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THE CIVIL AVIATION ACT

(No. 21 of 2013)

THE CIVIL AVIATION (INSTRUMENTS AND EQUIPMENT) REGULATIONS, 2018 PART

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THE CIVIL AVIATION ACT

(No. 21 of 2013)

IN EXERCISE of powers conferred by section 82 of the Civil Aviation Act, 2013 the Cabinet Secretary for Transport, Infrastructure, Housing and Urban Development makes the following Regulations—

THE CIVIL AVIATION (INSTRUMENTS AND EQUIPMENT) REGULATIONS, 2018

PART I—PRELIMINARY PROVISIONS

1. These Regulations may be cited as the Civil Aviation (Instruments and Equipment) Regulations, 2018. Citation.

2. In these Regulations unless the context otherwise requires— Interpretation.

"aerodrome" means a defined area on land or water, including any buildings, installations and equipment used or intended to be used either wholly or in part for the arrival, departure and surface movement of Aeroplane;

"aeroplane " means a power-driven heavier-than-air aeroplane, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight;

"aircraft" means any machine that can derive support in the atmosphere from the reactions of the air, other than the reactions of the air against the earth's surface;

"Air Operator Certificate" means a certificate authorising an operator to carry out specified commercial air transport operations;

"Air Operator Certificate holder" means an Aeroplane operator holding an Operator Certificate;

"appropriate Authority" means—

(a) in relation to an aeroplane, the authority which is responsible for approval of design and issuance of a type certificate;

(b) in relation to the content of a medical kit, the state of registry;

(c) in relation to Kenya, the Director General of the Authority;

"Approved Standard" means a manufacturing, design, maintenance, or quality standard approved by the Authority;

"Authority" means the Kenya Civil Aviation Authority;

"cabin crew member" means a crew member who perfoms, in the interest of safety of passengers, duties assigned by theoperator or the pilot in command of the aircraft, but who shall not act as a flight crew member;

"Calibration" means a set of operations, performed in accordance with a definite documented procedure, that compares the measurement performed by a measurement device or working standard for the

purpose of detecting and reporting or eliminating by adjustment errors in the measurement device, working standard, or Aeroplane component tested;

"Cargo Compartment Classifications" means—

(a) class A, one in which a presence of a fire would be easily discovered by a crewmember while at station and to which each part of the compartment is easily accessible in flight;

(b) class B, one in which—

(i) there is sufficient access in flight to enable a crewmember to effectively reach any part of the compartment with the contents of a hand fire extinguisher;

(ii) when the access provisions are being used, no hazardous quantity of smoke, flames, or extinguishing agent, will enter any compartment occupied by the crew or passengers; and

(iii) there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station.

(c) class C, one in which—

(i) there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station;

(ii) there is an approved built-in fire extinguishing or suppression system controllable from the cockpit;

(iii) there is means to exclude hazardous quantities of smoke, flames, or extinguishing agent, from any compartment occupied by the crew or passengers; and

(iv) there are means to control ventilation and drafts within the compartment so that the extinguishing agent used can control any fire that may start within the compartment.

(d) class D, one on airplanes used only for the carriage of cargo and in which—

(i) there is a separate approved smoke or fire detector system to give warning at the pilot or flight engineer station;

(ii) there are means to shut off the ventilating airflow to, or within, the compartment, and the controls for these means are accessible to the flight crew in the crew compartment;

(iii) there are means to exclude hazardous quantities of smoke, flames, or noxious gases, from the flight crew compartment; and

(iv) the required crew emergency exits are accessible under any cargo loading condition. "Category II (CAT II) operations" means, a precision instrument approach and landing with a decision height lower than 60m (200) Ft), but not lower than 30m (10 Ft), and a runway visual range not less than 350m;

"Category IIIA (CAT IIIA) operations" means, a precision instrument approach and landing with—

(a) a decision height lower than 30m (100Ft) or no decision; and

(b) a runway visual range not less than 200m .

"Category IIIB (CAT IIIB) operations" means, a precision instrument approach and landing with—

(a) a decision height lower than 15m (50Ft) or no decision height ; and

(b) a runway visual range less than 200m but not less than 50m.

"Category IIIC (CAT IIIC) operations" means a precision instrument approach and landing with no decision height and no runway visual range limitations.

"Class 1 Helicopter" means a Helicopter with performance such that, in case of critical engine failure, it is able to land on the rejected take-off area or safely continue the flight to an appropriate landing area, depending on when the failure occurs;

"Class 2 Helicopter" means a Helicopter with performance such that, in case of critical engine failure, it is able to safely continue the flight, except when the failure occurs prior to a defined point after takeoff or after a defined point before landing, in which case a forced landing may be required;

"Class 3 Helicopter" means a Helicopter with performance such that, in case of engine failure at any point in the flight profile, a forced landing shall be performed.

"Commercial Air Transport" means an aeroplane operation involving the transport of passengers, cargo, or mail for remuneration or hire;

"Contracting States" means all States that are signatories to the Convention on International Civil Aviation (Chicago Convention);

"Controlled Flight" means any flight which is subject to an air traffic control clearance;

"crew member" means a person assigned by an operator to duty on an aircraft during a flight duty period;

"critical engine" means the engine whose failure would most

adversely affect the performance or handling qualities of an aeroplane;

"CVR" means an abbreviation for Cockpit Voice Recorder;

"Emergency Locator Transmitter" means equipment which broadcast distinctive signals on designated frequencies and depending on application, may be automatically activated by impact or be manually activated which may be any of the following—

(a) "automatic fixed Emergency Locator Transmitter" which means an automatically activated Emergency Locator Transmitter which is permanently attached to an aeroplane;

(b) "automatic portable Emergency Locator Transmitter" means an automatically activated Emergency Locator Transmitter which is rigidly attached to an aeroplane but readily removable from the Aeroplane;

(c) "automatic deployable Emergency Locator Transmitter(ELT(AD))" which means an ELT which is rigidly attached to an Aeroplane and which is automatically deployed and activated by impact, and in some cases, also be hydrostatic sensors. Manual deployment is also provided;

(d) "survival Emergency Locator Transmitter" which means an Emergency Locator Transmitter which is removable from an Aeroplane, stowed so as to facilitate its ready use in an emergency, and manually activated by survivors;

(e) "Emergency Locator Transmitter battery useful life" which means the length of time after its date of manufacture or recharge that the battery or battery pack may be stored under normal environmental conditions without losing its ability to allow the Emergency Locator Transmitter to meet the applicable performance standards; and

(f) "Emergency Locator Transmitter battery expiration date" which means the date of battery manufacture or recharge plus one half of its useful life.

"EVS" means an abbreviation for Enhanced Vision Systems;

"FDR" means an abbreviation for Flight Data Recorder;

"Flight Crew Member" means a licensed crew member charged with duties essential to the operation of an Aeroplane during a flight duty period;

"Flight Data Analysis" means a process of analysing recorded flight data in order to improve the safety of flight operations;

"Flight Manual" means a manual, associated with the certificate of airworthiness, containing limitations within which the Aeroplane is to be considered air worthy, and instructions information necessary to the Flight Crew Members for the safe operation of the Aeroplane;

"Flight recorder" means any type of recorder installed in the Aeroplane for the purpose of complementing accident/incident investigation. This could include the CVR (CVR) or flight data recorder (FDR);

"flight time" means—

(a) for Aeroplanes and gliders, the total time from the moment an Aeroplane or a glider moves for the purpose of taking off until the moment it finally comes to rest at the end of the flight and it is synonymous with the term "block to block" or "chock to chock" time in general usage which is measured from the time an Aeroplane first moves for the purpose of taking off until it finally stops at the end of the flight;

(b) for Helicopter, the total time from the moment a Helicopter rotor blades start turning until the moment a Helicopter comes to rest at the end of the flight and the rotor blades are stopped;

(c) for airships or free balloon, the total time from the moment an airship or free balloon first becomes detached from the surface until the moment when it next becomes attached thereto or comes to rest thereon;

"Flight Time Aeroplanes" means the total time from the moment an Aeroplane first moves for the purpose of taking off until the moment it comes to rest at the end of the flight.

"Flight Time Helicopters" means the total time from the moment the Helicopter blades start turning until the moment the Helicopter finally comes to rest at the end of the flight and the rotor blades are stopped;

"Helicopter" means a heavier-than-air Aeroplane supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axis;

"HUD" means an abbreviation for Head Up Displays;

"Inspection" means the examination of an Aeroplane or Aeroplane component to establish conformity with a standard approved by the Authority;

"instrument approach" means an approach procedure prescribed by the Authority having jurisdiction over the Aerodrome;

"Instrument Meteorological Conditions" means meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, less than the minima specified for visual meteorological conditions in the Civil Aviation (Rules of the Air) Regulations;

"(IFR)" means the Instrument flight rules;

"IFR Flight" means a flight conduted in accordance with the Instrument Flight rules;

"large aeroplane" means an Aeroplane having a maximum certificated take-off mass of over 5,700 kg. (12,500 lbs.);

"maintenance" means tasks required to ensure the continued airworthiness of an Aeroplane or Aeroplane component including any one or combination of Overhaul, repair, Inspection, replacement, Modification, and defect rectification;

"Master Minimum Equipment List" means a list established for a particular Aeroplane type by the organisation responsible for the type design with the approval of the state of design containing items, one or more of which is permitted to be unserviceable on the commencement of a flight and the Master Minimum Equipment List may be associated with special operating conditions, limitations or procedures, and provides the basis for development, review, and approval by the Authority of individual operator's Minimum Equipment List;

"Minimum Equipment List" means a list approved by the Authority which provides for the operation of an Aeroplane, subject to specified conditions, with particular equipment inoperative, prepared by an Operator in conformity with, or more restrictive than, the master Minimum Equipment List established for the Aeroplane type;

"modification" means a change to the type design of an Aeroplane or aeronautical product which is not a repair;

"night" means the time between fifteen minutes after sunset and fifteen minutes before sunrise, sunrise and sunset being determined at surface level, and includes any time between sunset and sunrise when an unlighted Aeroplane or other unlighted prominent object cannot clearly be seen at a distance of 4,572 metres;

"Operator" means a person, organisation or enterprise engaged in or offering to engage in an Aeroplane operation;

"Operational Flight Plan" means the operator's plan for the safe conduct of the flight based on considerations of Aeroplane performance, other operating limitations, and relevant expected conditions on the route to be followed and at the Aerodromes or heliports concerned;

"overhaul" means the restoration of an Aeroplane or Aeroplane component using methods, techniques, and practices acceptable to the Authority, including disassembly, cleaning, and Inspection as permitted, repair as necessary, and reassembly; and testing in accordance with Approved Standards and technical data, or in accordance with current standards and technical data acceptable to the Authority, which have been developed and documented by the State of Design, holder of the type certificate, supplemental type certificate, or a material, part, process, or appliance approval under Parts Manufacturing Approval (PMA) or Technical Standard Order (TSO);

"Pressurised Aeroplane" means an Aeroplane fitted with means of controlling out flow of cabin air in order to maintain maximum cabin altitude of not more than 10,000 ft so as to enhance breathing and comfort of passengers and crew;

"propeller" means a device for propelling an Aeroplane that has blades on a power plant driven shaft and that, when rotated, produces by its action on the air, a thrust approximately perpendicular to its plane of rotation including control components normally supplied by its manufacturer, but does not include main and auxiliary rotors or rotating air foils of power plants;

"prototype" means an Aeroplane in respect of which an application has been made for a certificate of airworthiness and the design of which has previously been investigated in connection with any such application;

"rating" means an authorisation entered on or associated with a licence or certificate and forming part thereof, stating special conditions, privileges or limitations pertaining to such licence or certificate;

"Required Communication Perfomance" means a set of requirements for air traffic service provision and associated ground equipment, aircraft capabilty and operations needed to support performance based communication;

"small Aeroplane" means an Aeroplane of a maximum certificated take-off mass of 5,700kg or less; and

"VHF" means an abbreviation for Very High Frequency;

"VFR" means the abbreviation used to designate the Visual Flight Rules;

"Visual Meteorological Conditions" means meteorological conditions expressed in terms of visibility distance from cloud, and ceiling, equal to or better than specified in the Civil Aviation Rules of the Air Regulations.

PART II—GENERAL REQUIREMENTS FOR AEROPLANE EQUIPMENT AND INSTRUMENTS

General instrument and equipment requirements.

3. (1) An operator shall not fly an Aircraft registered in the Kenya, unless the aircraft is equipped as specified under these Regulations.

(2) An operator shall not fly an Aircraft registered in the Kenya without such additional or special equipment as the Authority may determine.

(3) An operator operating an Aircraft in the Kenya shall ensure that all the required emergency equipment is installed on board the aircraft, are clearly marked, and the aircraft is stowed or maintained so as to not be the source of danger on the aircraft.

(4) In addition to the minimum equipment necessary for the issuance of a certificate of airworthiness, the instruments, equipment and flight documents prescribed in these Regulations shall be installed or carried, as appropriate, in all Aircraft according to the Aircraft used and to the circumstances under which the flight is to be conducted. The prescribed instruments and equipment, including their installation, shall be approved or accepted by the Authority.

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

(6) Prior to operation in the Kenya of any foreign registered Aircraft that uses an airworthiness Inspection program approved or accepted by the State of Registry, the owner or operator shall ensure that instruments and equipment required by these Regulations but not installed in the Aircraft are properly installed and inspected in accordance with the requirements of the State of Registry.

(7) An operator shall ensure that a flight does not commence unless the required equipment—

(a) meets the minimum performance standard and the operational and airworthiness requirements;

(b) is installed such that the failure of any single unit required for either communication or navigation purposes, or both, shall not result in the inability to communicate or navigate safely on the route being flown; and

(c) is in operable condition for the kind of operation being conducted, except as provided in the minimum equipment list.

(8) If equipment is to be used by one flight crewmember at his station during flight, that equipment shall be installed so as to be readily operable from his station.

(9) Where a single item of equipment is required to be operated by more than one flight crewmember, the equipment shall be installed so as to be readily operable from any station at which it is required to be operated.

PART III— FLIGHT AND NAVIGATIONAL INSTRUMENTS

General requirements.

4. (1) An aircraft shall be equipped with instruments which will enable the flight crew to—

(a) control the flight path of the aircraft;

(b) carry out any required procedural manoeuvres; and

(c) observe the operating limitations of the aircraft in the expected operating conditions.

(2) Where a means is provided on any aircraft for transferring an instrument from its primary operating system to an alternative system, the means shall include a positive positioning control and shall be marked to indicate clearly which system is being used.

(3) For all aircraft, the instruments that are used by any one flight crewmember shall be so arranged as to permit the flight crewmember to readily see the indications from station with the minimum practicable deviation from the position and line of vision which the flight crewmember normally assumes when looking forward along the flight path.

Navigation equipment.

5. (1) An Operator shall not operate an Aircraft unless it is equipped with navigation equipment to enable it to proceed in accordance with—

(a) the Operational Flight Plan;

(b) prescribed required navigational performance equipment types; and

(c) the requirements of air traffic services.

(2) For operations where a navigation specification for performance-based navigation has been prescribed, an aeroplane shall, in addition to the requirements specified in (1)(a)—

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

(b) be authorized by the State of Registry for such operations.

(3) The requirements of paragraph (1) of this regulation shall not apply where navigation under visual flight rules is accomplished by visual reference to landmarks, if not precluded by the Appropriate Authority for the route and airspace.

(4) An operator shall not operate an Aircraft unless that Aeroplane is equipped with sufficient navigation equipment to ensure that, in the event of failure of one item of equipment at any stage of the flight, the remaining equipment shall enable the Aeroplane to continue navigating in accordance with the requirements.

(5) A radio navigation system fitted in an Aircraft shall have an independent antenna installation, except that, where rigidly supported non-wire antenna installations of equivalent reliability are used, only one antenna is required.

(6) Where a navigation specification for performance-based navigation has been prescribed, an Aircraft shall, in addition to the requirements specified in this regulation—

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

(b) be authorized by the State of Registry for such operations.

Minimum flight and navigational instruments: Visual Flight Rules operations.

6. An Operator shall not operate an Aeroplane by day in accordance with Visual Flight Rules unless it is equipped with the following flight and navigational instruments and associated equipment are applicable—

(a) a magnetic compass;

(b) an accurate timepiece showing the time in hours, minutes, and seconds;

(c) a sensitive pressure altimeter calibrated in feet with a subscale setting, calibrated in hectopascals or millibars,

adjustable for any barometric pressure likely to be set during flight;

(d) an airspeed indicator calibrated in knots;

(e) a vertical speed indicator;

(f) a turn and slip indicator, or a turn coordinator incorporating a slip indicator;

(g) an attitude indicator;

(h) a stabilized direction indicator;

(i) a means of indicating in flight crew compartment the outside air temperature calibrated in degrees Celsius;

(j) for flights which do not exceed sixty minutes duration, which take off and land at the same Aerodrome, and which remain within fifty nautical miles of that Aerodrome:

provided that, the instruments prescribed in sub-paragraphs (f), (g) and (h), and regulation 8 (1) (d), (e), and (f), may all be replaced by either a turn and slip indicator, or a turn coordinator incorporating a slip indicator, or both an attitude indicator and a slip indicator;

(k) a secondary surveillance radar transponder with Mode C for all Aeroplane except gliders, balloons, airships, kites and Aeroplane whose original certification does not include an engine powered electrical system and has not been subsequently certified for installation of such a system; and

(l) such additional instruments or equipment as may be prescribed by the Authority.

Navigation Flight Equipment Helicopter.

7. (1) All Helicopters when operating in accordance with Visual Rules by day shall be equipped with—

(a) a magnetic compass;

(b) an accurate timepiece indicating the time in hours, minutes and seconds;

(c) a sensitive pressure altimeter;

(d) an airspeed indicator; and

(e) such additional instruments or equipment as may be prescribed by the Appropriate Authority.

(2) All Helicopters when operating in accordance with VFR at night shall be equipped with—

(a) the equipment specified in sub-regulation 6(1);

(b) an attitude indicator (artificial horizon) for each required pilot and one additional attitude indicator;

(c) a slip indicator;

(d) a heading indicator (directional gyroscope);

(e) a rate of climb and descent indicator;

(f) such additional instruments or equipment as may be specified by the appropriate Authority;

(g) the lights required for Helicopter in flight or operating on the movement area of a heliport;

(h) two landing lights;

(i) illumination for all instruments and equipment that are essential for the safe operation of the Helicopter that are used by the flight crew;

(j) lights in all passenger compartments;

(k) a flashlight for each crew member station; and

(l) for flights operated under Visual Flight Rules and IFR - by day and night.

Instruments for

8. (1) An operator shall not operate an aeroplane that requires two

pilots to operate unless each pilot's station is equipped with separate operations requiring two pilots:

Visual instruments as follows— Flight Rules

operations.

(a) a sensitive pressure altimeter calibrated in feet with a sub-scale setting calibrated in hectopascals or millibars, adjustable for any barometric pressure likely to be set during flight;

(b) an airspeed indicator calibrated in knots;

(c) a vertical speed indicator;

(d) a turn and slip indicator, or a turn co-ordinator incorporating a slip indicator;

(e) an attitude indicator; and

(f) a stabilised direction indicator.

(2) Whenever two pilots are required to operate an aeroplane an airspeed indicating system shall be equipped with a heated pilot tube or equivalent means for preventing malfunction due to either condensation or icing for—

(a) Aeroplanes with a maximum certificated take-off mass of over 5,700 kg or having a maximum approved passenger seating configuration of more than nine; or

(b) Helicopters with a maximum certificated take off mass over 3180 kg or having a maximum approved passenger seating configuration of more than nine.

(3) Whenever duplicate instruments are required to operate an Aeroplane, separate displays for each pilot and separate selectors or other associated equipment where appropriate shall be provided.

(4) Where two pilots are required to operate an Aeroplane, the

Aeroplane shall be equipped with—

(a) means for indicating when power is not adequately supplied to the required flight instruments; and

(b) compressibility limitations not otherwise indicated by the required airspeed indicators shall be equipped with a Mach number indicator at each pilot's station; and

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

(5) An Operator shall not conduct Visual Flight Rules operations unless the Aeroplane is equipped with a headset with boom microphone or equivalent for each flight crewmember on cockpit duty.

9. An Operator shall not fly an Aeroplane under IFR unless the Aeroplane is equipped with— Minimum flight and navigational instruments: IFR operations.

(a) a magnetic compass;

(b) an accurate timepiece showing the time in hours, minutes, and seconds;

(c) two sensitive pressure altimeter calibrated in feet with a sub-scale setting, calibrated in hectopascals or millibars;

(d) adjustable for any barometric pressure likely to be set during flight;

(e) an airspeed indicating system with a means of preventing malfunctioning due to either condensation or icing;

(f) a turn and slip indicator;

(g) an attitude indicator (artificial horizon);

(h) a heading indicator (directional gyroscope);

(i) a means of indicating whether the supply of power to the gyroscopic instruments is adequate;

(j) a means of indicating in the flight crew compartment the outside air temperature;

(k) vertical speed indicator;

(l) two independent static pressure systems, except that for Propeller driven Aeroplanes with maximum certificated take off mass of 5,700 kg or less, one static pressure system and one alternate source of static pressure is allowed; and

(m) a secondary surveillance radar transponder with mode C, except gliders, airships, kites and Aeroplane whose original certification does not include an engine powered electrical system and has not been subsequently certified for installation of such a system.

(2) An Operator shall not operate an Aeroplane under IFR unless the Aeroplane is equipped with navigation equipment in accordance with the requirements of air traffic services in the areas of operation, but not less than—

(a) one VHF Omni directional radio range receiving system, automatic directional finder system, one distance measuring equipment, one marker beacon receiving system;

(b) one Instrument Landing Systemor Microwave Landing System where Instrument Landing Systemor Microwave

Landing System is required for approach navigation purposes;

(c) an area Navigation System when area navigation is required for the route being flown;

(d) an additional VHF omni directional radio range receiving system on any route, or part thereof, where navigation is based only on VHF omni directional radio range signals; and

(e) an additional ADF system on any route, or part thereof, where navigation is based only on NDB signals.

(3) All Aeroplane intended to land in Instrument Meteorological Conditions or at night shall be provided with radio navigation equipment capable of receiving signals providing guidance to—

(a) a point from which a visual landing can be effected;

(b) each Aerodrome at which it is intended to land in Instrument Meteorological Conditions ; and

(c) any designated alternate Aerodromes.

(4) An aeroplane operated by a single pilot under the IFR or at night shall be equipped with—

(a) a serviceable autopilot that has at least altitude hold and heading select modes;

(b) a headset with a boom microphone or equivalent; and

(c) means of displaying charts that enables them to be readable in all ambient light conditions.

(5) An operator shall not conduct single pilot IFR operations unless the Aeroplane is equipped with an autopilot with at least altitude hold and heading mode.

(6) An aeroplane shall be sufficiently provided with navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment will enable the aeroplane to navigate in accordance with these Regulations.

(7) An Operator shall not conduct a single pilot under the IFR or at night unless the aeroplane is be equipped with—

(a) a serviceable autopilot that has at least altitude hold and heading select modes;

(b) a headset with a boom microphone or equivalent; and

(c) means of displaying charts that enables them to be readable in all ambient light conditions.

Additional Systems and equipment for single- engine turbine-powered Aeroplanes: Night and Instrument Meteorological Conditions operations.

10. (1) Single-engine turbine-powered aeroplanes approved by the Authority to operate at night or in Instrument Meteorological Conditions shall be equipped with the following systems and equipment intended to ensure continued safe flight and to assist in achieving a safe forced landing after an engine failure, under all allowable operating conditions—

(a) two separate electrical generating systems, each one capable of supplying all probable combinations of continuous in-flight electrical loads for instruments, equipment and systems required at night or in Instrument Meteorological Conditions;

(b) a radio altimeter;

(c) an emergency electrical supply system of sufficient capacity and endurance, following loss of all generated power, to as a minimum—

(i) maintain the operation of all essential flight instruments, communication and navigation systems during a descent from the maximum certificated altitude in a glide configuration to the completion of a landing;

(ii) lower the flaps and landing gear, if applicable;

(iii) provide power to one pilot heater, which must serve an air speed indicator clearly visible to the pilot;

(iv) provide for operation of the landing light specified in (j);

(v) provide for one engine restart, if applicable; and

(vi) provide for the operation of the radio altimeter;

(d) two attitude indicators, powered from independent sources;

(e) a means to provide for at least one attempt at engine re-start;

(f) airborne weather radar;

(g) a certified area navigation system capable of being programmed with the positions of Aerodromes and safe forced landing areas, and providing instantly available track and distance information to those locations;

(h) for passenger operations, passenger seats and mounts which meet dynamically-tested performance standards and which are fitted with a shoulder harness or a safety belt with a diagonal shoulder strap for each passenger seat;

(i) in pressurized Aeroplanes, sufficient supplemental oxygen for all occupants for descent following engine failure at the maximum glide performance from the maximum certificated altitude to an altitude at which supplemental oxygen is no longer required;

(j) a landing light that is independent of the landing gear and is capable of adequately illuminating the touchdown area in a night forced landing; and

(k) an engine fire warning system.

Instruments for two pilots: IFR operations requiring two pilots: IFR operations.

11. (1) An Operator shall not operate an Aeroplane that requires two pilots to operate unless the second pilot's station has separate instruments as follows—

(a) a sensitive pressure altimeter calibrated in feet with a sub-scale setting, calibrated in hectopascals or millibars, adjustable for any barometric pressure likely to be set during flight;

(b) an airspeed indicating system with a means of preventing malfunctioning due to either condensation or icing;

(c) a vertical speed indicator;

(d) an attitude indicator;

(e) a stabilised direction indicator; and

(f) a turn and slip indicator or a turn coordinator incorporating a slip indicator.

Standby altitude indicator.

12. (1) An operator shall not operate an Aeroplane with a maximum certificated take-off mass of over 5,700 kg. or a Helicopter of performance Class 1 and 2 operated under IFR unless it is equipped with a single standby altitude indicator (artificial horizon) that—

(a) operates independently of any other altitude indicating system;

(b) is powered continuously during normal operation;

(c) after a total failure of the normal electrical generating system, is automatically powered for a minimum of thirty minutes from a source independent of the normal electrical generating system; and

(d) is appropriately illuminated during all phases of operation.

(2) Where the standby altitude indicator referred to in sub-regulation (1) —

(a) is being operated by emergency power, it shall be clearly evident to the flight crew; or

(b) has its own dedicated power supply, there shall be an associated indication, either on the instrument or on the instrument panel when this supply is in use.

(3) Where the standby attitude instrument system is installed and usable through flight altitudes of 360° of pitch and roll, the turn and slip indicators may be replaced by slip indicators.

Instruments and equipment required for Category II operations.

13. (1) An Operator shall not fly an Aeroplane in Category II operation unless the Aeroplane is fitted with the following instruments and equipment—

(a) two localizer and glide slope receiving systems;

(b) a communications system that does not affect the operation of at least one of the Instrument Landing System;

(c) a marker beacon receiver that provides distinctive aural and visual indications of the outer and the middle markers;

(d) two gyroscopic pitch and bank indicating systems;

(e) two gyroscopic direction indicating systems;

(f) two airspeed indicators;

(g) two sensitive altimeters adjustable for barometric pressure, having markings at twenty foot intervals and each having a placard correction for altimeter scale error and for the wheel height of the Aeroplane;

(h) two vertical speed indicators;

(i) the flight control guidance system may be operated from one of the receiving systems required by paragraph (a) that consists of either—

(i) flight director system capable of displaying computed information as steering command in relation to an Instrument Landing System localizer and, on the same instrument, either computed information as pitch command in relation to an Instrument Landing System glide slope or basic Instrument Landing System glide slope information; or

(ii) an automatic approach coupler capable of providing at least automatic steering in relation to an Instrument Landing System localiser;

(j) for Category II operations with decision heights below 150 feet either a marker beacon receiver providing aural and visual indications of the inner marker or a radio altimeter;

(k) warning systems for immediate detection by the pilot of system faults in items specified in paragraphs (a), (d), (e) and (i) and, if installed for use in Category III operations, the radio altimeter and auto throttle system;

(l) dual controls;

(m) an externally vented static pressure system with an alternate static pressure source;

(n) a windshield wiper or equivalent means of providing adequate cockpit visibility for a safe visual transition by either pilot to touchdown and rollout; and

(o) a heat source for each airspeed system pilot tube installed or an equivalent means of preventing malfunctioning due to icing of the pilot system.

(2) The instruments and equipment specified in this regulation shall be approved in accordance with the provisions of the maintenance programme referred under regulation 18 before being used in Category II operations.

Approval and maintenance of instruments and equipment required for Category II operations.

14. (1) An Operator shall not fly an Aeroplane unless the instruments and equipment required by regulation 13 have been approved as provided in this regulation for use in Category II operations.

(2) Before presenting an Aeroplane for approval of the instruments and equipment, it shall be shown that since the beginning of the 12th calendar month of the date of submission—

(a) the instrument landing system localizer and glide slope equipment were bench checked according to the manufacturer's instructions and found to meet the standards specified by the Authority;

(b) the altimeters and the static pressure systems were tested and inspected and found to meet the requirements of the manufacturers maintenance manual; and

(c) all other instruments and items of equipment specified in this regulation that are listed in the proposed maintenance program were bench checked and found to meet the manufacturer's maintenance manual.

(3) All components of the flight control guidance system shall be approved as installed by the evaluation program specified in this regulation if they have not been approved for Category III operations under applicable type or supplemental type certification procedures.

(4) Any subsequent changes to make, model, or design of the components shall be approved by the Authority and related systems or devices, such as the auto throttle and computed missed approach guidance system, shall be approved in the same manner if they are to be used for Category II operations

(5) A radio altimeter shall meet the performance criteria of this sub-regulation for original approval and for any subsequent alteration—

(a) it shall display to the flight crew clearly and positively the wheel height of the main landing gear above the terrain;

(b) it shall display wheel height above the terrain to an accuracy of ± (plus or minus)5 feet or 5 percent, whichever is greater, under the following conditions—

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(i) pitch angles of zero to ±5° (degree) about the mean approach attitude;

(ii) roll angles of zero to 20° in either direction;

(iii) forward velocities from minimum approach speed up to 200 knot; and

(iv) sink rates from zero to fifteen feet per second at altitudes from one hundred to two hundred feet;

(c) over level ground, it shall track the actual altitude of the Aeroplane without significant lag or oscillation;

(d) with the Aeroplane at an altitude of two hundred feet or less, any abrupt change in terrain representing no more than ten percent of the Aeroplane's altitude shall not cause the altimeter to unlock, and indicator response to such changes shall not exceed 0.1 seconds. If the system unlocks for greater changes, it shall reacquire the signal in less than one second;

(e) systems that contain a push to test feature shall test the entire system with or without an antenna at a simulated altitude of less than five hundred feet; and

(f) the system shall provide to the flight crew a positive failure warning display any time there is a loss of power or an absence of ground return signals within the designed range of operating altitudes.

(6) All other instruments and items of equipment required by regulation 12, shall be capable of performing as necessary for Category II operations and shall be approved by the Authority after each subsequent alteration to these instruments and items of equipment—

(a) approval by evaluation is requested as a part of the application for approval of the Category II manual;

(b) unless otherwise authorised by the Authority, the evaluation program for each Aeroplane requires the following demonstrations—

(i) at least fifty instrument landing system approaches shall be flown with at least five approaches on each of three different instrument landing system facilities and no more than one half of the total approaches on any one instrument landing system facility;

(ii) all approaches shall be flown under simulated instrument conditions to a one hundred foot decision height and ninety percent of the total approaches made shall be successful.

(7) A successful approach shall be one in which—

(a) at the one hundred foot decision height, the indicated airspeed and heading are satisfactory for a normal flare and landing (speed shall be ±5 knots of programmed airspeed, but shall not be less than computed threshold speed if auto throttles are used);

(b) the Aeroplane at the one hundred foot decision height, is positioned so that the cockpit is within, and tracking so as to remain within, the lateral confines of the extended runway;

(c) deviation from glide slope after leaving the outer marker does not exceed fifty percent of full-scale deflection as displayed on the Instrument Landing System indicator;

(d) no unusual roughness or excessive attitude changes occur after leaving the middle marker; and

(e) in the case of an Aeroplane equipped with an approach coupler, the Aeroplane is sufficiently in trim when the approach coupler is disconnected at the decision height to allow for the continuation of a normal approach and landing.

(8) During the evaluation program the following information shall be maintained by the applicant for the Aeroplane with respect to each approach and made available to the Authority upon request—

(a) each deficiency in airborne instruments and equipment that resented the initiation of an approach;

(b) the reasons for discontinuing an approach, including the altitude above the runway at which it was discontinued;

(c) speed control at the one hundred foot decision height if auto throttles are used;

(d) trim condition of the Aeroplane upon disconnecting the auto coupler with respect to continuation to flare and landing;

(e) position of the Aeroplane at the middle marker and at the decision height indicated both on a diagram of the basic instrument landing system display and a diagram of the runway extended to the middle marker, with the estimated touchdown point indicated on the runway diagram;

(f) compatibility of flight director with the auto coupler, if applicable; and

(g) quality of overall system performance.

(9) A final evaluation of the flight control guidance system is made upon successful completion of the demonstrations. If no hazardous tendencies have been displayed or are otherwise known to exist, the system is approved as installed.

(10) Any bench check required by this regulation or any other regulation shall—

(a) be performed by an approved maintenance organisation holding one of the following Ratings as appropriate to the equipment checked—

(i) an instrument Rating;

(ii) a radio Rating; or

(iii) computer Rating;

(b) consist of removal of an instrument or item of equipment and performance of the following—

(i) a visual Inspection for cleanliness, impending failure, and the need for lubrication, repair, or replacement of parts;

(ii) correction of items found by that visual Inspection; and

(iii) Calibration to at least the manufacturer's specifications unless otherwise specified in the approved Category II manual for the Aeroplane in which the instrument or item of equipment is installed.

15. (1) A maintenance program for Category II instruments and equipment shall contain the following—

Maintenance programme for instruments and equipment required for Category II operations.

(a) a list of each instrument and item of equipment specified in regulation 13 that is installed in the Aeroplane and approved for Category II operations, including the make and model of the instruments and items specified in that regulation;

(b) a schedule that provides for the performance of Inspections within three months after the date of the previous Inspection, conducted in the following manner—

(i) the Inspection shall be performed by a person authorised by the Civil Aviation (Airworthiness) Regulations, except that each alternate Inspection may be replaced by a functional flight check; and

(ii) the functional flight check shall be performed by a pilot holding a Category II operation pilot authorisation for the type of Aeroplane being checked;

(iii) a schedule that provides for the performance of bench checks for each listed instrument and item of equipment that is specified in Regulation 14within twelve months after the date of the previous bench check;

(iv) a schedule that provides for the performance of a test and Inspection of each static pressure system within twelve months after the date of the previous test and Inspection;

(v) the procedures for the performance of the periodic Inspections and functional flight checks to determine the ability of each listed instrument and item of equipment specified in regulation13 to perform as approved for Category II operations, including a procedure for recording functional flight checks;

(vi) a procedure for assuring that the pilot is informed of all defects in listed instruments and items of equipment;

(vii) a procedure for assuring that the condition of each listed instrument and item of equipment upon which maintenance is performed is at least equal to its Category II approval condition before it is returned to service for Category II operations;

(viii) a procedure for an entry in the maintenance records that shows the date, airport, and reasons for each discontinued Category II operation because of a malfunction of a listed instrument or item of equipment; and

(ix) a bench check required by this Regulation shall comply with the requirements specified in Regulation 18(10).

(2) After the completion of one maintenance cycle of twelve months, a request to extend the period for checks, tests, and Inspections may be approved if it is shown that the performance of particular equipment justifies the requested extension.

Navigation equipment for operations in minimal navigation performance specification airspace (MNPS).

16. (1) An Operator shall not operate an Aeroplane in minimal navigation performance specification airspace unless it is equipped with navigation equipment that—

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

(b) has been authorised by the State of Registry for minimal navigation performance specification operations concerned.

(2) All equipment referred to in sub-regulation (1) shall comply with the minimal navigation performance specification prescribed by the Authority.

(3) The navigation equipment required for air Operator Certificate holder operations in minimal navigation performance specification airspace shall be visible and usable by either pilot seated at his duty station.

(4) For unrestricted operation in minimal navigation performance specification airspace, an Aeroplane operated by an operator shall be equipped with two independent long-range navigational systems. 12741274

(5) For operation in minimal navigation performance specification airspace along notified special routes, an Aeroplane operated by an operator shall be equipped with one long range navigational systems, unless otherwise specified.

Equipment for operations in reduced vertical separation minimum airspace

17. (1) An Operator shall not operate an Aeroplane in reduced vertical separation minimum airspace unless it is provided with equipment which is capable of—

(a) indicating to the flight crew the flight level being flown;

(b) automatically maintaining a selected flight level;

(c) providing an alert to the flight crew when a deviation occurs from the selected flight level, with the threshold for the alert not exceeding ± (plus or minus) 90m (300 ft); and

(d) automatically reporting pressure-altitude.

(2) The equipment referred to in sub-regulation (1) of this regulation shall comply with minimum requirements prescribed by the Authority.

PART IV— COMMUNICATION EQUIPMENT

Radio Communication equipment.

18. (1) An Aeroplane shall be provided with radio communication equipment capable of—

(a) conducting two-way communication for Aerodrome flight control purposes;

(b) receiving meteorological information at any time during flight; and

(c) Conducting two-way communication at any time during flight with at least one aeronautical station and with such other aeronautical stations and on such frequencies as may be prescribed by the Appropriate Authority.

(2) The radio communication equipment required in accordance with regulation 18 shall provide for communications on the aeronautical emergency frequency 121.5 MHz.

(3) For operations where communication equipment is required to meet an Required Communication Performance specification for performance-based communication, an Aeroplane shall, in addition to the requirements specified in regulation 18—

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

(b) have information relevant to the Aeroplane Required Communication Performance specification capabilities listed in the Flight Manual or other Aeroplane documentation approved by the State of Design or State of Registry; and

(c) have information relevant to the Aeroplane Required Communication Performance specification capabilities included in the Minimum Equipment List.

(4) The Authority shall, for operations where an Required Communication Performance specification for performance based communication has been prescribed, ensure that the operator has established and documented—

(a) normal and abnormal procedures, including contingency procedures;

(b) flight crew qualification and proficiency requirements, in accordance with appropriate Required Communication Performance specifications;

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

(d) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate Required Communication Perfomance specifications.

(4) An Operator shall not operate an Aeroplane under Instrument Flight Rules, or Visual Flight Rules over routes that cannot

be navigated by reference to visual landmarks, unless the Aeroplane is equipped with communication and navigation equipment in accordance with the requirements of air traffic services in the area of operation, but not less than 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.

(5) The Authority shall ensure that, in respect of those Aeroplanes mentioned in regulation 18(3) adequate provisions exist for—

(a) receiving the reports of observed communication performance issued by monitoring programmes established in accordance with the Civil Aviation (Air Traffic Services) Regulations; and

(b) taking immediate corrective action for individual aircraft, aircraft types or operators, identified in such reports as not complying with the Required Communication Performance specifications.

(6) A radio system referred to in sub-regulation (4) shall have an independent antenna installation except that where rigidly supported non-wire antennae or other antennae installations of equivalent reliability are used, only one antenna is required.

(7) Where an operator is required to use more than one communication equipment unit, each unit shall be independent of the other or others to the extent that a failure in any one shall not result in failure of any other.

(8) An Operator shall not operate an Aeroplane under IFR unless the Aeroplane is equipped with an audio selector panel accessible to each required flight crewmember.

(9) An Operator shall not conduct single pilot IFR or night operations unless the Aeroplane is equipped with a headset with boom microphone or equivalent and a transmit button on the control wheel.

(10) All Aeroplane when flying under IFR while making an approach to landing shall be equipped with a radio apparatus capable of receiving signals from one or more aeronautical radio stations on the surface, to enable the Aeroplane to be guided to a point from which a visual landing can be made at the Aerodrome at which the Aeroplane is to land.

(11) Subject to such exceptions as may be prescribed, the radio equipment provided in compliance within this regulation in any

Aeroplane registered in the Kenya shall be maintained in a serviceable condition.

(12) All radio equipment installed in any Aeroplane registered in the Kenya, in addition to the equipment required under these Regulations, shall be of a type approved by the Authority in relation to the purpose for which it is to be used, and shall, be installed in a manner approved by the Authority and licenced by the Kenya Communication Regulatory Authority of, and neither the equipment nor the manner in which it is installed shall be modified except with the approval of the Authority.

(13) An Operator shall not operate an Aeroplane unless there is a boom or throat microphone available at each required flight crewmember flight duty station.

Airborne collision avoidance system.

19. (1) An Operator shall not fly a turbine-engine Aeroplane of a maximum certificated take-off-mass of over 5,700 kg or authorized to carry more than nineteen passengers unless the Aeroplane is equipped with an airborne collision avoidance system (ACAS II).

(2) Any airborne collision avoidance system installed on an Aeroplane shall be approved by the Authority.

(3) Each person operating an Aeroplane equipped with an airborne collision avoidance system shall have that system on and operating.

Forward-looking wind shear warning system—turbojet Aeroplanes.

20. (1) All turbojet Aeroplanes of a maximum certificated takeoff mass in excess of 5700 kg or authorised to carry more than nine passengers shall be equipped with a forward-looking wind shear warning system.

(2)The system should be capable of providing the pilot with a timely aural and visual warning of wind shear ahead of the Aeroplane and the information required to permit the pilot to safely commence and continue a missed approach or go-around or to execute an escape manoeuvre if necessary.

(3)The system should also provide an indication to the pilot when the limits specified for the certification of automatic landing equipment are being approached, when such equipment is in use.

Altitude Reporting transponder.

21. (1) An Operator shall not operate an Aeroplane in airspace that requires a pressure-altitude reporting transponder unless that equipment is operative.

(2)An Operator shall not operate an Aeroplane in Reduced Vertical Separation Minimum airspace unless the Aeroplane is equipped with a system that is automatically reporting pressure altitudes.

(3)An Operator shall not operate an Aeroplane or Helicopter unless it is equipped with a pressure-altitude reporting transponder that operates in accordance with the Civil Aviation (Surveillance and Collision Avoidance Systems) Regulations.

(4)AnAeroplane for which the individual certificate of airworthiness is first issued after the 1st January, 2009 shall be equipped with a data source that provides pressure-altitude information with a resolution of 7.62 m (25 ft.), or better.

(5)The Mode S transponder should be provided with the airborne on-the-ground status if the Aeroplane is equipped with an automatic means of detecting such status.

Crewmember interphone system: Aeroplane.

22. (1) An Operator shall not operate an Aeroplane of which a flight crew of more than one is required unless it is equipped with a flight crew interphone system, including headsets and microphones, not of a handheld type, for use by all members of the flight crew.

(2) An Operator shall not operate an Aeroplane with a maximum certified take-off mass exceeding 15,000 kg or having a maximum approved passenger seating configuration of more than nineteen unless it is equipped with a crewmember interphone system that—

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

(b) provides a means of two-way communication between the flight crew compartment and each—

(i) passenger compartment;

(ii) galley located other than on a passenger cockpit level;

(iii) remote crew compartment that is not on the passenger cockpit and is not easily accessible from a passenger compartment;

(c) is readily accessible for use—

(i) from each of the required flight crew stations in the flight crew compartment; and

(ii) at required cabin crewmember stations close to each separate or pair of floor level emergency exits;

(d) has an alerting system incorporating aural or visual signals for use by flight crew members to alert the cabin crew and for use by cabin crew members to alert the flight crew;

(e) has a means for the recipient of a call to determine whether it is a normal call or an emergency call; and

(f) provides on the ground a means of two-way communication between ground personnel and at least two flight crewmembers.

23. An Operator shall not operate a Helicopter carrying a cabin crew member other than a flight crew member unlessit is equipped with a cabin crew member interphone system which—

Crew member interphone Helicopter. system:

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

(b) provides a means of two-way communication between the flight crew compartment and each crewmember station;

(c) has readily accessible for use from each of the required flight crew stations in the flight crew compartment;

(d) is readily accessible for use at required cabin crew stations close to each separate or pair of floor level emergency exits;

(e) has an alerting system incorporating aural or visual signals for use by flight crewmembers to alert the flight crew; and

(f) has a means for the recipient of a call to determine whether it is a normal call or an emergency call.

PART V— INSTRUMENTS AND EQUIPMENT

24. (1) An Operator shall not operate an Aeroplane unless it is equipped with—

Aeroplane lights and instrument illumination

(a) for flight by day—

(i) anti-collision light system;

(ii) lighting supplied from the Aeroplane electrical system to provide adequate illumination for all instruments and equipment essential for the safe operation of the Aeroplane;

(iii) lighting supplied from the Aeroplane electrical system to provide adequate illumination in all passenger compartments;

(iv) an electric torch for each required crewmember readily accessible to crewmember when seated at their designated station;

(b) for flight by night, in addition to the equipment specified in regulation 13—

(i) the lights required by the Civil Aviation (Rules of the Air) Regulations, for Aeroplane in flight or operating on the movement area of an Aerodrome;

(ii) lighting supplied from the Aeroplane electrical system to provide adequate illumination for all instruments and equipment essential for the safe operation of the Aeroplane;

(iii) lights in all passenger compartments;

(iv) an electric torch for each crewmember station;

(v) two landing lights or a single light having two separately energized filaments.

25. (1) An Aeroplane with speed limitations expressed in terms Mach Number of Mach number shall be equipped with a Mach number indicator. Indicator.

(2) An Operator shall not operate an Aeroplane that requires two

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pilots to operate unless each pilot's station has a with compressibility limitations not otherwise indicated by the required airspeed indicating system Aeroplane.

26. An Operator shall not operate a pressurised aeroplane Loss of

intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa unless the aeroplane is equipped with a device to provide positive warning to the flight crew of any dangerous loss of pressurisation.

pressurisation device.

Altitude alerting system.

27. (1) An operator shall not operate a turbojet-powered Aeroplane unless that Aeroplane is equipped with an approved altitude alerting system or device that is in operable condition and meets the requirements of sub-regulation (2).

(2) An altitude alerting system or device required under subregulation (1) shall be able to—

(a) alert the flight crew upon approaching a pre-selected altitude in either ascent or descent, by a sequence of—

(i) both aural and visual signals in sufficient time to establish level flight at that pre-selected altitude; or

(ii) visual signals in sufficient time to establish level flight at that pre-selected altitude, and when deviating above and below that pre-selected altitude, by an aural signal;

(b) provide the required signals from sea level to the highest operating altitude approved for the Aeroplane in which it is installed;

(c) pre-select altitudes in increments that are commensurate with the altitudes at which the Aeroplane is operated;

(d) be tested without special equipment to determine proper operation of the alerting signals; and

(e) accept necessary barometric pressure settings if the system or device operates on barometric pressure.

(3) For operation below 3,000 feet above ground level, the system or device need only to provide one signal, either visual or aural, to comply with this regulation; a radio altimeter may be included to provide the signal if the operator has an approved procedure for its use to determine decision height or minimum deviation altitude, as appropriate.

(4) An operator to which this regulation applies shall establish and assign procedures for the use of the altitude alerting system or device and each flight crew shall comply with those procedures assigned to him.

28. (1) An Operator shall not fly a turbine-engined Aeroplane of a maximum certificated take-off mass of over 5,700 kg or authorized to carry more than nine passengers unless the Aeroplane is equipped with a ground proximity warning system.

Ground proximity warning system(GPWS).

(2) A turbine-engined Aeroplane of a maximum certificated takeoff mass of over 15,000 kg or authorized to carry more than thirty passengers shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.

(3) A turbine-engined Aeroplane of a maximum certificated takeoff mass of over 5,700 kg or authorized to carry more than nine passengers, for which the individual certificate of airworthiness is first issued on or after the 1st January, 2004, shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.

(4) An Operator shall not fly a turbine-engined Aeroplane of over 5,700 kg maximum certificated take-off mass of over 5,700 kg or authorized to carry more than nine passengers, unless the Aeroplane is equipped with a ground proximity warning system which has a forward looking terrain avoidance function.

(5) An Operator shall not fly a piston-engined Aeroplanes of a maximum certificated take-off mass of over 5,700 kg or authorized to carry more than nine passengers unless the Aeroplane is equipped with a ground proximity warning system which provides the warnings in sub-regulation (7) (a) and (c), warning of unsafe terrain clearance and a forward looking terrain avoidance function.

(6) A ground proximity warning system shall provide automatically a timely and distinctive warning to the flight crew when the Aeroplane is in potentially hazardous proximity to the earth's surface.

(7) A ground proximity warning system shall provide, unless otherwise specified herein, warnings of the following circumstances—

(a) excessive descent rate;

(b) excessive terrain closure rate;

(c) excessive altitude loss after take-off or go- around;

(d) unsafe terrain clearance while not in landing configuration;

(i) gear not locked down;

(ii) flaps not in a landing position; and

(e) excessive descent below the instrument glide path.

29. (1) An Operator shall not operate— Weather radar.

(a) a pressurised aeroplane;

(b) an unpressurised Aeroplane which has a maximum certificated take-off mass of over 5,700 kg; or

(c) an unpressurised Aeroplane having a maximum approved passenger seating configuration,

unless it is equipped with airborne weather radar equipment whenever such an Aeroplane is being operated at night or in instrument meteorological conditions in areas where thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather radar, may be expected to exist along the route.

(2) An airborne weather radar equipment in Propeller driven pressurised Aeroplane having a maximum certificated take-off mass of over 5,700 kg with a maximum approved passenger seating configuration not exceeding nine seats and operated at night and in instrument metrological conditions referred to in sub regulation (1) may be replaced by other equipment capable of detecting thunderstorms and other potentially hazardous weather conditions, regarded as detectable with airborne weather radar equipment, subject to approval by the Authority

(3) An airborne weather radar equipment in Propeller driven pressurized Aeroplanes having a maximum certificated take-off mass of over 5,700 kilograms with a maximum approved passenger seating configuration not exceeding nine seats, operated at night and in instrument meteorological conditions referred to in sub-regulation (1) may be replaced by other equipment capable of detecting thunderstorms and other potentially hazardous weather conditions, regarded as detectable with airborne weather radar equipment, subject to approval by the Authority.

PART VI— FLIGHT DATA RECORDER AND CVR

30. (1) A turbine-engined Aeroplane of a maximum certificated take-off mass of over 2 250 kg, up to and including 5 700 kg, for which the type certificate was issued on or after the 1st January, 2016 and required to be operated by more than one pilot shall be equipped with either a CVR or a CARS.

CVRs and cockpit audio recording systems.

(2) An Aeroplane of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued on or after the 1st January, 2003 shall be equipped with a CVR capable of retaining the information recorded during at least the last two hours of its operation.

(3) An Aeroplane of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued on or after the 1st January 1987 shall be equipped with a CVR.

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

(5) An alternate power source shall automatically engage and provide ten minutes, plus or minus one minute, of operation whenever Aeroplane power to the recorder ceases, either by normal shutdown or by any other loss of power. The alternate power source shall power the CVR and its associated cockpit area microphone components and the CVR shall be located as close as practicable to the alternate power source.

(6) An Aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the type certificate is submitted to a Contracting State on or after 1 January 2018 shall be provided with an alternate power source, as defined in sub regulation 5 Above that powers the forward CVR in the case of combination recorders.

(7) The use of magnetic tape and wire CVRs shall be discontinued by the 1st January, 2016.

31. (1) An Aeroplane equipped with automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS, or any combination of those systems into a hybrid system, the use of such systems for the safe operation of an Aeroplane shall be approved by the Authority.

Head-up displays (HUD) or enhanced vision systems (EVS).

(2) The Authority may approve the operational use of automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS, if the Operator ensures that—

(a) the equipment meets the appropriate airworthiness certification requirements;

(b) the Operator has carried out a safety risk assessment of the operations supported by the automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS;

(c) the Operator has established and documented the procedures for the use of, and training requirements for, automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS.

CVRs: duration– Aeroplane.

32. A CVR shall be capable retaining the information recorded during at least the last two hours of its operation.

CVRs: general requirements- Aeroplane.

33. (1) An Operator shall not fly an Aeroplane unless the Aeroplane is equipped with a CVRCVR installed as required under regulation 30 and designed to record at least the following voice communication transmitted from or received in the Aeroplane by radio—

(a) aural environment on the flight cockpit;

(b) voice communication of flight crewmembers on the flight cockpit using the Aeroplane's interphone system;

(c) voice or audio signals identifying navigation or approach aids introduced in the headset or speaker;

(d) voice communication of flight crewmembers using the passenger address system, if installed; and

(e) digital communications with ATS, unless recorded by the flight data recorder.

(2) A CVR container shall—

(a) be painted a distinctive orange or yellow colour;

(b) carry reflective material to facilitate its location; and

(c) have securely attached an automatically activated underwater locating device.

(3) Microphones in the cockpit shall be located in the best position for recording voice communications originating at the pilot and co-pilot stations and voice communications of other crewmembers on the flight deck when directed to those stations by wiring suitable boom microphones to record continuously on separate channels.

(4) A CVR shall be installed so that—

(a) the probability of damage to the recording is minimized by—

(i) locating the recorder as far aft as practicable;

(ii) in the case of pressurized Aeroplanes, locating the CVR in the vicinity of the rear pressure bulkhead;

(b) It has an alternate power source that shall automatically engage and provide ten minutes, plus or minus one minute, of operation whenever Aeroplane power to the recorder ceases, either by normal shutdown or by any other loss of power;

(i) The alternate power source shall power the CVR and its associated cockpit area microphone components.

(ii) The CVR shall be located as close as practicable to the alternate power source

(c) An Aeroplane of a maximum certificated take-off mass of over 27 000 kg for which the type certificate is submitted to a Contracting State on or after 1 January 2018 shall be provided with an alternate power source, as defined in (b) that powers the forward CVR in the case of combination recorders.

(d) there is an aural or visual means for pre-flight checking of the CVR for proper operation; and

(e) if the CVR has a bulk erasure device, the installation is designed to prevent operation of the device during flight time or crash impact.

(5) The use of magnetic tape and wire flight CVRs is prohibited.

(6) The provisions of the First Schedule shall apply with regard to CVRs.

CVRs: Helicopters.

34. (1) Subject to sub-regulation (2), an Operator shall not fly a Helicopter of a maximum certificated take-off mass of 3,175 kilograms or above unless the Helicopter is equipped with a CVR for recording of the aural environment on the flight deck during flight time.

(2) A Helicopter is not equipped with a flight data recorder the main rotor speed shall be recorded on one track of the CVR.

(3) The Provisions of the First Schedule shall apply with regard to CVRs.

CVRs: durationHelicopters.

35. (1) A CVR shall be capable of retaining the information recorded during at least the last 30 minutes of its operations.

(2) A Helicopter required to be equipped with a CVR shall be equipped with a CVR capable of retaining the information recorded during the last two hours of its operation.

(3) The provisions of the First Schedule shall apply with regard to this regulation.

CVRs: performance requirements.

36. (1) An Operator shall not fly a Helicopter unless the Helicopter is equipped with a CVR installed as required by regulation 35 and 36, capable of recording on at least four tracks simultaneously—

(a) to ensure accurate time correlation between tracks, the CVR shall record in an in-line format;

(b) if a bidirectional configuration is used, the in-line format and track allocation shall be retained in both directions.

(2) The track allocation in a CVR shall be—

(a) track 1 – co-pilot headphones and live boom microphone;

(b) track 2 – PIC headphones and live boom microphone;

(c) track 3 – area microphones; and

(d) track 4 – time reference plus the third and fourth crewmembers' headphone and live microphone, if applicable.

(3) A CVR shall, when tested by methods approved by the Appropriate Authority, be demonstrated to be suitable for the environmental extremes, which it is designed to operate.

(4) A CVR installed in an Aeroplane, shall provide for an accurate correlation between the CVR and the flight data recorder.

CVRs Inspections.

37. (1) An Operator shall perform the built-in test features on the

cockpit for the CVR prior to the first flight of each day.

(2) Annual Inspections of a CVR shall be conducted as follows—

(a) the read-out of the recorded data shall ensure that the recorder operates correctly for the nominal duration of the recording;

(b) an annual examination of the recorded signal on the CVR shall be carried out by replay of the CVR recording;

(c) while installed in the Aeroplane, the CVR shall record text signals from each Aeroplane source and from relevant external sources to ensure that all required signals meet intelligibility standards;

(d) during the annual examination, a sample of in-flight recordings of the CVR shall be examined for evidence that the intelligibility of the signal is acceptable; and

(e) operational checks and evaluations of recordings from the flight recorder systems shall be conducted to ensure the continued serviceability of the recorders.

(3) An operator shall ensure that a report of the annual Inspection referred to in sub-regulation(2) is made available to the Authority.

Flight data recorders.

38. (1) An Operator shall not operate a turbine-engined Aeroplane of a maximum certificated take off mass of over 5,700 kg unless the Aeroplane is equipped with an approved flight data recording system.

(2) A flight data recorder referred to in sub regulation (1) shall—

(a) be constructed, located and installed so as to provide maximum practical protection for the recordings in order that the recorded information may be preserved, recovered and transcribed;

(b) be calibrated and maintained in accordance with a maintenance schedule approved by the Authority, with a valid certificate of release to service issued in accordance with these Regulations certifying that maintenance has been carried out in accordance with such maintenance schedule; and

(c) have an approved device to assist in locating that recorder under water.

(3) Inspections of flight data records shall be conducted annually and a report of the annual Inspection shall be made available to the Authority.

(4) The use of engraving metal foil flight data recorders or, analogue data using frequency modulation and photographic film flight data recorders is prohibited.

(5) The use of engraving metal foil flight data recorders, magnetic tape flight data recorders or Photographic film flight data recorders is prohibited.

Flight data recorders: Aeroplanes.

39. (1) Types I and IA FDR shall record the parameters required to determine accurately the Aeroplane flight path, speed, attitude, engine power, configuration and operation.

(2) Types II and IIA FDRs shall record the parameters required to determine accurately the Aeroplane flight path, speed, attitude, engine power and configuration of lift and drag devices.

(3) A turbine-engined Aeroplane of a maximum certificated takeoff mass of 5 700 kg or less for which the type certification was issued on or after 1 January 2016 shall be equipped with—

(a) a Type II FDR; or

(b) a Class C AIR or AIRS capable of recording flight path and speed parameters displayed to the pilot(s); or

(c) an ADRS capable of recording the essential parameters defined in First Schedule

(4) An Aeroplane which are required to record normal acceleration, lateral acceleration and longitudinal acceleration for which the type certificate was issued on or after 1 January 2016 and which are required to be fitted with an FDR shall record those parameters at a maximum sampling and recording interval of 0.0625 seconds.

(5) An Aeroplane which is required to record pilot input or control surface position of primary controls (pitch, roll, yaw) for which the type certificate was issued on or after 1 January 2016 and which are required to be fitted with an FDR shall record those parameters at a maximum sampling and recording interval of 0.125 seconds.

(6) Types I and IA FDR shall record the parameters required to determine accurately the Aeroplane flight path, speed, attitude, engine power, configuration and operation.

(7) Types II and IIA FDRs shall record the parameters required to determine accurately the Aeroplane flight path, speed, attitude, engine power and configuration of lift and drag devices.

Flight data recorders: Helicopters

40. (1) An FDR installed on Helicopters shall meet the requirements outlined in the First Schedule.

(2) A Type IV FDR shall record the parameters required to determine accurately the Helicopter flight path, speed, attitude, engine power and operation.

(3) A Type IVA FDR shall record the parameters required to determine accurately the Helicopter flight path, speed, attitude, engine power, operation and configuration.

(4) A Type V FDR shall record the parameters required to determine accurately the Helicopter flight path, speed, attitude and engine power.

(5) A Helicopter of a maximum certificated take-off mass of over

3 175 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2016 shall be equipped with a Type IVA FDR.

(6) All Helicopters of a ma

(7) Types IV, IVA and V FDRs shall ximum certificated take-off mass of over 7 000 kg, or having a passenger seating configuration of more than nineteen, for which the individual certificate of airworthiness is first issued on or after 1 January 1989 shall be equipped with a Type IV FDR. be capable of retaining the information recorded during at least the last ten hours of their operation.

(8) The use of the following FDRs shall be discontinued—

(a) metal foil FDRs;

(b) photographic film FDRs;

(c) analogue FDRs using frequency modulation (FM);

(d) magnetic tape FDRs

Flight data recorder duration.

41. An Operator shall not fly an Aeroplane or Helicopter unless it is equipped with a flight data recorder capable of retaining the information recorded during at least the last twenty-five hours of the operation, except for the Type IIA flight data recorders which shall be capable of retaining the information recorded during at least the last thirty minutes of its operation.

Flight data recorder: information recorded.

42. An Operator shall not fly an Aeroplane unless it is equipped with a flight data recorder which shall record the information specified in the Table set out in the First Schedule to these Regulations.

43. (1) An Aeroplane or Helicopter for which the individual certificate of airworthiness is first issued on or after 1 January 2016, which utilize any of the data link communications applications listed in the First Schedule and are required to carry a CVR, shall record on a flight recorder the data link communications messages.

Recording of data link communication.

(2) An Aeroplane which are modified on or after 1 January 2016 to install and utilize any of the data link communications applications listed in the First Scheduleand are required to carry a CVR shall record on a flight recorder the data link communications messages.

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

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

44. The documentation requirement concerning FDR and ADRS parameters provided by operators to accident investigation authorities should be in electronic format and take account of industry specifications.

Flight recorders electronic documentation.

PART VII— EMERGENCY, RESCUE AND SURVIVAL EQUIPMENT

45. (1) An Operator shall not operate an Aeroplane unless that Aeroplane is equipped with emergency and flotation equipment that is—

Emergency equipment: all Aeroplane.

(a) readily accessible to the crew and, with regard to equipment located in the passenger compartment, to passengers without appreciable time for preparatory procedures;

(b) clearly identified and clearly marked to indicate its method of operation;

(c) marked to indicate the date of last Inspection; and

(d) when carried in a compartment or container, marked to indicate the contents and the compartment or container or the item itself.

(2) An item of emergency and flotation equipment referred to in sub-regulation (1) shall be inspected regularly in accordance with Inspection periods approved by the Authority.

46. (1) An Operator shall not operate a passenger carrying Aeroplaneof a maximum approved passenger seating configuration of more than nine unless the Aeroplane is provided with an emergency lighting system having an independent power supply to facilitate the evacuation of the Aeroplane.

Emergency lighting.

(2) An emergency lighting system must include—

(a) for Aeroplanes which have a maximum approved passenger seating configuration of more than nineteen—

(i) sources of general cabin illumination;

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

(iii) illuminated emergency exit marking and locating signs;

(iv) for Aeroplanes for which the application for the type certificate or equivalent was filed in an Appropriate Authority and when flying by night, exterior emergency lighting at all over wing exits, passenger emergency exits and at exits where descent assist means are required; and

(v) for Aeroplanes for which the type certificate was first issued by an Appropriate Authorityon or after the 1st January, 1958, floor proximity emergency escape path marking system in the passenger compartments;

(b) for Aeroplanes which have a maximum approved passenger seating configuration of 19 or less—

(i) sources of general cabin illumination;

(ii) internal lighting in emergency exit areas; and

(iii) illuminated emergency exit marking and locating

signs.

(c) An Operator shall not, by night, operate a passenger carrying Aeroplane which has a maximum approved passenger seating configuration of nine or less unless it is provided with a source of general cabin illumination to facilitate the evacuation of the Aeroplane.

(3) An emergency system may use dome lights or other sources of illumination already fitted on the Aeroplane and which are capable of remaining operative after the Aeroplane's battery has been switched off.

47. (1) An Operator shall not fly an Aeroplane unless, every exit Exits. and every internal door in the Aeroplane is in working order, and, subject to sub-regulations (2), (3) and (4), during take-off and landing and during any emergency, every such exit and door shall be kept free of obstruction and operating handle shall not be fastened by locking or otherwise so as to prevent, hinder or delay door operation during emergency.

(2) An exit may be obstructed by cargo if it is an exit which, in accordance with arrangements approved by the Authority, either generally or in relation to a class of Aeroplane or a particular Aeroplane, is not required for use by passengers.

(3) Every exit from the Aeroplane, being an exit intended to be used by passengers in normal circumstances, shall be marked with the word "EXIT" and "KUTOKA" in capital letters and every exit, being an exit intended to be used by passengers in an emergency only, shall be

marked with the words "EMERGENCY EXIT" and "MLANGO WA DHARURA" in capital letters or approved symbols depicting the same.

(4) Every exit from the Aeroplane shall be marked with instructions and with diagrams, to indicate the correct method of opening the exit and the markings shall be placed on or near the inside surface of the door or other closure of the exit and, if it can be opened from the outside of the Aeroplane, or near the exterior surface.

(5) Subject to compliance with sub regulation (4), if one, but not more than one, exit from an Aeroplane becomes inoperative at a place where it is not reasonably practicable for it to be repaired or replaced, nothing in this regulation shall prevent that Aeroplane from carrying passengers until it next lands at a place where the exit can be repaired or replaced.

(6) On any flight pursuant to this sub regulation—

(a) the number of passengers carried and the position of the seats which the passengers occupy shall be in accordance with arrangements approved by the Authority either in relation to the particular Aeroplane or to a class of Aeroplane; and

(b) in accordance with arrangements so approved, the exit shall be fastened by locking or otherwise, the words 'EXIT', 'KUTOKA', 'EMERGENCY EXIT' and 'MLANGO WA DHARURA' shall be covered, and the exit shall be marked by a red disc at least 23 centimetres in diameter with a horizontal white bar across it bearing the words 'NO EXIT' and 'HAKUNA KUTOKA' in red letters or approved symbols depicting the same.

Flights over designated land areas: all Aeroplane.

48. An Operator shall not operate an Aeroplane across land areas which have been designated by the state concerned as areas in which search and rescue would be especially difficult, unless equipped with such signalling devices and lifesaving equipment, including means of sustaining life as may be appropriate to the area over flown.

Emergency locator transmitter; Aeroplanes.

49. (1) Except as provided for in sub regulation 2 below, all Aeroplanes authorized to carry more than 19 passengers shall be equipped with at least one automatic Emergency Locator Transmitteror two Emergency Locator Transmitters of any type operating on 121.5 MHz and 406 MHz.

(2) An Aeroplane authorized to carry more than 19 passengers for which the individual certificate of airworthiness is first issued after 1 July 2008 shall be equipped with either—

(a) at least two Emergency Locator Transmitters, one of which shall be automatic; or

(b) at least one Emergency Locator Transmitter and a capability that meets the requirements of regulation 53.

(3) Except as provided for in sub regulation 4, all Aeroplanes authorized to carry 19 passengers or less shall be equipped with at least one Emergency Locator Transmitter of any type.

(4) An Aeroplane authorized to carry 19 passengers or less for which the individual certificate of airworthiness is first issued after 1 July 2008 shall be equipped with at least one automatic Emergency Locator Transmitter.

(5) Emergency Locator Transmitter equipment carried to satisfy the requirements of sub-regulation 1, 2, 3 and 4 shall operate in accordance with the relevant provisions of the Civil Aviation (Surveillance and Collision Avoidance systems)Regulations.

Emergency locator transmitter: Helicopters.

50. (1) All Helicopters operating in performance Class 1 and 2 shall be equipped with at least one automatic Emergency Locator Transmitter and, when operating on flights over water, with at least one automatic Emergency Locator Transmitter and one Emergency Locator Transmitter(S) in a raft or life jacket

(2) All Helicopters operating in performance Class 3 shall be equipped with at least one automatic Emergency Locator Transmitter and, when operating on flights over water with at least one automatic Emergency Locator Transmitter and one Emergency Locator Transmitter(S) in a raft or life jacket.

(3) Emergency Locator Transmitter equipment carried to satisfy the requirements of sub regulation 1 and 2 shall operate in accordance

with the relevant provisions of the Civil Aviation (Surveillance and Collision Avoidance Systems) Regulations.

Portable fire extinguishers.

51. (1) An Operator shall not operate an Aeroplane unless hand fire extinguishers are provided for use in pilot, passenger, and as applicable, cargo compartments and galleys in accordance with the following—

(a) the type and quantity of extinguishing agent is suitable for the kinds of fires likely to occur in the compartment where the extinguisher is intended to be used and, for personnel compartments, shall minimise the hazard of toxic gas concentration;

(b) at least one hand fire extinguisher, containing Halon 1211 (bromochlorodi-fluoromethane, $CBrCIF_2$), or equivalent as the extinguishing agent, shall be conveniently located on the cockpit for use by the flight crew;

(c) at least one hand fire extinguisher shall be located in, or readily accessible for use in, each galley not located on the main passenger cabin;

(d) at least one readily accessible 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 crewmembers in flight; and

(e) At least the following number of hand fire extinguishers shall be conveniently located in the passenger compartment and, in the event that two or more extinguishers are required, they shall be evenly distributed in the passenger compartment.

Maximum approved passenger seating configuration	Number of Extinguishers
7 to 30	1
31 to 60	2
61 to 200	3
201 to 300	4
301 to 400	5
401 to 500	6
501 to 600 7 601 or more	8

(f) at least one of the required fire extinguishers located in the passenger compartment of an Aeroplane with a maximum approved passenger seating configuration of at least thirtyone, and not more than sixty, and at least two of the fire extinguishers located in the passenger compartment of an Aeroplane with a maximum approved passenger seating configuration of sixty one or more must contain Halon 1211 (bromochlorodi-fluoromethane, CB_rCIF_2), or equivalent as the extinguishing agent.

Lavatory fire extinguisher.

52. (1) An Operator shall not operate an Aeroplane carrying passengers unless each lavatory in the Aeroplane is equipped with a built-in fire extinguisher for each disposal receptacle for towels, paper, or waste located within the lavatory.

(2) The built-in lavatory fire extinguishers referred in sub regulation (1) shall be designed to discharge automatically into each disposal receptacle upon occurrence of a fire in the receptacle.

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

(a) meet the applicable minimum performance requirements of the State of Registry; and

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

Lavatory smoke detector.

53. An Operator shall not operate a passenger-carrying Aeroplane unless each lavatory in the Aeroplane is equipped with a smoke detector system or equivalent that provides—

(a) warning light in the cockpit;

(b) a warning light or audio warning in the passenger cabin, which shall be readily detected by a cabin crewmember, taking into consideration the positioning of cabin crewmembers throughout the passenger compartment during various phases of flight.

Crash axe.

54. (1) An Operator shall not operate an Aeroplane with a maximum certificated take-off mass of over 5,700 kg or having a maximum approved passenger seating configuration of more than nine seats unless it is equipped with at least one crash axe or crowbar located in the cockpit.

(2) Where the maximum approved passenger-seating configuration is more than two hundred an additional crash axe or crowbar shall be carried and located in or near the most rearward galley area.

(3) Crash axes and crowbars located in the passenger compartment shall not be visible to the passengers.

Marking of break-in points.

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

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

(3) Where areas of the fuselage suitable for break-in by rescue crews in emergency are marked on an Aeroplane, such areas shall be marked as shown in the following diagram—

Medical Supplies (Aerplanes).

56. (1) An Aeroplane shall be equipped with—

(a) accessible and adequate medical supplies as set out in the Second Schedule;

(b) medical supplies which shall comprise—

(i) one or more first-aid kits for the use of cabin crew in managing incidents of ill health; and

(ii) for Aeroplanes required to carry cabin crew as part of the operating crew, one universal precaution kit (two for Aeroplanes authorized to carry more than 250 passengers) for the use of cabin crew members in managing incidents of ill health associated with a case of suspected communicable disease, or in the case of illness involving contact with body fluids; and

(iii) for Aeroplanes authorized to carry more than 100 passengers, on a sector length of more than two hours, a medical kit, for the use of medical doctors or other qualified persons in treating in-flight medical emergencies.

Medical Supplies (Helicopter).

57. (1) A helicopter shall be equipped with—

(a) accessible and adequate medical supplies as provided in the Second Schedule;

(b) Medical supplies shall comprise—

(i) first-aid kit; and

(ii) for helicopters required to carry cabin crew as part of the operating crew, a universal precaution kit, for the use of cabin crew in managing incidents of ill health associated with a case of suspected communicable disease, or in the case of illness involving contact with body fluids.

Oxygen Supply: Aeroplane

58. (1) A flight to be operated at flight altitudes at which the atmospheric pressure in personnel compartments will be less than 700 hPa shall not be commenced unless sufficient stored breathing oxygen is carried to supply—

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

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

(i)	Absolute pressure	Metres	Feet
(ii)	700 hPa	3 000	10 000
(iii)	620 hPa	4 000	13 000
(iv)	376 hPa	7 600	25 000

(2) An Aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa in personnel compartments shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in sub regulation 1.

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

(4) Pressurized aeroplanes newly introduced into service on or after1 July 1962 and intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa shall be equipped with a device to provide positive warning to the flight crew of any dangerous loss of pressurization.

(5) Pressurized aeroplanes introduced into service before the 1st July 1962 and intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa should be equipped with a device to provide positive warning to the flight crew of any dangerous loss of pressurization

(6) An aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa, cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa and for which the individual certificate of airworthiness is first issued on or after the 9th November, 1998, shall be provided with automatically deployable oxygen equipment to satisfy the requirements of sub regulation (1) and the total number of oxygen dispensing units shall exceed the number of passenger and cabin crew seats by at least 10 per cent.

Oxygen Supply Helicopter.

59. (1) A flight to be operated at flight altitudes at which the atmospheric pressure in personnel compartments will be less than 700 hPa shall not be commenced unless sufficient stored breathing oxygen is carried to supply—

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

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

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

(2) Flight to be operated with a pressurized helicopter shall not be commenced unless a sufficient quantity of stored breathing oxygen is carried to supply all the crew members and passengers, as is appropriate o the circumstances of the flight being undertaken, in the event of loss of pressurization, for any period that the atmospheric pressure in any compartment occupied by them would be less than 700 hPa and in addition, when the helicopteris operated at flight altitudes at which the atmospheric pressure is more than 376 hPa and cannot descend safely to a flight altitude at which the atmospheric pressure is equal to 620 hPa within four minutes, there shall be no less than a 10-minute supply for
he occupants of the passenger compartment.

(3) A helicopter intended to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa in personnel compartments shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies

required in sub regulation (1).

(4) Helicopter intended to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa but which is provided with means of maintaining pressures greater than 700 hPa in personnel compartments shall be providedwith oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in sub regulation (2).

(5) A helicopter intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa, or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa which cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa, and for which the individual certificate of airworthiness was issued on or after the 9th November 1998, shall be provided with automatically deployable oxygen equipment to satisfy the requirements of sub regulation 2 and the total number of oxygen dispensing units shall exceed the number of passenger and cabin crew seats by at least 10 per cent.

(6) Unpressurized helicopters intended to be operated at high altitudes shall carry equipment for storing and dispensing the oxygen supplies required in sub regulation (1).

(7) Pressurized helicopters intended to be operated at high altitudes should carry emergency oxygen storage and dispensing equipment capable of storing and dispensing the oxygen supplies required in sub regulation (1).

Crew Members use of Oxygen.

60. (1) All flight crew members, when engaged in performing duties essential to the safe operation of an aeroplane in flight, shall use breathing oxygen continuously whenever the circumstances prevail for which its supply has been required in regulation 58.

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

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

Protective breathing equipment.

61. (1) An Aeroplane with a maximum certificated takeoff mass of over 5,700 kg having a maximum approved seating configuration of
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more than nineteen seats shall have—

(a) protective breathing equipment to protect the eyes, nose and mouth of each flight crewmember while on cockpit duty and to provide oxygen for a period of not less than fifteen minutes; and

(b) sufficient protective breathing equipment to protect the eyes, nose and mouth of all required cabin crewmembers and to provide oxygen for a period of not less than fifteen minutes.

(2) When the flight crew is more than one and a cabin crewmember is not carried, portable protective breathing equipment must be carried to protect the eyes, nose and mouth of one member of the flight crew and to provide oxygen for a period of not less than fifteen minutes.

(3) The oxygen supply for protective breathing equipment may be provided by the required supplemental oxygen system.

(4) The protective breathing equipment intended for flight crew use shall be conveniently located on the cockpit and be easily accessible for immediate use by each required flight crewmember at their assigned duty station.

(5) The protective breathing equipment intended for cabin crew use shall be installed adjacent to each required cabin crewmember duty station.

(6) Easily accessible portable protective breathing equipment shall be provided and located at or adjacent to the required hand fire extinguishers except that, where the fire extinguisher is located inside a cargo compartment, the protective breathing equipment shall be stowedoutside but adjacent to the entrance to that compartment.

(7) The protective breathing equipment shall not while in use prevent required communication.

Megaphones: Aeroplane.

62. (1) An Aeroplane shall be equipped with portable battery powered megaphones readily accessible to the crew members assigned to direct emergency evacuation.

(2) The number and location of megaphones required by subregulation (1) shall be determined as follows—

(a) on Aeroplanes with a seating capacity of more than sixty and less than one hundred passengers, one megaphone shall be located at the most rearward location in the passenger cabin where it would be readily accessible to a normal flight attendant seat; and

(b) on Aeroplanes with a seating capacity of more than ninetynine passengers, two megaphones in the passenger cabin with one installed at the forward end and the other at the most rearward location where it would be readily accessible to a normal flight attendant seat.

(3) For Aeroplanes with more than one passenger cockpit in all cases where the total passenger seating configurations is more than sixty, at least one megaphone is required.

Megaphones: Helicopters.

63. A Helicopter with a total maximum approved passengerseating configuration of more than nineteen shall be equipped with portable battery powered megaphones readily available for use by crewmembers during emergency evacuation.

Individual floatation devices.

64. (1) All aircraft shall carry one life jacket or equivalent individual flotation device for each person on board.

(2) The life jackets or equivalent individual flotation devices referred to in sub-regulation (1) shall be stowed in a position easily accessible from the seat or berth of the person for whose use it is provided. Each life jacket and equivalent individual flotation device, when carried in accordance with sub regulation 1 shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons, except where the requirement of sub regulation 1 is met by the provision of individual flotation devices other than life jackets.

(3) Equipment for making the pyrotechnical distress signals described in the Civil Aviation (Rules of the Air) Regulations.

Life rafts; Aeroplanes.

65. (1) An operator shall not operate an aeroplane at a distance away from land, which is suitable for making an emergency landing, greater than that corresponding to—

(a) one hundred and twenty minutes at cruising speed or four hundred nautical miles, whichever is the lesser, for aeroplane capable of continuing the flight to an aerodrome with the critical power unit becoming inoperative at any point along the route or planned diversions; or

(b) thirty minutes at cruising speed or one hundred nautical miles, whichever is the lesser, for all other aeroplanes, without having on the aeroplane enough life rafts with rated capacities and buoyancy to accommodate the occupants of the aeroplane.

(2) Unless excess rafts of enough capacity are provided, the buoyancy and seating capacity of the rafts referred in sub regulation (1) shall accommodate all occupants of the aeroplane in the event of a loss of one raft of the largest rated capacity.

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(3) The life rafts to be provided under this regulation shall be stowed so as to facilitate readily use in emergency and be equipped with—

(a) a survivor locator light;

(b) a survival kit;

(c) life lines, and means of attaching one life raft with another;

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

(e) marine-type pyrotechnic signalling devices;

(f) a waterproof torch;

(g) means of making sea water drinkable, unless the full quantity of freshwater is carried as specified;

(h) two survival beacon radio apparatus for every eight life rafts, and an additional survival beacon radio apparatus for every additional fourteen or proportion of fourteen life rafts.

(4) The life rafts referred in sub regulation (1) which are not deployable by remote control and which have a mass of more than 40 kg shall be equipped with some means of mechanically assisted deployment.

(5) All seaplanes and amphibian aeroplane shall be equipped with ife rafts.

Life raft :Helicopter

66. (1) All helicopters for which the individual certificate of airworthiness was first issued on or after the 1st January, 1991, at least 50 per cent of the life rafts carried should be deployable by remote control.

(2) Rafts which are not deployable by remote control and which have a mass of more than 40 kg should be equipped with some means of mechanically assisted deployment.

Life jackets: Helicopters

67. An Operator shall not operate a Helicopter for any operations on water or flight over water when operating performance—

(a) Class 3 beyond auto rotational distance from land;

(b) Class 1 or 2 at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed; or

(c) Class 2 or 3 when taking off or landing at a heliport where the take-off or approach path is over water,

unless it is equipped with life jackets equipped with a survivor locator light, for each person on board stowed in an easily accessible position, from the seat or berth of the person for whose use it is provided and an individual infant flotation device, equipped with a survivor locator light, for use by each infant on board.

Flotation devices for Helicopter ditching.

68. An Operator shall not fly a Helicopter over water at a distance from land corresponding to more than ten minutes at normal

cruise speed in the case of performance Class 1 or 2 Helicopters, or flying over water beyond auto-rotational or safe forced landing distance from land in the case of performance Class 3 Helicopters, unless the Helicopter is equipped with a permanent or rapidly deployable means of flotation so as to ensure safe ditching of the Helicopter.

PART VIII— MISCELLANEOUS SYSTEMS AND EQUIPMENT

69. (1) An Operator shall not operate a passenger carrying Seats, safety belts
Aeroplane unless it is equipped with the following seats, safety belts and shoulder harnesses.
and shoulder harnesses that meet the airworthiness requirements for type certification of that Aeroplane—

(a) a seat or berth with safety belt for each person on board over the age of two years;

(b) a supplementary loop belt or another restraint device for each infant;

(c) a berth designed to be occupied by two persons, such as a multiple lounge or divan seat, shall be equipped with an approved safety belt for use by two occupants during en route flight only;

(d) a safety harness, which includes shoulder straps and a safety belt which may be used independently, for each flight crew seat;

(e) a safety harness for each pilot seat which shall incorporate a device which shall automatically restrain the occupant's torso in the event of rapid deceleration;

(f) seat in the passenger compartment for each cabin crewmember; and

(g) adequate seating and restraints shall be provided for the occupants, taking account of the likely flight and emergency landing loads to be encountered. Attention shall be paid to minimizing injury to occupants due to contact with surrounding structure during the operation of the Aeroplane.

(2) Aeroplanes or Helicopters shall be equipped with a forward or rearward facing (within 15 degrees of the longitudinal axis of the

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Aeroplane) seat, fitted with a safety harness for the use of each cabin crewmember required to satisfy the emergency evacuation requirement.

(3) The safety harness referred to in sub regulation (1) for each pilot seat shall incorporate a device to prevent a suddenly incapacitated pilot from interfering with the flight controls.

(4) In the case of an Aeroplane carrying out erect spinning, the Authority may permit a safety belt with one diagonal shoulder harness strap to be fitted if the Authority determines that such restraint is sufficient for carrying out erect spinning in that Aeroplane, and that it is not reasonably practicable to fit a safety harness in that Aeroplane.

(5) All Aeroplane and Helicopter shall be equipped with a forward or rearward facing (within 15 degrees of the longitudinal axis of the Aeroplane) seat, fitted with a safety harness for the use of each cabin crew member required to satisfy the intent of these Regulations in respect of emergency evacuation.

(6) Cabin crew seats provided in accordance with these Regulations shall be located near floor level and other emergency exits as required by the Authority for emergency evacuation.

Passenger and pilot compartment doors.

70. (1) Aeroplanes which is equipped with a flight crew compartment door, this door shall be capable of being locked, and means shall be provided by which cabin crew can discreetly notify the flight crew in the event of suspicious activity or security breaches in the cabin.

(2) A passenger-carrying Aeroplane of a maximum certificated take-off mass in excess of 45 500 kg or with a passenger seating capacity greater than 60 shall be equipped with an approved flight crew compartment door that is designed to resist penetration by small arms fire and grenade shrapnel, and to resist forcible intrusions by unauthorized persons. This door shall be capable of being locked and unlocked from either pilot's station.

(3) In an Aeroplane which is equipped with a flight crew compartment door in accordance with sub regulation 2—

(a) this door shall be closed and locked from the time all external doors are closed following embarkation until any such door is opened for disembarkation, except when necessary to permit access and egress by authorized persons; and

(b) means shall be provided for monitoring from either pilot's station the entire door area outside the flight crew compartment to identify persons requesting entry and to detect suspicious behavior or potential threat.

71. (1) An Aeroplane shall be equipped with a means of ensuring that the following information and instructions are conveyed to passengers—

Passenger information signs.

(a) when seat belts are to be fastened;

(b) when and how oxygen equipment is to be used if the carriage of oxygen is required;

(c) restrictions on smoking;

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

(e) location and method of opening emergency exits;

(2) An Aeroplane shall have a sign or placard affixed to each forward bulkhead and each passenger seat back that reads "FASTEN SEAT BELT WHILE SEATED." and " FUNGA MKANDA WAKATI UMEKETI" or approved symbols depicting the same.

(3) An Operator shall ensure that an Aeroplane is equipped with a means of ensuring that the information and instructions are conveyed to passengers on location and use of life jackets or equivalent individual flotation devices where their carriage is required; and

(4) An Operator shall ensure that an Aeroplane equipped with a means of ensuring that the information and instructions are conveyed to passengers on location and method of opening emergency exits;

72. An Operator shall not operate a passenger carrying Aeroplane with a maximum approved passenger seating configuration of more than nineteen unless a public address system is installed that—

Public address system.

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

(b) for each required floor level passenger emergency exit which has an adjacent cabin crew seat, has a microphone which is readily accessible to the seated cabin crewmember, except that one microphone may serve more than one exit, provided the proximity of the exits allows unassisted verbal communication between seated cabin crewmembers;

(c) is capable of operation within ten seconds by a cabin crewmember at each of those stations in the compartment from which its use is accessible; and

(d) is audible and intelligible at all passenger seats, toilets, and cabin crew seats and workstations

Materials for cabin interiors.

73. An Operator shall not operate an Aeroplane unless the seat cushions in any compartment occupied by crew or passengers other than those on flight crewmember seatmeet requirements pertaining to fire protection as specified by the Authority.

Materials for cargo and baggage compartments.

74. (1) An Operator shall not operate a passenger carrying Aeroplane unless, each Class C cargo compartment greater than 200 cubic feet in volume in a transport category has ceiling and sidewall liner panels which are constructed of—

(a) glass fibre reinforced resin; or

(b) materials which meet the test requirements for flame resistance of cargo compartment liners as prescribed for type certification.

(2) The term "liner" in sub regulation (1) (b) includes any design feature, such as a joint or fastener, which would affect the capability of the liner to safely contain fire.

(3) A Class C cargo or baggage compartment is one in which—

(a) there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station; there is an approved built-in fire extinguishing or suppression system controllable from the cockpit;

(b) there is means to exclude hazardous quantities of smoke, flames, or extinguishing agent, from any compartment occupied by the crew or passengers; and

(c) there are means to control ventilation and drafts within the compartment so that the extinguishing agent used can control any fire that may start within the compartment.

Power supply, distribution, and indication system.

75. (1) An Operator shall not operate an Aeroplane unless it is equipped with an electrical power supply and distribution system that—

(a) meets the airworthiness requirements for certification of a commercial air transport Aeroplane, as specified by the Authority; or

(b) is able to produce and distribute the load for the required instruments and equipment, with use of an external power supply if any one electrical power source or component of the power distribution system fails, and a means for indicating the adequacy of the electrical power being supplied to required flight instruments.

(2) Engine-driven sources of energy when used shall be on separate engines.

Protective circuit fuses.

76. (1) An Operator shall not operate an Aeroplane in which protective circuit fuses are installed, unless there are spare protective circuit fuses available for use in flight equal to at least ten percent of the number of fuses of each rating or three of each rating whichever is the greater.

(2) An Aeroplaneshall be fitted with fuses that are accessible in flight, spare electrical fuses of appropriate ratings for replacement of those fuses.

Emergency power supply.

77. (1) An Aeroplane of a maximum certificated take-off mass of over 5 700 kg newly introduced into service after the 1st January 1975 shall be fitted with an emergency power supply, independent of the main electrical generating system, for the purpose of operating and illuminating, for a minimum period of 30 minutes, an attitude indicating instrument (artificial horizon), clearly visible to the pilot-incommand.

(2) Subject to sub regulation (1), the emergency power supply shall be automatically operative after the total failure of the main electrical generating system and clear indication shall be given on the instrument panel that the attitude indicators is being operated by emergency power.

Operation of Aeroplanes or Helicopters in icing conditions.

78. An Aeroplane or Helicopter shall be equipped with suitable de-icing or anti-icing devices when operated in circumstances in which conditions are reported to exist or are expected to be encountered.

Icing detection.

79. (1) An Operator shall not operate an Aeroplane in expected or actual icing conditions at night unless it is equipped with a means to illuminate or detect the formation of ice.

(2) Any illumination that is used on an Aeroplane shall be of a type that shall not cause glare or reflection that would handicap crewmembers in the performance of their duties.

Pilot indication systems.

80. An Operator shall not operate an Aeroplane equipped with a flight instrument pilot heating system unless the Aeroplane is also equipped with an operable pilot heat indication system that complies with the following requirements—

(a) the indication provided shall incorporate an amber light that is in clear view of a flight crewmember; and

(b) the indication provided shall be designed to alert the flight crew if either the pilot heating system is switched off, or the pilot heating system is switched on and any pilot tube heating element is inoperative.

Static pressure system.

81. An Operator shall not operate an Aeroplane in accordance with instrument flight rules or by night unless the Aeroplane is equipped with two independent static pressure systems, except that for

Propeller -driven Aeroplanes with maximum certificated take-off mass of 5,700 kg or less, one static pressure system and one alternate source of static pressure is allowed.

Windshield wipers.

82. An Operator shall not operate an Aeroplane with a maximum certificated take off mass of over 5,700 kg, unless it is equipped at each pilot station with a windshield wiper or equivalent means to maintain a clear portion of the windshield during precipitation.

Chart holder.

83. An Operator shall not operate an Aeroplane in accordance with instrument flight rules or by night unless the Aeroplane is equipped with a chart holder installed in an easily readable position which can be illuminated for night operations.

Cosmic radiation detection equipment.

84. An Aeroplane intended to be operated above 15 000 meters (49 000 ft) shall carry equipment to measure and indicate continuously the dose rate of total cosmic radiation being received (i.e. the total of ionizing and neutron radiation of galactic and solar origin) and the cumulative dose on each flight and the display unit of the equipment shall be readily visible to a Flight Crew Member.

Seaplanes and amphibians: miscellaneous equipment.

85. An Operator shall not operate a seaplane or an amphibian Aeroplane on water unless it is equipped with—

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

(b) equipment for making the sound signals prescribed in the International Regulations for Preventing Collisions at Sea, where applicable and one sea anchor (drogue).

Least-risk bomb location

86. Aeroplanes of a maximum certificated take-off mass in excess of 45 500 kg or with a passenger seating capacity greater than 60, a least-risk location on the Aeroplane shall be identified where a bomb or other explosive device may be placed to minimize the effects on the Aeroplane in the case of detonation.

Marking and Placards

87. (1) Markings and placards on instruments, equipment, controls, etc., shall include such limitations or information as necessary for the direct attention of the flight crew during flight.

(2) Markings and placards or instructions shall be provided to give any information that is essential to the ground crew in order to preclude the possibility of mistakes in ground servicing (e.g. towing, refuelling) that could pass unnoticed and that could jeopardize the safety of the Aeroplane in subsequent flights.

Electronic Flight Bags.

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

(2) Where EFBs are used on board an Aeroplane the operator shall—

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

(b) establish and document the procedures for the use of, and training requirements for, the device and each EFB function; and

(c) ensure that, in the event of an EFB failure, sufficient information is readily available to the flight crew for the flight to be conducted safely.

(3) The Authority shall approve the operational use of EFB functions to be used for the safe operation of Aeroplanes.

(4) In approving the use of EFBs, the operator shall ensure that—

(a) the EFB equipment and its associated installation hardware, including interaction with Aeroplane systems if applicable, meet the appropriate airworthiness certification requirements;

(b) the operator has assessed the safety risks associated with the operations supported by the EFB functions;

(c) the operator has established requirements for redundancy of the information (if appropriate) contained in and displayed by the EFB functions;

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

(e) the operator has established and documented the procedures for the use of, and training requirements for, the EFB and the EFB functions.

Surveillance Equipment.

89. (1) An aeroplane shall be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services.

(2) An aeroplane shall be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services.(2) For operations where surveillance equipment is required to meet an RSP specification for performance-based surveillance (PBS), an aeroplane shall, in addition to the requirements specified in in sub regulation 1 above—

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

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specifications;

(b) have information relevant to the aeroplane RSP specification capabilities listed in the flight manual or other aeroplane documentation approved by the State of Design or State of Registry; and

(c) have information relevant to the aeroplane RSP specification capabilities included in the MEL.

(3) The State of the Operator shall, for operations where an RSP specification for PBS has been prescribed, ensure that the operator has established and documented—

(a) normal and abnormal procedures, including contingency procedures;

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

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

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

(4) The Authority shall ensure that, in respect of those aeroplanes mentioned in sub regulation 2, adequate provisions exist for—

(a) receiving the reports of observed surveillance performance issued by monitoring programmes established in accordance with the Civil Aviation (Air Traffic Services) Regulations; and

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

Installation.

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

Location of an Aeroplane in Distress.

91. (1) All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2021, shall autonomously transmit information from which a position can be determined by the operator at least once every minute, when in distress.

(2) All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2021, shall autonomously transmit information from which a position can be determined by the operator at least once every minute, when in distress.

(3) The operator shall make position information of a flight in distress available to the appropriate organizations, as established by the Authority

(4) An aeroplane in distress shall automatically activate the transmission of information from which its position can be determined by the operator and the position information shall contain a time stamp and that it shall be possible for this transmission to be activated manually and the system used for the autonomous transmission of position information shall be capable of transmitting that information in the event of aircraft electrical power loss, at least for the expected duration of the entire flight.

(5) An aircraft is in a distress condition when it is in a state that, if the aircraft behaviour event is left uncorrected, can result in an accident an an autonomous transmission of position information shall be active when an aircraft is in a distress condition to provide a high probability of locating an accident site to within a 6 NM radius since the operator shall be alerted when an aircraft is in a distress condition with an acceptable low rate of false alerts and in case of a triggered transmission system, initial transmission of position information shall commence immediately or no later than five seconds after the detection of the activation event.

(6) When an aircraft operator or an air traffic service unit (ATSU) has reason to believe that an aircraft is in distress, coordination shall be established between the ATSU and the aircraft operator.

(7) The State of the Operator shall identify the organizations that will require the position information of an aircraft in an emergency phase. These shall include, as a minimum—

(a) air traffic service unit(s) (ATSU); and

(b) SAR rescue coordination centre(s) (RCC) and sub-centres.

(8) When autonomous transmission of position information has been activated, it shall only be able to be deactivated using the same mechanism that activated it.

(9) The accuracy of position information shall, as a minimum, meet the position accuracy requirements established for ELTs.

PART IX—EXEMPTIONS

92. (1) An Operator may apply to the Authority for an exemption from any of regulation herein. Requirements for Application.

(2) An application for an exemption shall be submitted not less than sixty days before the date on which the time to obtain the review becomes due.

(3) A request for an exemption shall contain the applicant's—

(a) name;

(b) physical address and mailing address;

(c) telephone number;

(d) fax number if available; and

(e) email address if available.

(4) The application shall be accompanied by a fee specified by the Authority, for technical evaluation.

93. (1) An application for an exemption must contain the following— Substance of the request for exemption.

(a) a citation of the specific requirement from which the applicant seeks exemption;

(b) an explanation of why the exemption is needed;

(c) a description of the type of operations to be conducted under the proposed exemption;

(d) the proposed duration of the exemption;

(e) an explanation of how the exemption would be in the public interest, that is, benefit the public as a whole;

(f) a detailed description of the alternative means by which the applicant will ensure a level of safety equivalent to that established by the regulation in question;

(g) a review and discussion of any known safety concerns with the requirement, including information about any relevant accidents or incidents of which the applicant is aware; and

(h) if an applicant seeks to operate under the proposed exemption outside of the Kenya's airspace, an indication whether the exemption would contravene any provision of the Standards and Recommended Practices of the (ICAO) as well as the Regulations pertaining to the airspace in which the operation will occur.

(2) An applicant seeking emergency processing, the application shall contain supporting facts and reasons to the effect that the application was not timely filed, and the reasons it is an emergency.

(3) The Authority may refuse an application if the Authority finds that the applicant has not justified the failure to apply for an exemption in timely manner.

Initial review by the Authority.

94. (1) The Authority shall review the application for accuracy and compliance with the requirements of regulations 89 and 90.

(2) If the application appears on its face to satisfy the provisions of this Regulation and the Authority determines that a review of its merits is justified, the Authority will publish a detailed summary of the application in either Government Gazette, aeronautical information circular or at least one of the local daily newspaper for comment and specify the date by which comments must be received by the Authority for consideration.

(3) Where the filing requirements of regulations 89 and 90 have not been met, the Authority will notify the applicant and take no further action until and unless the applicant corrects the application and re-files it in accordance with these Regulations.

(4) If the request is for emergency relief, the Authority shall publish the application or the Authority's decision as soon as possible after processing the application.

Evaluation of the request.

95. (1) After initial review, if the filing requirements have been satisfied, the Authority shall conduct an evaluation of the request so as to include—

(a) determination of whether an exemption would be in the public interest;

(b) a determination, after a technical evaluation of whether the applicant's proposal would provide a level of safety equivalent to that established by the regulation, although where the Authority decides that a technical evaluation of the request would impose a significant burden on the Authority's technical resources, the Authority may deny the exemption on that basis;

(c) a determination of whether a grant of the exemption would contravene the applicable Authority ICAO Standards and Recommended Practices; and

(d) a recommendation based on the preceding elements, of whether the request should be granted or denied, and of any conditions or limitations that should be part of the exemption.

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(2) The Authority shall notify the applicant by letter and publish a detailed summary of its evaluation and decision to grant or deny the request.

(3) The summary referred to in sub regulation (2) shall specify the duration of the exemption and any conditions or limitations of the exemption.

(4) If the exemption affects a significant population of the aviation community in Kenya, the Authority shall publish the summary in aeronautical information circular.

PART X—GENERAL PROVISIONS

96. (1) The Authority may, in the public interest, suspend provisionally pending further investigation or re-examine the original certification basis of any approval, exemption or such other document issued or granted under these Regulations. Suspension, revocation of approval.

(2) The Authority may, upon the completion of an investigation and in the public interest, revoke, suspend, or vary any approval, exemption or such other document issued or granted under these Regulations.

(3) The Authority may, in the public interest, prevent any person or Aeroplane from flying.

(4) A holder or any person having the possession or custody of any approval, exemption or such other documents which has been revoked, suspended or varied under these Regulations shall surrender it to the Authority within a reasonable time after being required to do so by the Authority.

(5) The breach of any condition subject to which any approval, exemption or any such other document, other than a licence issued in respect of an Aerodrome, has been granted or issued under these Regulations shall render the document invalid during the continuance of the breach.

Use and retention of records.

97. (1) An Operator shall not—

(a) use any approval, exemption or such other document issued or required by or under these Regulations which has been forged, altered, revoked, or suspended, or to which he is not entitled;

(b) forge or alter an approval, exemption or other document issued or required by or under these Regulations;

(c) lend any approval, exemption or such other document issued or required by or under these Regulations to any other person; or

(d) make any false representation for the purpose of procuring for himself or any other person the grant issue renewal or variation of any such approval, or exemption.

(2) During the period for which it is required under these Regulations to be preserved, no person shall mutilate, alter, render illegible or destroy any records required by or under these Regulations to be maintained, or knowingly make, or procure or assist in the making of, any false entry in any record, or wilfully omit to make a material entry in record.

(3) All entries in records required to be maintained by or under these Regulations shall be made in a permanent and indelible material.

(4) An Operator shall not purport to issue any approvals, authorisations or exemptions under these Regulations unless he is authorised by the Authority to do so.

(5) An Operator shall not issue any approval, authorisation or exemption of the kind referred to in sub-regulation (4) unless he has satisfied himself that all statements in the certificate are correct, and that the applicant is qualified to hold that certificate.

Reports of violation.

98. (1) Any person who knows of a violation of the Act, or any rule, regulation, or order issued there under, shall report it to the Authority.

(2) The Authority will determine the nature and type of any additional investigation or enforcement action that need be taken.

Enforcement of directions.

99. (1) The Authority shall take enforcement action on any regulated entity that fails to comply with the provisions of these Regulations.

(2) Inspectors of the Authority holding valid delegations shall take necessary action to preserve safety where an undesirable condition has been detected.

(3) The actionsreferred to in sub regulation (2) may include—

(a) in the case of a regulated entity, imposition of operating restrictions until such a time that the existing undesirable condition has been resolved;

(b) in the case of a licensed personnel, require that the individual does not exercise the privileges of the license until such a time that the undesirable condition has been resolved.

(4) In carrying out the enforcement actions pursuant to the provisions of sub regulation (2), the inspectors of the Authority shall

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invoke the powers with due care and act in good faith in the interest of preserving safety.

Aeronautical user fees.

100. (1) The Authority may notify the fees to be charged in connection with the issue, validation, renewal, extension or variation of any certificate, licence or other document, including the issue of a copy thereof, or the undergoing of any examination, test, Inspection or investigation or the grant of any permission or approval, required by, or for the purpose of these Regulations any orders, notices or proclamations made thereunder.

(2) Upon application being made in connection with which a fee is chargeable in accordance with the provisions of sub-regulation

(1), the applicant shall be required, before the application is entertained, to pay the fee so chargeable.

(3) If, after that payment has been made, the application is withdrawn by the applicant or otherwise ceases to have effect or is refused, the Authority shall not refund the payment made.

Application of regulations to Government and visiting forces, etc.

101. Except where the context otherwise requires, the provisions of these Regulations shall—

(a) in so far as they apply, whether by express reference or otherwise, to Aeroplane registered in Kenya, apply to such Aeroplane wherever they may be;

(b) in so far as they apply, whether by express reference or otherwise, to other Aeroplane, apply to such Aeroplane when they are within the Kenya;

(c) in so far as they prohibit, require or regulate, whether by express reference or otherwise, the doing of anything by any person in, or by any of the crew of, any Aeroplane registered in Kenya, shall apply to such persons and crew, wherever they may be; and

(d) in so far as they prohibit, require or regulate, whether by express reference or otherwise, the doing of anything in relation to any Aeroplane registered in Kenya by other persons shall, where such persons are citizens of the Kenya, apply to them wherever they may be.

Extra-territorial application of Regulations.

102. (1) These Regulations shall apply to Aeroplane, not being military. Aeroplane, belonging to or exclusively employed in the service of the Government, and for the purposes of such application, the Department or other authority for the time being responsible for management of the Aeroplane shall be deemed to be the operator of the Aeroplane, and in the case of an Aeroplane belonging to the Government, to be the owner of the interest of the Government in the Aeroplane.

(2) Except as otherwise expressly provided, the naval, military and air force authorities and member of any visiting force and property held or used for the purpose of such a force shall be exempt from the provision of these regulations to the same extent as if the visiting force formed part of the military force of the Kenya.

PART XI—OFFENCES AND PENALTIES

Contravention of Regulations.

103. An Operator who contravenes any provision of these Regulations may have his licence, certificate, approval, authorisation, exemption or such other document revoked or suspended.

Penalties.

104. (1) An Operator who contravenes any provision of these Regulations, orders, notices or proclamations made there under in relation to an Aeroplane, the operator of that Aeroplane and the pilotin-command, if the operator or, the pilot in command is not the person who contravened that provision he shall, without prejudice to the liability of any other person under these Regulations for that contravention, be deemed for the purposes of the following provisions of this regulation to have contravened that provision unless he proves that the contravention occurred without his consent or connivance and that he exercised all due diligence to prevent the contravention.

(2) If it is proved that an act or omission of any person, which would otherwise have been a contravention by that person of a provision of these Regulations, orders, notices or proclamations made there under was due to any cause not avoidable by the exercise of reasonable care by that person, the act or omission shall be deemed not to be a contravention by that person of that provision.

(3) Where an Operator is charged with contravening a provision of these Regulations, Orders, notices or proclamations made there under by reason of his having been a member of the flight crew of an Aeroplane on a flight for the purpose of commercial air transport operations, the flight shall be treated, without prejudice to the liability of any other person under these Regulations, as not having been for that purpose if he proves that he neither knew nor had reason to know that the flight was for that purpose.

(4) An Operator who contravenes any provision of these Regulations, orders, notices or proclamations made thereunder not being a provision referred to in sub-regulation (11) shall, upon conviction, be liable to a fine, and in the case of a continuing contravention, each day of the contravention shall constitute a separate offence.

(5) In case an Aeroplane is involved in a contravention and the contravention is by the owner or operator of the Aeroplane, the Aeroplane shall be subject to a lien for the penalty.

(6) Any Aeroplane subject to alien for the purpose of sub-

regulation (5) may be seized by and placed in the custody of the Authority;

(7) The Aeroplane shall be released from custody of the Authority upon—

(a) payment of the penalty or the amount agreed upon in compromise;

(b) deposit of a bond in such amount as the Authority may prescribe, conditioned upon payment of the penalty or the amount agreed upon in compromise;

(c) receiving an order of the court to that effect.

(8) An Operator who contravenes any provision specified as an “A” provision in the Third Schedule to these Regulations commits an offence and is liable on conviction to a fine not exceeding one million shillings for each offence or to imprisonment for a term not exceeding one year or to both.

(9) The Authority and any person specifically authorised by name by him or any police officer not below the rank of inspector specifically authorised by name by the Minister, may compound offences under Part A of the Third Schedule to these Regulations by assessing the contravention and requiring the person reasonably suspected of having committed the offence to pay to the Authority a sum equivalent in Kenya shillings of one hundred United States dollars and three hundred United States dollars for provisions referred to in sub-part (i) and subpart (ii) respectively Part A of the Third Schedule to these Regulations.

(10) Where any person is aggrieved by any order made under sub regulation (9), he may, within twenty-one days of such order being made, appeal against the order to the High Court and the provisions of the Criminal Procedure Act shall apply mutatis mutandis, to every such appeal as if it were an appeal against a sentence passed by a district court in the exercise of its original jurisdiction.

(11) An operator who contravenes any provision specified as a “B” provision in the Third Schedule to these Regulations commits an offence and is liable on conviction to a fine not exceeding two million shillings for each offence or to imprisonment for a term not exceeding three years or to both.

(12) An operator who contravenes any provision of these Regulations not being a provision referred to in the Third Schedule to these Regulations commits an offence and is liable on conviction to a fine not exceeding two million shillings, and in the case of a second or subsequent conviction for the like offence to a fine not exceeding four million shillings.

105. (1) A license, certificate, approval or any other document issued to a person or operator prior to the commencement of these Regulations shall continue in force as if it was issued under these Regulations until it expires, varied or cancelled by the Authority. Transition provisions.

(2) Notwithstanding any other provision of these Regulations, a person who at the commencement of these Regulations, is carrying out any acts, duties or operations affected by these Regulations shall, within one (1) year from the date of commencement, or within such longer time that the Cabinet Secretary may, by notice in the Gazette prescribe, comply with the requirements of these Regulations or cease to carry out such acts, duties or operations.

106. The Civil Aviation (Instruments and Equipment's) Regulations, 2013 are revoked. Revocation of L.N 75/ 2013.

FIRST SCHEDULE (rr. 33(6),34(3),35(3),39(3)(c), 40(1),42, 43(1)&(2)) FLIGHT DATA RECORDER – INFORMATION TO BE RECORDED

The material in this Schedule concerns flight recorders intended for installation in aeroplanes engaged in international air navigation. Crash protected flight recorders comprise one or more of the following systems: a flight data recorder, a cockpit voice recorder, an airborne image recorder or a data link recorder. Lightweight flight recorders comprise one or more of the following systems: an aircraft data recording system, a cock pit audio recording system, an airborne image recording system(AIRS) and/or a data link recording system. *Image and data link information may be recorded on either the CARS or the ADRS.*

Specifications applicable to lightweight flight recorders may be found in EUROCAE ED155, Minimum, Operational Performance Specification (MOPS), or equivalent documents.

GENERAL REQUIREMENTS

1.1Non-deployable flight recorder containers shall—

(a) be painted a distinctive orange or yellow colour;

(b) Carry reflective material to facilitate their location; and

(c) Have securely attached an automatically activated underwater locating device operating at a frequency of 37.5kHz.

At the earliest practicable date, but not later than 1 January 2018, this device shall operate for a minimum of 90 days.

Note.— Currentindustrypracticeistophaseoutyellowflightrecordercontainersattheendoftheservicel ifeofthe flight recorder.

1.2 Automatic deployable flight recorder containers shall—

(a) Be painted a distinctive orange colour, however the surface visible from outside the aircraft maybe of another colour;

(b) carry reflective material to facilitate their location; and

(c) have an integrated automatically activated ELT.

1.3 The flight recorder systems shall be installed so that— (a)

the probability of damage to the recordings is minimized;

(b) they receive electrical power from a bus that provides the maximum reliability for operation of the flight recorder systems without jeopardizing service to essential or emergency loads;

(c) there is an aural or visual means for pre-flight checking that the flight recorder systems are operating properly; and

(d) if the flight recorder systems have a bulk erasure device, the installation shall be designed to prevent operation of the device during flight time or crash impact.

1.4 The flight recorder systems, when tested by methods approved by the appropriate certificating authority, shall be demonstrated to be suitable for the environmental extremes over which they a redesigned to operate.

1.5 Means shall be provided for an accurate time correlation between the flight recorder systems recordings.

1.6 The manufacturer shall provide the appropriate certificating authority with the following information in respect of the flight recording systems—

(a) manufacturer's operating instructions, equipment limitations and installation procedures;

(b) parameter origin or source and equations which relate counts to units of measurement and

(c) manufacturer's test reports.

2. FLIGHT DATARECORDER (FDR)

2.1 The flight data recorder shall start to record prior to the aeroplane moving under its own power and record continuously until the termination of the flight when the aeroplane is no longer capable of moving under its own power.

2.2 Parameters to be recorded

2.2.1 Flight data recorders shall be classified as Type I, Type I A, Type II and Type II A depending upon the number of parameters to be recorded and the duration required for retention of there corded information.

2.2.2 The parameters that satisfy the requirements for FDRs are listed in the paragraphs below. The number of parameters to be recorded shall depend on aeroplane complexity. The parameters without an asterisk(*)are mandatory parameters which shall be recorded regardless of aeroplane complexity. In addition, the parameters designated by an asterisk (*)shall be recorded if an information data source for the parameter is used by aeroplane systems or the flight crew to operate the aeroplane. However, other parameters may be substituted with due regard to the aeroplane type and the characteristics of the recording equipment.

2.2.2.1 The following parameters shall satisfy the requirements for flight path and speed—

(a) Pressure altitude

(b) Indicated air speed or calibrated airspeed

(c) Air-ground status and each landing gear air-ground sensor when practicable

(d) Total or outside air temperature

(e) Heading (primary flight crew reference)

(f) Normal acceleration

(g) Lateral acceleration

(h) Longitudinal acceleration(body axis)

(i) Time or relative time count

(j) Navigation data*: drift angle, windspeed, wind direction, latitude/longitude

(k) Groundspeed*

(l) Radio altitude*

2.2.2.2 The following parameters shall satisfy the requirements for attitude: Pitch attitude— (a) Roll attitude

(b) Yaw or sides lipangle*

(c) Angle of attack*

2.2.2.3 The following parameters shall satisfy the requirements for engine power—

(a) Engine thrust/power: propulsive thrust/power on each engine, cockpit thrust/power lever position

(b) Thrust reverse status*

(c) Engine thrust command*

(d) Engine thrust target*

(e) Engine bleed valve position*

(f) Additional engine parameters*: EPR, N1, indicated vibration level, N2,EGT,TLA, fuelflow, fuel cut-off lever position, N3

2.2.2.4 The following parameters shall satisfy the requirements for configuration—

(a) Pitch trim surface position

(b) Flaps*: trailing edge flap position, cockpit control selection

(c) Slats*: leading edge flap (slat) position, cockpit control selection

(d) Landing gear*:landing gear, gear selector position

(e) Yaw trim surface position*

(f) Roll trim surface position*

(g) Cockpit trim control input position pitch*

(h) Cockpit trim control input position roll*

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(i) Cockpit trim control input position yaw*

(j) Groundspoilerandspeedbrake*:Groundspoilerposition,groun dspoilerselection, speedbrakeposition,speed brake selection

(k) De-icing and/or anti-icing systems selection*

(l) Hydraulic pressure(each system)*

(m) Fuel quantity in CG trim tank*

(n) AC electrical bus status* (o) DC electrical bus status*

(p) APU bleed valve position*

(q) Computed centre of gravity*

2.2.2.5 The following parameters shall satisfy the requirements for operation—

(a) Warnings

(b) Primary flight control surface and primary flight control pilot input: pitch axis, roll axis, yaw axis

(c) Marker beacon passage

(d) Each navigation receiver frequency selection

(e) Manual radio transmission keying and CVR/FDR synchronization reference

(f) Autopilot/auto throttle/AFCSmode and engagement status*

(g) Selected barometric setting*: pilot, first officer

(h) Selected altitude (all pilot selectable modes of operation)*

(i) Selected speed (all pilot selectable modes of operation)* (j)

Selected Mach (all pilot selectable modes of operation)*

(k) Selected vertical speed (all pilot selectable modes of operation)*

(l) Selected heading (all pilot selectable modes of operation)*

(m) Selected flight path (all pilot selectable modes of operation)*: course/DSTRK, path angle

(n) Selected decision height*

(o) EFIS display format*: pilot, first officer

(p) Multi-function/engine/alerts display format*

(q) GPWS/TAWS/GCAS status*: selection of terrain display mode including pop-up display status, terrain alerts, both cautions and warnings, and advisories, on/off switch position

(r) Low pressure warning*: hydraulic pressure, pneumatic pressure

(s) Computer failure*

(t) Loss of cabin pressure*

(u) TCAS/ACAS(traffic alert and collision avoidance system/airborne collision avoidance system)*

(v) Ice detection*

(w) Engine warning each engine vibration*

(x) Engine warning each engine over temperature*

(y) Engine warning each engine oil pressure low*

(z) Engine warning each engine overspeed*

(aa) Winds hear warning*

(bb) Operational stall protection, stick shaker and push eractivation*

(cc) All cock pit flight control input forces*: control wheel, control column, rudder pedal cockpit input forces

(dd) Vertical deviation*: ILS glide path, MLS elevation, GNSS approach path

(ee) Horizontal deviation*:ILS localizer, MLS azimuth, GNSS approach path

(ff) DME1and 2distances*

(gg) Primary navigation system reference*:GNSS,INS,VOR/DME,MLS, Loran C,ILS

(hh) Brakes*: left and right brake pressure, left and right brake pedal position

(ii) Date*

(jj) Event marker*

(kk) Head up display in use*

(ll) Paravisual display on*

Note.—It is not intended that aeroplanes issued with an individual certificate of airworthiness before the 1st January, 2016 be modified to meet the range, sampling, accuracy or resolution guidance detailed in this Schedule.

2.2.2.6 Type IA FDR. This FDR shall be capable of recording, as appropriate to the aeroplane, at least the78 parametersinTableA8-1.

2.2.2.7 Type IFDR. This FDR shall be capable of recording, as appropriate to the aeroplane, at least the first 32 parametersinTableA8-1.

2.2.2.8 Types II and II AFDRs. These FDRs shall be capable of recording, as appropriate to the aeroplane, at least the first16 parameters in Table A8-1.

2.2.2.9 The parameters that satisfy the requirements for flight path and speed as displayed to the pilot(s) are listed below. The parameters without an(*)are mandatory parameters which shall be recorded. In addition, the parameters designated by an (*) shall be recorded if an information source for the parameter is displayed to the pilot and is practicable to record:

Pressure altitude

— Indicated airspeed or calibrated airspeed

— Heading (primary flight crew reference)

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(a) Pitch attitude

(b) Roll attitude

(c) Engine thrust/power

(d) Landing-gear status*

(e) Total or outside air temperature*

(f) Time*

(g) Navigation data*: drift angle, windspeed,wind direction, latitude/longitude (h) Radio altitude*

2.3 Additional information

2.3.1 A Type II A FDR, in addition to a 30-minute recording duration, shall retain sufficient information from the preceding take-off for calibration purposes.

2.3.2 The measurement range, recording interval and accuracy of parameters on installed equipment shall be verified by methods approved by the appropriate certificating authority.

2. 3.3Documentation concerning parameter allocation, conversion equations, periodic calibration and other serviceability/maintenance information shall be maintained by the operator. The documentation needs to be sufficient to ensure that accident investigation authorities have the necessary information to read out the data in engineering units.

3. COCKPIT VOICE RECORDER (CVR) ANDCOCKPIT AUDIORECORDING SYSTEM (CARS)

3.1 Signals to be recorded

The CVR and CARS shall start to record prior to the aeroplane moving under its own power and record continuously until the termination of the flight when the aeroplane is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the CVR and CARS shall start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cock pit checks immediately following engine shutdown at the end of the flight.

3.1.1 The CVR shall record on four separate channels, or more, at least the following—

(a) voice communication transmitted from or received in the aeroplane by radio;

(b) aural environment on the flight deck;

(c) voice communication of flight crew members on the flight deck using the aeroplane’s interphone system, if installed;

(d) voice or audio signals identifying navigation or approach aids introduced in the headset or speaker; and

(e) voice communication off light crew members using the passenger address system, if installed.

3.1.2 The CARS shall record on two separate channels, or more, at least the following:

(a) voice communication transmitted from or received in the aeroplane by radio;

(b) aural environment on the flight deck; and

(c) voice communication of flight crew members on the flight deck using the aeroplane’s interphone system, if installed.

3.1.3 The CVR shall be capable of recording on at least four channels simultaneously .On a tape-based CVR, to ensure accurate time correlation between channels, the CVR is to record in an in-line format. If a bi-directional configuration is used, the in-line format and channel allocation shall be retained in both directions.

Note 1.— Channel1is located closest to the base of the recording head.

Note2.—The preferred channel allocation presumes use of current conventional magnetic tape transport mechanisms, and is specified because the outer edges of the tape have a higher risk of damage than the middle. It is not intended to preclude use of alternative recording media where such constraints may not apply.

4. AUTOMATIC DEPLOYABLE FLIGHTRECORDER(ADFR)

4.1 Operation

The following requirements shall apply to an ADFR—

(a) deployment shall take place when the aeroplane structure has been significantly deformed;

(b) deployment shall take place when an aeroplane sinks in water;

(c) ADFR shall not be capable of manual deployment;

(d) the ADFR shall be able to float on water;

(e) the ADFR deployment shall not compromise the safe continuation of the flight;

(f) the ADFR deployment shall not significantly reduce the chance of survival of the recorder and of successful transmission by its ELT;

(g) the ADFR deployment shall not release more than one piece;

(h) an alert shall be made to the flight crew when the ADFR is no longer captive to the aircraft;

(i) the flight crew shall have no means to disable ADFR deployment when the aircraft is airborne;

(j) the ADFR shall contain an integrated ELT, which shall activate automatically during the deployment sequence: such ELT maybe of atypethatis activated in-flight and provides information from which apposition can be determined; and

(k) theintegratedELTofanADFRshallsatisfythesamerequirementsasanELTrequire dtobeinstalledonan aeroplane. The integrated ELT shall at least have the same performance as the fixed ELT to maximize detection of the transmitted signal.

Note1—Refer to the Manual on Location of Aircraft in Distress and Flight Recorder Data Recovery (Doc 10054) for more information on ADFR.

Note2—If an integrated ELT of a type that is activated in flight is used within an ADFR, it could be a means to comply with the requirements of Location of An Aeroplane In Distress.

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5. AIRBORNE IMAGE RECORDER (AIR) AND AIRBORNE IMAGE RECORDING SYSTEM (AIRS)

5.1 Classes

5.1.1 A Class AAIR or AIRS captures the general cockpit area inorder to provide data supplemental to conventional flight recorders.

Note1.—To respect crew privacy, the cockpit area view may be designed as far as practical to exclude the head and shoulders of crew members whilst seated in their normal operating position.

Note 2.— There are no provisions for Class A AIR or AIRS in this document.

5.1.2 A Class B AIR or AIRS captures data link message displays.

5.1.3 A Class C AIR or AIRS captures instruments and control panels.

Note.—A Class C AIR or AIRS may be considered as a means for recording flight data where it is not practical or is prohibitively expensive to record on an FDR or an ADRS, or where an FDR is not required.

5.2 Operation

The AIR or AIRS must start to record prior to the aeroplane moving under its own power and record continuously until the termination of the flight when the aeroplane is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the AIR or AIRS must 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 shut down at the end of the flight.

6. DATALINKRECORDER(DLR)

6.1 Applications to be recorded

6.1.1 Where the aircraft flight path is authorized or controlled through the use of data link messages, all data link messages, both up links(to the aircraft)and down links(from the aircraft), shall be recorded on the aircraft. As far as practicable, the time the messages were displayed to the flight crew and the time of the responses shall be recorded.

Note.—Sufficient information to derive the content of the data link communications message and the time the messages were displayed to the flight crew is needed to determine an accurate sequence of events on board the aircraft.

6.1.2 Messages applying to the applications listed below shall be recorded. Applications without the asterisk(*) are mandatory applications which shall be recorded regardless of the system complexity. Applications with an (*) shall be recorded only as far as is practicable given the architecture of the system Data link initiation capability

(a) Controller-pilot data link communications

(b) Data link flight information services

(c) Automatic dependent surveillance — contract (d) Automatic dependent surveillance — broadcast* (e) Aeronautical operational control*.

Note.— Descriptions of the applications are contained in Table A-2.

7. AIRCRAFT DATA RECORDING SYSTEMS (ADRS)

7.1 Parameters to be recorded

ADRS shall be capable of recording, as appropriate to the aeroplane, at least the essential (E) parameters inTableA8-3.

7.2 Additional information

7.2.1 The measurement range, recording interval and accuracy of parameters on installed equipment is usually verified by methods approved by the appropriate certificating authority.

7. 2.2Documentation concerning parameter allocation, conversion equations, periodic calibration and other serviceability/maintenance information shall be maintained by the operator. The documentation needs to be sufficient to ensure that accident investigation authorities have the necessary information to read out the data in engineering units.

8. INSPECTIONSOFFLIGHTRECORDERSYSTEMS

8.1 Prior to the first flight of the day, the built-in test features for the flight recorders and flight data acquisition unit (FDAU),when installed, shall be monitored by manual and/or automatic checks.

8.2 FDR systems or ADRS, CVR systems or CARS, and AIR systems or AIRS shall have recording system inspection intervals of one year; subject to the approval from the Authority, this period may be extended to two years provided these systems have demonstrated a high integrity of serviceability and self-monitoring.

DLR systems or DLRS shall have recording system inspection intervals of two years; subject to the approval from the appropriate regulatory authority, this period may be extended to four years provided these systems have demonstrated high integrity of serviceability and self-monitoring.

8.3 Recording system inspections shall be carried out as follows—

(a) an analysis of the recorded data from the flight recorders shall ensure that the recorder operates correctly for the nominal duration of the recording;

(b) the analysis of the FDR or ADRS shall evaluate the quality of the recorded data to determine if the bit error rate (including those errors introduced by recorder, the acquisition unit, the source of the data on the aeroplane and by the tools used to extract the data from the recorder) is within acceptable limits and to determine the nature and distribution of the errors;

(c) a complete flight recording from the FDR or ADRS shall be examined in engineering units to evaluate the validity of all recorded parameters. Particular attention shall be given to parameters from sensors dedicated to the FDR or ADRS. Parameters taken from the aircraft's electrical bus system need not be checked if their serviceability can be detected by other aircraft systems;

(d) the read out facility shall have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals;

(e) an examination of the recorded signal on the CVR or CARS shall be carried

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out by replay of the CVR or CARS recording. While installed in the aircraft, the CVR or CARS shall record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards;

(f) where practicable, during the examination, a sample of in-flight recordings of the CVR or CARS shall be examined for evidence that the intelligibility of the signal is acceptable; and

(g) an examination of the recorded images on the AIR or AIRS shall be carried out by replay of the AIR or AIRS recording. While installed in the aircraft, the AIR or AIRS shall record test images from each aircraft source and from relevant external sources to ensure that all required images meet recording quality standards.

8.4 A flight recorder system shall be considered unserviceable if there is a significant period of poor quality data, unintelligible signals, or if one or more of them an datory parameters is not recorded correctly.

8.5 report of the recording system inspection shall be made available on request to regulatory authorities for monitoring purposes.

8.6 Calibration of the FDR system—

(a) for those parameters which have sensors dedicated only to the FDR and are not checked by other means, recalibration shall be carried out at least every five years or in accordance with the recommendations of the sensor manufacturer to determine any discrepancies in the engineering conversion routines for the mandatory parameters and to ensure that parameters are being recorded within the calibration tolerances; and

(b) when the parameters of altitude and airspeed are provided by sensors that are dedicated to the FDR system, there shall be are calibration performed as recommended by the sensor manufacturer, or at least every two years.

Table A-1 Parameter Guidance for Crash Protected Flight Data Recorders

Serial number	*Parameter*	*Measurement range*	*Maximum sampling and recording interval (seconds)*	*Accuracy limits (sensor input compared To FDR read-out)*	*Recording resolution*
1	Time (UTC when available,	24hours	4	±0.125%perhour	1second
	Otherwise relative time countor				
	GPS time sync)				
2	Pressure-altitude	–300m(–1000ft)to	1	±30mto±200m	1.5m(5ft)
		Maximum certificated		(±100ftto±700ft)	
		Altitude of aircraft			
		+1500m(+5000ft)			
3	Indicated airspeed or calibrated	95km/h(50kt)to max	1	±5%	1kt(0.5ktrecommended)
	airspeed	VSo*(Note1)* VSoto1.2VD*(Note2)*		±3%	
4	Heading (primary flightcrew	360°	1	±2°	0.5°
	reference)				

5	Normal acceleration(*Note3*)	–3gto+6g	0.125	±1%of maximum	0.004g
				Range excluding	
				datumerrorof±5%	
6	Pitch attitude	±75°orusablerange	0.25	±2°	0.5°
		Whichever is greater			
7	Roll attitude	±180°	0.25	±2°	0.5°
8	Radio transmission keying	On-off(one discrete)	1		
9	Power on each engine	Full range	1(per	±2%	0.2%offullrangeorthe
	(Note4)		engine)		Resolution required to operate the
					aircraft
10*	Trailing edge flapandcockpit	Full range or each	2	±5%oraspilot's	0.5%offullrangeorthe
	Control selection	Discrete position		indicator	Resolution required to operate the
					aircraft
11*	Leading edge flap and cockpit	Full range or each	2	±5%oraspilot's	0.5%offullrangeorthe
	Control selection	Discrete position		indicator	Resolution required to operate the
					aircraft
12*	Thrust reverser position	Stowed, in transit,	1(per		
		And reverse	engine)		
13*	Ground spoiler/speed brake	Full range or each	1	±2%unlesshigher	0.2%offullrange
	selection(selection and position)	Discrete position		Accuracy uniquely	
				required	
14	Out side air temperature	Sensor range	2	±2°C	0.3°C
15*	Autopilot/auto	A suitable	1		
	throttle/AFCS	combination			
	Mode and engagement status	Of discretes			
16	Longitudinal acceleration	±1g	0.25	±0.015g	0.004g
	(*Note3*)			Excluding a datum	
				errorof±0.05g	

Note.—Thepreceding16parameterssatisfytherequirementsforaTypeIIFDR.

17	Lateral acceleration(*Note3*)	±1g	0.25

±0.015g excluding a datum errorof±0.05g 0.004g

Serial number	*Parameter*	*Measurement range*	*Maximum sampling and recording interval (seconds)*	*Accuracy limits (sensor input compared To FDR read-out)*	*Recording resolution*
18	Pilot input and/or control surface position-primary controls(pitch, roll, yaw) *(Note5)(Note6)*	Full range	0.25	±2°unless higher accuracy uniquely required	0.2%offull range or as installed
19	Pitch trim position	Full range	1	±3%unlesshigher accuracy uniquely required	0.3%offullrangeorasinstalled
20*	Radio altitude	–6mto750m (–20ftto2500ft)	1	±0.6m(±2ft)or±3% whichever is greater below150m (500ft)and±5% above150m (500ft)	0.3m(1ft)below150m(500ft) 0.3m(1ft)+0.5%offullrange above150m(500ft)
21*	Vertical beam deviation (ILS/GPS/GLS glide path, MLS elevation, IRNAV/IAN vertical deviation)	Signal range	1	±3%	0.3%offullrange
22*	Horizontal beam deviation (ILS/GPS/GLS localizer, MLS azimuth, IRNAV/IAN lateral deviation)	Signal range	1	±3%	0.3%offullrange
23	Marker beacon passage	Discrete	1		
24	Master warning	Discrete	1		
25	Each NAV receiver frequency selection*(Note7)*	Full range	4	As installed	
26*	DME1and2distance(includes Distance to runway threshold (GLS)and Distance to missed approach point(IRNAV/IAN)) *(Notes7and8)*	0–370km (0–200NM)	4	As installed	1852m(1NM)
27	Air/ground status	Discrete	1		
28*	GPWS/TAWS/GCAS status (selection of terrain display mode including pop-up display status) and(terrain alerts, both	Discrete	1		

	cautions and warnings, and advisories) and(on/offswitchposition)				
29*	Angle of attack	Full range	0.5	As installed	0.3%offullrange
30*	Hydraulics, each system (low pressure)	Discrete	2		0.5%offullrange
31*	Navigation data (latitude/longitude, ground speed and drift angle)*(Note9)*	As installed	1	As installed	
32*	Landing gear and gear selector position	Discrete	4	As installed	

Note.—The preceding 32 parameters satisfy the requirements for a Type IFDR.

Serial number	*Parameter*	*Measurement range*	*Maximum sampling and recording interval (seconds)*	*Accuracy limits (sensor input compared to FDR read-out)*	*Recording resolution*
33*	Groundspeed	As installed	1	Data should be	1kt
				Obtained from the	
				Most accurate system	
34	Brakes(left and right brake	(Maximum metered brake	1	±5%	2%offullrange
	pressure, left and right brake	range, discretes or full			
	Pedal position)	range)			
35*	Additional engine parameters	As installed	Each engine	As installed	2%offullrange
	(EPR,N1,indicated vibration level, N2,EGT, fuel flow, fuel cut-off lever position, N3)		Each second		
36*	TCAS/ACAS(traffic alert and	Discretes	1	As installed	
	Collision avoidance system)				
37*	Wind shear warning	Discrete	1	As installed	
38*	Selected barometric setting	As installed	64	As installed	0.1mb(0.01in-Hg)
	(pilot, co-pilot)				
39*	Selected altitude(all pilot	As installed	1	As installed	Sufficient to determine crew
	Selectable modes of operation)				selection
40*	Selected speed (all pilot	As installed	1	As installed	Sufficient to determine crew

	Selectable modes of operation)				selection
41*	Selected Mach (all	As installed	1	As installed	Sufficient to

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	pilot				determine crew
	Selectable modes of operation)				selection
42*	Selected vertical speed (all pilot	As installed	1	As installed	Sufficient to determine crew
	Selectable modes of operation)				selection
43*	Selected heading (all pilot	As installed	1	As installed	Sufficient to determine crew
	Selectable modes of operation)				selection
44*	Selected flight path (all pilot		1	As installed	
	Selectable modes of operation)				
	(course/DSTRK, path angle, final				
	Approach path (IRNAV/IAN))				
45*	Selected decision height	As installed	64	As installed	Sufficient to determine crew
					selection
46*	EFIS display format(pilot,	Discrete(s)	4	As installed	
	co-pilot)				
47*	Multi-function/engine/alerts	Discrete(s)	4	As installed	
	Display format				
48*	AC electrical bus status	Discrete(s)	4	As installed	
49*	DC electrical bus status	Discrete(s)	4	As installed	
50*	Engine bleed valve position	Discrete(s)	4	As installed	
51*	APU bleed valve position	Discrete(s)	4	As installed	
52*	Computer failure	Discrete(s)	4	As installed	
53*	Engine thrust command	As installed	2	As installed	
54*	Engine thrust target	As installed	4	As installed	2%offullrange
55*	Computed centre of gravity	As installed	64	As installed	1%offullrange

Serial number	*Parameter*	*Measurement range*	*Maximum sampling and recording interval (seconds)*	*Accuracy limits (sensor input compared To FDR read-out)*	*Recording resolution*
56*	Fuel quantity in CG trim tank	As installed	64	As installed	1%offullrange
57*	Head up display in use	As installed	4	As installed	
58*	Para visual display on/off	As installed	1	As installed	
59*	Operational stall protection, stick shake rand pusher activation	As installed	1	As installed	
60*	Primary navigation system reference (GNSS,INS, VOR/DME, MLS, Loran C, localizer glide slope)	As installed	4	As installed	
61*	Ice detection	As installed	4	As installed	
62*	Engine warning each engine vibration	As installed	1	As installed	
63*	Engine warning each engine over temperature	As installed	1	As installed	
64*	Engine warning each engine oil pressure low	As installed	1	As installed	
65*	Engine warning each engine over speed	As installed	1	As installed	
66*	Yaw trim surface position	Full range	2	±3%unlesshigher accuracy uniquely required	0.3%offullrange
67*	Roll trim surface position	Full range	2	±3%unlesshigher accuracy uniquely required	0.3%offullrange
68*	Yaw or sides lip angle	Full range	1	±5%	0.5°
69*	De-icing and/or antiicing systems selection	Discrete(s)	4		
70*	Hydraulic pressure (each system)	Full range	2	±5%	100psi
71*	Loss of cabin pressure	Discrete	1		
72*	Cockpit trim control input position, Pitch	Full range	1	±5%	0.2%offullrangeorasin stalled
73*	Cockpit trim control input position, Roll	Full range	1	±5%	0.2%offullrangeorasin stalled

74*	Cockpit trim control input position, Yaw	Full range	1	±5%	0.2%offullrangeorasin stalled
75*	All cockpit flight control input forces (control wheel, control column, rudder pedal)	Full range(±311N (±70lbf),±378N (±85lbf),±734N (±165lbf))	1	±5%	0.2%offullrangeorasin stalled
76*	Event marker	Discrete	1		
77*	Date	365days	64		
78*	ANP or EPE or EPU	As installed	4	As installed	

Note.—The preceding 78 parameters satisfy ther equirements for a Type IAFDR.

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Notes.—

1. VSo stalling speed or minimum steady flight speed in the landing configuration is in Section “Abbreviations and Symbols”.
2. VD design diving speed.
3. Refer to 6.3.1.2.11 for increased recording requirements.
4. Record sufficient in puts to determine power.
5. For aeroplanes with control systems in which movement of a control surface willback drive the pilot’s control,‘‘or’’applies. For aeroplanes with control systems in which movement of acontrol surface will not back drive the pilot’s control,‘‘and’’applies. In aeroplanes with split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately.
6. Refer to 6.3.1.2.12 for increased recording requirements.
7. If signal available in digital form.
8. Recording of latitude and longitude from INS or other navigation system is a preferred alternative.
9. Recording of latitude and longitude from INS or other navigation system is a preferred alternative.

10.If signals readily available.

If further recording capacity is available, recording of the following additional information should be considered—

operational information from electronic display systems, such as electronic flight instrument systems (EFIS), electronic centralized aircraft monitor (ECAM) and engine indication and crew alerting system (EICAS).Use the following order of priority—

1.parametersselectedbytheflightcrewrelatingtothedesiredflightpath,e.g.barometricpressure setting, selected altitude, selected airspeed, decision height, and auto flight system engagement and mode indications if not recorded from another source;

2.display systems election/status, e.g. SECTOR, PLAN, ROSE, NAV, WXR, COMPOSITE, COPY, ETC.;

3.warnings and alerts;

4.the identity of displayed pages for emergency procedures and check lists;and

5.retardationinformationincludingbrakeapplicationforuseintheinvestigationoflandingoverrunsandrejected take-offs.

TableA-2. Description of Applications for Data Link Recorders

Item No.	*Application type*	*Application description*	*Recording content*
1	Data link initiation	This includes any applications used to log on to or initiate data linkservice.InFANS-1/A and ATN, these are ATS facilities notification(AFN) and context management(CM) respectively.	C
2	Controller/pilot communication	This i n c l u d e s a n y application used to exchange requests, clearances, instructions and reports between the flight crew and controllers on the ground. InFANS-1/A and ATN, this includes the CPDLC application. It also includes applications used for the	C
		exchange of oceanic (OCL) and departure clearances (DCL) as well as data link delivery of taxi clearances.	
3	Addressed surveillance	This includes any surveillance application in which the ground sets up contracts for delivery of surveillance data.InFANS-1/A and ATN, this includes the automatic dependent surveillance— contract (ADSC)application. Where parametric data are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.	C
4	Flight information	This includes any service used for delivery off light information to specific aircraft. This includes, for example, data link aviation weather report service (D-METAR), data link-automatic terminal service (D-ATIS), digital Notice to Airmen (D-NOTAM)and other textual data link services.	C
5	Aircraft broadcast surveillance	This includes elementary and enhanced surveillance systems, as well as automatic dependent surveillance— broadcast(ADS-B) output data. Where parametric data sent by the aeroplane are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.	M*
6	Aeronautical operational control data	This includes any application transmitting or receiving data used For aeronautical operational control purposes (per the ICAO definition of operational control).	M*

Key:

C: Complete contents recorded.

M: Information that enables correlation to any associated records stored separately from the aeroplane. *: Applications to be recorded only as far as is practicable given the architecture of the system.

TableA-3. Parameter Guidance for Aircraft Data Recording Systems

No.	Parameter name	Parameter category	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks

1	Heading(Magnetic or True)	R*	±180degrees	1	±2degrees	0.5degre e	*If not available, recordrates
2	Pitch attitude	E*	±90degrees	0.25	±2degrees	0.5degre e	*If not available, recordrates
3	Roll attitude	E*	±180degrees	0.25	±2degrees	0.5degre e	*If not available, recordrates
4	Yaw rate	E*	±300degrees/s	0.25	±1%+drift of360°/hr	2degree/s	*Essential if no heading available
5	Pitch rate	E*	±300degrees/s	0.25	±1%+drift of360°/hr	2degree/s	*Essential if no pitch attitude available
6	Roll rate	E*	±300degrees/s	0.25	±1%+drift of360°/hr	2degree/s	*Essential if no roll attitude available
7	Positioning system: latitude/longit ude	E	Latitude:±90degre es Longitude:±180de grees	2 (1ifavailable)	As installed (0.00015degre e recommended)	0.00005 degree	
8	Positioning system	E*	Available range	2 (1ifavailable)	As installed	As installed	*If available

	estimated error						
9	Positioning system: altitude	E	–300m(–1000ft)to maximum certificated altitude of aeroplane +1500m(5000ft)	2 (1ifavailable)	As installed (±15m(±50ft) recommended)	1.5m(5ft)	
10	Positioning system: time*	E	24hours	1	±0.5second	0.1secon d	*UTC time preferred where available.
11	Positioning system: groundspeed	E	0–1000kt	2(1if available)	As installed (±5ktrecomme nded)	1kt	
12	Positioning system: channel	E	0–360degrees	2(1if available)	As installed(± 2degrees recommended)	0.5degre es	
13	Normal acceleration	E	–3gto+6g(*)	0.25(0.125if available)	As installed(±0.09 g excluding a datum error of±0.45g recommended)	0.004g	
14	Longitudinal acceleration	E	±1g(*)	0.25(0.125if available)	As installed(±0.01 5g excluding a datum error	0.004g	

					of±0.05g recommended)		
15	Lateral acceleration	E	±1g(*)	0.25(0.125if available)	As installed(±0.015g excluding a datum error of±0.05g recommended)	0.004g	

No.	Parameter name	Parameter category	Minimum recording range	Maximum recording intervalin seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
16	External static pressure		R	34.4mb(3.44in-Hg)to	1	As installed(±1 mb	0.1mb
	(or pressure altitude)		310.2 mb(31.02in-Hg)		(0.1in-Hg)or	(0.01in-Hg)	
			Or available sensor		±30m(±100ft) to	or1.5m(5ft)	
			range		±210m(±700ft)		
					recommended)		
17	Outside air	R	– 50°to+90° Cor	2	As installed	1°C	
	temperature(or total		Available sensor		(±2°Crecommended)		
			range				
	Air temperature)						
18	Indicated airspeed	R	As the installed pilot	1	As installed	1kt(0.5kt	
			Display measuring		(±3%recommended)	recommended)	
			System or available				
			Sensor range				
19	Engine RPM	R	Full range including	Each engine	As installed	0.2%offull	

			Over speed condition	Each second		range	
20	Engine oil pressure	R	Full range	Each engine	As installed	2%offull	
				Each second	(5%offullran ge	range	
					recommended)		
21	Engine oil temperature	R	Full range	Each engine	As installed	2%offull	
				Each second	(5%offullran ge	range	
					recommended)		
22	Fuel flow o r pressure	R	Full range	Each engine	As installed	2%offull	
				Each second		range	
23	Manifold pressure	R	Full range	Each engine	As installed	0.2%offull	
				Each second		range	
24	Engine	R	Full range	Each engine	As installed	0.1%offull	*Sufficient
	thrust/power/ torque			Each second		range	Parameter se.g.
	Parameters required to						EPR/N1or
	Determine propulsive						torque/Npas
	thrust/power *						Appropriate to the
							Particular engine
							Shall be recorded to
							Determine power in
							Both normal and
							Reverse thrust. A
							Margin for possible
							Over speed should be provided.

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25	Engine gas generator	R	0-150%	Each engine	As installed	0.2%of	
	speed(Ng)			Each second		Full range	
26	Free powerturbine	R	0-150%	Each engine	As installed	0.2%of	

	speed(Nf)			Each second		Full range	
27	Coolanttemp erature	R	Full range	1	As installed	1degree	
					(±5°Crecom mended)	Celsius	
28	Mainvoltage	R	Full range	Each engine	As installed	1Volt	
				Each second			
29	Cylinderhea d	R	Full range	Each cylinder	As installed	2%of	
	temperature			Each second		Full range	
30	Flapspositio n	R	Full range or each	2	As installed	0.5degree	
			Discrete position				

Maximum recording
Minimum
Minimum

No.	*Parameter name*	*Parameter category*	*Minimum recording range*	*Interval in seconds*	*recording accuracy*	*recording resolution*	*Remarks*
31	Primary flight control surfaceposition	R	Full range	0.25	As installed	0.2%of fullrange	
32	Fuel quantity	R	Full range	4	As installed	1%of full range	
33	Exhaust gas temperature	R	Full range	Each engine each second	As installed	2%of full range	
34	Emergency voltage	R	Full range	Each engine eachsecond	As installed	1Volt	
35	Trim surface position	R	Full range or each discreteposition	1	As installed	0.3%offull range	
36	Landing gear position	R	Each discrete position*	Each gear every two seconds	As installed		*Where available, record upand-locked and down- and-locked position
37	Novel/unique aircraft features	R	As required	As required	As required	As required	
Key:							

E: Essential parameters
R: Recommended parameters

FLIGHT DATA RECORDERS –HELICOPTERS

1. GENERAL REQUIREMENTS

1.1 Non-deployable flight recorder containers shall— (a) be painted a distinctive orange or yellow colour;

(b) carry reflective material to facilitate their location; and

(c) havesecurelyattachedanautomaticallyactivatedunderwaterlocating deviceoperatingat afrequencyof37.5kHz.

At the earliest practical date, but not later than 1January, 2018,this device shall operate for a minimum of ninety days.

Note.—Current industry practice is to phase out yellow flight recorder containers at the end of the service life of the flight recorder.

1.2 The flight recorder systems shall be installed so that— (a) the probability of damage to the recordings is minimized;

(b) theyreceiveelectricalpowerfromabusthatprovidesthemaximumreliabilityforoperati ono ftheflightrecorder systems without jeopardizing service to essential or emergency loads;

(c) there is an aural or visual means for pre-flight checking that the flight recorder systems are operating properly; and

(d) if the flight recorder systems have a bulk erasure device, the installation shall be designed to prevent operation of the device during flight time or crash impact.

1.3 The flight recorder systems, when tested by methods approved by the appropriate certificating authority, shall be demonstrated to be suitable for the environmental extremes over which they are designed to operate.

1.4 Means shall be provided for an accurate time correlation between the flight recorder systems functions.

1.5 The manufacturer usually provides the appropriate certificating authority with the following information in respect of the flight recorder systems—

(a) manufacturer's operating instructions, equipment limitations and installation procedures; and

(b) manufacturer's test reports.

2. FLIGHT DATARECORDER(FDR)

2.1 The flight data recorder shall start to record prior to the helicopter moving under its ownpowerand record continuously until the termination of the flight when the helicopter is no longer capable ofmoving under its own power.

2.2 Parameters to be recorded

2.2.1 FlightdatarecordersforhelicoptersshallbeclassifiedasTypeIV,IVAandVdependinguponthe numberof parameters to be recorded.

2.2.2 The parameters that satisfy the requirements for Types IV,IVA and VFDRs, are listed in the paragraphs below. The number of parameters to be recorded shall depend on helicopter complexity. The parameters without an asterisk (*)are mandatory parameters which shall be recorded regardless of helicopter complexity. In addition, the parameters designated by an asterisk (*) shall be recorded if an information data source for the parameter is used by helicopter systems or the flight crew to operate the helicopter. However, other parameters may be substituted with due regard to the helicopter type and the characteristics of the recording equipment.

2.2.3 The following parameters shall satisfy the requirements for flight path and speed—

(a) pressure altitude

(b) indicated airspeed

(c) outside air temperature

(d) heading

(e) normal acceleration

(f) lateral acceleration

(g) longitudinal acceleration(body axis)

(h) time or relative time count

(i) navigation data*: drift angle, windspeed,wind direction, latitude/longitude (j) radio altitude*.

2.2.4 The following parameters shall satisfy the requirements for attitude—

(a)Pitch attitude

(b) Roll attitude (c) Yaw rate.

2.2.5 The following parameters shall satisfy the requirements for engine power—

(a) Poweroneachengine:freepowerturbinespeed(Nf),enginetorque,enginegasgeneratorspeed(Ng),cockpit power control position (b) Rotor: main rotor speed, rotor brake

(c)Main gearbox oil pressure*

(d) Gearboxoiltemperature*:maingearboxoiltemperature,intermediategearboxoiltemperat ure,tailrotorgearboxoil temperature (e) Engine exhaust gas temperature(T4)* (f) Turbine inlet temperature (TIT)*.

2.2.6 The following parameters shall satisfy the requirements for operation—

(a) Hydraulics low pressure

(b) Warnings

(c) Primary flight controls—pilot input and/or control output position: collective pitch, longitudinal cyclic pitch, lateral cyclic pitch, tail rotor pedal, controllable stabilator, hydraulic selection (d) Marker beacon passage

(e) Each navigation receiver frequency selection

(f) AFCS mode and engagement status*

(g) Stability augmentation system engagement*

(h) Indicated sling load force*

(i) Vertical deviation*: ILS glide path, MLS elevation, GNSS approach path

(j) Horizontal deviation*:ILS localizer,MLSazimuth,GNSSapproach path

(k) DME1and 2distances*

(l) Altitude rate*

(m)Ice detector liquid water content*

(n) Helicopterhealthandusagemonitorsystem(HUMS)*:enginedata,chip detectors,channelt iming,exceedance discretes, broad band average engine vibration.

2.2.7 The following parameters shall satisfy the requirements for configuration—

(a)Landing gear or gear selector position*

(b) Fuel contents*

(c)Ice detector liquid water content*.

2.2.8 Type IVAFDR. This FDR will be capable of recording, as appropriate to the helicopter,atleastthe48parameters in Table A4-1.

2.2.9 Type IV FDR. This FDR shall be capable of recording, as appropriate to the helicopter, at least the first 30 parametersinTableA4-1.

2.2.10

TypeVFDR.ThisFDRshallbecapableofrecording,asappropriatetothehelicopter,atle a stthefirst 15 parametersinTableA4-1.

2.2.11 If further recording capacity is available, recording of the following additional information shall be considered—

(a) additionaloperationalinformationfromelectronicdisplays,suchaselectronicflightinstr umentsystems(EFIS), electronic centralized aircraft monitor(ECAM) and engine indication and crew alerting system(EICAS); and (b) additional engine parameters (EPR, N1,fuel flow, etc.).

2.3 Additional information

2.3.1 The measurement range, recording interval and accuracy of parameters on installed equipment is usually verified by methods approved by the appropriate certificating authority.

2. 3.2Documentation concerning parameter allocation, conversion equations, periodic calibration and other serviceability/maintenance information shall be maintained by the operator/owner. The documentation shall be sufficient to ensure that accident investigation authorities have the necessary information to read out the data in engineering units.

3. COCKPITVOICERECORDER(CVR)

3.1 Signals to be recorded

3.1.1 The CVR shall start to record prior to the helicopter moving under its own power and record continuously until the termination of the flight when the helicopter is no longer capable of moving under its own power. In addition, 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 engines hut down at the end of the flight.

3.1.2 The CVR shall record on four separate channels, or more, at least the following:

(a) voice communication transmitted from or received in the aircraft by radio;

(b) aural environment on the flight deck;

(c) voice communication off light crew members on the flight deck using the interphone system, if installed;

(d) voice or audio signals identifying navigation or approach aids introduced in the headset or speaker; and

(e) voice communication off light crew members using the passenger address system, if installed.

3.1.3 The CVR shall be capable of recording on at least four channels simultaneously. On tape-based CVR, to ensure accurate time correlation between channels, the CVR shall record in an in-line format. If a bi-direction alc on figuration is used, the in-line

format and channel allocation shall be retained in both directions.

3.1.4 The preferred channel allocations hall be as follows:

(a) Channel1— co-pilot headphones and live boom microphone

(b) Channel2— pilot headphones and live boom microphone

(c) Channel3— area microphone

(d) Channel4— time reference, main rotor speed or the flight deck vibration environment, the third and fourth crew member's headphone and live microphone, if applicable.

Note 1.— Channel1is located closest to the base of the recording head.

Note2.—The preferred channel allocation presumes use of current conventional magnetic tape transport mechanisms and is specified because the outer edges of the tape have a higher risk of damage than the middle. It is not intended to preclude use of alternative recording media where such constraints may not apply.

5.0 DATA LINK RECORDERS (DLR)

5.1 Applications to be recorded

5.1.1 Where the helicopter flight path is authorized or controlled through the use of data link messages, all data link messages, both uplinks (to the helicopter) and downlinks (from the helicopter), shall be recorded on the helicopter. As far as practicable, the time the messages were displayed to the flight crew and the time of the responses shall to be recorded.

Note.— Sufficient information to derive the content of the data link communications message and the time the messages were displayed to the flight crew is needed to determine an accurate sequence of events on board the aircraft.

5.1.2 Messages applying to the applications listed below shall be recorded. Applications without the asterisk (*) are mandatory applications which shall be recorded regardless of the system complexity. Applications with an (*) are to be recorded only as far as is practicable given the architecture of the system. (a) Data link initiation capability

(b) Controller–pilot data link communications

(c) Data link flight information services

(d) Automatic dependent surveillance — contract (e) Automatic dependent surveillance — broadcast* (f) Aeronautical operational control*.

Note.— Descriptions of the applications are contained in Table A4-2.

TableA4-1. Parameter Guidance for Flight Data Recorders

Serial numbe r	*Parameter*	*Measurement range*	*Maximum sampling and recording interval (seconds)*	*Accuracy limits (sensor input compared to FDR readout)*	*Recording resolution*
l	Time (UTC when	24hours	4	±0.125%perhour	1s
	Available ,otherwise				
	Relative time count or				
	GPS time				
	sync)				
2	Pressure altitude	–300m(–1000ft)to	1	±30mto±200m	1.5m(5ft)
		Maximum certificated		(±100ftto±700ft)	
		altitudeofaircraft+15 00			
		m(+5000ft)			
3	Indicated airspeed	As the installed pilot	1	±3%	1kt
		Display measuring system			
4	Heading	360°	1	±2°	0.5°
5	Normal acceleration	–3gto+6g	0.125	±0.09gexcludinga	0.004g
				datumerrorof±0.045 g	
6	Pitch attitude	±75°or100%of useable	0.5	±2°	0.5°
		Range whichever is greater			

7	Roll attitude	±180°	0.5	±2°	0.5°
8	Radio transmission	On-off(one discrete)	1	—	—
	keying				
9	Power on each engine	Full range	1(per engine)	±2%	0.1%offullrange
10	Main rotor:				
	Main rotor speed	50–130%	0.51	±2%	0.3%offullrange
					—
	Rotor brake	Discrete		—	
11	Pilot input and/or	Full range	0.5	±2%unlesshigher	0.5%ofoperatingrange
	Control surface position		(0.25recommended)	Accuracy uniquely	
	—primary controls			required	
	(collective pitch,				
	Longitudinal cyclic pitch,				
	Lateral cyclic pitch, tail				
	Rotor pedal)				
12	Hydraulics, each system	Discrete	1	—	—
	(low pressure and				
	selection)				

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13	Outside air temperature	Sensor range	2	±2°C	0.3°C
14*	Autopilot/	A suitable combination	1	—	—
	Auto throttle/AFCS mode	Of discretes			
	And engagement status				
15*	Stability augmentation	Discrete	1	—	—
	System engagement				

Note.—Thepreceding15parameterssatisfytherequirementsforaTypeVFDR.					
16*	Main gearbox oil	As installed	1	As installed	6.895kN/m^2(1psi)
	pressure				
17*	Main gearbox oil temperature	As installed	2	As installed	1°C

Serial numbe r	Parameter	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
18	Yaw rate	±400°/second	0.25	±1.5%maximumran ge excluding datumerr or of ±5%	±2°/s
19*	Sling load force	0to200%ofcertifie d load	0.5	±3%of maximum range	0.5%for maximum certifiedload
20	Longitudial acceleration	±1g	0.25	±0.015gexcludinga datumerrorof±0.05g	0.004g
21	Lateral acceleration	±1g	0.25	±0.015gexcludinga datumerrorof±0.05g	0.004g
22*	Radio altitude	–6mto750m (–20ftto2500ft)	1	±0.6m(±2ft)or±3% whichever is greater below150m(500ft)a nd ±5%above150m (500ft)	0.3m(1ft)below150 m (500ft),0.3m(1ft)+ 0.5%offullrangeabo ve 150m(500ft)
23*	Vertical beam deviation	Signal range	1	±3%	0.3%offullrange
24*	Horizontal beam deviation	Signal range	1	±3%	0.3%offullrange
25	Marker beacon passage	Discrete	1	—	—
26	Warnings	Discrete(s)	1	—	—
27	Each navigation receiver frequency selection	Sufficient to determine selected frequency	4	As installed	—
28*	DME1and2distanc es	0–370km (0–200NM)	4	As installed	1852m(1NM)
29*	Navigation data (latitude/longitude, ground speed, drift angle, wind speed, wind direction)	As installed	2	As installed	As installed
30*	Landing gear and gear selector position.	Discrete	4	—	—

Note.—Thepreceding30parameterssatisfytherequirementsforaTypeIVFDR.					
31*	Engine exhaust gas temperature(T4)	As installed	1	As installed	
32*	Turbine in let temperature(TIT/ITT)	As installed	1	As installed	
33*	Fuel contents	As installed	4	As installed	
34*	Altitude rate	As installed	1	As installed	
35*	Ice detection	As installed	4	As installed	
36*	Helicopter heal than d usage monitorsystem	As installed	—	As installed	—
37	Engine control modes	Discrete	1	—	—
38*	Selected barometric setting (pilot and co-pilot)	As installed	64 (4recommended)	As installed	0.1mb (0.01inHg)

Serial number	Parameter	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
39*	Selected altitude(all Pilot selectable modes of operation)	As installed	1	As installed	Sufficient to determine crew selection
40*	Selected speed (all pilot selectable modes of operation)	As installed	1	As installed	Sufficient to determine crew selection
41*	Selected Mach (all pilot selectable modes of operation)	As installed	1	As installed	Sufficient to determine crew selection
42*	Selected vertical speed (all pilots electable modes of operation)	As installed	1	As installed	Sufficient to determine crew selection
43*	Selected heading (all pilot selectable modes of operation)	As installed	1	As installed	Sufficient to determine crew selection.
44*	Selected flight path(all pilot selectable modes of operation)	As installed	1	As installed	Sufficient to determine crew selection

45*	Selected decision height	As installed	4	As installed	Sufficient to determine crew selection
46*	EFIS display format (pilot and co-pilot)	Discrete(s)	4	—	—
47*	Multi-function/ engine/alerts display format	Discrete(s)	4	—	—
48*	Event marker	Discrete	1	—	—

Note.—The preceding 48 parameters satisfy the requirements for a Type IVAFDR.

Table A4-2. Description of Applications for Data Link Recorders

Regulation

Item No.	Application type	Application description	Recording content
1	Data link initiation	This includes any applications used to log on to or initiate data link service. In FANS-1/A and ATN, these are ATS facilities notification (AFN) and context management (CM) respectively.	C
2	Controller/pilot communication	This includes any application used to exchange requests, clearances, instructions and reports between the flight crew and controllers on the ground. In FANS-1/A and ATN, this includes the CPDLC application. It also includes applications used for the exchange of oceanic (OCL) and departure clearances (DCL) as well as data link delivery of taxi clearances.	C
3	Addressed surveillance	This includes any surveillance application in which the ground sets up contracts for delivery of surveillance data. In FANS-1/A and ATN, this includes the automatic dependent surveillance — contract (ADS-C) application. Where parametric data are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.	C
4	Flight information	This includes any service used for delivery of flight information to specific aircraft. This includes, for example, data link aviation weather report service (D-METAR), data link-automatic terminal service (D-ATIS), digital Notice to Airmen (D-NOTAM) and other textual data link services.	C
5	Aircraft broadcast surveillance	This includes elementary and enhanced surveillance systems, as well as automatic dependent surveillance — broadcast (ADS-B) output data. Where parametric data sent by the helicopter are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.	M*
6	Aeronautical operational control data	This includes any application transmitting or receiving data used for aeronautical operational control purposes (per the ICAO definition of operational control).	M*

Key:

C: Complete contents recorded.

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

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

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NAVIGATION EQUIPMENT

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

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

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

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

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

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

(b) the differences between the cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

SECOND SCHEDULE

rr. 56(1)(a) and 57(1)(a)

MEDICAL SUPPLIES 1.

TYPES, NUMBER,

LOCATION AND

CONTENTS OF

MEDICAL SUPPLIES

The different types of medical supplies should be provided as follows:

(a) first-aid kit(s) for carriage on all aeroplanes,

(b) universal precaution kit(s) for carriage on all aeroplanes that require a cabin crew member, and a medical kit for carriage where the aeroplane is authorized to carry more than 100 passengers on a sector length of more than two hours.

Based on the limited available evidence, only a very small number of passengers are likely to benefit from the carriage of automated external defibrillators (AED) on aeroplanes. However, many operators carry them because they offer the only effective treatment for cardiac fibrillation. The likelihood of use, and therefore of potential benefit to a passenger, is greatest in aircraft carrying a large number of passengers, over long duration sector lengths. The carriage of AEDs should be determined by operators on the basis of a risk assessment taking into account the particular needs of the operation.

2. NUMBER OF FIRST-AID AND UNIVERSAL PRECAUTION KITS

(a) First-aid kits

The number of first-aid kits should be appropriate to the number of passengers which the aeroplane is authorized to carry:

Passenger First-aid kits 0 – 100 1 101 – 200 2 201 –
300 3 301 – 400 4 401 – 500 5 More than 500
6

(b) Universal precaution kits

For routine operations, one or two universal precaution kits should be carried on aircraft that are required to operate with at least one cabin crew member. Additional kit(s) should be made available at times of increased public health risk, such as during an outbreak of a serious communicable disease having pandemic potential. Such kits may be used to clean up any potentially infectious body contents such as blood, urine, vomit and faeces and to protect the cabin crew members who are assisting potentially infectious cases of suspected communicable disease.

3. LOCATION

(a) First-aid and universal precaution kits should be distributed as evenly as practicable throughout the passenger cabins.

(b) They should be readily accessible to cabin crew members.

(c) The medical kit, when carried, should be stored in an appropriate secure location.

4. CONTENTS

The following provides guidance on typical contents of first-aid, universal precaution and medical kits.

4.1.1 First-aid kit—

(a) List of contents;

(b) Antiseptic swabs (10/pack);

(c) Bandage: adhesive strips;

(d) Bandage: gauze 7.5 cm × 4.5 m;

(e) Bandage: triangular; safety pins;

(f) Dressing: burn 10 cm × 10 cm;

(g) Dressing: compress, sterile 7.5 cm × 12 cm;

(h) Dressing: gauze, sterile 10.4 cm × 10.4 cm;

(i) Tape: adhesive 2.5 cm (roll);

(j) Steri-strips (or equivalent adhesive strip);

(k) Hand cleanser or cleansing towelettes;

(l) Pad with shield, or tape, for eye;

(m) Scissors: 10 cm (if allowed by national regulations);

(n) Tape: Adhesive, surgical 1.2 cm × 4.6 m;

(o) Tweezers: splinter;

(p) Disposable gloves (multiple pairs);

(q) Thermometers (non-mercury);

(r) Mouth-to-mouth resuscitation mask with one-way valve;

(s) First-aid manual, current edition; (t) Incident record form.

The following suggested medications can be included in the first-aid kits where permitted by the Authority—

(a) Mild to moderate analgesic;

(b) Antiemetic;

(c) Nasal decongestant;

(d) Antacid; and

(e) Antihistamine.

4.1.2 Universal precaution kit—

(a) Dry powder that can convert small liquid spill into a sterile granulated gel;

(b) Germicidal disinfectant for surface cleaning;

(c) Skin wipes;

(d) Face/eye mask (separate or combined);

(e) Gloves (disposable);

(f) Protective apron;

(g) Large absorbent towel;

(h) Pick-up scoop with scraper; (i) Bio-hazard disposal waste bag; (j) Instructions.

4.1.3 Medical kit:

Equipment

(a) List of contents;

(b) Stethoscope;

(c) Sphygmomanometer (electronic preferred);

(d) Airways, oropharyngeal (three sizes);

(e) Syringes (appropriate range of sizes);

(f) Needles (appropriate range of sizes);

(g) Intravenous catheters (appropriate range of sizes);

(h) Antiseptic wipes;

(i) Gloves (disposable);

(j) Needle disposal box;

(k) Urinary catheter;

(l) System for delivering intravenous fluids;

(m) Venous tourniquet;

(n) Sponge gauze;

(o) Tape – adhesive;

(p) Surgical mask;

(q) Emergency tracheal catheter (or large gauge intravenous cannula);

(r) Umbilical cord clamp;

(s) Thermometers (non-mercury);

(t) Basic life support cards;

(u) Bag-valve mask;

(v) Flashlight and batteries.

Required communication performance (RCP) Required surveillance performance (RSP) specification.

RCP specifications RCP specification	RCP transaction time (sec)	RCP continuity (probability)	RCP availability (probability)	RCP integrity (acceptable rate/flight hour)

RCP 240	240	0.999	0.999 0.9999 (efficiency) *(See Note 3)*	10-5
RCP 400	400	0.999	0.999	10-5

Required surveillance performance (RSP) specification Regulation 73

Table 2-2. RSP specifications	RSP delivery time (sec)	RSP continuity (probability)	RSP availability (probability)	RSP integrity (acceptable rate/flight

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RSP specification				hour)
RSP 180	180	0.999	0.999 0.9999 (efficiency) *(See Note 3)*	FOM = Navigation specification Time at position accuracy = +/- 1 sec Data integrity (malfunction) = 10-5
RSP specification	RSP delivery time (sec)	RSP continuity (probability)	RSP availability (probability)	RSP integrity (acceptable rate/flight hour)
RSP 400	400	0.999	0.999	FOM = Navigation specification Time at position accuracy = +/- 30 sec Data integrity (malfunction) = 10-5

THIRD SCHEDULE
PENALTIES
REGULATION 104(8),(9),(11)&(12)

REG. NO.	TITLE	PART
3	General instrument and equipment requirements	B

4	General requirements.	A
5	Navigation Equipment	A
6	Minimum flight and Navigational instruments VFR Operations: Aeroplane	A
7	Minimum flight and Navigational Instrument-IFR Operations: Aeroplane	A
8	Navigation Equipment: Helicopter	A
9	Additional Requirements for single –engine turbine-powered aeroplanes:Night and IMC Operations	A
10	Additional Requirements for Helicoptes in performamce Class 3 In Instrument Metorological Conditions(IMC):Helicopters	A
11	Navigation equipment for operations in minimal navigation performance specification airspace (MNPS)	B
12	Equipment for operations in reduced vertical separation minimum airspace (RVSM).	B
13	Communication equipment: Aeroplane	A
14	Communication equipment: Helicopters	A
15	Airborne Collision Avoidance System(ACAS II): Aeroplane	A

16	Airborne Collision Avoidance System(ACAS): Helicopters	A
17	Forward Looking wind shear warning system-Turbojet Aeroplane	A
18	Pressure-Altitude Reporting Transponder: Aeroplane	A
19	Pressure-Altitude Reporting Transponder: Helicopter	A
20	Crewmember interphone system: Aeroplane.	A
21	Crewmember interphone system: Helicopter.	A
22	Aeroplane lights and instrument illumination.	A
23	Mach Number Indicator	B
24	Altitude alerting system.	B
25	Ground proximity warning system.	A
26	Weather radar.	A
27	Cockpit voice recorders and cockpit audio recording systems: Aeroplane	A
28	Cockpit voice recorders and cockpit audio recording systems : Helicopter	A
29	Flight data recorders : Aeroplanes	A
30	Flight data recorders: Helicopters.	A

31	Data link recorders	A
32	Head-up displays (HUD) or enhanced vision systems (EVS).	A
33	All Aeroplanes On Flights Over Water	A
34	Emergency lighting.	A
35	Exits.	A
36	Emergency Locators transmitter: Aeroplanes	A
37	Emergency Locators transmitter: Helicopters	A
38	Portable Fire Extinguishers	A
39	Lavatory Fire Extinguisher	A
40	Lavatory Smoke Detector	A
41	Crash axe.	A
42	Marking of break-in points.	A
43	Medical Supplies: Aeroplanes	A
44	Medical Supplies: Helicopters	A
45	Oxygen Supply: Aeroplane	A

46	Oxygen Supply: Helicopters	A
47	Crew Members Use of Oxygen	A
48	Protective breathing equipment.	A
49	Megaphones: Aeroplane.	A
50	Megaphones: helicopters.	A

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51	Life Jackets	A
52	Life rafts;Aeroplane	A
53	Life raft:Helicopter	
54	Seats, safety belts and shoulder harnesses.	A
55	Passenger and pilot compartment doors.	A
56	Passenger information signs.	A
57	Public address system.	A
58	Materials for cabin interiors.	A
59	Materials for cargo and baggage compartments.	A
60	Power supply, distribution and indication system.	A

61	Protective circuit fuses.	A
62	Emergency power supply.	A
63	Operations of Aeroplanes or Helicopters in icing conditions	A
64	Icing detection.	A
65	Pitot indication systems.	A
66	Static pressure system.	A
67	Windshield wipers.	A
68	Chart holder.	A
69	Radiation Indicators	A
70	Least risk bomb location	A
71	Marking and Placards	A
72	Electronic Flight Bag	A
73	Surveillance Equipment	A
74	Installation	A
75	Location of An Aeroplane in Distress	A

81	Use and retention of records.	B
82	Reports of violation.	B
83	Enforcement of directions	A

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JAMES MACAHARIA,
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