

SWAZILAND GOVERNMENT GAZETTE EXTRAORDINARY

NO. 96 OF 2011

LEGAL NOTICE NO.125 OF 2011

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CIVIL AVIATION AUTHORITY ACT, 2009  
(Act No. 10 of 2009)

CIVIL AVIATION AUTHORITY (INSTRUMENTS AND EQUIPMENT)  
REGULATIONS, 2011  
(Under section 104)

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PART I  
PRELIMINARY

In exercise of the powers conferred by section 104 of the Civil Aviation Authority Act, 2009, the Minister of Public Works and Transport makes the following regulations-

***Citation and commencement***

1. These regulations may be cited as the Civil Aviation Authority (Instrument and Equipment) Regulations, 2011, and shall come into force on the date of publication in the Gazette.

***Interpretation***

2. In these regulations, unless the context otherwise requires, words or expressions used in the Act have the same meaning as in these Regulations, and-

“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 aircraft;

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

“aircraft” means a machine that derives 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 (AOC)” means a certificate authorizing an operator to carry out specified commercial air transport operations;

“AOC holder” means an aircraft operator holding an air operator certificate;

“appropriate authority” means-

- (a) in relation to an aircraft, the Authority which is responsible for approval of design and issue of a type certificate;
- (b) in relation to the content of a medical kit, the state of registry;
- (c) in relation to Swaziland, the managing director of the Authority;

“approved standard” means a manufacturing, design, maintenance or quality standard approved by the Authority;

“Authority” means the Civil Aviation Authority established under the Civil Aviation Authority Act;

“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 aircraft component

tested;

“cargo compartment classifications”-

- (a) class A- one in which a presence of a fire would be easily discovered by a crew member while at his or her station; and 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 crew member 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 E-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 (100 ft) 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 (50 ft) 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 take-off 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 aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire;

“Contracting State” means a State that is signatory to the Convention on International Civil Aviation (Chicago Convention);

“controlled flight” means a flight which is subject to an air traffic control clearance;

“critical engine” means the engine whose failure would most adversely affect the performance or handling qualities of an aircraft;

“flight crew member” means a licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period;

“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 aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axis;

“inspection” means the examination of an aircraft or aircraft 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;

“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 aircraft or aircraft component including any one or combination of overhaul, repair, inspection, replacement, modification and defect rectification;

“master minimum equipment list (MMEL)” means a list established for a particular aircraft type by the organization responsible for the type design with the approval of the state of design containing items, one or more of which is permitted to be unserviceable on the commencement of a flight; the MMEL 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 MEL;

“minimum equipment list (MEL)” means a list approved by the Authority which provides for the operation of aircraft, subject to specified conditions, with particular equipment inoperative, prepared by an operator in conformity with, or more restrictive than, the master minimum equipment list established for the aircraft type;

“modification” means a change to the type design of an aircraft 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 aircraft or other unlighted prominent object cannot clearly be seen at a distance of 4,572 metres;

“operator” means a person, organization or enterprise engaged in or offering to engage in an aircraft operation;

“operational flight plan” means the plan of the operator for the safe conduct of the flight based on considerations of aircraft 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 aircraft or aircraft 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);

“pressurized aircraft” means an aircraft 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 aircraft that has blades on a powerplant 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 airfoils of power plants;

“prototype” means an aircraft 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 authorization 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;

“small aeroplane” means an aeroplane of a maximum certificated take-off mass of 5,700kg or less.

## PART II

### GENERAL REQUIREMENTS FOR AIRCRAFT EQUIPMENT AND INSTRUMENTS

#### *General instrument and equipment requirements*

3. (1) No person shall fly an aircraft unless the aircraft is equipped so as to comply with the law of the State of registry.
- (2) No person shall fly an aircraft registered in Swaziland unless the aircraft is equipped as specified under these Regulations.
- (3) A person may fly an aircraft registered in Swaziland with any additional or special equipment as the Authority may determine.
- (4) A person operating an aircraft in Swaziland shall ensure that all the required emergency equipment is installed on board the aircraft, is clearly marked and

is stowed or maintained so as not to be a source of danger on the aircraft.

(5) In addition to the minimum equipment necessary for the issue 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.

(6) For all aircraft, all required instruments and equipment shall be approved and installed in accordance with the applicable airworthiness requirements.

(7) Prior to operation in Swaziland 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.

(8) An air operator certificate (AOC) holder 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.

(9) If equipment is to be used by one flight crew member at the station of that crew member during flight, the equipment shall be installed so as to be readily operable from the station.

(10) Where a single item of equipment is required to be operated by more than one flight crew member, 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) No person shall fly an aircraft unless the aircraft is equipped with flight and navigational instruments which shall 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 crew member shall be arranged so as to permit the flight crew member to see the indications readily from the station of that crew member, with the minimum practicable deviation from the position and line of vision which the flight crew member normally assumes when looking forward along the flight path.

***Navigation equipment***

5 (1) No person shall operate an aircraft unless the aircraft is equipped with navigation equipment which shall enable it to proceed in accordance with-

- (a) the operational flight plan;
- (b) prescribed required navigational performance types; and
- (c) the requirements of air traffic services.

(2) The requirements of sub-regulation (1) 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.

(3) No person shall operate an aircraft unless that aircraft 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 aircraft to continue navigating in accordance with the requirements.

(4) 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.

***Minimum flight and navigational instruments: VFR operations***

6. An operator shall not operate an aircraft by day in accordance with visual flight rules (VFR) unless the aircraft is equipped with the following flight and navigational instruments and associated equipment where 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 sub-scale 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 altitude indicator;
  - (h) a stabilised 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 60 minutes duration, which take off and land at the same aerodrome and which remain within 50 nautical miles of that aerodrome, the instruments prescribed in sub-paragraphs (f), (g) and (h), and regulation 7 (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 altitude indicator and a slip indicator;
  - (k) a secondary surveillance radar (SSR) transponder with mode C for all aircraft except gliders, balloons, airships, kites and aircraft whose original certification does not include an engine powered electrical system and has not been subsequently certified for installation of such a system;
  - (l) any additional instruments or equipment that may be prescribed by the Authority.

***Instruments for operations requiring two pilots: VFR***

7. (1) No operator shall operate an aircraft that requires two pilots to operate unless the station of each pilot is equipped with 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 indicator calibrated in knots;
- (c) a vertical speed indicator;
- (d) a turn and slip indicator or a turn co-coordinator incorporating a slip indicator;
- (e) an altitude indicator; and

(f) a stabilised direction indicator.

(2) Where two pilots are required to operate an aircraft, an airspeed indicating system shall be equipped with a heated pitot 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 9;
- (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) Where duplicate instruments are required to operate an aircraft, 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 aircraft, the aircraft-

- (a) shall be equipped with means for indicating when power is not adequately supplied to the required flight instruments; and
- (b) shall be equipped with a mach number indicator at the station of each pilot, with compressibility limitations not otherwise indicated by the required airspeed indicators.

(5) Where two pilots are required to operate an aircraft, 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 crew member on cockpit duty.

***Minimum flight and navigation instruments-IFR operations***

8. (1) No person shall fly an aircraft under instrument flight rules (IFR) unless the aircraft is equipped with-

- (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, adjustable for any barometric pressure likely to be set during flight;
- (d) an airspeed indicating system with a means of preventing malfunctioning due to either condensation or icing;
- (e) a turn and slip indicator;

- (f) an altitude indicator (artificial horizon);
- (g) a heading indicator (directional gyroscope);
- (h) a means of indicating whether the supply of power to the gyroscopic instruments is adequate;
- (i) a means of indicating in the flight crew compartment the outside air temperature;
- (j) vertical speed indicator;
- (k) 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
- (l) an SSR transponder with mode C, except gliders, airships, kites and aircraft whose original certification does not include an engine powered electrical system and has not been subsequently certified for installation of that system.

(2) No person shall 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 very high frequency omnidirectional radio range receiving system, automatic directional finder system, one distance measuring equipment, one marker beacon receiving system;
- (b) one instrument landing system (ILS) or microwave landing system (MLS) where ILS or MLS is required for approach navigation purposes;
- (c) an area navigation system when area navigation is required for the route being flown;
- (d) an additional very high frequency omnirange (VOR) receiving system on any route or part of the route, where navigation is based only on VOR signals; and
- (e) an additional automatic directional finder (ADF) system on any route or part of the route, where navigation is based only on non-directional beacon (NDB) signals.

(3) An operator of an aircraft intending to land in instrument meteorological conditions (IMC) at night shall provide the aircraft 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 IMC; and
- (c) any designated alternate aerodromes.

(4) An air operator certificate (AOC) holder shall not conduct single pilot IFR operations unless the aeroplane is equipped with an autopilot with at least altitude hold and heading mode.

(5) An operator of an aircraft shall sufficiently provide the aircraft 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.

***Additional systems and equipment for single engine turbine powered aeroplanes: night and IMC operations.***

9. A single-engine turbine-powered aeroplane approved by the Authority to operate at night or in instrument meteorological conditions (IMC) 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 IMC;
- (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 pitot heater, which shall serve an air speed indicator clearly visible to the pilot;
  - (iv) provide for operation of the landing light specified in paragraph (j);
  - (v) provide for one engine restart, if applicable; and
  - (vi) provide for the operation of the radio altimeter;
- (d) two altitude 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 a pressurized aeroplane, 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 operations requiring two pilots: IFR operations***

10. No operator shall operate an aircraft that requires two pilots to operate unless the station of the second pilot 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) a turn and slip indicator or a turn coordinator incorporating a slip indicator;
- (e) an altitude indicator; and
- (f) a stabilised direction indicator.

***Standby altitude indicator***

11. (1) No person shall 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 instrument flight rules unless the aeroplane or helicopter 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 30 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;
  - (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 altitude instrument system is installed and usable through flight altitudes of 3600 of pitch and roll, the turn and slip indicators may be replaced by slip indicators.

***Instrument and equipment required for Category II operations***

12. (1) No person shall fly an aircraft in a category II operation unless the aircraft 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 systems;
  - (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 20 foot intervals and each having a placarded correction for altimeter scale error and for the wheel height of the aircraft;
  - (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 (ILS) glide slope or basic instrument landing system glide slope information;

- (ii) an automatic approach coupler capable of providing at least automatic steering in relation to an ILS 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 pitot tube installed or an equivalent means of preventing malfunctioning due to icing of the pitot system.

(2) The instruments and equipment specified in this regulation shall be approved in accordance with the maintenance programme referred under regulation 13 before being used in category II operations.

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

13. (1) No person shall fly an aircraft unless the instruments and equipment required by regulation 11 have been approved as provided in this regulation for use in category II operations.

(2) Before presenting an aircraft 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 was bench checked according to the instructions of the manufacturer 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 maintenance manual of the manufacturer.

(3) All components of the flight control guidance system shall be approved as installed by the evaluation programme 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 the 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 after each 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  $\pm 5$  feet or 5 percent, whichever is greater, under the following conditions-
  - (i) pitch angles of zero to  $\pm 5$  degrees about the mean approach altitude;
  - (ii) roll angles of zero to 20 degrees 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 aircraft without significant lag or oscillation;
- (d) with the aircraft at an altitude of two hundred feet or less, any abrupt change in terrain representing no more than 10 percent of the altitude of the aircraft 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 500 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 11 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.

(7) Approval by evaluation is requested as a part of the application for approval of the category II manual.

(8) Unless otherwise authorized by the Authority, the evaluation program for each aircraft requires the following demonstrations-

- (a) at least 50 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;
- (b) all approaches shall be flown under simulated instrument conditions to a 100 foot decision height and 90 percent of the total approaches made shall be successful.

(9) A successful approach referred to in sub-regulation 8(b) is 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  $\pm 5$  knots of programmed airspeed, but shall not be less than computed threshold speed if auto throttles are used);
- (b) the aircraft at the 100 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 50 percent of full-scale deflection as displayed on the instrument landing system indicator;
- (d) no unusual roughness or excessive altitude changes occur after leaving the middle marker; and
- (e) in the case of an aircraft equipped with an approach coupler, the aircraft 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.

(10) During the evaluation programme the following information shall be maintained by the applicant for the aircraft with respect to each approach and made available to the Authority upon request-

- (a) each deficiency in airborne instruments and equipment that prevented 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 100 foot decision height if auto throttles are used;
- (d) trim condition of the aircraft upon disconnecting the auto coupler with respect to continuation to flare and landing;
- (e) position of the aircraft 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.

(11) 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.

(12) A bench check required by this regulation and regulation 14 shall-

- (a) be performed by an approved maintenance organization 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 specifications of the manufacturer unless otherwise specified in the approved category II manual for the aircraft in which the instrument or item of equipment is installed.

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

14. (1) A maintenance program for category II instruments and equipment shall contain the following-

- (a) a list of each instrument and item of equipment specified in regulation 11 that is installed in the aircraft 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 under paragraph (e) within three months after the date of the previous inspection, subject to the following-
  - (i) the inspection shall be performed by a person authorized by the Civil Aviation Authority (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 authorization for the type aircraft checked;
- (c) a schedule that provides for the performance of bench checks for each listed instrument and item of equipment that is specified in regulation 11 within twelve months after the date of the previous bench check;
- (d) 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;
- (e) 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 regulation 1 to perform as approved for category II operations, including a procedure for recording functional flight checks;
- (f) a procedure for assuring that the pilot is informed of all defects in listed instruments and items of equipment;
- (g) 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;

- (h) 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.

(2) A bench check required by sub-regulation (1) (c) shall comply with the requirements specified in regulation 13(10).

(3) 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)***

15. (1) An air operator certificate (AOC) holder shall not operate an aeroplane in minimal navigation performance specification airspace unless the aeroplane 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 authorized by the state of registry for minimal navigation performance specification operations concerned.

(2) The equipment referred to in sub-regulation (1) shall comply with the minimal navigation performance specification prescribed in ICAO Doc 7030 Regional Supplementary Procedures.

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

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

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

***Equipment for operations in reduced vertical separation minimum airspace (RVSM)***

16. (1) No person shall operate an aeroplane in reduced vertical separation minimum airspace unless the aeroplane 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 90m (300 ft); and
- (d) automatically reporting pressure-altitude.

(2) The equipment referred to in sub-regulation (1) shall comply with minimum requirements prescribed in ICAO Doc 9574 Manual for the Implementation of a 300m (1000ft) Vertical Separation Minimum Between flight level 290 and flight level 410 inclusive.

#### PART IV COMMUNICATION EQUIPMENT

##### ***Radio equipment***

17. (1) No person shall operate an aircraft unless the aircraft is equipped with radio equipment

- (a) that complies with the law of the state of registry;
- (b) required for the kind of operation being conducted; and
- (c) capable of receiving meteorological information at any time during the flight.

(2) In any particular case, the Authority may direct that an aircraft registered in Swaziland shall carry any additional or special radio equipment as specified by the Authority for the purpose of facilitating the navigation of the aircraft, the carrying out of search and rescue operations or the survival of the persons carried on the aircraft.

(3) An aircraft operated under visual flight rules (VFR) or instrument flight rules (IFR) shall be equipped with radio communication equipment capable of conducting two-way communication with those aeronautical stations and on the frequencies prescribed by the Authority, including the aeronautical emergency frequency 121.5 MHz; this requirement is considered fulfilled if the ability to conduct the communications specified is established during radio propagation conditions which are normal for the route.

(4) No person shall operate an aircraft under IFR or VFR 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) 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.

(6) Where an air operator certificate (AOC) holder is required to use more than one communications 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.

(7) No person shall operate an aircraft under IFR unless the aircraft is equipped with an audio selector panel accessible to each required flight crew member.

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

(9) An aircraft 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 aircraft to be guided to a point from which a visual landing can be made at the aerodrome at which the aircraft is to land.

(10) Subject to exceptions that may be prescribed, the radio equipment provided in compliance with this regulation in any aircraft registered in Swaziland shall be maintained in a serviceable condition.

(11) Radio equipment installed in any aircraft registered in Swaziland, 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 licensed by the authority responsible for communication; and neither the equipment nor the manner in which it is installed shall be modified except with the approval of the Authority.

(12) No person shall operate an aircraft unless there is a boom or throat microphone available at each required flight crew member flight duty station.

***Airborne collision avoidance system***

18. No person shall fly a turbine-engined aeroplane of a maximum certificated take-off-mass of over 5,700 kg or authorized to carry more than 19 passengers unless the aeroplane is equipped with an airborne collision avoidance system (ACAS II).

***Altitude reporting transponder***

19. (1) No person shall operate an aeroplane or helicopter in airspace that requires a pressure-altitude reporting transponder unless that equipment is operative.

(2) No person shall operate an aeroplane in reduced vertical separation minima (RVSM) airspace unless the aeroplane is equipped with a system that is automatically reporting pressure altitudes.

(3) No person shall operate an aeroplane or helicopter in commercial air transport unless the aeroplane or helicopter is equipped with a pressure-altitude reporting transponder that operates in accordance with the air traffic control requirements.

***Crew member interphone system: aeroplane***

20. (1) An air operator certificate (AOC) holder shall not operate an aeroplane on which a flight crew of more than one is required unless the aeroplane 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 AOC holder shall not operate an aeroplane with a maximum certified take-off mass exceeding 15,000 kilogrammes or having a maximum approved passenger seating configuration of more than 19 unless the aeroplane is equipped with a crew member interphone system.

- (3) A crew member interphone system shall meet the following-
- (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 deck level; and
    - (iii) remote crew compartment that is not on the passenger deck 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 crew member 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 crew members.

***Crew member interphone system: helicopter***

21. An air operator certificate (AOC) holder shall not operate a helicopter carrying a crew member other than a flight crew member unless the helicopter is equipped with a crew member interphone system which-

- (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 crew member station;
- (c) is 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 crew members 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

***Aircraft lights and instrument illumination***

22. (1) No person shall operate an aircraft unless the aircraft is equipped with-

- (a) for flight by day-
  - (i) anti-collision light system;
  - (ii) lighting supplied from the aircraft electrical system to provide adequate illumination for all instruments and equipment essential for the safe operation of the aircraft;
  - (iii) lighting supplied from the aircraft electrical system to provide adequate illumination in all passenger compartments; and
  - (iv) an electric torch for each required crew member readily accessible to crew member when seated at their designated station;
- (b) for flight by night, in addition to the equipment specified in regulation 8-
  - (i) the lights required by the Civil Aviation Authority (Rules of the Air and Air Traffic Control) Regulations for aircraft in

flight or operating on the movement area of an aerodrome;

- (ii) lighting supplied from the aircraft electrical system to provide adequate illumination for all instruments and equipment essential for the safe operation of the aircraft;
- (iii) lights in all passenger compartments;
- (iv) an electric torch for each crew member station; and
- (v) two landing lights or a single light having two separately energized filaments.

***Engine instruments***

23. (1) No person shall conduct any commercial air transport operations in any aircraft without the following engine instruments, where applicable-

- (a) a fuel pressure indicator for each engine;
- (b) a fuel flow meter;
- (c) a means for indicating fuel quantity in each fuel tank to be used;
- (d) an oil pressure indicator for each engine;
- (e) an oil quantity indicator for each oil-tank when a transfer or separate oil reserve supply is used;
- (f) an oil-in temperature indicator for each engine;
- (g) a tachometer for each engine; and
- (h) an independent fuel pressure warning device for each engine or a master warning device for all engines with a means for isolating the individual warning circuits from the master warning device.

(2) In addition to the equipment listed in sub-regulation (1), a reciprocating engine aircraft shall have the following-

- (a) a carburettor air temperature indicator for each engine;
- (b) a cylinder head temperature indicator for each air-cooled engine;
- (c) a manifold pressure indicator for each engine;
- (d) a device for each reversible propeller, to indicate to the pilot when the propeller is in reverse pitch that complies with the following-
  - (i) the device may be actuated at any point in the reversing cycle between the normal low pitch stop position and full reverse

pitch, but it shall not give an indication at or above the normal low pitch position: and

- (ii) the source of indication shall be actuated by the propeller blade angle or be directly responsive to it.

(3) In addition to the equipment listed in sub-regulation (1), an AOC holder operating turbine engine aircraft shall have the following-

- (a) a gas temperature indicator for each engine;
- (b) an indication of engine thrust or gas stream pressure that can be related to thrust for each turbojet engine;
- (c) a torque indicator for each turbo propeller engine;
- (d) a blade position indicating means for each turbo-propeller engine propeller to provide an indication to the flight crew when the propeller blade angle is below the flight low pitch position;
- (e) a position indicator to the flight crew to indicate thrust reverse position; and
- (f) an indicator to indicate the functioning of the powerplant ice protection system.

### ***Warning Instruments and Systems***

#### ***Machmeter and speed warning devices***

24. (1) No person shall operate an aeroplane with compressibility limitations not otherwise indicated by the required airspeed indicator unless the aeroplane is equipped with a mach meter at each pilot station.

(2) No person shall operate an aeroplane requiring a speed warning device unless the device installed is capable of giving effective aural warnings differing distinctively from aural warnings used for other purposes, whenever the speeds exceeds VMO plus 6 knots or MMO + 0.01.

#### ***Loss of pressurisation device***

25. A operator shall not operate a pressurized aircraft intended to be operated at flight altitudes at which the atmospheric pressure is less than 376hPa unless the aircraft is equipped with a device to provide positive warning to the flight crew of any dangerous loss of pressurization.

#### ***Landing gear: aural warning device***

26. (1) No person shall operate an aeroplane equipped with a retractable landing gear unless the aeroplane has landing gear aural warning device that functions continuously under the following conditions-

- (a) for aeroplanes with an established approach wing-flap position, whenever the wing flaps are extended beyond the maximum certified approach or climb configuration position in the aeroplane flight manual and the landing gear is not fully extended and locked; and
  - (b) for aeroplanes without an established approach climb wing flap position, whenever the wing flaps are extended beyond the position at which landing gear extension is normally performed and the landing gear is not fully extended and locked.
- (2) The warning system required under sub-regulation (1)-
- (a) shall not have a manual shut off;
  - (b) shall be in addition to the throttle-actuated device installed under the type certification airworthiness requirements; and
  - (c) may utilise any part of the throttle-actuated system including the aural warning device.

(3) The flap position-sensing unit required under sub-regulation (1) may be installed at any suitable place in the aeroplane.

***Altitude alerting system***

27. No person shall 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 sub-regulation (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 is commensurate with the altitudes at which the aircraft 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; however, for operation below 3,000 feet above ground level, the system or device need only provide one signal, either visual or aural, to comply with this paragraph; 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.

(3) 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 the procedures assigned to each member.

***Ground proximity warning system***

28. (1) No person shall fly a turbine-engined aeroplane of a maximum certificated take-off mass of over 5,700 kg or authorized to carry more than 9 passengers unless the aeroplane is equipped with a ground proximity warning system.

(2) A turbine-engined aeroplane of a maximum certificated take-off mass of over 15,000 kg or authorized to carry more than 30 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 take-off mass of over 5,700 kg or authorized to carry more than 9 passengers, for which the individual certificate of airworthiness is first issued on or after 1 January 2004, shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.

(4) All turbine-engined aeroplanes of over 5,700 kg maximum certificated take-off mass of over 5,700 kg or authorized to carry more than 9 passengers, shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.

(5) All piston-engined aeroplanes of a maximum certificated take-off mass of over 5,700 kg or authorized to carry more than 9 passengers shall be 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 surface of the earth.

(7) A ground proximity warning system shall provide, unless otherwise specified in these Regulations, 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.

***Weather radar***

29. (1) An air operator certificate (AOC) holder shall not operate-
- (a) a pressurized aircraft; or
  - (b) an unpressurized aircraft which has a maximum certificated take-off mass of over 5,700 kg; or
  - (c) an unpressurized aircraft having a maximum approved passenger seating configuration of more than 9 seats, unless such aircraft is equipped with airborne weather radar equipment whenever such an aircraft 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) The airborne weather radar equipment in propeller driven pressurized aeroplanes having a maximum certificated take-off mass of over 5,700 kg with a maximum approved passenger seating configuration not exceeding 9 seats, operated by an AOC holder 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 COCKPIT VOICE RECORDER**

***Cockpit voice recorders: aeroplane***

30. (1) An air operator certificate (AOC) holder shall not operate an aeroplane of a maximum certificated take-off mass of over 5,700 kg unless the aeroplane is equipped with a cockpit voice recorder, to record the aural environment on the flight deck during flight time.

(2) A turbine-engined aeroplane of a maximum certificated take-off mass of 27,000 kg or above that is of a type of which the prototype was certificated by the appropriate Authority before 30th September 1969 or the individual certificate of

airworthiness was issued before 1st January, 1987 shall be equipped with a cockpit voice recorder, the objective of which is the recording of the aural environment on the flight deck during flight time.

***Cockpit voice recorders: duration - aeroplane***

31. (1) No person shall fly an aeroplane unless the aeroplane is equipped with a cockpit voice recorder installed as required under regulation 29, capable of retaining the information recorded during at least the last thirty minutes of its operation.

(2) A cockpit voice recorder installed in an aeroplane of a maximum certificated take-off mass of over 5,700 kg for which the individual certificate of airworthiness is first issued after 1 January 2003, shall be capable of retaining the information recorded during at least the last two hours of its operation.

***Cockpit voice recorders: general requirements – aeroplane***

32. (1) No person shall fly an aeroplane unless the aeroplane is equipped with a cockpit voice recorder installed as required under regulation 29, designed to record 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 interphone system of the aeroplane;
- (d) voice or audio signals identifying navigation or approach aids introduced in the headset or speaker;
- (e) voice communication of flight crew members using the passenger address system, if installed; and
- (f) digital communications with air traffic services (ATS), unless recorded by the flight data recorder.

(2) A cockpit voice recorder 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) To aid in voice and sound discrimination, 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 crew members on the flight deck when directed to those stations by wiring suitable boom microphones to record continuously on separate channels.

(4) A cockpit voice recorder shall be installed so that-

- (a) the probability of damage to the recording is minimized by-
  - (i) locating the recorder as far as practicable, and
  - (ii) in the case of pressurized aeroplanes, locating the cockpit voice recorder in the vicinity of the rear pressure bulkhead;
- (b) it receives its electrical power from a bus that provides the maximum reliability for the operation of the cockpit voice recorder without jeopardizing service to essential or emergency loads;
- (c) there is an aural or visual means for pre-flight checking of the cockpit voice recorder for proper operation; and
- (d) if the cockpit voice recorder has a bulk erasure device, the installation is designed to prevent operation of the device during flight time or crash impact.

***Cockpit voice recorders: helicopters***

33. (1) Subject to sub-regulation (2), no person shall not fly a helicopter for which the individual certificate of airworthiness was first issued before, on or as the case may be, after 1 January 1987 of a maximum certificated take-off mass of 3,180 kg or above unless the helicopter is equipped with a cockpit voice recorder (CVR) the objective of which is the recording of the aural environment on the flight deck during flight time.

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

***Cockpit voice recorders: duration -helicopters***

34. (1) Except as provided in sub-regulation (2), no person shall fly a helicopter unless the helicopter is equipped with a cockpit voice recorder (CVR) capable of retaining the information recorded during at least the last 30 minutes of its operation.

(2) A CVR installed in a helicopter for which the individual certificate of airworthiness is first issued after 1 January 2003 shall be capable of retaining the information recorded during at least the last two hours of its operation.

***Cockpit voice recorders: performance requirements***

35. (1) No person shall fly a helicopter unless the helicopter is equipped with a cockpit voice recorder installed as required by regulation 29, capable of recording on at least four tracks simultaneously-

- (a) to ensure accurate time correlation between tracks, the cockpit voice recorder shall record in an in-line format;
- (b) if a bi-directional configuration is used, the in-line format and track

allocation shall be retained in both directions.

- (2) The track allocation in a cockpit voice recorder shall be-
- (a) track 1 - co-pilot headphones and live boom microphone;
  - (b) track 2 - pilot in command headphones and live boom microphone;
  - (c) track 3 - area microphones; and
  - (d) track 4 - time reference plus the headphone and live microphone of the third and fourth crew members, if applicable.

(3) The cockpit voice recorder 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) Where a cockpit voice recorder is installed in an aircraft, means shall be provided for an accurate correlation between the cockpit voice recorder and the flight data recorder.

***Cockpit voice recorders: inspections***

36. (1) Prior to the first flight of the day, the built-in test features on the cockpit for the cockpit voice recorder, when installed, shall be monitored.

(2) Annual inspections of a cockpit voice recorder 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 cockpit voice recorder shall be carried out by replay of the cockpit voice recorder recording;
- (c) while installed in the aircraft, the cockpit voice recorder shall record text signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards; and
- (d) during the annual examination, a sample of in-flight recordings of the cockpit voice recorders shall be examined for evidence that the intelligibility of the signal is acceptable.

(3) A report of the annual inspection referred to in sub-regulation (2) shall be made available to the Authority.

***Flight data recorders***

37. (1) No person shall operate a turbine-engine aircraft of a maximum certificated take off mass of over 5,700 kg unless the aircraft is equipped with an approved flight data recording system.

- (2) The flight recorders 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 the 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) An aeroplane for which the individual certificate of airworthiness is first issued after 1 January 2005, which utilizes data link communications and is required to carry a cockpit voice recorder shall record on a flight recorder, all data link communications to and from the aeroplane; the minimum recording duration shall be equal to the duration of the cockpit voice recorder and shall be correlated to the recorded cockpit audio.

(4) With effect from 1 January 2007, an aeroplane, which utilizes data link communications and is required to carry a cockpit voice recorder shall record on a flight recorder, all data link communications to and from the aeroplane; the minimum recording duration shall be equal to the duration of the cockpit voice recorder, and shall be correlated to the recorded cockpit audio.

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

(6) The use of engraving metal foil flight data recorders or photographic film flight data recorders is prohibited.

***Flight data recorders: aeroplanes***

38. (1) No person shall fly an aeroplane for which the individual certificate of airworthiness was first issued on or after 1 January 1989-

- (a) of a maximum certificated take off mass of over 27,000 kg unless it is equipped with a type I flight data recorder; and
  - (b) of a maximum certificated take-off mass of over 5,700 kg, up to and including 27 000 kg, unless the aeroplane is equipped with a type II flight data recorder (FDR).
- (2) No person shall fly a turbine-engined aeroplane for which the individual

certificate of airworthiness was first issued on or after 1 January 1987 but before 1 January 1989 being of a maximum certificated take-off mass of-

- (a) over 5,700 kg except those referred to in paragraph (b), unless the aeroplane is equipped with a FDR which shall record time, altitude, airspeed, normal acceleration and heading; and
- (b) over 27,000 kg of the types of which the prototype was certificated by the appropriate national authority after 30 September 1969, unless the aeroplane is equipped with a type II FDR.

(3) No person shall fly a turbine-engined aeroplane for which the individual certificate of airworthiness was first issued before 1 January 1987, being of a maximum certificated take-off mass of over 5,700 kg, unless the aeroplane is equipped with a FDR which shall record time, altitude, airspeed, normal acceleration and heading.

(4) No person shall fly an aeroplane for which the individual certificate of airworthiness is first issued after 1 January 2005 of a maximum certificated take-off mass of over 5 700 kg unless it is equipped with a Type IA FDR.

(5) No person shall fly a multi-engined turbine powered aeroplane of a maximum certificated take-off mass of 5,700 kg or less for which the individual certificate of airworthiness is first issued on or after 1st January 1990, unless it is equipped with a type IIA FDR

***Flight data recorders: helicopters***

39. No person shall fly a helicopter of a maximum certificated take-off mass of over-

- (a) 7,000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1989, unless the helicopter is equipped with a type IV flight data recorder (FDR); and
- (b) 3,180 kg for which the individual certificate of airworthiness is first issued after 1 January 2005, unless the helicopter is equipped with a Type IVA FDR with a recording duration of at least 10 hours.

***Flight data recorder duration***

40. No person shall fly an aircraft unless the aircraft 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***

41. No person shall fly an aircraft unless the aircraft is equipped with a flight data recorder specified in regulations 36 and 37 shall record the information specified in the Table set out in the First Schedule.

***Recording of data link communication***

42. (1) No person shall fly an aeroplane that uses data link communications and is required to carry a cockpit voice recorder (CVR), unless it is capable to record on a flight recorder all data link communications to and from the aeroplane.

(2) This requirement in sub- regulation (1) is effective-

- (a) 1 January 2005, in all aeroplanes for which the individual certificate of airworthiness is issued after this date;
- (b) 1 January 2007, in all aeroplanes that use data link communications and are required to carry a CVR.

(3) The minimum recording duration shall be equal to the duration of the CVR and shall be correlated to the recorded cockpit audio.

(4) The recording shall contain sufficient information to derive the content of the data link communications message and, whenever practical, the time the message was displayed to or generated by the crew shall be recorded.

(5) An aeroplane is required to be equipped with a FDR and a CVR may alternatively be equipped with the following number of combination (FDR/CVR) recorders-

- (a) two - for all aeroplanes of a certificated takeoff mass of over 5 700kg; and
- (b) one - for all multi-engined turbine powered aeroplanes of 5 700kg or less.

## PART VII

## EMERGENCY, RESCUE AND SURVIVAL EQUIPMENT

***Emergency equipment: all aircraft***

43. (1) No person shall operate an aircraft unless that aircraft is equipped with emergency and flotation equipment that is-

- (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 the method of operation of the aircraft;
- (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.

***Means for emergency evacuation***

44. (1) An air operator certificate holder shall not operate an aeroplane with passenger emergency exit sill heights-

- (a) which are more than 1.83 metres (6 feet) above the ground with the aeroplane on the ground and the landing gear extended; or
- (b) which would be more than 1.83 metres (6 feet) above the ground after the collapse of or failure to extend of, one or more legs of the landing gear and for which a type certificate was first applied for on or after 1 April 2000, unless the aeroplane has equipment or devices available at each exit, where sub-regulations (1) or (2) apply, to enable passengers and crew to reach the ground safely in an emergency.

(2) The equipment or device referred to in sub-regulation (1) need not be provided at over wing exits if the designated place on the aeroplane structure at which the escape route terminates is less than 1.83 metres (6 feet) from the ground with the aeroplane on the ground, the landing gear extended and the flaps in the take off or landing position whichever flap position is higher from the ground.

(3) An aeroplane required to have a separate emergency exit for the flight crew and for which-

- (a) the lowest point of the emergency exit is more than 1.83 metres (6 feet) above the ground with the landing gear extended; or
- (b) a type certificate was first applied for on or after 1 April 2000, would be more than 1.83 metres (6 feet) above the ground after the collapse of or failure to extend of, one or more legs of the landing gear, shall have a device to assist all members of the flight crew in descending to reach the ground safely in an emergency.

***Emergency lighting***

45. (1) No person shall operate a passenger carrying aeroplane of a maximum approved passenger seating configuration of more than 9 unless the aeroplane is provided with an emergency lighting system having an independent power supply to facilitate the evacuation of the aeroplane.

(2) The emergency lighting system must include-

- (a) for aeroplanes which have a maximum approved passenger seating configuration of more than 19-
  - (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 authority on or after 1st January 1958, floor proximity emergency escape path marking system in the passenger compartment;
- (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) After 1 April 1998, an operator shall not, by night, operate a passenger carrying aeroplane which has a maximum approved passenger seating configuration of 9 or less unless the aeroplane is provided with a source of general cabin illumination to facilitate the evacuation of the aeroplane; the system may use dome lights or other sources of illumination already fitted on the aeroplane and which are capable of remaining operative after the battery of the aeroplane has been switched off.

### ***Exits***

46. (1) No person shall fly an aircraft unless every exit and every internal door in the aircraft 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 the 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 aircraft or a particular aircraft, is not required for use by passengers.

(3) Every exit from the aircraft, being an exit intended to be used by passengers in normal circumstances, shall be marked with the word “EXIT” 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” in capital letters.

(4) Every exit from the aircraft 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 aircraft, an or near the exterior surface.

(5) Subject to compliance with sub-regulation (5), if one, but not more than one, exit from an aircraft 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 aircraft 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 aircraft or to a class of aircraft; and
- (b) in accordance with arrangements so approved, the exit shall be fastened by locking or otherwise, the words ‘EXIT’, and ‘EMERGENCY EXIT’ 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’ in red letters.

***Flights over designated land areas: all aircraft***

47. No person shall operate an aircraft 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 life saving equipment, including means of sustaining life as may be appropriate to the area overflown.

***Survival equipment***

48. An air operator certificate holder shall not operate an aircraft across areas in which search and rescue would be especially difficult unless the aircraft is equipped with the following-

- (a) signalling equipment to make the pyrotechnical distress signals

as specified in the Civil Aviation Authority (Rules of the Air and Air Traffic Control) Regulations;

- (b) at least one emergency locator transmitter capable of transmitting on both the distress frequencies 406 MHz and 121.5 MHz simultaneously; and
- (c) additional survival equipment for the route to be flown taking account of the number of persons on board, except that the equipment in the documents referred to in paragraph (b) need not be carried when the aeroplane either-
  - (i) remains within a distance from an area where search and rescue is not especially difficult corresponding to-
    - (aa) 120 minutes at the one engine inoperative cruising speed for aeroplanes capable of continuing the flight to an aerodrome with the critical power unit(s) becoming inoperative at any point along the route or planned diversions; or
    - (bb) 30 minutes at cruising speed for all other aeroplanes, or
  - (ii) for large turbine powered aeroplanes, no greater distance than that corresponding to 90 minutes at cruising speed from an area suitable for making an emergency landing.

***Emergency locator transmitter: aeroplanes***

49. (1) No person shall operate an aeroplane unless the aircraft is equipped with an automatically activated emergency locator transmitter capable of transmitting on 121.5 MHz and 406 MHz.

(2) No person shall operate an aeroplane in flights over water away from land suitable for making an emergency landing at a distance of more than 185 km (100 NM), in the case of single-engine aeroplane, and more than 370 km (200 NM), in the case of a multi-engine aeroplane capable of continuing flight with one engine inoperative unless the aeroplane has one survival automatic emergency locator transmitter that transmits simultaneously on 121.5 MHz and 406 MHz.

(3) A person operating over water flights shall not operate an aeroplane at a distance away from land, which is suitable for making an emergency landing, greater than that corresponding to 120 minutes at cruising speed or four nautical miles, whichever is the lesser, for aeroplanes capable of continuing the flight to an aerodrome with the critical power unit becoming inoperative at any point along the route or planned diversions, unless that aeroplane has two survival type emergency locator transmitters, one of which shall be automatic, that transmits simultaneously on 121.5 and 406 MHz.

(4) No person shall operate an aeroplane on flights over designated land areas unless the aeroplane has one automatic emergency locator transmitter that can transmit simultaneously on 121.5 and 406 MHz.

(5) A person operating an aircraft in over water operations shall install at least one survival type emergency locator transmitter referred to in sub regulation(2) in each life raft carried.

(6) For all aircraft, batteries used in emergency locator transmitters shall be replaced, or recharged if the battery is rechargeable, when-

- (a) the transmitter has been in use for more than one cumulative hour; or
- (b) 50 percent of their useful life, or for rechargeable batteries, 50 percent of their useful life of charge, has expired.

(7) The expiration date for a replacement or recharged emergency locator transmitter battery shall be legibly marked on the outside of the transmitter on all aircraft.

(8) An operator shall ensure that an emergency locator transmitter that is capable of transmitting on 406 MHz shall be coded as prescribed by the Authority and registered with the national agency responsible for initiating search and rescue or another nominated agency.

(9) For all aircraft, the useful life of a battery or useful life of charge requirements shall not apply to batteries such as water-activated batteries that are essentially unaffected during probable storage intervals.

***Emergency locator transmitter: helicopters***

50. (1) No person shall operate a helicopter unless the helicopter is fitted with automatic emergency locator transmitter.

(2) No person shall operate a helicopter on a flight over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed when operating in performance class 1 or 2 or beyond autorotation or safe forced landing distance from land when operating in performance class 3 unless the helicopter has one automatic survival emergency locator transmitter and at least one survival emergency locator transmitter in a raft that transmits simultaneously on 121.5 or 406 MHz.

(3) No person shall operate a helicopter over a designated land area unless it has one automatic emergency locator transmitter that transmits on 121.5 or 406 MHz.

***Portable fire extinguishers***

51. (1) No person shall operate an aircraft unless hand fire extinguishers are provided for use in crew, 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 minimize the hazard of toxic gas concentration;

- (b) at least one hand fire extinguisher, containing halon 1211 (bromochlorodi-fluoromethane, CBrClF<sub>2</sub>), 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 deck;
- (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 crew members in flight; and
- (e) at least the following number of hand fire extinguishers must 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 31, and not more than 60, and at least two of the fire extinguishers located in the passenger compartment of an aeroplane with a maximum approved passenger seating configuration of 61 or more must contain halon 1211 (bromochlorodi-fluoromethane, CBrClF<sub>2</sub>), or equivalent as the extinguishing agent.

***Lavatory fire extinguisher***

52. (1) No person shall operate an aircraft 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.

***Lavatory smoke detector***

53. No person shall operate a passenger-carrying aircraft unless each lavatory in the aircraft is equipped with a smoke detector system or equivalent that provides-

- (a) warning light in the cockpit; or
- (b) a warning light or audio warning in the passenger cabin, which shall be readily detected by a cabin crew member, taking into consideration the positioning of cabin crew members throughout the passenger compartment during various phases of flight.

***Crash axe***

54. (1) No person shall operate an aircraft with a maximum certificated take-off mass of over 5,700 kg or having a maximum approved passenger seating configuration of more than 9 seats unless the aircraft 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 200, 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) No person shall operate an aeroplane or helicopter unless the areas of the fuselage suitable for break-in by rescue crews in emergency are marked on aeroplanes and helicopters, the areas shall be marked upon the exterior surface of its fuselage with markings to show the areas, in this regulation referred to as "break-in areas", which can, for purposes of rescue in an emergency, be most readily and effectively broken into by persons outside the aeroplane or helicopter.

(2) The break-in areas shall be rectangular in shape and shall be marked by right-angled corner markings, each area of which shall be 9 cm in length along its outer edge and 3 cm in width.

(3) Where the corner markings referred to in sub-regulation (2) are more than 2 m apart, intermediate lines 9 cm x 3 cm shall be inserted so that there is not more than

2 m between adjacent markings.

(4) The words “CUT HERE IN EMERGENCY” shall be marked across the centre of each break-in area in capital letters.

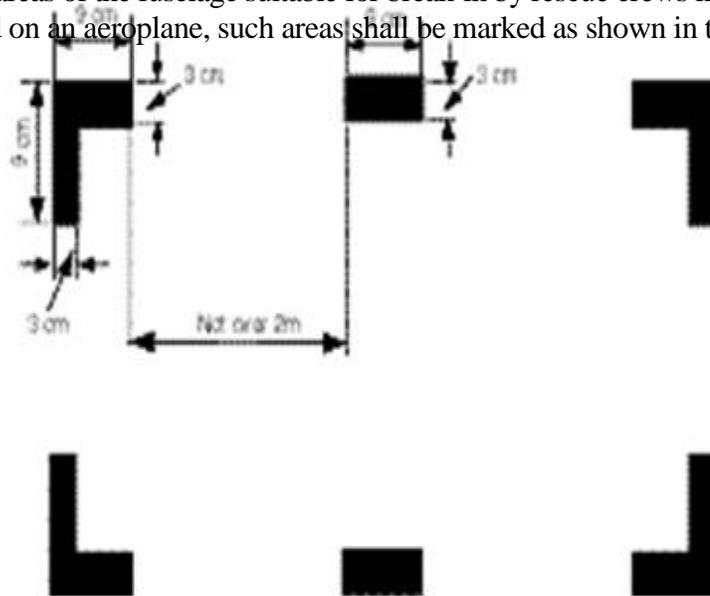
(5) The markings required under this regulation shall be-

(a) painted or affixed by other equally permanent means;

(i) red or yellow and, in any case in which the colour of the adjacent background renders red or yellow markings to be not readily visible, be outlined in such a manner that shall be readily distinguishable from the surrounding fuselage area by contrast in colour; and

(b) kept clean and unobscured at all times.

(6) 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-



***First-aid and emergency medical kit***

56. (1) An air operator certificate holder shall not operate an aeroplane unless the aeroplane is equipped with accessible and adequate medical supplies appropriate to the number of passengers the aeroplane is authorized to carry.

(2) The medical supplies referred to in sub-regulation (1) shall comprise-

- (a) one or more first aid kits; and
- (b) a medical kit, for the use of medical doctors or other qualified persons in treating in-flight medical emergencies for passenger flights requiring a cabin crew.

(3) The number of first-aid kits to be carried on an AOC-operated aeroplane shall be to the following scale-

Number of passenger seats installed	Number of first-aid kits required
0 to 50	1
51 to 150	2
151 to 250	3
251 and more	4

(4) The first-aid kits referred to in sub-regulation (2) shall be distributed as evenly as practicable throughout the passenger cabin.

(5) The required first-aid kits referred to in sub-regulation (2) shall be readily accessible to cabin crew, and, in view of the possible use of medical supplies outside the aeroplane in an emergency situation, shall be located to the extent practicable near an exit.

(6) The first aid kits required under this regulation shall include the following contents-

- (i) a handbook on first aid;
- (ii) ground-air visual signal code for use by survivors as specified in the Civil Aviation Authority (Rules of the Air and Air Traffic Control)

Regulations;

- (iii) materials for treating injuries;
- (iv) ophthalmic ointment;
- (v) a decongestant nasal spray;
- (vi) insect repellent;
- (vii) emollient eye drops;
- (viii) sunburn cream;
- (ix) water-miscible antiseptic/skin cleanser;
- (x) materials for treatment of extensive burns;
- (xi) oral drugs, including analgesic, antispasmodic, central nervous system stimulant, circulatory stimulant, coronary vasodilator, antidiarrhoeic and motion sickness medications; and (xii) an artificial plastic airway and splints.

(7) The medical kit required under this regulation shall contain the following equipment and drugs-

- (a) equipment-
  - (i) one pair of sterile surgical gloves;
  - (ii) sphygmomanometer;
  - (iii) stethoscope;
  - (iv) sterile scissors;
  - (v) haemostatic forceps;
  - (vi) haemostatic bandages or tourniquet;
  - (vii) sterile equipment for suturing wounds;
  - (viii) disposable syringes and needles; and
  - (ix) disposable scalpel handle and ado.
- (b) drugs-
  - (i) coronary vasodilators;
  - (ii) analgesics;
  - (iii) diuretics;
  - (iv) anti-allergics;
  - (v) steroids;
  - (vi) sedatives;
  - (vii) ergometrine;
  - (viii) where compatible with Regulations of the appropriate authority, a narcotic drug in injectable form; and

- (ix) injectable bronchodilator.

***Supplemental oxygen pressurised aeroplanes***

57. (1) An air operator certificate holder shall not operate a pressurized aeroplane at pressure altitudes above 10,000 ft unless supplemental oxygen equipment capable of storing and dispensing the oxygen supplies is provided.

(2) The amount of supplemental oxygen shall be determined on the basis of cabin pressure altitude, flight duration and the assumption that a cabin pressurization failure will occur at the pressure altitude or point of flight that is most critical from the standpoint of oxygen need and the aeroplane will descend in accordance with emergency procedures specified in the aeroplane flight manual to a safe altitude for the route to be flown that will allow continued safe flight and landing.

(3) In the event of failure, the cabin pressure altitude shall be considered the same as the aeroplane pressure altitude, unless it is demonstrated to the Authority that no probable failure of the cabin or pressurization system will result in a cabin pressure altitude equal to the aeroplane pressure altitude; under these circumstances this lower cabin pressure altitude may be used as a basis for determination of oxygen supply.

***Oxygen equipment and supply requirements: pressurized aeroplanes***

58. (1) An air operator certificate holder shall not operate an aeroplane unless the members of the flight crew on cockpit duty are supplied with supplemental oxygen in accordance with minimum requirements prescribed in Table 1.

(2) Where all occupants of cockpit seats are supplied from the flight crew source of oxygen supply, they shall be considered as flight crew members on flight deck duty for the purpose of oxygen supply.

(3) The cockpit seat occupants who are not supplied by the flight crew source of oxygen supply and flight crew members not covered under sub-regulations (1) and (2) shall be considered as passengers for the purpose of oxygen supply.

(4) Oxygen masks to be installed in an aeroplane shall be-

- (a) located so as to be within the immediate reach of flight crew members while at their assigned duty station; and
- (b) of a quick donning type for use by flight crew members in pressurized aeroplanes operating at pressure altitudes above 25,000 ft.

(5) Passengers in an aeroplane shall be supplied with supplemental oxygen in accordance with Table 1.

(6) An operator who operates an aeroplane intended to be operated at pressure altitudes above 25,000 ft shall ensure that the aeroplane is provided with-

- (a) sufficient spare outlets and masks or sufficient portable oxygen units with masks for use by all required cabin crew members;

- (b) spare outlets or portable oxygen units distributed evenly throughout the cabin to ensure immediate availability of oxygen to each required cabin crew member regardless of their location;
- (c) an oxygen dispensing unit connected to oxygen supply terminals immediately available to each occupant, wherever seated; and
- (d) total number of dispensing units and outlets which exceeds the number of seats by at least 10 percent and the extra units evenly distributed throughout the cabin.

(7) An aeroplane intended to be operated at pressure altitudes above 25,000 ft or which, if operated at or below 25,000 ft, cannot descend safely within 4 minutes to 13,000 ft, shall be provided with automatically deployable oxygen equipment immediately available to each occupant wherever seated and the total number of dispensing units and outlets shall exceed the number of seats by at least 10 percent with the extra units evenly distributed throughout the cabin.

(8) The oxygen supply requirements specified in Table 1 may, in the case of aeroplanes not certificated to fly above 25,000 ft, be reduced to the entire flight time between 10,000 ft and 13,000 ft cabin pressure altitudes for all required cabin crew members and for at least 10 percent of the passengers if, at all points along the route to be flown, the aeroplane is able to descend safely within 4 minutes to a cabin pressure altitude of 13,000 ft.

**TABLE 1 - OXYGEN -MINIMUM REQUIREMENTS FOR SUPPLEMENTAL OXYGEN FOR PRESSURISED AEROPLANES (Note 1)**

(a) SUPPLY FOR	(b) DURATION AND CABIN PRESSURE ALTITUDE
	Entire flight time when cabin pressure altitude exceeds 13 000 feet and entire flight time when the cabin pressure altitude exceeds 10 000 feet but does not exceed 13000 feet after the first 30 minutes at those altitudes, but in no case less than:
1. All occupants of flight deck seats on flight deck duty	<ul style="list-style-type: none"> <li>(i) 30 minutes for aeroplanes certificated to fly at altitudes not exceeding 25 000 feet (note 2)</li> <li>(ii) 2 hours for aeroplanes certificated to fly at altitudes not exceeding 2000 feet (Note 3)</li> </ul>
2. All required cabin crew members	Entire flight time when cabin pressure altitude exceeds 13000 Feet but not less than 30 minutes (Note 2) and entire flight time when cabin pressure altitude is greater than 10000 feet But does not exceed 13000 feet after the first 30 minutes at these altitudes.
3. 100% of passengers (Note 5)	Entire flight time when the cabin pressure altitude exceeds 15 000 feet but in no case less than 1o minutes (Note 4)

- |                               |   |
|-------------------------------|---|
| 4. 30% Of passengers (Note 5) | Entire flight time when the cabin pressure altitude exceeds 14000 feet but does not exceed 15000 feet.  |
| 5. 10% of passengers (Note 5) | Entire flight time when the cabin pressure altitude exceeds 10 000 feet but does not exceed 14000 feet after the first 30 minutes at these altitudes. |

Note 1: The supply provided must take account of the cabin pressure altitude and descent profile for the routes concerned.

Note 2: The required minimum supply is that quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certificated operating altitude to 10,000 ft in 10 minutes and followed by 20 minutes at 10,000 ft.

Note 3: The required minimum supply is that quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certificated operating altitude to 10,000 ft in 10 minutes and followed by 110 minutes at 10,000 ft; the oxygen required under regulation 58 (1) may be included in determining the supply required.

Note 4: The required minimum supply is that quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certificated operating altitude to 15,000 ft in 10 minutes.

Note 5: For the purpose of this Table 'passengers' means passengers actually carried and include infants.

### ***Supplemental oxygen non-pressurized aircraft***

59. (1) An operator shall not operate a non-pressurized aircraft at altitudes above 10,000 ft unless supplemental oxygen equipment capable of storing and dispensing the oxygen supplies is provided.

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

### ***Oxygen supply requirements – non-pressurized aircraft***

60. (1) A member of the flight crew on cockpit duty shall be supplied with supplemental oxygen in accordance with Table 2; where all occupants of cockpit seats are supplied from the flight crew source of oxygen supply then they shall be considered as flight crew members on cockpit duty for the purpose of oxygen supply.

(2) Cabin crew members and passengers shall be supplied with oxygen in

accordance with Table 2 and cabin crew members carried in addition to the minimum number of cabin crew members required, and additional crew members, shall be considered as passengers for the purpose of oxygen supply.

TABLE 2 - SUPPLEMENTAL OXYGEN FOR NON-PRESSURIZED AIRCRAFT

SUPPLY FOR	DURATION AND PRESSURE ALTITUDE
1. All occupants of flight deck seats on flight deck duty	Entire flight time at pressure altitudes above 10000 feet
2. All required cabin crew members	Entire flight time at pressure altitudes above 13000 feet and for any period exceeding 30 minutes at pressure altitudes above 10000 feet but not exceeding 13000 feet
3. 100% of passengers (see note)	Entire flight time at pressure altitudes above 13000 feet
4. 10% of passengers (see note)	Entire flight time after 30 minutes at pressure altitudes greater than 10000 feet but not exceeding 13000 feet
Note: For the purpose of this Table “passengers” means passengers actually carried and includes infants under the age of 12	

***Protective breathing equipment***

61. (1) Subject to sub-regulation (2), an air operator certificate holder shall not operate an aeroplane with a maximum certificated takeoff mass of over 5,700 kg having a maximum approved seating configuration of more than 19 seats unless-

- (a) the aeroplane has protective breathing equipment to protect the eyes, nose and mouth of each flight crew member while on cockpit duty and to provide oxygen for a period of not less than fifteen minutes; and
- (b) the aeroplane has sufficient protective breathing equipment to protect the eyes, nose and mouth of all required cabin crew members and to provide oxygen for a period of not less than 15 minutes.

(2) Where the flight crew is more than one and a cabin crew member is not carried, portable protective breathing equipment shall 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 15 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 crew member at their assigned duty station.

(5) The protective breathing equipment intended for cabin crew use shall be installed adjacent to each required cabin crew member 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 stowed outside but adjacent to the entrance to that compartment.

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

***First-aid oxygen dispensing units***

62. (1) An AOC holder shall not conduct a passenger carrying operation in a pressurized aeroplane with a seating capacity of more than 19 seats at altitudes above 25,000 ft unless the aeroplane is equipped with-

- (a) undiluted first-aid oxygen for passengers who, for physiological reasons, may require oxygen following a cabin depressurization; and
- (b) a sufficient number of dispensing units, but in no case less than 2, with a means for cabin crew to use the supply.

(2) The amount of first-aid oxygen required under sub-regulation (1) (a), for a particular operation and route shall be determined on the basis of-

- (a) flight duration after cabin depressurization at cabin altitudes of more than 8,000 ft;
- (b) an average flow rate of at least 3 litres standard temperature pressure dry per minute per person; and
- (c) at least 2 percent of the passengers carried, but in no case for less than one person.

(3) The amount of first-aid oxygen required for a particular operation shall be determined on the basis of cabin pressure altitudes and flight duration consistent with the operating procedures established for each operation and route.

(4) The oxygen equipment provided shall be capable of generating a mass flow to each user of at least 4 litres per minute, standard temperature pressure dry, means may be provided to decrease the flow to not less than 2 litres per minute, standard temperature pressure dry, at any altitude.

***Megaphones: aeroplane***

63. (1) An air operator certificate holder shall not operate a passenger-carrying aeroplane unless that aeroplane is 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 sub-regulation (1) shall be determined as follows-

- (a) on aeroplanes with a seating capacity of more than 60 and less than 100 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 99 passengers, 2 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 deck in all cases where the total passenger seating configurations is more than 60, at least one megaphone is required.

***Megaphones: helicopters***

64. An operator shall not operate a helicopter with a total maximum approved passenger-seating configuration of more than 19 unless the helicopter is equipped with portable battery -powered megaphones readily available for use by crew members during emergency evacuation.

***Individual flotation devices***

65. (1) An air operator certificate (AOC) holder shall not operate an aircraft on flights over water at greater than gliding distance from land suitable for making an emergency landing unless the aircraft is equipped with one life jacket or equivalent individual flotation device for each person on board the aircraft.

(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.

(3) An AOC holder who operates an aircraft on extended overwater operations shall ensure that each individual flotation device is fitted with an approved survivor locator light.

(4) All seaplanes and amphibians for all flights shall be equipped with a life jacket or equivalent individual floatation device, for each person on board, stowed in a position easily accessible from the seat or berth of the person for whose use it is provided.

***Life rafts***

66. (1) An air operator certificate (AOC) holder shall not operate an aeroplane in commercial air transport at a distance away from land, which is suitable for making an emergency landing, greater than that corresponding to-

- (a) 120 minutes at cruising speed or 400 nautical miles, whichever is the lesser, for aeroplanes 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) 30 minutes at cruising speed or 100 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.

(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) an emergency locator transmitter as specified in regulation 47;
- (e) a sea anchor;
- (f) means of protecting the occupants from the elements;
- (g) paddles or other means of propulsion;
- (h) marine-type pyrotechnic signalling devices;
- (i) a waterproof torch;
- (j) means of making sea water drinkable, unless the full quantity of fresh water is carried as specified in sub-regulation (1)(ii);
- (k) for each 4 or proportion of 4 persons the life raft is designed to carry-
  - (i) 100 grammes of glucose toffee tablets;
  - (ii) 1/2 litre of fresh water in durable containers or in any case in which it is not reasonably practicable to carry the 1/2 litre of water, as large a quantity of fresh water as is reasonably practicable in the circumstances; provided that, in no case shall the quantity of water carried be less than is sufficient, when added to the amount of fresh water capable of being produced by means of the equipment

specified in paragraph (k) to provide 1/2 litre of water for each 4 or proportion of 4 persons the life raft is designed to carry;

- (l) first aid equipment; and
  - (m) two survival beacon radio apparatus for every 8 life rafts, and an additional survival beacon radio apparatus for every additional 4 or proportion of 14 life rafts
- (4) The items specified in sub-regulation (3) (i) to (m) shall be contained in one pack.
- (5) 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.
- (6) A seaplane and amphibian aircraft shall be equipped with life rafts.
- (7) An operator shall not operate a helicopter on a flight over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed when operating in performance class 1 or 2 or three minutes flying time at normal cruising speed when operating in performance class 3 unless the helicopter carries-
- (a) in the case of an helicopter carrying-
    - (i) less than 12 persons, a minimum of one life-raft with a rated capacity of not less than the maximum number of persons on board;
    - (ii) more than 11 persons, a minimum of 2 life-rafts sufficient together to accommodate all persons capable of being carried on board, where one life-raft of the largest rated capacity may be lost, shall be sufficient to accommodate all persons on the helicopter.

***Life jackets: helicopters***

67. No operator shall operate a helicopter for any operations on water or flight over water when operating performance-

- (a) class 3 beyond auto rotational distance from land; or
- (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 overwater;

unless the helicopter is equipped with life jackets equipped with a survivor locator light, for each person on board stowed in an easily accessible position with safety emergency locator transmitter or harness fastened, 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 helicopters ditching***

68. No person shall fly a helicopter over water at a distance from land corresponding to more than 10 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**

***Seats, safety belts and shoulder harnesses***

69. (1) No person shall operate an aircraft in passenger operations unless the aircraft is equipped with the following seats, safety belt and shoulder harnesses that meet the airworthiness requirements for type certification of that aircraft-

- (a) a seat or berth with safety belt for each person on board over the age of 2 years;
- (b) a supplementary loop belt or another restraint device for each infant;
- (c) a berth designed to be occupied by 2 persons, such as a multiple lounge or divan seat, shall be equipped with an approved safety belt for use by 2 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 torso of the occupant in the event of rapid deceleration;
- (f) seat in the passenger compartment for each cabin crew member.

(2) 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.

(3) In the case of an aircraft 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 aircraft, and that it is not reasonably practicable to fit a safety

harness in that aircraft.

***Passenger and pilot compartment doors***

70. (1) No operator shall operate an aeroplane which is equipped with a flight crew compartment door unless the door is capable of being locked and has means 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 which shall be capable of being locked and unlocked from the station of either pilot, that is designed to resist penetration by small firearms, grenade shrapnel and forcible intrusions by unauthorized persons.

(3) In all aeroplanes which are 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 behaviour or potential threat.

***Passenger information signs***

71. An air operator certificate holder shall not operate a passenger-carrying aeroplane unless-

- (a) the aeroplane is equipped with a passenger information sign visible from passenger seats notifying when smoking is prohibited;
- (b) if the pilot in command cannot, from the PIC own seat, see all the passengers' seats in the aircraft, a means of indicating to passengers that the seat belt should be fastened; and
- (c) the aeroplane is equipped with a sign or placard affixed to each forward bulkhead and each passenger seat back that reads "Fasten Seat Belt While Seated."

***Public address system***

72. No air operator certificate holder shall operate a passenger carrying aeroplane with a maximum approved passenger seating configuration of more than 19 unless a public address system is installed that-

- (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 crew member, except that one microphone may serve more than one exit, if the proximity of the exits allows unassisted verbal communication between seated cabin crew members;
  - (c) is capable of operation within 10 seconds by a cabin crew member 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 crew member seat meet requirements pertaining to fire protection as specified by the Authority.

***Materials for cargo and baggage compartments***

74. (1) An air operator certificate holder 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) In this regulation “liner” 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;
  - (b) there is an approved built-in fire extinguishing or suppression system controllable from the cockpit;
  - (c) there is means to exclude hazardous quantities of smoke, flames or extinguishing agent, from any compartment occupied by the crew or passengers; and
  - (d) 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 air operator certificate holder shall not operate an aeroplane unless the aeroplane is equipped with an electrical power supply and distribution system that-

- (a) meets the airworthiness requirements for certification of an aeroplane in the transport category, 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. An air operator certificate holder 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 10 percent of the number of fuses of each rating or 3 of each rating whichever is the greater.

***Aeroplanes in icing conditions***

77. An air operator certificate holder shall not operate an aeroplane in circumstances in which icing conditions are reported to exist or are expected to be encountered, unless the aeroplane is equipped with suitable de-icing or anti-icing devices.

***Icing detection***

78. (1) An air operator certificate (AOC) holder shall not operate an aircraft in expected or actual icing conditions at night unless the aircraft is equipped with a means to illuminate or detect the formation of ice.

(2) Any illumination that is used on an AOC holder-operated aircraft shall be of a type that shall not cause glare or reflection that would handicap crew members in the performance of their duties.

***Pitot Indication systems***

79. An air operator certificate holder shall not operate an aeroplane equipped with a flight instrument pitot heating system unless the aeroplane is also equipped with an operable pitot 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 crew member; and
- (b) the indication provided shall be designed to alert the flight crew if either the pitot heating system is switched “off,” or the pitot heating system is switched “on” and any pitot tube heating element is

inoperative.

***Static pressure system***

80. An air operator certificate holder shall not operate an aeroplane in accordance with instrument flight rules or by night unless the aeroplane is equipped with 2 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***

81. An air operator certificate holder shall not operate an aeroplane with a maximum certificated take off mass of over 5,700 kg, unless the aeroplane 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***

82. An air operator certificate holder 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***

83. An air operator certificate holder shall not operate an aeroplane above 15,000 metres (49,000 feet) unless-

- (a) that aeroplane is equipped with an instrument to measure and indicate continuously the dose rate of total cosmic radiation being received, that is the total of ionising and neutron radiation of galactic and solar origin, and the cumulative dose on each flight;
- (b) a system of in-board quarterly radiation sampling acceptable to the Authority is established.

***Seaplanes and amphibians: miscellaneous equipment***

84. An air operator certificate holder shall not operate a seaplane or an amphibian aircraft on water unless the aircraft is equipped with-

- (a) a sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvring the aircraft on water, appropriate to its size, weight and handling characteristics; and
- (b) equipment for making the sound signals prescribed in the Convention on the International Regulation for Prevention of Collision at Sea, 1972, where applicable.

PART IX

## GENERAL

***Suspension and revocation of approval***

85. (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 other document issued or granted under these Regulations.

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

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

(4) A holder or any person having the possession or custody of any approval, exemption or 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 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***

86. (1) No person shall-

- (a) use any approval, exemption or other document issued or required by or under these Regulations which has been forged, altered, revoked or suspended or to which that person not entitled; or
- (b) forge or alter an approval, exemption or other document issued or required by or under these Regulations; or
- (c) lend any approval, exemption or 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 herself 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 willfully 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) No person shall purport to issue any certificate, document or exemption under these Regulations unless that person is authorized to do so by the Authority.

(5) No person shall issue any approval, authorization or exemption of the kind referred to in sub-regulation (4) unless that person is that all statements in the certificate are correct, and that the applicant is qualified to hold that certificate.

***Reports of violation***

87. (1) A person who knows of a violation of the Civil Aviation Authority Act or any regulation or order issued under the Act, 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***

88. A person who fails to comply with any direction given to that person by the Authority or by any authorized person under any provision of these Regulations shall be deemed for the purposes of these Regulations to have contravened that provision.

***Aeronautical user fees***

89. (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 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 or any orders, notices or proclamations made under these Regulations.

(2) Upon an application being made in connection with which any fee is chargeable in accordance with sub-regulation (1), the applicant shall be required, before the application is entertained, to pay the fee so chargeable.

(3) If, after 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***

90. (1) These Regulations shall apply to aircraft, not being military aircraft, 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 aircraft shall be deemed to be the operator of the aircraft and in the case of an aircraft belonging to the Government, to be the owner of the interest of the Government in the aircraft.

(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 that force shall be exempt from the provisions of these regulations to the same extent as if the visiting force formed part of the military force of Swaziland.

- (3) Except where the context otherwise requires, the provisions of these Regulations-
- (a) in so far as they apply, whether by express reference or otherwise, to aircraft registered in Swaziland, shall apply to such aircraft wherever they may be;
  - (b) in so far as they apply, whether by express reference or otherwise, to other aircraft, shall apply to such aircraft when they are within Swaziland;
  - (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 aircraft registered in Swaziland, 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 aircraft registered in Swaziland by other persons shall, where such persons are citizens of Swaziland, apply to them wherever they may be.

## PART X OFFENCES AND PENALTIES

### *Extraterritorial application of Regulations*

91. A person who contravenes a provision of these Regulations may have a licence, certificate, approval, authorization, exemption or other document revoked or suspended.

### *Contravention of Regulations and penalties*

92. (1) If any provision of these Regulations, orders, notices or proclamations made under these Regulations is contravened in relation to an aircraft, the operator of that aircraft and the pilot in command, if the operator or the PIC is not the person who contravened that provision shall, without prejudice to the liability of any other person under these Regulations for that contravention, be deemed to have contravened that provision unless the operator or pilot in command proves that the contravention occurred without their consent or connivance and that they exercised all due diligence to prevent the contravention

(2) A person who contravenes any provision specified as an “A” provision in the Second Schedule commits an offence and is liable, on conviction to a fine not exceeding fifty thousand Emalangeni for each offence and or to imprisonment for a term not exceeding one year or both.

(3) A person who contravenes any provision specified as a “B” provision in the Second Schedule commits an offence and is liable, on conviction, to a fine not exceeding one hundred thousand Emalangi for each offence and or to imprisonment for a term not exceeding three years or both.

(4) A person who contravenes any provision of these Regulations not being a provision referred to in the Second Schedule to these Regulations, commits an offence and is liable on conviction to a fine not exceeding one hundred thousand Emalangi and in the case of a second or subsequent conviction for a similar offence, to a fine not exceeding two hundred thousand Emalangi.

## PART XI EXEMPTIONS

### ***Requirements for Application***

94. (1) A person may apply to the Authority for an exemption from any of these Regulations.

(2) An application for an exemption shall be submitted not less than 60 days before the proposed effective date, to obtain timely review.

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

- (a) name;
- (b) physical address and mailing address; (c)
- (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.

### ***Substance of the request for exemption***

95. (1) An application for an exemption shall contain the following-

- (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, benefits 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

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

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

*Review, Publication and Issue or Denial of the Exemption*

***Initial review by the Authority***

96. (1) The Authority shall review the application for accuracy and compliance with the requirements of regulations 94 and 95.

(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 the Gazette, aeronautical information circular or at least one 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 94 and 95 have not been met, the Authority will notify the applicant and take no further action until 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 decision of the Authority as soon as possible after processing the application.

***Evaluation of the request***

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

- (a) determination of whether an exemption would be in the public interest;
- (b) a determination, after a technical evaluation of whether the proposal of the applicant 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 technical resources of the Authority, the Authority may deny the exemption on that basis;

- (c) a determination of whether a grant of the exemption would contravene the applicable 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.

(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 of Swaziland the Authority shall publish the summary in aeronautical information circular.

## PART XII

### TRANSITION AND SAVINGS

#### *Transition and savings*

98. A valid licence, certificate, permit or authorization issued or granted by the Authority before the commencement of these Regulations shall remain operational until it expires or is revoked, annulled or replaced.

FIRST SCHEDULE: Flight Data Recorder-Information to be recorded

#### FIRST SCHEDULE

#### REGULATION 41

#### FLIGHT DATA RECORDER - INFORMATION TO BE RECORDED

S/N	REQUIREMENTS FOR FLIGHT PATH AND SPEED	TYPE OF FDR				MEASUREMENT RANGE	RECORDING INTERVAL (a) (seconds)	ACCURACY LIMITS (b) SENSOR INPUT COMPARED TO FDR READ-OUT
		I	IA	II	IIA			

2	Pressure Altitude	X	X	X	X	-300m (-1,000ft) to max. certificated altitude of aircraft+ 1,500m (5,000ft)	1	+/-30m to +/-200m (+/-1,00ft to +/-700ft)
3	Indicated airspeed or calibrated airspeed	X	X	X	X	95km/h (50kt) to max V <sub>so</sub> V <sub>so</sub> to 1,2 VD	1	+/-5% +/-3%
27	Air-ground status and each landing gear air-ground sensor when practicable	X	X	-	-	Discreet	1	-
14	Total or outside air temperature	X	X	X	X	Sensor range	2	+/- 2]C
4	Heading (Primary crew reference)	X	X	X	X	360]	1	+/- 2]
5	Normal Acceleration	X	X	X	X	-3g to +6g	0125	+/- 1,5% max range excluding datum error of 5%
17	Lateral Acceleration	X	X	-	-	+/- 1g	0,25	+/- 1,5% max range excluding datum error of 5%
16	Longitudinal acceleration	X	X	-	-	+/- 1g	0,25	+/- 1,5% max range excluding datum error of 5%
1	Time (UTC when available, otherwise elapsed time)	X	X	X	X	24 hours	4	+/- 0,125% per hour

31	Navigational data*: drift angle, wind speed, wind direction, latitude, longitude, groundspeed*	X	X	-	-	As installed	1	As installed
20	Radio altitude	X	X	-	-	-6m to 750(-20ft to 2,500ft)	1	+/-0,6m (+/- 2ft)or +/-3% whichever is greater below 150m (500ft) and +/-5% above 150m (500 ft)
	<b>REQUIREMENTS FOR ALTITUDE</b>							
6	PITCH ALTITUDE	X	X	X	X	+/-75]	1	+/-2%
7	ROLL ALTITUDE	X	X	X	X	+/-180]	1	+/-2%
-	Yaw or slide slip Angle*	-	X	-	-	-	-	-

29	Angle of Attack	-	X	-	-	Full range	0,5	As installed
	Requirements for Engine Power							
	<b>REQUIREMENTS FOR ALTITUDE</b>							
9	Engine thrust/power propulsive thrust/power on each engine, cockpit thrust/power lever position	X	X	X	X	Full range	1 (per engine)	+/-2%
12	Thrust Revenue Reverse Status*	X	X	X	X	Stowed, in transit reverse	1 (per engine)	-
-	ENGINE THRUST COMMAND*	-	X	-	-	-	-	-
-	ENGINE THRUST TARGET*	-	X	-	-	-	-	-
-	ENGINE THRUST BLEED VALVE POSITION*	-	X	-	-	-	-	-
-	ADDITIONAL ENGINE PARAMETERS*:EPR, N1,INDICATEDVIBRATION LEVEL, N2, EGT, TLA, FUEL FLOW, FUEL CUT-	-	X	-	-	-	-	-

	OFF LEVER POSITION, N3							
S/N	REQUIREMENTS FOR CONFIGURATION	TYPE OF FDR				MEASUREMENT RANGE	RECORDING INTERVAL (c) (seconds)	Accuracy limits (b) (SENSOR INPUT COMPARED TO FDR READ-OUT)
		I	IA	II	IIA			
19	Pitch trim surface position	X	X	-	-	Full range	1	+/- 3% unless higher accuracy uniquely required
10	Flaps*: trailing edge flap position, cockpit control selection	X	X	X	X	Full range or each discrete position	2	+/-5% or as pilotis indicator
11	Slats*: leading edge flap (slat) position, cockpit control selection	X	X	X	X	Full range or each discrete position	2	+/-5% or as pilotis indicator
32	Landing gear*; landing gear, gear selector positions	X	X	X	X	Discrete	4	As installed
-	Yaw trim surface position*	-	X	-	-	-	-	-
-	Roll trim surface position *	-	X	-	-	-	-	-
-	Cockpit trim control input position pitch*	-	X	-	-	-	-	-

-	Cockpit trim control input position roll*	-	X	-	-	-	-	-
13	Ground spoiler and speed brake*: Ground spoiler position, ground spoiler selection, speed brake position, speed brake selection	X	X	X	X	Full range or each discrete position	1	+/- 2% unless higher accuracy uniquely required
-	De-icing anti-icing systems selection*	-	X	-	-	-	-	-
-	Hydraulic pressure(each system)*	X	X	-	-	-	-	-
-	Fuel quantity*	-	X	-	-	-	-	-
-	AC electrical bus status*	-	X	-	-	-	-	-
-	DC electrical bus status*	-	X	-	-	-	-	-
-	APU bleed valve position	-	X	-	-	-	-	-
-	Computed centre of gravity*	-	X	-	-	-	-	-
	Requirements for Operation							
24	Master warnings	X	X	-	-	Discrete	1	-
-	Warnings	-	X	-	-	-	-	-

18	Primary flight control surface and primary flight control pilot input: pitch axis, roll axis, yaw axis	X	X	-	-	Full range	1	+/- 2% unless higher accuracy uniquely required
23	Marker beacon passage	X	X	-	-	Discrete	1	-
25	Each navigation receiver frequency selection: NAV 1 and 2	X	X	-	-	Full range	4	As installed
8	Manual radio transmission keying and COCKPIT VOICE RECORDER/FDR synchronisation reference	X	X	X	X	On-off (one discrete)	1	-
15	Autopilot/auto throttle/AFCS mode and engagement status*	X	X	X	X	A suitable combination of discretes	1	-
-	Selected barometric setting*: pilot, first officer	-	X	-	-	-	-	-
-	Selected altitude (all pilot selectable modes of operation)*	-	X	-	-	-	-	-
-	Selected speed (all pilot selectable modes of operation)*	-	X	-	-	-	-	-
-	Selected Mach (all pilot selectable modes of operation)*	-	X	-	-	-	-	-
-	Selected vertical speed (all pilot selectable modes of operation)*	-	X	-	-	-	-	-

S/N	REQUIREMENTS FOR CONFIGURATION	TYPE OF ERROR				MEASUREMENT RANGE	RECORDING INTERVAL (c) (seconds)	Accuracy limits (b) (SENSOR INPUT COMPARED TO FDR READ-OUT)
		I	IA	II	IIA			
-	Selected heading (all pilot selectable modes of operation)*	-	X	-	-	-	-	-
-	Selected flight path (all pilot selectable modes of operation)*: course/DSTRK	-	X	-	-	-	-	-
-	Selected decision height*	-	X	-	-	-	-	-
-	EFIS display format*: pilot, first officer	-	X	-	-	-	-	-
-	Multi function/engine/alerts display format*	-	X	-	-	-	-	-
28	GPWS/TAWS/GCAS*: selection of terrain display mode including pop-up display status, terrain alerts, both cautions and warnings, and advisories, on/off switch position	X	X	-	-	Discrete	1	-
30	Low pressure warning*: hydraulic pressure, pneumatic pressure	-	X	-	-	Discrete	2	-
-	Computer failure*	-	X	-	-	-	-	-

-	Loss of cabin pressure	-	X	-	-	-	-	-
-	TCAS/ACAS (traffic alert and collision avoidance system/airborne collision avoidance system)*	-	X	-	-	-	-	-
-	Ice detection*	-	X	-	-	-	-	-
-	Engine warning each engine vibration*	-	X	-	-	-	-	-
-	Engine warning each engine over temperature*	-	X	-	-	-	-	-
-	Engine warning each engine oil pressure low*	-	X	-	-	-	-	-
-	Engine warning each engine over speed*	-	X	-	-	-	-	-
-	Wind shear warning*	-	X	-	-	-	-	-
-	Operational stall protection, stick shaker and pusher activation*	-	X	-	-	-	-	-
-	All cockpit flight control input forces*: control wheel, control column, rudder pedal cockpit input forces	-	X	-	-	-	-	-
21	Vertical deviation*: ILS glide patch, MLS elevation, GNSS approach path	X	X	-	-	Signal range	1	+/- 3%

22	Horizontal deviation*: ILS localizer, MLS azimuth, GNSS approach path	X	X	-	-	Signal range	1	+/- 3%
26	DME 1 and 2 distances	X	X	-	-	0 ñ 370 Km	4	As installed
-	Primary navigation system reference*: GNSS, INS, VOR/DME, MLS, Loran-C, ILS	X	X	-	-	-	-	-
-	Brakes*: left and right brake pressure, left and right brake pedal position	-	X	-	-	-	-	-
-	Date*	-	X	-	-	-	-	-
-	Event marker*	-	X	-	-	-	-	-
-	Head-up display in use*	-	X	-	-	-	-	-
-	Para visual display on*	-	X	-	-	-	-	-

## SECOND SCHEDULE

## Regulation 92

## Penalties

REG NO.	TITLE	PART
3	General instrument and equipment requirements	B
4	General requirements	A
5	Navigational equipment	A
6	Minimum flight and navigational instruments: VFR operations	A

7	Instruments for operations requiring two pilots: VFR operations	A
8	Minimum flight navigation instruments: IFR operations	A
10	Instrument and equipment required for Category II operations	A
11	Standby altitude indicator	A
12	Instrument and equipment required for Category II operations	A
13	Approval and maintenance of instruments and equipment required for Category II operations	A
15	Navigation equipment for operations in minimal navigation performance specification airspace (MNPS)	B
16	Equipment for operations in reduced vertical separation minimum airspace (RVSM).	B
17	Radio equipment	A
18	Airborne collision avoidance system.	A
19	Altitude Reporting transponder.	A
20	Crew member interphone system: aeroplane.	
21	Crew member interphone system: helicopter.	A
22	Aircraft lights and instrument illumination	A
23	Engine instruments.	A
24	Machmeter and speed warning devices	B
25	Loss of pressurisation device.	B
26	Landing gear: aural warning device.	B
27	Altitude alerting system.	B
28	Ground proximity warning system.	A
29	Weather radar	A
30	Cockpit voice recorders: aeroplane.	A
31	Cockpit voice recorders: duration — aeroplane.	A
32	Cockpit voice recorders: general requirements — aeroplane	A
33	Cockpit voice recorders: helicopters.	A
34	Cockpit voice recorders: duration helicopters.	A
35	Cockpit voice recorders: performance requirements.	A

36	Cockpit voice recorders: inspectors.	A
37	Flight data recorders.	A
38	Flight data recorders for aeroplanes	A
39	Flight data recorders for helicopters	A
40	Flight data recorder duration	A
41	Flight data recorder: information recorded	A
42	Recording of data link communication.	A
43	Emergency equipment: all aircraft	A
44	Means for emergency evacuation.	A
45	Emergency lighting.	A
46	Exits.	A
47	Flights over designated land areas: all aircraft.	A
48	Survival equipment.	A
49	Emergency locator transmitter: aeroplanes	A
50	Emergency locator transmitter: helicopters.	A
51	Portable fire extinguishers.	A
52	Lavatory fire extinguisher.	A
53	Lavatory smoke detector.	A
54	Crash axe.	A
55	Marking of break-in points.	A
56	First-aid and emergency medical kit.	A
57	Supplemental oxygen pressurised aeroplanes	A
58	Oxygen equipment and supply requirements.	A
59	Supplemental oxygen — non-pressurised aeroplanes	A
60	Oxygen supply requirements — non-pressurised aircraft.	A
61	Protective breathing equipment.	A
62	First-aid oxygen dispensing units.	A
63	Megaphones: aeroplane	A
64	Megaphones: helicopters	A
65	Individual flotation devices.	A
66	Life rafts.	A

67	Life jackets: helicopters.	A
68	Flotation devices for helicopters ditching.	A
69	Seats, safety belts and shoulder harnesses	A
70	Passenger and pilot compartment doors.	A
71	Passenger information signs	A
72	Public address system.	A
73	Materials for cabin interiors	A
74	Materials for cargo and baggage compartments	A
75	Power supply, distribution and indication system.	A
76	Protective circuit fuses.	A
77	Aeroplanes in icing conditions.	A
78	Icing detection.	A
79	Pitot indication systems.	A
80	Static pressure system.	A
81	Windshield wipers.	A
82	Chart holder.	A
83	Cosmic radiation detection equipment.	A
84	Seaplanes and amphibians miscellaneous equipment	A
85	Use and retention of records	A
86	Use and retention of records	B
87	Reports of violations	B
88	Enforcement directions	A

### **Cross References**

1. The Civil Aviation (Airworthiness) Regulations, 2011.
2. The Civil Aviation (Rules of the Air and Air Traffic Control) Regulations, 2011.

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