible person accompanying the infant/child. Operators should prohibit the use of a CRD not installed on the passenger seat according to the manufacturer's instructions or not approved for use in aircraft.

(3) If a forward-facing child seat with a rigid backrest is to be fastened by a seat lap belt, the restraint device should be fastened when the backrest of the passenger seat on which it rests is in a reclined position. Thereafter, the backrest is to be positioned

upright. This procedure ensures better tightening of the child seat on the aircraft seat if the aircraft seat is reclinable.

(4) The buckle of the adult safety belt must be easily accessible for both opening and closing, and must be in line with the seat belt halves (not canted) after tightening.

(5) Forward facing restraint devices with an integral harness must not be installed such that the adult safety belt is secured over the infant.

(e) Operation

(1) Each CRD should remain secured to a passenger seat during all phases of flight unless it is properly stowed when not in use.

(2) Where a child seat is adjustable in recline, it must be in an upright position for all occasions when passenger restraint devices are required.

AMC2 CAT.IDE.H.205 Seats, seat safety belts, restraint systems and child restraint devices
Upper torso restraint system
An upper torso restraint system having two shoulder straps and additional straps is deemed to be compliant with the requirement for restraint systems with two shoulder straps.

Seat belt

A seat belt with a diagonal shoulder strap (three anchorage points) is deemed to be compliant with the requirement for a seat belt (two anchorage points).

AMC3 CAT.IDE.H.205 Seats, seat safety belts, restraint systems and child restraint devices

Seats for minimum required cabin crew

(a) Seats for the minimum required cabin crew members should be located near required floor level emergency exits, except if the emergency evacuation of passengers would be enhanced by seating the cabin crew members elsewhere. In this case, other locations are acceptable. This criterion should also apply if the number of required cabin crew members exceeds the number of floor level emergency exits.

(b) Seats for cabin crew member(s) should be forward or rearward facing within 15° of the longitudinal axis of the helicopter.

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.

AMC1 CAT.IDE.H.220 First-aid kits

Content of first-aid kits

(a) First-aid kits should be equipped with appropriate and sufficient medications and instrumentation. However, these kits should be supplemented by the operator according to the characteristics of the operation (scope of operation, flight duration, number and demographics of passengers, etc.).

(b) The following should be included in the first-aid kit:

(1) Equipment

(i) bandages (assorted sizes, including a triangular bandage);

(ii) burns dressings (unspecified);

(iii) wound dressings (large and small);

(iv) adhesive dressings (assorted sizes);

(v) adhesive tape;

(vi) adhesive wound closures;

(vii) safety pins;

(viii) safety scissors;

(ix) antiseptic wound cleaner;

(x) disposable resuscitation aid;

(xi) disposable gloves;

(xii) tweezers: splinter;

(xiii) thermometers (non-mercury); and

(xiv) surgical masks.

(2) Medications

(i) simple analgesic (including paediatric form — if the type of operation does not include transport of children or infants, the paediatric form may not be included);

(ii) antiemetic — non-injectable;

(iii) nasal decongestant;

(iv) gastrointestinal antacid, in the case of helicopters carrying more than 9 passengers;

(v) anti-diarrhoeal medication in the case of helicopters carrying more than 9 passengers; and

(vi) antihistamine (including paediatric form – if the type of operation does not include transport of children or infants, the paediatric form may not be included).

(3) Other content. The operator should make the instructions readily available. If an electronic format is available, then all instructions should be kept on the same device. If a paper format is used, then the instructions should be kept in the same kit with the

applicable equipment and medication. The instructions should include, as a minimum, the following:

(i) a list of contents in at least two languages (English and one other). This should include information on the effects and side effects of medications carried;

(ii) first-aid handbook, current edition;

(v) Basic life support instructions cards (summarising and depicting the current algorithm for basic life support); and

(vi) medical incident report form.

(4) Additional equipment. The following additional equipment should be carried on board each aircraft equipped with a first-aid kit, though not necessarily in the first-aid kit. The additional equipment should include, as a minimum:

(i) automated external defibrillator (AED) on all helicopter required to carry at least one cabin crew;

(ii) bag-valve masks (masks in three sizes: one for adults, one for children, and one for infants). If the type of operation does not include transport of children or infants, those sizes of bag-valve masks may not be included;

(iii) suitable airway management device (e.g. supraglottic airway devices, oropharyngeal or nasopharyngeal airways);

(iv) eye irrigator; and

(v) biohazard disposal bags.

(5) For HEMS operations, where the content of the first-aid kit is included in the medical equipment carried on board, the first-aid kit as described above is no longer required.

AMC2 CAT.IDE.H.220 First-aid kits

Maintenance of first-aid kits

To be kept up to date, first-aid kits should be:

(a) inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use;

(b) replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant; and

(c) replenished after use-in-flight at the first opportunity where replacement items are available.

CAT.IDE.H.240 Supplemental oxygen – non-pressurised helicopters

Non-pressurised helicopters operated at pressure altitudes above 10 000 ft shall be equipped with supplemental oxygen equipment capable of storing and dispensing the oxygen supplies in accordance with the following tables.

Table 1
Oxygen minimum requirements for complex non-pressurised helicopters

Supply for	Duration and cabin pressure altitude
1. Occupants of flight crew compartment seats on flight crew compartment duty and crew members assisting flight crew in their duties	The entire flying time at pressure altitudes above 10 000 ft.
2. Required cabin crew members	The entire flying time at pressure altitudes above 13000 ft and for any period exceeding 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13000 ft.
3. Additional crew members and 100 % of passengers(1)	The entire flying time at pressure altitudes above 13 000 ft.
4. 10 % of passengers(1)	The entire flying time after 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
(1) Passenger numbers in Table 1 refer to passengers actually carried on board including persons younger than 24 months.	

Table 2
Oxygen minimum requirements for other-than-complex non-pressurised helicopters

Supply for	Duration and cabin pressure altitude
1. Occupants of flight crew compartment seats on flight crew compartment duty, crew members assisting flight crew in their duties, and required cabin crew members	The entire flying time at pressure altitudes above 13000 ft and for any period exceeding 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13000 ft.
2. Additional crew members and 100 % of passengers(1)	The entire flying time at pressure altitudes above 13 000 ft.
3. 10 % of passengers(1)	The entire flying time after 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
(1) Passenger numbers in Table 2 refer to passengers actually carried on board including persons younger than 24 months.	

AMC1 CAT.IDE.H.240 Supplemental oxygen – non-pressurised helicopters

Determination of oxygen

The amount of supplemental oxygen for sustenance for a particular operation should be determined on the basis of flight altitudes and flight duration, consistent with the operating procedures, including emergency, procedures, established for each operation and the routes to be flown as specified in the operations manual.

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 1, conveniently located to provide adequate availability for use in each passenger compartment.

Table 1
Number of hand fire extinguishers

MOPSC	Number of extinguishers
7-30	1
31-60	2
61-200	3

AMC1 CAT.IDE.H.250 Hand fire extinguishers

Number, location and type

(a) The number and location of hand fire extinguishers should be such as to provide adequate availability for use, account being taken of the number and size of the passenger compartments, the need to minimise the hazard of toxic gas concentrations and the location of lavatories, galleys, etc. These considerations may result in a number of fire extinguishers greater than the minimum required.

(b) There should be at least one hand fire extinguisher installed in the flight crew compartment and this should be suitable for fighting both flammable fluid and electrical equipment fires. Additional hand fire extinguishers may be required for the protection of other compartments accessible to the crew in flight. Dry chemical fire extinguishers should not be used in the flight crew compartment, or in any compartment not separated by a partition from the flight crew compartment, because of the adverse effect on vision during discharge and, if conductive, interference with electrical contacts by the chemical residues.

(c) Where only one hand fire extinguisher is required in the passenger compartments, it should be located near the cabin crew member's station, where provided.

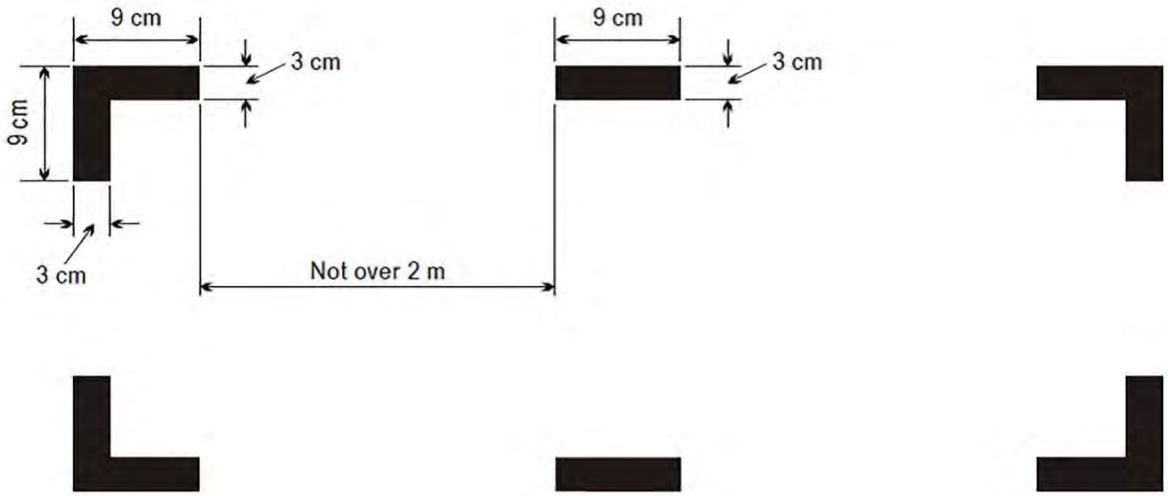
(d) Where two or more hand fire extinguishers are required in the passenger compartments and their location is not otherwise dictated by consideration of (a), an extinguisher should be located near each end of the cabin with the remainder distributed throughout the cabin as evenly as is practicable.

(e) Unless an extinguisher is clearly visible, its location should be indicated by a placard or sign. Appropriate symbols may also be used to supplement such a placard or sign.

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 1.

Figure 1



AMC1 CAT.IDE.H.260 Marking of break-in points

Markings — colour and corners

(a) The colour of the markings should be red or yellow and, if necessary, should be outlined in white to contrast with the background.

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

CAT.IDE.H.270 Megaphones

Helicopters with an MOPSC of more than 19 shall be equipped with one portable battery-powered megaphone readily accessible for use by crew members during an emergency evacuation.

AMC1 CAT.IDE.H.270 Megaphones

Location of megaphones

(a) The megaphone should be readily accessible at the assigned seat of a cabin crew member or crew members other than flight crew.

(b) This does not necessarily require megaphones to be positioned such that they can be physically reached by a crew member when strapped in a cabin crew member's seat.

CAT.IDE.H.275 Emergency lighting and marking

(a) Helicopters with an MOPSC 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) An ELT of any type shall be capable of transmitting simultaneously on 121,5 MHz and 406 MHz.

AMC1 CAT.IDE.H.280 Emergency locator transmitter (ELT)

Batteries

(a) All batteries used in ELTs should be replaced (or recharged if the battery is rechargeable) when the equipment has been in use for more than 1 cumulative hour or in the following cases:

(1) Batteries specifically designed for use in ELTs and having an airworthiness release certificate should be replaced (or recharged if the battery is rechargeable) before the end of their useful life in accordance with the maintenance instructions applicable to the ELT.

(2) The battery useful life (or useful life of charge) criteria in (1) do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

(b) The new expiry date for a replaced (or recharged) battery should be legibly marked on the outside of the equipment.

AMC2 CAT.IDE.H.280 Emergency locator transmitter (ELT)

Types of ELTs and general technical specifications

(a) The ELT required by this provision should be one of the following:

(1) Automatic Fixed (ELT(AF)). An automatically activated ELT that is permanently attached to an aircraft and is designed to aid search and rescue (SAR) teams in locating the crash site.

(2) Automatic Portable (ELT(AP)). An automatically activated ELT, which is rigidly attached to an aircraft before a crash, but is readily removable from the aircraft after a crash. It functions as an ELT during the crash sequence. If the ELT does not employ an integral antenna, the aircraft-mounted antenna may be disconnected and an auxiliary antenna (stored in the ELT case) attached to the ELT. The ELT can be tethered to a survivor or a life-raft. This type of ELT is intended to aid SAR teams in locating the crash site or survivor(s).

(3) Automatic deployable (ELT(AD)). An ELT that is rigidly attached to the aircraft before the crash and that is automatically deployed and activated by an impact, and, in some cases, also by water sensors. This type of ELT should float in water and is intended to aid SAR teams in locating the crash site. The ELT(AD) may be either a stand-alone beacon or an inseparable part of a deployable recorder.

(b) To minimise the possibility of damage in the event of crash impact, the automatic ELT should be rigidly fixed to the aircraft structure, as far aft as is practicable, with its antenna and connections arranged so as to maximise the probability of the signal being transmitted after a crash.

(c) Any ELT carried should operate in accordance with the relevant provisions of ICAO Annex 10, Volume III Communications Systems and should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

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 autorotational 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 flotation device shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

AMC1 CAT.IDE.H.290 Life-jackets

Accessibility

The life-jacket should be accessible from the seat or berth of the person for whose use it is provided, with a safety belt or harness fastened.

AMC2 CAT.IDE.H.290(b) Life-jackets

Electric illumination

The means of electric illumination should be a survivor locator light as defined in the applicable TSO issued by FAA/EASA.

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.

AMC1 CAT.IDE.H.300 Life-rafts, survival ELTs and survival equipment on extended overwater flights

Life-rafts and equipment for making distress signals – helicopters

(a) Each required life-raft should conform to the following specifications:

(1) be of an approved design and stowed so as to facilitate their ready use in an emergency;

(2) be radar conspicuous to standard airborne radar equipment;

(3) when carrying more than one life-raft on board, at least 50 % should be able to be deployed by the crew while seated at their normal station, where necessary by remote control; and

(4) life-rafts that are not deployable by remote control or by the crew should be of such weight as to permit handling by one person. 40 kg should be considered a maximum weight.

(b) Each required life-raft should contain at least the following:

(1) one approved survivor locator light;

(2) one approved visual signalling device;

(3) one canopy (for use as a sail, sunshade or rain catcher) or other mean to protect occupants from the elements;

(4) one radar reflector;

(5) one 20-m retaining line designed to hold the life-raft near the helicopter but to release it if the helicopter becomes totally submerged;

(6) one sea anchor;

(7) one survival kit, appropriately equipped for the route to be flown, which should contain at least the following:

(i) one life-raft repair kit;

(ii) one bailing bucket;

(iii) one signalling mirror;

(iv) one police whistle;

(v) one buoyant raft knife;

(vi) one supplementary means of inflation;

(vii) sea sickness tablets;

(viii) one first-aid kit;

(ix) one portable means of illumination;

(x) 500 ml of pure water and one sea water desalting kit; and

(xi) one comprehensive illustrated survival booklet in an appropriate language.

AMC1 CAT.IDE.H.300(b)(3) & CAT.IDE.H.305(b) Flight over water & Survival equipment

Survival ELT

(a) The survival ELT (ELT(S)) is an ELT removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by a survivor. An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed to be tethered either to a life raft or a survivor.

(b) An ELT(AP) may be used to replace one required ELT(S) provided that it meets the ELT(S) requirements. A water-activated ELT(S) is not an ELT(AP).

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.

AMC1 CAT.IDE.H.305 Survival equipment

ADDITIONAL SURVIVAL EQUIPMENT

(a) The following additional survival equipment should be carried when required:

(1) 500 ml of water for each 4, or fraction of 4, persons on board;

(2) one knife;

(3) first-aid equipment; and

(4) one set of air/ground codes.

(c) If any item of equipment contained in the above list is already carried on board the helicopter in accordance with another requirement, there is no need for this to be duplicated.

AMC1 CAT.IDE.H.300(b)(3) & CAT.IDE.H.305(b) Flight over water & Survival equipment

Survival ELT

(a) The survival ELT (ELT(S)) is an ELT removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by a survivor. An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed to be tethered either to a life raft or a survivor.

(b) An ELT(AP) may be used to replace one required ELT(S) provided that it meets the ELT(S) requirements. A water-activated ELT(S) is not an ELT(AP).

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, mass 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 certification specification 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 with the relevant certification specification 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.

AMC1 CAT.IDE.H.320(b) All helicopters on flight over water ditching

General

The same considerations of procedures and equipment for operations in hostile environment apply in respect of emergency flotation equipment.

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/her assigned station.

AMC1 CAT.IDE.H.325 Headset

General

(a) A headset consists of a communication device that includes two earphones to receive and a microphone to transmit audio signals to the helicopter's communication system. To comply with the minimum performance requirements, the earphones and microphone should match the communication system's characteristics and the cockpit environment. The headset should be adequately adjustable in order to fit the pilot's head. Headset boom microphones should be of the noise cancelling type.

(b) If the intention is to utilise noise cancelling earphones, the operator should ensure that the earphones do not attenuate any aural warnings or sounds necessary for alerting the flight crew on matters related to the safe operation of the helicopter.

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, navigation and surveillance 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, navigation and surveillance 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.

(e) For PBN operations the aircraft shall meet the airworthiness certification requirements for the appropriate navigation specification.

AMC1 CAT.IDE.H.345 Communication and navigation equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks

Two independent means of communication

Whenever two independent means of communication are required, each system should have an independent antenna installation, except where rigidly supported non-wire antennae or other antenna installations of equivalent reliability are used.

AMC2 CAT.IDE.H.345 Communication and navigation equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks

Acceptable number and type of communication and navigation equipment

(a) An acceptable number and type of communication and navigation equipment is:

(1) two VHF omnidirectional radio range (VOR) receiving systems on any route, or part thereof, where navigation is based only on VOR signals;

(2) two automatic direction finder (ADF) systems on any route, or part thereof, where navigation is based only on non-directional beacon (NDB) signals; and

(3) area navigation equipment when area navigation is required for the route being flown (e.g. equipment required by ANO Part-SPA.

(b) The helicopter may be operated without the navigation equipment specified in (a)(1) and (a)(2) provided it is equipped with alternative equipment. The reliability and the accuracy of alternative equipment should allow safe navigation for the intended route.

(c) VHF communication equipment, instrument landing system (ILS) localiser and VOR receivers installed on helicopters to be operated under IFR should comply with the following FM immunity performance standards:

(1) ICAO Annex 10, Volume I – Radio Navigation Aids, and Volume III, Part II – Voice Communications Systems; and

AMC3 CAT.IDE.H.345 Communication and navigation equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks

Failure of a single unit

Required communication and navigation equipment should be installed such that the failure of any single unit required for either communication or navigation purposes, or both, will not result in the failure of another unit required for communications or navigation purposes.

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.

AMC1 CAT.IDE.H.350 Transponder

SSR transponder

(a) The secondary surveillance radar (SSR) transponders of helicopter being operated should comply with applicable airspace requirements .

(b) The SSR transponders should operate in accordance with the relevant provisions of Volume IV of ICAO Annex 10.

CAT.IDE.H.355 Management of aeronautical databases

(a) Aeronautical databases used on certified aircraft system applications shall meet data quality requirements that are adequate for the intended use of the data.

(b) The operator shall ensure the timely distribution and insertion of current and unaltered aeronautical databases to all aircraft that require them.

(c) Notwithstanding any other occurrence reporting requirements, the operator shall report to the database provider instances of erroneous, inconsistent or missing data that might be reasonably expected to constitute a hazard to flight.

In such cases, the operator shall inform flight crew and other personnel concerned, and shall ensure that the affected data is not used.

AMC1 CAT.IDE.H.355 Management of aeronautical databases

Aeronautical databases

When the operator of an aircraft uses an aeronautical database that supports an airborne navigation application as a primary means of navigation used to meet the airspace usage requirements, the database provider should be an acceptable data services provider.

SUBPART – GA

Section 1- Aeroplanes

GA.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 if they are:

(1) used by the flight crew to control the flight path;

(2) used to comply with GA.IDE.A.190;

(3) used to comply with GA.IDE.A.195; or

(4) installed in the aeroplane.

(b) The following items, when required under this Subpart, do not need an equipment approval:

(1) spare fuses;

(2) independent portable lights;

(3) an accurate time piece;

(4) first-aid kit;

(5) survival and signalling equipment;

(6) sea anchor and equipment for mooring;

(7) child restraint device;

(8) a simple PCDS used by a task specialist as a restraint device.

(c) Instruments and equipment not required this subpart, but is carried on a flight, shall comply with the following requirements:

(1) the information provided by those instruments or equipment shall not be used by the flight crew members to comply with applicable airworthiness requirements or points GA.IDE.A.190 and GA.IDE.A.195.

(2) the instruments and equipment shall not affect the airworthiness of the aeroplane, even in the case of failures or malfunction.

(d) Instruments and equipment shall be readily operable or accessible from the station where the flight crew member that needs to use it is seated.

(e) All required emergency equipment shall be easily accessible for immediate use.

GA.IDE.A.105 Minimum equipment for flight

A flight shall not be commenced when any of the aeroplane instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless:

(a) the aeroplane is operated in accordance with the MEL, if established; or

(b) the aeroplane is subject to a permit to fly issued in accordance with the applicable airworthiness requirements.

AMC1 GA.IDE.A.105 Minimum equipment for flight

Management of the status of certain instruments, equipment or functions

The operator should control and retain the status of the instruments, equipment or functions required for the intended operation, that are not controlled for the purpose of continuing airworthiness management.

GA.IDE.A.110 Spare electrical fuses

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.

GM1 GA.IDE.A.110 Spare electrical fuses

Fuses

A spare electrical fuse means a replaceable fuse in the flight crew compartment, not an automatic circuit breaker or circuit breakers in the electric compartments.

GA.IDE.A.115 Operating lights

Aeroplanes operated at night shall be equipped with:

(a) an anti-collision light system;

(b) navigation/position lights;

(c) a landing light;

(d) 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;

(e) lighting supplied from the aeroplane's electrical system to provide illumination in all passenger compartments;

(f) an independent portable light for each crew member station; and

(g) lights to conform with the International Regulations for Preventing Collisions at Sea if the aeroplane is operated as a seaplane.

GA.IDE.A.120 Operations under VFR – flight and navigational instruments and associated equipment

(a) Aeroplanes operated under VFR by day shall be equipped with a means of measuring and displaying the following:

(1) magnetic heading;

(2) time, in hours, minutes and seconds;

(3) barometric altitude;

(4) indicated airspeed; and

(5) Mach number, whenever speed limitations are expressed in terms of Mach number.

(b) Aeroplanes operated under visual meteorological conditions (VMC) at night, or in conditions where the aeroplane cannot be maintained in a desired flight path without reference to one or more additional instruments, shall be, in addition to (a), equipped with:

(1) a means of measuring and displaying the following:

(i) turn and slip;

(ii) attitude;

(iii) vertical speed; and

(iv) stabilised heading; and

(2) a means of indicating when the supply of power to the gyroscopic instruments is not adequate.

(c) Aeroplanes operated in conditions where they cannot be maintained in a desired flight path without reference to one or more additional instruments, shall be, in addition to (a) and (b), equipped with a means of preventing malfunction of the airspeed indicating system required in (a)(4) due to condensation or icing.

AMC1 GA.IDE.A.120&GA.IDE.A.125 Operations under VFR & operations under IFR – flight and navigational instruments and associated equipment

Integrated instruments

(a) Individual equipment requirements may be met by combinations of instruments, by integrated flight systems or by a combination of parameters on electronic displays. The information so available to each required pilot should not be less than that required in the applicable operational requirements, and the equivalent safety of the installation should be approved during type certification of the aeroplane for the intended type of operation.

(b) The means of measuring and indicating turn and slip, aeroplane attitude and stabilised aeroplane heading may be met by combinations of instruments or by integrated flight director systems, provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

AMC2 GA.IDE.A.120 Operations under VFR – flight and navigational instruments and associated equipment

Local flights

For flights that do not exceed 60 minutes duration, that take off and land at the same aerodrome, and that remain within 50 NM of that aerodrome, an equivalent means of complying with GA.IDE.A.120(b)(1)(i), (b)(1)(ii) may be:

(a) a turn and slip indicator;

(b) a turn co-ordinator; or

(c) both an attitude indicator and a slip indicator.

GA.IDE.A.125 Operations under IFR – flight and navigational instruments and associated equipment

Aeroplanes operated under IFR shall be equipped with:

(a) a means of measuring and displaying the following:

(1) magnetic heading;

(2) time in hours, minutes and seconds;

(3) barometric altitude;

(4) indicated airspeed;

(5) vertical speed;

(6) turn and slip;

(7) attitude;

(8) stabilised heading;

(9) outside air temperature; and

(10) Mach number, whenever speed limitations are expressed in terms of Mach number;

(b) a means of indicating when the supply of power to the gyroscopic instruments is not adequate; and

(c) a means of preventing malfunction of the airspeed indicating system required in (a)(4) due to condensation or icing.

AMC1 GA.IDE.A.120(a)(1)&GA.IDE.A.125(a)(1) Operations under VFR & operations under IFR – flight and navigational instruments and associated equipment

Means of measuring and displaying magnetic heading

The means of measuring and displaying magnetic direction should be a magnetic compass or equivalent.

AMC1 GA.IDE.A.120(a)(2)&GA.IDE.A.125(a)(2) Operations under VFR & operations under IFR – flight and navigational instruments and associated equipment

Means of measuring and displaying the time

A means of measuring and displaying the time in hours, minutes and seconds may be a wrist watch capable of the same functions.

AMC1 GA.IDE.A.120(a)(3)&GA.IDE.A.125(a)(3) Operations under VFR operations & operations under IFR – flight and navigational instruments and associated equipment

Calibration of the means of measuring and displaying pressure altitude

The instrument measuring and displaying barometric altitude should be of a sensitive type calibrated in feet (ft), with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight.

AMC1 GA.IDE.A.120(a)(4)&GA.IDE.A.125(a)(4) Operations under VFR & operations under IFR – flight and navigational instruments and associated equipment

Calibration of the instrument indicating airspeed

(a) The instrument indicating airspeed should be calibrated in knots (kt).

(b) In the case of aeroplanes with a maximum certified take-off mass (MCTOM) below 2 000 kg, calibration in kilometres per hour (kph) or in miles per hour (mph) is acceptable when such units are used in the AFM.

AMC1 GA.IDE.A.120(c)&GA.IDE.A.125(c) Operations under IFR — flight and navigational instruments and associated equipment

Means of preventing malfunction due to condensation or icing

The means of preventing malfunction due to either condensation or icing of the airspeed indicating system should be a heated pitot tube or equivalent.

AMC1 GA.IDE.A.125(a)(9) Operations under IFR – flight and navigational instruments and associated equipment

Means of displaying outside air temperature

(a) The means of displaying outside air temperature should be calibrated in degrees Celsius.

(b) In the case of aeroplanes with a maximum certified take-off mass (MCTOM) below 2 000 kg, calibration in degrees Fahrenheit is acceptable, when such unit is used in the AFM.

(c) The means of displaying outside air temperature may be an air temperature indicator that provides indications that are convertible to outside air temperature.

GA.IDE.A.130 Terrain awareness warning system (TAWS)

Turbine-powered aeroplanes certified for a maximum passenger seating configuration of more than nine shall be equipped with a TAWS that meets the requirements for:

(a) class A equipment, as specified in an acceptable standard, in the case of aeroplanes for which the individual certificate of airworthiness (CofA) was first issued after 1 January 2011; or

(b) class B equipment, as specified in an acceptable standard, in the case of aeroplanes for which the individual CofA was first issued on or before 1 January 2011.

AMC1 GA.IDE.A.130 Terrain awareness warning system (TAWS)

Excessive downwards glideslope deviation warning for class A TAWS

The requirement for a Class A TAWS to provide a warning to the flight crew for excessive downwards glideslope deviation should apply to all final approach glideslopes with angular vertical navigation (VNAV) guidance, whether provided by the instrument landing system (ILS), microwave landing system (MLS), satellite-based augmentation system approach procedure with vertical guidance (SBAS APV (localiser performance with vertical guidance approach LPV)), ground-based augmentation system (GBAS (GPS landing system, GLS)) or any other systems providing similar guidance. The same requirement should not apply to systems providing vertical guidance based on barometric VNAV.

GA.IDE.A.135 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.

AMC1 GA.IDE.A.135 Flight crew interphone system

General

(a) The flight crew interphone system should not be of a handheld type.

(b) A headset consists of a communication device that includes two earphones to receive and a microphone to transmit audio signals to the aeroplane's communication system. To comply with the minimum performance requirements, the earphones and microphone should match the communication system's characteristics and the flight crew compartment environment. The headset should be adequately adjustable in order to fit the pilot's head. Headset boom microphones should be of the noise cancelling type.

(c) If the intention is to utilise noise cancelling earphones, the pilot-in-command should ensure that the earphones do not attenuate any aural warnings or sounds necessary for alerting the flight crew on matters related to the safe operation of the aeroplane.

GA.IDE.A.140 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 on each seat and restraining belts for each berth;

(3) a child restraint device (CRD) for each person on board younger than 24 months; and

(4) a seat belt with upper torso restraint system on each flight crew seat, having a single point release for aeroplanes having a CofA first issued on or after 25 August 2016.

AMC1 GA.IDE.A.140 Seats, seat safety belts, restraint systems and child restraint devices

Child restraint devices (CRDs)

(a) A CRD is considered to be acceptable if acceptable if it complies with applicable TSO, TC or STC requirements.:

(c) Location

(1) Forward-facing child seats may be installed on both forward-and rearward-facing passenger seats, but only when fitted in the same direction as the passenger seat on which they are positioned. Rearward-facing child seats should only be installed on forward-facing passenger seats. A child seat may not be installed within the radius of action of an airbag unless it is obvious that the airbag is de-activated or it can be demonstrated that there is no negative impact from the airbag.

(2) An infant/child in a CRD should be located in the vicinity of a floor level exit.

(3) An infant/child in a CRD should not hinder evacuation for any passenger.

(d) Installation

(1) CRDs tested and approved for use in aircraft should only be installed on a suitable passenger seat by the method shown in the manufacturer's instructions provided with each CRD and with the type of connecting device they are approved for the installation in aircraft. CRDs designed to be installed only by means of rigid bar lower anchorages (ISOFIX or equivalent) should only be used on passenger seats equipped with such connecting devices and should not be secured by passenger seat lap belt.

(2) All safety and installation instructions should be followed carefully by the responsible adult accompanying the infant/child. Operators should prohibit the use of a CRD not installed on the passenger seat according to the manufacturer's instructions or not approved for use in aircraft.

(3) If a forward-facing child seat with a rigid backrest is to be fastened by a seat lap belt, the restraint device should be fastened when the backrest of the passenger seat on which it rests is in a reclined position. Thereafter, the backrest is to be positioned upright. This procedure ensures better tightening of the child seat on the aircraft seat if the aircraft seat is reclinable.

(4) The buckle of the adult safety belt should be easily accessible for both opening and closing, and should be in line with the seat belt halves (not canted) after tightening.

(5) Forward-facing restraint devices with an integral harness must not be installed such that the adult safety belt is secured over the infant.

(e) Operation

(1) Each CRD should remain secured to a passenger seat during all phases of flight unless it is properly stowed when not in use.

(2) Where a child seat is adjustable in recline, it should be in an upright position for all occasions when passenger restraint devices are required.

AMC2 GA.IDE.A.140 Seats, seat safety belts, restraint systems and child restraint devices

Upper torso restraint system

(a) The following systems are deemed to be compliant with the requirement for an upper torso restraint system:

(1) A seat belt with a diagonal shoulder strap;

(2) A restraint system having a seat belt and two shoulder straps that may be used independently;

(3) A restraint system having a seat belt, two shoulder straps and additional straps that may be used independently.

(b) The use of the upper torso restraint independently from the use of the seat belt is intended as an option for the comfort of the occupant of the seat in those phases of flight where only the seat belt is required to be fastened. A restraint system including a seat belt and an upper torso restraint that both remain permanently fastened is also acceptable.

Seat belt

A seat belt with a diagonal shoulder strap (three anchorage points) is deemed to be compliant with the requirement for a seat belt (two anchorage points).

GA.IDE.A.145 First-aid kit

(a) Aeroplanes shall be equipped with a first-aid kit.

(b) The first-aid kit shall be:

(1) readily accessible for use; and

(2) kept up-to-date.

AMC1 GA.IDE.A.145 First-aid kit

Content of first-aid kits

(a) First-aid kits should be equipped with appropriate and sufficient medications and instrumentation. However, these kits should be supplemented by the operator according to the characteristics of the operation (scope of operation, flight duration, number and demographics of passengers, etc.).

(b) The following should be included in the FAKs:

(1) bandages (assorted sizes, including a triangular bandage),

(2) burns dressings (large and small),

(3) wound dressings (large and small),

(4) adhesive dressings (assorted sizes),

(5) antiseptic wound cleaner,

(6) safety scissors,

(7) disposable gloves,

(8) disposable resuscitation aid, and

(9) surgical masks.

AMC2 GA.IDE.A.145 First-aid kit

Maintenance of first-aid kit

To be kept up-to-date, the first-aid kit should be:

(a) inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use;

(b) replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant; and

(c) replenished after use in-flight at the first opportunity where replacement items are available.

GA.IDE.A.150 Supplemental oxygen – pressurised aeroplanes

(a) Pressurised aeroplanes operated at flight altitudes for which the oxygen supply is required in accordance with (b) shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the required oxygen supplies.

(b) Pressurised aeroplanes operated above flight altitudes at which the pressure altitude in the passenger compartments is above 10 000 ft shall carry enough breathing oxygen to supply:

(1) all crew members and:

(i) 100 % of the passengers for any period when the cabin pressure altitude exceeds 15 000 ft, but in no case less than 10 minutes' supply;

(ii) at least 30 % of the passengers, for any period when, in the event of loss of pressurisation and taking into account the circumstances of the flight, the pressure altitude in the passenger compartment will be between 14 000 ft and 15 000 ft; and

(iii) at least 10 % of the passengers for any period in excess of 30 minutes when the pressure altitude in the passenger compartment will be between 10 000 ft and 14000 ft;

and

(2) all the occupants of the passenger compartment for no less than 10 minutes, in the case of aeroplanes operated at pressure altitudes above 25 000 ft, or operated below that altitude but under conditions that will not allow them to descend safely to a pressure altitude of 13 000 ft within 4 minutes.

(c) Pressurised aeroplanes operated at flight altitudes above 25 000 ft shall, in addition, be equipped with a device to provide a warning indication to the flight crew of any loss of pressurisation.

AMC1 GA.IDE.A.150 Supplemental oxygen – pressurized aeroplanes

Determination of oxygen

(a) In the determination of the amount of oxygen for the routes to be flown, it is assumed that the aeroplane will descend in accordance with the emergency procedures specified in the

AFM, without exceeding its operating limitations, to a flight altitude that will allow the flight to be completed safely (i.e. flight altitudes ensuring adequate terrain clearance, navigational accuracy, hazardous weather avoidance, etc.).

(b) The amount of oxygen should be determined on the basis of cabin pressure altitude, flight duration, and on the assumption that a cabin pressurisation failure will occur at the pressure altitude or point of flight that is most critical from the standpoint of oxygen need.

(c) Following a cabin pressurisation failure, the cabin pressure altitude should be considered to be the same as the aeroplane pressure altitude, unless it can be demonstrated to the competent authority that no probable failure of the cabin or pressurisation system will result in a cabin pressure altitude equal to the aeroplane pressure altitude. Under these circumstances, the demonstrated maximum cabin pressure altitude may be used as a basis for determination of oxygen supply.

GA.IDE.A.155 Supplemental oxygen – non-pressurised aeroplanes

Non-pressurised aeroplanes operated when an oxygen supply is required shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the required oxygen supplies.

AMC1 GA.IDE.A.155 Supplemental oxygen – non-pressurised aeroplanes

Determination of oxygen

(a) In the determination of the amount of oxygen for the routes to be flown, it is assumed that the aeroplane will operate at a flight altitude that will allow the flight to be completed safely (i.e.flight altitudes ensuring adequate terrain clearance, navigational accuracy, hazardous weather avoidance, etc.).

(b) The amount of oxygen should be determined on the basis of cabin pressure altitude and flight duration.

AMC2 GA.IDE.A.155 Supplemental oxygen supply – non- pressurised aeroplanes

Oxygen supply

The need for oxygen supply, may be met either by means of installed equipment or portable equipment.

GA.IDE.A.160 Hand fire extinguishers

(a) Aeroplanes, except light aeroplanes, shall be equipped with at least one hand fire extinguisher:

(1) in the flight crew compartment; and

(2) in each passenger compartment that is separate from the flight crew compartment, except if the compartment is readily accessible to the flight crew.

(b) 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

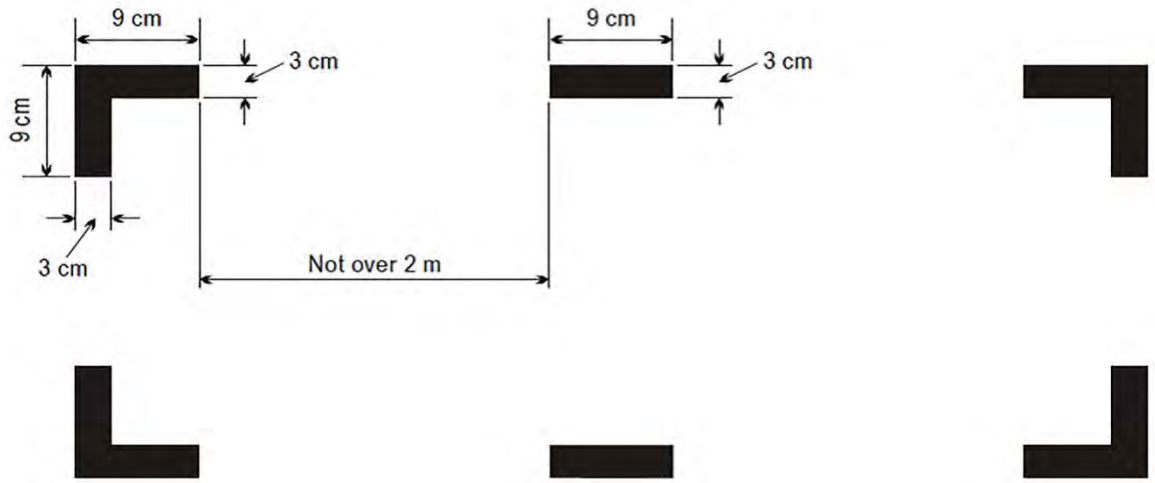
intended to be used and to minimise the hazard of toxic gas concentration in compartments occupied by persons.

GA.IDE.A.165 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

Marking of break-in points



AMC1 GA.IDE.A.165 Marking of break-in points

Markings — colour and corners

(a) The colour of the markings should be red or yellow and, if necessary, should be outlined in white to contrast with the background.

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

GA.IDE.A.170 Emergency locator transmitter (ELT)

(a) Aeroplanes shall be equipped with:

(1) an ELT of any type, when first issued with an individual CofA on or before 1 July 2008;

(2) an automatic ELT, when first issued with an individual CofA after 1 July 2008; or

(3) a survival ELT (ELT(S)) or a personal locator beacon (PLB), carried by a crew member or a passenger, when certified for a maximum passenger seating configuration of six or less.

(b) ELTs of any type and PLBs shall be capable of transmitting simultaneously on 121,5 MHz and 406 MHz.

AMC1 GA.IDE.A.170 Emergency locator transmitter (ELT)

Batteries

(a) All batteries used in ELTs or PLBs should be replaced (or recharged, if the battery is rechargeable) when the equipment has been in use for more than 1 cumulative hour or in the following cases:

(1) Batteries specifically designed for use in ELTs and having an airworthiness release certificate should be replaced (or recharged, if the battery is rechargeable) before the end of their useful life in accordance with the maintenance instructions applicable to the ELT.

(2) All batteries used in PLBs should be replaced (or recharged, if the battery is rechargeable) when 50 % of their useful life (or for rechargeable, 50 % of their useful life of charge), as established by the battery manufacturer, has expired.

(3) The battery useful life (or useful life of charge) criteria in (1) and (2) do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

(b) The new expiry date for a replaced (or recharged) battery should be legibly marked on the outside of the equipment.

AMC2 GA.IDE.A.170 Emergency locator transmitter (ELT)

Types of ELTs and general technical specifications

(a) The ELT required by this provision should be one of the following:

(1) Automatic fixed (ELT(AF)). An automatically activated ELT that is permanently attached to an aircraft and is designed to aid search and rescue (SAR) teams in locating the crash site.

(2) Automatic portable (ELT(AP)). An automatically activated ELT that is rigidly attached to an aircraft before a crash, but is readily removable from the aircraft after a crash. It functions as an ELT during the crash sequence. If the ELT does not employ an integral antenna, the aircraft-mounted antenna may be disconnected and an auxiliary antenna (stored on the ELT case) attached to the ELT. The ELT can be tethered to a survivor or a life-raft. This type of ELT is intended to aid SAR teams in locating the crash site or survivor(s).

(3) Automatic deployable (ELT(AD)). An ELT that is rigidly attached to the aircraft before the crash and that is automatically deployed and activated by an impact, and, in some cases, also by water sensors. This type of ELT should float in water and is intended to aid SAR teams in locating the crash site. The ELT(AD) may be either a stand-alone beacon or an inseparable part of a deployable recorder.

(4) Survival ELT (ELT(S)). An ELT that is removable from an aircraft, stowed so as to facilitate its ready use in an emergency and manually activated by a survivor. An ELT(S) may be activated manually or automatically (e.g. by water activation). It

should be designed either to be tethered to a life-raft or a survivor. A water-activated ELT(S) is not an ELT(AP).

(b) To minimise the possibility of damage in the event of crash impact, the automatic ELT should be rigidly fixed to the aircraft structure, as far aft as is practicable, with its antenna and connections arranged so as to maximise the probability of the signal being transmitted after a crash.

(c) Any ELT carried should operate in accordance with the relevant provisions of ICAO Annex 10, Volume III, and should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

AMC3 GA.IDE.A.170 Emergency locator transmitter (ELT)

PLB technical specifications

Any PLB carried should be registered with the national agency responsible for initiating search and rescue or other international agency.

AMC4 GA.IDE.A.170 Emergency locator transmitter (ELT)

Briefing on PLB use

When a PLB is carried by a passenger, he/she should be briefed on its characteristics and use by the pilot-in-command before the flight.

GA.IDE.A.175 Flight over water

(a) The following aeroplanes shall be equipped with a life-jacket for each person on board, or equivalent individual floatation device for each person on board younger than 24 months, that shall be worn or stowed in a position that is readily accessible from the seat or berth of the person for whose use it is provided:

(1) single-engined landplanes when:

(i) flying over water beyond gliding distance from land; or

(ii) taking off or landing at an aerodrome or operating site where, in the opinion of the pilot-in-command, the take-off or approach path is so disposed over water that there would be a likelihood of a ditching;

(2) seaplanes operated over water; and

(3) aeroplanes operated at a distance away from land where an emergency landing is possible greater than that corresponding to 30 minutes at normal cruising speed or

50 NM, whichever is less.

(b) Seaplanes operated over water shall be equipped with:

(1) one anchor;

(2) one sea anchor (drogue), when necessary to assist in maneuvering; and

(3) equipment for making the sound signals, as prescribed in the International Regulations for Preventing Collisions at Sea, where applicable.

(c) The pilot-in-command of an aeroplane operated at a distance away from land where an emergency landing is possible greater than that corresponding to 30 minutes at normal cruising speed or 50 NM, whichever is the lesser, shall determine the risks to survival of the occupants of the aeroplane in the event of a ditching, based on which he/she shall determine the carriage of:

(1) equipment for making the distress signals;

(2) life-rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in emergency; and

(3) life-saving equipment, to provide the means of sustaining life, as appropriate to the flight to be undertaken.

AMC1 GA.IDE.A.175 Flight over water

Accessibility of life-jackets

The life-jacket, if not worn, should be accessible from the seat or berth of the person for whose use it is provided, with a safety belt or a restraint system fastened.

Means of illumination for life-jackets

Each life-jacket or equivalent individual flotation device should be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

Risk assessment

(a) When conducting the risk assessment, the pilot-in-command should base his/her decision, as far as is practicable, on the Implementing Rules and AMCs applicable to the operation of the aeroplane.

(b) The pilot-in-command should, for determining the risk, take the following operating environment and conditions into account:

(1) sea state;

(2) sea and air temperatures;

(3) the distance from land suitable for making an emergency landing; and

(4) the availability of search and rescue facilities.

GA.IDE.A.180 Survival equipment

Aeroplanes operated over areas in which search and rescue would be especially difficult shall be equipped with such signalling devices and life-saving equipment, including means of sustaining life, as may be appropriate to the area overflown.

AMC1 GA.IDE.A.180 Survival equipment

General

(a) Aeroplanes operated across land areas in which search and rescue would be especially difficult should be equipped with the following:

(1) signalling equipment to make the distress signals;

(2) at least one ELT(S) or a PLB, carried by the pilot-in-command or a passenger; 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 remains within a distance from an area where search and rescue is not especially difficult, that corresponds to:

(1) 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

(2) 30 minutes at cruising speed for all other aeroplanes.

AMC2 GA.IDE.A.180 Survival equipment

Additional survival equipment

(a) The following additional survival equipment should be carried when required:

(1) 500 ml of water for each four, or fraction of four, persons on board;

(2) one knife;

(3) first-aid equipment; and

(4) one set of air/ground codes.

(b) If any item of equipment contained in the above list is already carried on board the aeroplane in accordance with another requirement, there is no need for this to be duplicated.

GA.IDE.A.190 Radio communication equipment

(a) Where required by the airspace being flown aeroplanes shall be equipped with radio communication equipment capable of conducting two-way communication with those aeronautical stations and on those frequencies to meet airspace requirements.

(b) Radio communication equipment, if required by (a), shall provide for communication on the aeronautical emergency frequency 121,5 MHz.

(c) When more than one communication equipment unit is required, each shall be independent of the other or others to the extent that a failure in any one will not result in failure of any other.

GA.IDE.A.195 Navigation equipment

(a) Aeroplanes operated over routes that cannot be navigated by reference to visual landmarks shall be equipped with any navigation equipment necessary to enable them to proceed in accordance with:

(1) the ATS flight plan; if applicable; and

(2) the applicable airspace requirements.

(b) Aeroplanes 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 (a), or an appropriate contingency action, to be completed safely.

(c) Aeroplanes 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. This equipment shall be capable of providing such guidance for each aerodrome at which it is intended to land in IMC and for any designated alternate aerodromes.

(d) For PBN operations the aircraft shall meet the airworthiness certification requirements for the appropriate navigation specification.

(e) Aeroplanes shall be equipped with surveillance equipment in accordance with the applicable airspace requirements.

AMC1 GA.IDE.A.195 Navigation equipment

Navigation with visual reference to landmarks

Where aeroplanes, with the surface in sight, can proceed according to the ATS flight plan by navigation with visual reference to landmarks, no additional equipment is needed to comply with GA.IDE.A.195(a)(1).

AMC1 GA.IDE.A.195(a) Navigation equipment

Navigation equipment — rnav substitution

An RNAV system may be used to substitute for conventional navigation aids and radio equipment, without monitoring of the raw data from conventional navigation aids, under the following conditions:

Scope of RNAV substitution

(a) RNAV substitution may be used in all the phases of flight except:

(1) to provide lateral guidance in the FAS of an IAP; and

(2) to substitute for DME, if a DME transceiver is either not installed on the aircraft or found to be unserviceable before flight.

Suitability of the RNAV system for RNAV substitution

(b) The RNAV system should meet:

(1) the requirements of TSO issued by EASA or FAA; and

(2) the requirements of PBN approval for RNAV 1, RNP 1 or RNP APCH as regards its installation in the aircraft.

Operating procedure

(c) The pilot-in-command is responsible for:

(1) ensuring that any procedure and waypoints used are retrieved from a navigation database which meets the requirements of GA.IDE.A.205;

(2) verifying waypoint sequence, reasonableness of track angles, and distances of any overlay procedure used;

(3) applying pre-flight procedures associated with GNSS use;and

(4) complying with any limitation on RNAV substitution in the AFM.

Pilot competence

(d) The pilot-in-command should be aware of the limitations of RNAV substitution.

Airspace limitations

(e) RNAV substitution should not be applied on any procedure where RNAV substitution has been indicated as 'not authorised' by an AIP entry or a notice to airmen (NOTAM).

Contingency planning

(f) Nothing in this AMC relieves the pilot-in-command from compliance with GA.IDE.A.195(b) which requires 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 according to the flight plan, or an appropriate contingency action, to be completed safely.

AMC1 GA.IDE.A.195(b) Navigation equipment

Appropriate contingency action

An appropriate contingency action is an alternative offered in GA.IDE.A.195(b) to completion of the planned flight to a safe landing, either at the planned destination or a destination alternate, using normal procedures and using navigation equipment meeting the requirements of GA.IDE.A.100, installed for redundancy or as a backup.

The contingency action should be considered before flight and take into account the information identified by flight preparation. It may depend on the flight and availability of navigation solutions (satellites, ground navaids, etc.) and weather conditions (IMC, VMC) along the flight.

The contingency action addresses partial loss of navigation capability. An appropriate contingency action to meet the requirements of GA.IDE.A.195(b) does not rely on the performance of any function of the item of equipment whose potential failure is being considered. For example, in considering the failure of a VOR/LOC/DME receiver, none of the functions of that receiver should be relied upon in the contingency action.

Examples of contingency actions include:

— seeking navigational assistance from ATS, using communication, navigation and surveillance systems that remain operational, to enable a safe instrument approach or a safe descent to VMC;

— unusually long periods of dead reckoning.

A contingency action is required such that the failure of one item of navigation equipment has a reasonable likelihood of a safe outcome to the flight, consistent with other risks to which the operation is exposed.

GA.IDE.A.200 Transponder

Where required by the airspace being flown, aeroplanes shall be equipped with a secondary surveillance radar (SSR) transponder with all the required capabilities.

AMC1 GA.IDE.A.200 Transponder

General

(a) The secondary surveillance radar (SSR) transponders of aeroplanes being operated should comply with applicable airspace requirements.

(b) The SSR transponders should operate in accordance with the relevant provisions of Volume IV of ICAO Annex 10.

GA.IDE.A.205 Management of aeronautical databases

(a) Aeronautical databases used on certified aircraft system applications shall meet data quality requirements that are adequate for the intended use of the data.

(b) The pilot-in-command shall ensure the timely distribution and insertion of current and unaltered aeronautical databases to the aircraft that require them.

(c) Notwithstanding any other occurrence reporting requirements~~,~~ the pilot-in-command shall report to the database provider instances of erroneous, inconsistent or missing data that might be reasonably expected to constitute a hazard to flight.

In such cases, the pilot-in-command shall not use the affected data.

AMC1 GA.IDE.A.205 Management of aeronautical databases

Aeronautical databases

When the operator of an aircraft uses an aeronautical database that supports an airborne navigation application as a primary means of navigation used to meet the airspace usage requirements, the database provider should be an acceptable data services provider.

REPEAL AND SAVINGS

This ANO (AW) Part- IDE will repeal and savings as per the followings:

(a) As soon as may be after the commencement of this ANO(AW) Part- IDE, the ANO (AW) E2, ANO (AW) E3, ANO (AW) E4, ANO (AW) E6 and ANO (AW) E.8 shall stand repealed.

(b) Despite such repeal under paragraph (1),

(i) any act done, measures taken, works done, any order, circular, or notice issued, certificate, license or permit given or any agreement entered into or document signed under the said the ANO (AW) E2, ANO (AW) E3, ANO (AW) E4, ANO (AW) E6 and ANO (AW) E.8 shall be deemed to have done, taken, entered, issued, given, made or signed under this ANO;

(ii) any proceeding, going on or pending, shall, in so far as possible, be disposed of under this ANO; and

(c) any suit and other legal proceedings instituted before any court shall, if pending, be disposed of in such way as if the said the ANO (AW) E2, ANO (AW) E3, ANO (AW) E4, ANO (AW) E6 and ANO (AW) E.8 had not been repealed