CIVIL AVIATION [(NO. 7) INSTRUMENTS AND EQUIPMENT) REGULATIONS, 2004

**Arrangement of Regulations**

PART IV

AIRCRAFT LIGHTS AND INSTRUMENT ILLUMINATION



PART V

ENGINE INSTRUMENTS



PART VI

WARNING INSTRUMENTS AND SYSTEMS



PART VII

FLIGHT RECORDERS

## PART VIII

### EMERGENCY, RESCUE, AND SURVIVAL EQUIPMENT



## PART IX

### MISCELLANEOUS SYSTEMS AND EQUIPMENT

LEGAL NOTICE NO. 50

REPUBLIC OF TRINIDAD AND TOBAGO

THE CIVIL AVIATION ACT, 2001

REGULATIONS

MADE BY THE AUTHORITY WITH THE APPROVAL OF THE MINISTER UNDER SECTION 33 OF THE CIVIL AVIATION ACT

# THE CIVIL AVIATION [(NO. 7) INSTRUMENTS AND EQUIPMENT] REGULATIONS, 2004

Citation

1. These Regulations may be cited as the Civil Aviation [(No. 7) Instruments and Equipment] Regulations, 2004.

Interpretation

2. In these Regulations—

"Act" means the Civil Aviation Act, 2001;

"air operator" means any person, organization or enterprise which undertake to engage in domestic commercial air transport or international commercial air transport, whether directly or indirectly or by a lease or any other arrangement;

"class C cargo compartment" means a cargo compartment on an aircraft in which—

*(a)* the presence of fire would not be easily discovered nor is the compartment accessible by the flight crew;

*(b)* there is a separate approved fire detector or fire detector system to give warning in the cockpit;

*(c)* there is an approved built-in fire extinguishing or suppression system to give warning in the cockpit;

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

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

"class E cargo compartment" means a cargo compartment on an aircraft, in which—

*(a)* there is a separate approved fire detector system to give warning in the cockpit;

*(b)* there are means to shut off ventilation airflow to or within the cargo compartment, and the controls for these means are accessible to the flight crew in the cockpit;

*(c)* there are means to exclude hazardous quantities of smoke, flames or noxious gasses from the cockpit; and

*(d)* the required crew emergency exits are accessible under any cargo loading condition;

"cosmic radiation" means the total ionizing and neutron radiation of galactic and cosmic origin;

"data link communication" means all data link communications including but not limited to automatic dependent surveillance, controller-pilot data link communication, data link flight information services and aeronautical operational control messages;

"emergency exit" means—

*(a)* a Type I exit in an aeroplane which is at floor level with a rectangular opening of not less than twenty-four inches wide by forty-eight inches high with corner radii not greater than eight inches;

*(b)* a Type II exit in an aeroplane which is a rectangular opening of not less than twenty inches wide by forty-four inches high with corner radii not greater than seven inches located at floor level except over the wing in which case a step up inside the aeroplane of more than ten inches or a step down outside the aeroplane of more than seventeen inches shall not exist;

*(c)* a Type III exit in an aeroplane which is a rectangular opening of not less than twenty inches wide by thirty-six inches high with corners radii not greater than seven inches and with a step up inside the aeroplane of not more than twenty inches and where located over the wing, the step down outside the aeroplane of not more than twenty-seven inches;

*(d)* a Type IV exit in an aeroplane which is rectangular opening of not less than nineteen inches wide by twenty-six inches high with corner radii of not greater than six and three tenths inches located over the wing with a step up inside the aeroplane of not more than twenty-nine inches and a step down outside the areoplane of not more than thirty-six inches;

*(e)* a Ventral exit in an aeroplane which is an exit from the passenger compartment through the pressure shell and the bottom fuselage skin of dimensions and physical configuration as the Type I exit; or

*(f)* a Tailcone emergency exit in an aeroplane which is an exit from the passenger compartment through the pressure shell and through an openable cone of the fuselage aft of the pressure shell with simple and obvious single operation means of opening the tailcone;

"equipment" means an article, item, component, unit, product or part, including first-aid and survival equipment and commissary supplies being an integral part of an aircraft or required to be carried on board an aircraft for use during flight but does not include spare parts or stores;

"extended over-water operation" means—

*(a)* an operation conducted a distance of more than 100 nautical miles from land which is suitable for making an emergency landing in a single-engine land plane or a twin-engine land plane which is incapable of continuing flight with one engine inoperative;

*(b)* an operation conducted at a distance of more than 200 nautical miles from land which is suitable for making an emergency landing in a multi-engine land plane with the capability of continuing flight with one engine inoperative;

"instrument" means calibrated displays, gauges and signs used to present information in analog, digital or pictorial presentation to flight crew for use in the navigation and operations of an aircraft;

"liner" means all materials including any designed feature such as a joint or fastener, which would affect the capability of the liner to safely contain fire;

"national air operator" means a person, organization or enterprise who has been issued an air operator certificate in accordance with the Civil Aviation [(No. 3) Air Operator Certification and Administration] Regulations, 2004;

"navigation equipment" means aircraft components consisting of radio equipment, computers, instruments and equipment used in the navigation of an aircraft;

"operator" means—

*(a)* a person, organization or enterprise, engaged in or offering to engage in, aircraft operations, and any person who causes or authorises the operation of aircraft, in the capacity as owner, lessee or otherwise, whether with or without the control of the aircraft; and

*(b)* a person who or which is deemed to be engaged in the operation of aircraft within the meaning of the Act; and

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

"Performance Class 2 helicopter" means a helicopter with performance such that, in case of critical power-unit 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;

"Performance Class 3 helicopter" means a helicopter with performance such that, in case of critical power-unit failure at any point in the flight profile, a forced landing must be performed;

"VHF Omni-range" means a radio navigation signal, operating in the frequency band of 108 to 116.99 Megahertz, emanating from a ground navigation base and which is transmitted in all directions.

### *General Applicability of these Regulations*

General applicability of these Regulations

3. These Regulations shall apply to all aircraft operating in Trinidad and Tobago in respect to the minimum requirements for such aircraft to have instrument and equipment of such aircraft.

## PART I

### GENERAL REQUIREMENTS

General applicability of Part I

4. This Part prescribes the general instrument and equipment requirements which are on board aircraft operating in Trinidad and Tobago.

### *General Requirements for Instruments and Equipment*

General requirements for instruments and equipment on board aircraft

5. (1) Notwithstanding the minimum equipment specified in the Type Certificate of an aircraft and required for the issuance of an Airworthiness Certificate under Civil Aviation [(No. 5) Airworthiness Regulations, 2004, an operator shall ensure that additional instruments, equipment and flight documents are installed or carried, as appropriate, in such aircraft according to the circumstances under which the flight is to be conducted.

(2) An operator shall ensure that the additional instrument and equipment referred to in subregulation (1) are installed in accordance with the applicable airworthiness requirements approved by the State of Design of the aircraft and installed in accordance with the instructions of such State of Design to meet the airworthiness requirements.

(3) An operator shall ensure that a flight is not commenced unless all required instruments and equipment required on board an aircraft for flight—

*(a)* installed in accordance with the instructions of such State of Design to meet the airworthiness requirements;

*(b)* meets the minimum performance standard and the operational and airworthiness requirements prescribed by the Authority;

*(c)* is installed in such a manner that the failure of any single unit required for either communication or navigational purposes, or both, shall not result in the inability of the flight crew to communicate and navigate safely on the route being flown; and

*(d)* is in an operable condition for the kind of operation being conducted, except as provided in the Minimum Equipment List.

(4) Prior to operation in Trinidad and Tobago of any civil aircraft not registered in Trinidad and Tobago that uses an airworthiness inspection programme approved or accepted by another State, the operator of such aircraft shall ensure that all instruments and equipment required by the Authority are properly installed and inspected in accordance with the requirements of the State of Registry.

(5) An operator shall ensure that where equipment is to be used by one flight crew member at his station during flight, it shall be installed so as to be readily operable from his station.

(6) An operator shall ensure that when a single item of equipment is required to be operated by more than one flight crew member, it shall be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

## PART II

### FLIGHT AND NAVIGATIONAL INSTRUMENTS

General applicability of Part II

6. This Part prescribes the minimum requirements for flight and navigational instruments for aircraft operating in Trinidad and Tobago.

### *General Flight and Navigational Instruments Requirements*

General requirements for flight and navigational instrument

7. (1) An operator of an aircraft shall ensure that such aircraft is equipped with flight and navigational instruments which shall enable—

*(a)* the flight crew to—

(i) control the flight path of the aircraft;

(ii) carry out any required procedural manoeuvres;

(iii) observe the operating limitations of the aircraft in the expected operating conditions; and

*(b)* the aircraft to proceed in accordance with—

(i) its operational flight plan;

(ii) prescribed navigational accuracy; and

(iii) the requirements of Air Traffic Control.

(2) An operator shall ensure that when a means is provided for transferring an instrument from its primary operating system to an alternative system, such means includes a positive positioning control and it shall be marked to indicate clearly which system is being used.

(3) An operator shall ensure that instruments used by a flight crew member are arranged in such a manner that would allow such flight crew member to see the indications readily from his station, with the minimum practicable deviation from the position and line of vision which he normally assumes when looking forward along the flight path.

(4) An operator shall ensure that all equipment is installed on an aircraft in such a manner that the failure of any single unit required either for communication or navigational purposes or both shall not result in the failure of another unit required for communication or navigational purposes.

(5) An operator shall ensure that his aircraft is equipped with the necessary instruments and equipment to ensure that in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment shall enable the aircraft to be navigated in accordance with the—

*(a)* general, Minimum Navigation Performance Specifications; and

*(b)* Reduced Vertical Separation Minimum,

requirements of these Regulations where applicable.

### *Navigational Instruments*

Minimum flight and navigational instruments

8. (1) An operator shall not operate an aircraft under Visual Flight Rules unless it is equipped with the following flight and navigational instruments:

*(a)* an airspeed indicating system calibrated in knots;

*(b)* 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;

*(c)* an accurate timepiece indicating the time in hours minutes and seconds;

*(d)* a magnetic compass; and

*(e)* such additional instruments or equipment as may be required by the Authority.

(2) Where an operator intends to conduct operations in an aircraft under Visual Flight Rules as a controlled flight, he shall ensure that such aircraft is equipped with instruments specified under Regulation 10.

### *Instruments for Operations Requiring Two Pilots*

Specific instrument required for operation requiring two pilots

9. (1) An operator shall ensure that, where two pilots are required to operate an aircraft, the stations of each pilot have separate flight instruments which include—

*(a)* an airspeed indicator calibrated in knots;

*(b)* 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;

*(c)* a vertical speed indicator;

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

*(e)* an attitude indicator; and

*(f)* a stabilized direction indicator.

***Instruments for Instrument Flight Rules Operations***

Instrument Flight Rating instruments

10. (1) An operator shall not conduct operations in an aircraft under Instrument Flight Rules, at night or when the aircraft cannot be maintained in a desired attitude without reference to one or more flight instruments, unless such aircraft is equipped with—

*(a)* a magnetic compass;

*(b)* an accurate timepiece indicating 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, with counter-drum pointer or equivalent presentation;

*(d)* an airspeed indicating system calibrated in knots with a means of preventing malfunctioning due to either condensation or icing;

*(e)* a turn and slip indicator for an aeroplane and a slip indicator for a helicopter;

*(f)* an attitude indicator for an aeroplane and two attitude indicators for a helicopter, one of which may be replaced by a turn indicator;

*(g)* a heading indicator;

*(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)* a rate-of-climb and descent indicator; and

*(k)* such additional instruments or equipment as may be required by the Authority.

(2) The requirements of *(e)*, *(f)* and *(g)* may be met by combination of instruments or by integrated flight director system provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

(3) An air operator shall not operate an aeroplane under Instrument Flight Rules, or at night or when the aircraft cannot be maintained in a desired attitude without reference to one or more flight instruments, unless such aircraft is equipped with—

*(a)* the instruments required under subregulation (1); and

*(b)* 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, with counter-drum pointer or equivalent presentation.

(4) An air operator shall not operate a helicopter under Instrument Flight Rules, or at night or when the aircraft cannot be maintained in a desired attitude without reference to one or more flight instruments, unless such helicopter is equipped with—

*(a)* the instrument required under subregulation (1);

*(b)* an attitude indicator; and

*(c)* a stabilizing system.

(5) A stabilization system under subregulation (4)*(b)*, may not be required where it was demonstrated to the satisfaction of the State of Design that the helicopter possesses, by nature of its design, adequate stability without such stabilization system.

(6) An air operator shall not operate an aeroplane under Instrument Flight Rules, or under Visual Flight Rules over routes that cannot be navigated by reference to visual landmarks, unless such aeroplane is equipped with navigational equipment in accordance with the requirements of Air Traffic Control in the area of operations, that includes—

*(a)* one VHF Omni-Range receiving system, one Automatic Direction Finder system, one Distance Measuring Equipment and one Marker Beacon receiving system;

*(b)* one Instrument Landing System or Microwave Landing System where Instrument Landing System or Microwave Landing System is required for approach navigation purposes;

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

*(d)* an additional VHF Omni-Range receiving system to the requirements of paragraph *(a)*, on any route, or part thereof, where navigation is based only on VHF Omni-Range signals; and

*(e)* an additional Automatic Direction Finder system to the requirements of paragraph *(a)*, on any route, or part thereof, where navigation is based only on non-directional beacon signals.

(7) An operator shall ensure that an aircraft intended to land in Instrument Meteorological Conditions or at night is provided with radio navigation equipment capable of receiving signals that provide guidance to—

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

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

*(c)* any designated alternate aerodrome.

(8) An air operator shall not conduct single-pilot Instrument Flight Rules operations unless the aeroplane is equipped with an automatic pilot with at least an altitude hold mode and a heading mode.

### *Standby Attitude Indicator*

Standby attitude indicator

11. (1) An operator shall not operate—

*(a)* an aeroplane with a maximum certified take-off mass exceeding five thousand, seven hundred kilogrammes;

*(b)* an aircraft having a maximum approved passenger seating configuration of more than nine seats; or

*(c)* a Performance Class 1 helicopter or a Performance Class 2 helicopter,

unless it is equipped with a single stand-by attitude indicator or artificial horizon indicator that—

*(d)* is operated and illuminated independently of any other attitude indicating system;

*(e)* is powered continuously during normal operations; and

*(f)* is automatically powered for a minimum of thirty minutes from a source independent of the normal electrical generating system, after a total failure of the normal electrical generating system.

(2) When the stand-by attitude indicator is operating on emergency power, such emergency power operation, shall be clearly indicated to the flight crew.

(3) When the stand-by attitude indicator is operating on its own power supply, there shall be an associated indication, either on the instrument or on the instrument panel that such power supply is in use.

(4) Where the stand-by attitude instrument system is installed and usable through flight attitudes of 360° of pitch and roll, the turn and slip indicator may be replaced by slip indicators.

### *Instruments and Equipment for Category II Operations*

Instruments and Equipment for Category II Operations Schedule 1

12. An operator shall ensure that his aircraft engaged in Category II operations is installed with the instruments and equipment listed in Schedule 1 appropriate to its group.

### *Navigation Equipment for Operations in Minimum Navigational Performance Specifications Airspace*

Navigation equipment for operations in Minimum Navigational Performance Specifications airspace

13. (1) An air operator shall not operate an aeroplane in Minimum Navigation Performance Specifications airspace unless it is equipped with navigation equipment that—

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

*(b)* has been authorized by the Authority for Minimum Navigation Performance Specifications operations.

(2) An air operator shall ensure that—

*(a)* navigation equipment required for operations in Minimum Navigation Performance Specifications airspace are visible and usable by each pilot seated at his duty station;

*(b)* an aeroplane operating unrestricted in Minimum Navigation Performance Specifications airspace is equipped with two independent Long Range Navigation Systems; and

*(c)* an aeroplane operating in Minimum Navigation Performance Specifications airspace along notified special routes is equipped with one Long Range Navigation System, unless otherwise specified by the Authority.

## PART III

## COMMUNICATION EQUIPMENT

General applicability of Part III

14. This Part prescribes the minimum radio equipment requirements for aircraft operating in Trinidad and Tobago.

### *Radio Equipment*

Radio equipment requirements

15. (1) An operator shall not operate an aircraft unless it is equipped with the required radio equipment for the type of operation being conducted.

(2) An operator shall ensure that where his aircraft is operating—

*(a)* under Visual Flight Rules as a controlled flight;

*(b)* at night; or

*(c)* under Instrument Flight Rules conditions,

such aircraft is equipped with radio communication equipment capable of conducting two-way communication for air traffic and aerodrome control purposes, and to receiving meteorological information at any time during flight with aeronautical stations and on those frequencies prescribed by the Authority, including the aeronautic emergency frequency of 121.5 Megahertz.

(3) An air operator shall not conduct operations in an aircraft—

*(a)* under Instrument Flight Rules; or

*(b)* in Visual Flight Rules over routes that cannot be navigated by reference to visual landmarks,

unless such aircraft is equipped with communication and navigation equipment in accordance with the requirements of Air Traffic Control in the area of operations.

(4) The communication and navigational equipment under subregulation (3) shall comprise—

*(a)* two independent radio communication systems under normal operating conditions to communicate with an appropriate ground station from any point on the route including diversions with each system having—

(i) an independent antenna installation; or

(ii) where rigidly supported non-wire antennae or other antenna installations are used, only one antenna is required; and

*(b)* a Secondary Surveillance Radar Transponder equipment required for the route flown.

(5) An operator shall ensure that where the route of the aircraft or area of operations to be flown requires more than one communications equipment unit, each unit shall be independent of the other to the extent that a failure in any one will not result in failure of any other.

(6) An operator shall not conduct operations in an aircraft under Instrument Flight Rules unless it is equipped with an audio selector panel accessible to each required flight crew member.

(7) An operator shall not conduct operations in an aircraft at night or conduct single-pilot Instrument Flight Rules unless the aircraft is equipped with a head-set with boom microphone or equivalent and a transmit button on the control wheel.

### *Crew Member Interphone System*

Crew member interphone system

16. (1) An air operator shall not conduct operations in an aircraft on which more than one member of a flight crew is required, unless such aircraft is equipped with a flight crew interphone system, including head-sets and microphones, not of a hand-held type, for use by members of the flight crew.

(2) An air operator shall not conduct operations in an aircraft with a maximum certified take-off mass exceeding fifteen thousand kilogrammes or having a maximum approved passenger seating configuration of more than nineteen, unless such aircraft is equipped with a crew member interphone system that—

*(a)* operates independently of the public address system except for hand-sets, head-sets, microphones, selector switches and signaling devices;

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

(i) passenger compartment;

(ii) galley location 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) in the flight crew compartment, from each of the required flight crew stations; 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 mechanism through which a recipient of a call can 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.

## PART IV

### AIRCRAFT LIGHTS AND INSTRUMENT ILLUMINATION

Applicability of Part IV

17. This Part prescribes the minimum aircraft lights and instrument illuminations for aircraft operating in Trinidad and Tobago.

### *Aircraft Light and Instrument Illumination*

Aircraft lights and instrument illumination

18. (1) An operator shall not conduct operations in an aircraft at night unless such aircraft is equipped with—

*(a)* a fixed landing light for an aeroplane, and a trainable landing light at least in the vertical plane, for a helicopter;

*(b)* anti-collision and position lights;

*(c)* illumination for all flight instruments and equipment that are essential for the safe operation of such aircraft that are used by the flight crew;

*(d)* lights in all passenger compartments; and

*(e)* a flashlight for each crew member station, acceptable to the Authority.

(2) An air operator shall not conduct operations in an aircraft by day or night unless, such aircraft is equipped with—

*(a)* the lights required by subregulation (1);

*(b)* two landing lights or a single landing light having two separately energized filaments; and

*(c)* lights that conforms to international regulations for prevention of collisions at sea where the aircraft is a seaplane or an amphibian aircraft.

## PART V

### ENGINE INSTRUMENTS

Applicability of Part V

19. This Part prescribes the minimum engine instruments requirement for aircraft operating in Trinidad and Tobago.

### ***Engine Instrument***s

Engine instruments requirements

20. (1) An air operator shall not conduct commercial air transport operations without the following engine instruments installed in his aircraft:

*(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) Notwithstanding subregulation (1), the Authority may require an air operator to have different instrumentation for turbine engine powered aeroplanes, which provides for an equivalent level of safety.

(3) In addition to the required engine instruments listed in subregulation (1), an air operator shall ensure that a reciprocating engine aircraft is operated with the following engine instruments installed in his aircraft:

*(a)* a carburetor 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; and

*(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 shall be capable of being 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 stop position; and

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

## PART VI

### WARNING INSTRUMENTS AND SYSTEMS

Applicability of Part VI

21. This Part prescribes the minimum warning instruments and systems requirements for aircraft operating in Trinidad and Tobago.

### *Mach Number Indicator*

Mach number indicator

22. An operator shall ensure that his aircraft which has speed limitations expressed in terms of mach number in the Aircraft Flight Manual, is equipped with a mach number indicator.

### *Requirement for Loss of Pressurization Warning*

Loss of pressurization indicator

23. An operator shall ensure that a pressurized aircraft intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hectopascals or twenty-five thousand feet or more shall be equipped with a device to provide an aural or distinct visual warning to the flight crew of any dangerous loss of pressurization.

### *Landing Gear Warning Device*

Landing gear aural warning device

24. (1) An air operator shall ensure that an aeroplane in which he conducts operations has a landing gear also has a landing gear aural warning system that gives continuous aural warning 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 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) A flap position-sensing unit utilized under subregulation (1) may be installed at any suitable place on the aeroplane.

(3) The landing gear aural warning system required under subregulation (1) shall not be capable of manual shut-off.

(4) Where an aeroplane has a throttle activated device installed, the air operator of such aeroplane shall ensure that it has a landing gear aural warning system, which meets the requirements of this Regulation.

(5) The landing gear aural warning system of an aeroplane under subregulation (4) may utilize any part of the throttle-actuated system as part of the landing gear aural warning system.

### *Altitude Alerting System*

Altitude alerting system

25. (1) An air operator shall not operate—

*(a)* a turbine propeller powered aeroplane with a maximum certified take-off mass in excess of five thousand, seven hundred kilogrammes or having a maximum approved passenger seating configuration of more than nine seats; or

*(b)* a turbojet powered aeroplane,

unless it is equipped with an alerting system capable of alerting the flight crew—

*(c)* upon approaching pre-selected altitude in either ascent or descent; and

*(d)* by at least an aural signal, when deviating above or below a pre-selected altitude.

(2) Where an operator is conducting operations in an aeroplane in defined portions of airspace, based on a Regional Air Navigation Agreement and a Vertical Separation Minimum of one thousand feet is applied above FL 290, such aeroplane shall be provided with equipment which—

*(a)* has been authorized by the Authority for the Vertical Separation Minima operations;

*(b)* is capable of providing an alert at a maximum threshold of plus or minus three hundred feet to the flight crew when a deviation occurs from the selected flight level;

*(c)* indicates to the flight crew the flight level being flown; and

*(d)* automatically maintains a selected flight level and reports pressure-altitude.

### *Ground Proximity Warning System*

Ground proximity award warning visual system

26. (1) An operator shall not conduct operations in a turbine-engined aeroplane having a maximum certified take-off mass in excess of five thousand, seven hundred kilogrammes or having a maximum approved passenger seating configuration of more than nine seats for which a Certificate of Airworthiness was first issued after 31st December, 2003 and all such aeroplanes after 31st December, 2006, unless it is equipped with a ground proximity warning system which has a forward looking terrain avoidance function.

(2) An operator shall not conduct general aviation operations unless his aircraft has a ground proximity warning system which automatically provides, as a minimum, by means of aural signals, which may be supplemented by visual signals, timely and distinctive warning to the flight crew when the aircraft is in potentially hazardous proximity to the surface of the earth in the following circumstances:

*(a)* excessive descent rate;

*(b)* excessive altitude loss after take-off or go-around; and

*(c)* unsafe terrain clearance.

(3) An air operator shall not conduct operations in a turbine-engined aeroplane with a maximum certified take-off mass in excess of five thousand, seven hundred kilogrammes or having a maximum approved passenger seating configuration of more than nine seats, unless it is equipped with a ground proximity warning system.

(4) An air operator shall not conduct operations in a turbine-engined aeroplane with a maximum certified take-off mass in excess of fifteen thousand kilogrammes or having a maximum approved passenger seating configuration of more than thirty seats, unless it is equipped with a ground proximity warning system which has a forward looking terrain avoidance function.

(5) An air operator shall not conduct operations in a piston-engined aeroplane of a maximum certified take-off mass in excess of five thousand, seven hundred kilogrammes or having a maximum approved passenger seating configuration of more than nine passengers, unless it is equipped with a ground proximity warning system which provides the warnings specified in subregulation (6)*(a)* and *(c)*, warning of unsafe terrain clearance and a forward looking terrain avoidance function.

(6) An air operator shall not conduct operations unless his aircraft has a ground proximity warning system which automatically provides, as a minimum, by means of aural signals, which may be supplemented by visual signals, timely and distinctive warning to the flight crew when the aircraft is in potentially hazardous proximity to the surface of the earth in the following circumstances:

*(a)* excessive descent rate;

*(b)* excessive terrain closure rate;

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

*(d)* unsafe terrain clearance while the aircraft is not in landing configuration where—

(i) gear is not down and locked;

(ii) flaps not in a landing position; and

*(e)* excessive descent below the instrument glide path.

### *Weather Radar*

Airborne weather radar equipment

27. An air operator shall not operate an aircraft in commercial air transport operations whenever such an aircraft is being operated at night or in instrument meteorological conditions in an area where a thunderstorm or other potentially hazardous weather condition, which may be detectable with an airborne weather radar, may be expected to occur along the route, unless such aircraft is equipped with airborne weather radar equipment.

## PART VII

## FLIGHT RECORDERS

Applicability of Part VII

28. This Part prescribes the minimum requirements for flight recorder systems installed on aircraft operating in Trinidad and Tobago.

### *Flight Recorder System Requirements*

Flight recorders system requirements

29. (1) An operator shall not conduct operations in an aircraft in Trinidad and Tobago unless such aircraft is equipped with the applicable flight recorder system specified for such aircraft under this regulation.

(2) An operator shall ensure that the flight recorder system required under subregulation (1) shall—

*(a)* be comprised of, where applicable—

(i) a flight data recorder system;

(ii) a cockpit voice recorder system; or

(iii) both;

*(b)* be constructed, located and installed on such aircraft as to provide maximum practical protection for the recordings to ensure that the recorded information can be preserved, recovered and transcribed;

*(c)* be calibrated where required by the Authority;

*(d)* meet the specifications approved or accepted by the Authority for protection from fire and destruction as a result of a crash; and

*(e)* not be switched off or disabled during flight time.

(3) An operator shall ensure that where a flight recorder system utilizes a combination of a flight data recorder and a cockpit voice recorder contained in a single unit to meet the flight recorder equipment requirements, such combination recorders shall be installed in accordance with these Regulations.

(4) An operator shall ensure that, where an aircraft accident or incident occurs, the flight recorder system on board such aircraft is de-activated by the pilot in command upon completion of flight time so as to preserve data.

(5) A flight recorder system under subregulation (4) shall not be re-activated before the examination of such flight recorder system and approval has been granted to re-activate the fight recorder system by the authority responsible for the investigation of the aircraft accident or incident.

(6) An operator of an aircraft involved in an accident or incident shall comply with the instructions of the authority responsible for investigating such aircraft accident or incident in the State conducting the investigation where, after giving due regard to the seriousness of the aircraft accident or incident and the circumstances, the authority responsible for investigating the aircraft accident or incident requires the operator to remove the cockpit voice recorder and the flight data recorder units from the aircraft.

(7) The pilot in command of an aircraft involved in an accident or incident specified in subregulation (4), in general aviation operations shall ensure the preservation of all related flight recorder records, and if necessary the associated flight recorders, and their retention in safe custody pending their disposition by the authority responsible for investigating the accident or incident.

(8) An operator shall ensure that operational checks and evaluations of recordings from the flight data recorder and cockpit voice recorder systems are conducted once every twelve months to ensure the continued serviceability of the recorders.

(9) In order to facilitate the location and identification of the cockpit voice recorder and flight data recorder units of a flight recorder system required under subregulation (1) where an aircraft incident or accident occurs, an operator shall ensure such cockpit voice recorder and flight data recorder units—

*(a)* are either bright orange or bright yellow in colour;

*(b)* have reflective tape affixed to the external surface to facilitate their location under water; and

*(c)* have an approved underwater locating device on or adjacent to each unit, which is secured in such a manner, that it is not likely to be separated during a crash impact.

### *Cockpit Voice Recorder System Requirements*

Cockpit Voice recorder system requirements

30. (1) An operator shall ensure that where an aircraft in which he intends to conduct or conducts operations has a cockpit voice recorder system installed for the recording of the aural environment on the cock pit during flight time, such aircraft is—

*(a)* an aeroplane with a maximum certified take-off mass of over five thousand, seven hundred kilogrammes for which a Certificate of Airworthiness was first issued after 31st December, 1986; and

*(b)* a helicopter with a maximum certified take-off mass of three thousand, one hundred and eighty kilogrammes for which a Certificate of Airworthiness was first issued after 31st December, 1986.

(2) An air operator shall ensure that where an aircraft in which he intends to conduct or conducts operations has a cockpit voice recorder system installed for the recording of the aural environment on the cock pit during flight time, such aircraft is—

*(a)* a multi-engine turbine-powered aeroplane with a maximum certified take-off mass of five thousand seven hundred kilogrammes and less for which an individual Certificate of Airworthiness was first issued after 31st December, 1989;

*(b)* a turbine-engined aeroplane with a maximum certified take-off mass of over five thousand, seven hundred kilogrammes for which the prototype was certified by the State of manufacture after 30th September, 1969 and for which the individual Certificate of Airworthiness was first issued before 1st January, 1987; and

*(c)* a helicopter with a maximum certified take-off mass of over seven thousand kilogrammes for which an individual Certificate of Airworthiness was first issued before 1st January, 1987.

(3) Where a helicopter under this regulation, is not equipped with a flight data recorder system, the operator or air operator, as applicable, shall ensure that at least the main rotor speed is recorded on one track of the cockpit voice recorder system.

**Duration of Recordings of a Cockpit Voice Recorder System**

Duration of recording of cockpit voice recorder system

31. An operator shall ensure that a Cockpit Voice Recorder System installed in an aircraft on which he conducts operations is capable of recording information during the last thirty minutes of operation of the aircraft, except where a cockpit voice recorder system is installed in—

*(a)* an aeroplane with a maximum certified take-off mass of over five thousand, seven hundred kilogrammes for which the individual Certificate of Airworthiness was first issued after 1st January, 2003; and

*(b)* a helicopter for which the individual Certificate of Airworthiness was first issued after 1st January, 2003,

shall be capable of recording information of the operations during at least the last two hours of operation.

***Recording of Data Link Communication***

Recording of data link communication

32. (1) An operator shall ensure that an aircraft in which he conducts operations and for which an individual Certificate of Airworthiness is first issued after 1st January, 2005, which utilizes data link communications has a cockpit voice recorder, records on a flight recorder system all data link communications to and from the aircraft.

(2) An operator shall ensure that from 1st January, 2007, that an aircraft in which he conducts operations, which utilizes data link communications and has a cockpit voice recorder, records on a flight recorder system all data link communications to and from the aircraft.

(3) An operator under subregulations (1) and (2) shall ensure that the minimum recording duration is equal to the duration of the cockpit voice recorder system, and is correlated with the recorded cockpit audio.

(4) An operator shall ensure that where a data link communication specified in subregulation (1) and (2), is installed on his aircraft, sufficient information can be recorded on the flight recorder system to derive the content of the data link communication message and whenever practical, the time the message was displayed to or generated by the crew.

***Requirements for Flight Data Recorder System***

Requirements for flight data recorder system

33. (1) An operator shall ensure that a flight data recorder system required by these Regulations records the parameters required to determine accurately—

Part A of Schedule 2

*(a)* the aeroplane flight path, speed, attitude, engine power, configuration and operations specified in Part A of Schedule 2 for a Type I Flight Data Recorder;

Part B of Schedule 2

*(b)* the aeroplane flight path, speed, attitude, engine power, configuration and operations specified in Part B of Schedule 2 for a Type IA Flight Data Recorder;

Part A of Schedule 2

*(c)* the aeroplane flight path, speed, attitude, engine power and configuration of lift and drag devices specified in Part A of Schedule 2 for a Types II and IIA Flight Data Recorder;

Part C of Schedule 2

*(d)* the helicopter flight path, speed, attitude, engine power and operations specified in Part C of Schedule 2 for a Type IV Flight Data Recorder;

Part D of Schedule 2

*(e)* the helicopter flight path, speed, attitude, engine power, configuration and operations specified in Part D of Schedule 2 for a Type IVA Flight Data Recorder; or

Part C of Schedule 2

*(f)* the helicopter flight path, speed, attitude and engine power specified in Part C of Schedule 2 for a Type V Flight Data Recorder.

(2) An operator shall ensure when conducting operations on an aeroplane for which the individual Certificate of Airworthiness—

*(a)* was first issued after 31st December, 1988 and with a maximum certified take-off mass of over twenty-seven thousand kilogrammes such aeroplane is equipped with a Type I Flight Data Recorder;

*(b)* is first issued after 1st January, 2005 and with a maximum certified take-of mass of over five thousand, seven hundred kilogrammes such aeroplane is equipped with a Type IA Flight Data Recorder; and

*(c)* was first issued after 31st December, 1988 and with a maximum certified take-off mass of over five thousand, seven hundred kilogrammes up to and including twenty seven thousand kilogrammes such aeroplane is equipped with a Type II Flight Data Recorder.

(3) An air operator shall ensure when conducting operations in a turbine-engined aeroplane with a maximum certified take-off mass of over five thousand, seven hundred kilogrammes and for which a Certificate of Airworthiness was first issued—

*(a)* after 31st December, 1986 but before 1st January, 1989, such aeroplane is equipped with a flight data recorder to record the parameters required to determine accurately time, altitude, airspeed, normal acceleration and heading and such additional parameters as are necessary to determine pitch attitude, roll attitude, radio transmission keying and power on each engine;

*(b)* before 1st January, 1987, such aeroplane is equipped with a flight data recorder to record time, altitude, airspeed, normal acceleration and heading.

(4) Notwithstanding subregulation (3), an air operator shall ensure when conducting operations in a turbine-engined aeroplane with a maximum certified take-off mass of over twenty-seven thousand kilogrammes that is of a type of which the prototype was certified by the State of Design after 30th September, 1969 and the individual Certificate of Airworthiness was issued after 31st December, 1986 but before 1st January, 1989, shall be equipped with a Type II flight data recorder system.

(5) An air operator shall ensure that when conducting operations in a turbine-engined aeroplane with a maximum certified take-off mass of over twenty seven thousand kilogrammes that is of a type for which its prototype was certified by the State of Design of the aeroplane after 30th September, 1969 for which an individual Certificate of Airworthiness was issued before 1st January, 1987, such turbine-engined aeroplane is equipped with a flight data recorder system to record in addition to time, altitude, airspeed, normal acceleration and heading, such parameters as are necessary to meet the objectives of determining—

*(a)* the attitude of the aeroplane in achieving the flight path of such aeroplane; and

*(b)* the basic forces acting upon the aeroplane resulting in the achieved flight path and the origin of such basic forces.

(6) An air operator shall ensure that when conducting operations in a multi-engined turbine-powered aeroplane with a maximum certified take-off mass of five thousand seven hundred kilogrammes or less and which was first issued a Certificate of Airworthiness after 31st December, 1989, such multi-engined turbine-engined aeroplane is equipped with a Type IIA flight data recorder.

(7) An operator shall ensure that when conducting operations on a helicopter for which a Certificate of Airworthiness was first issued—

*(a)* after 31st December, 1988 and with a maximum certified take-off mass of over seven thousand kilogrammes such helicopter is equipped with a Type IV flight data recorder;

*(b)* after 31st December, 1988 and with a maximum certified take-off mass of over two thousand, seven hundred kilogrammes up to and including seven thousand kilogrammes such helicopter is equipped with a Type V flight data recorder; and

*(c)* after 1st January, 2005 and with a maximum certified take-off mass of over three thousand, one hundred and eighty kilogrammes such helicopter is equipped with a Type IVA flight data recorder.

(8) An operator shall not use on his aircraft a flight data recorder system which utilizes—

*(a)* engraving metal foil;

*(b)* analogue frequency modulation; or

*(c)* photographic film.

### *Alternative Flight Recorder System*

Alternative flight recorder system

34. (1) An aeroplane with a maximum certified take-off mass of over five thousand, seven hundred kilogrammes and which is required to be equipped with a flight data recorder unit and a cockpit voice recorder unit, may alternatively be equipped with two combined cockpit voice recorder and flight data recorder units.

(2) A multi-engined turbine-engined aeroplane with a maximum certified take-off mass of five thousand, seven hundred kilogrammes or less, which is required to be equipped with—

*(a)* a flight data recorder unit or a cockpit voice recorder unit; or

*(b)* a flight data recorder unit and a cockpit voice recorder unit,

may alternatively be equipped with a single combined cockpit voice recorder and flight data recorder unit.

(3) A helicopter with a maximum certified take-off mass over two thousand, seven hundred kilogrammes which is required to be equipped with—

*(a)* a flight data recorder unit or a cockpit voice recorder unit; or

*(b)* a flight data recorder unit and a cockpit voice recorder unit, may alternatively be equipped with a single combined cockpit voice recorder and flight data recorder unit.

### *Duration of Recordings of a Flight Data Recorder System*

Duration of recordings of flight data recorder system

35. An operator shall ensure that a flight data recorder system installed in his aircraft in which he conducts operations is capable of retaining recorded information for the duration specified for such flight data recorder set out in Part E of Schedule 2.

Part E of Schedule 2

## PART VIII

## EMERGENCY, RESCUE AND SURVIVAL EQUIPMENT

Applicability of Part VIII

36. This Part prescribes the minimum requirements for emergency, rescue and survival equipment for aircraft operating in Trinidad and Tobago.

### *Emergency Equipment*

Emergency equipment

37. An operator shall ensure that emergency and flotation equipment on an aircraft on which he intends to or conducts operations is—

*(a)* readily accessible to the crew and stored so as to facilitate easy access during emergencies;

*(b)* clearly identified and marked to indicate the procedures for use;

*(c)* marked with the date of its last and next inspection date; and

*(d)* marked as to contents when carried in a compartment or container.

### *Emergency Exit Equipment*

Emergency exit equipment

38. (1) An air operator shall ensure that when conducting operations in a passenger carrying aeroplane—

*(a)* each passenger emergency exit, its means of access and its means of opening are conspicuously marked by a sign visible to the crew and passengers approaching along the main passenger aisle; and

*(b)* the means of opening each passenger emergency exit from the outside is marked on the outside of the aeroplane.

(2) An air operator shall ensure that a passenger carrying aeroplane in which he conducts or intends to conduct operations has an emergency lighting system, independent of the main lighting system that—

*(a)* illuminates each passenger exit marking and locating sign;

*(b)* provides enough general lighting in the passenger cabin to allow vision during an emergency; and

*(c)* includes floor proximity emergency escape path lighting systems.

(3) An air operator shall ensure that a passenger carrying aeroplane in which he conducts or intends to conduct operations is equipped with an escape route that is slip resistant and meets the requirements under which such aeroplane was type certified.

(4) An air operator shall not conduct operations in a land plane unless the emergency exits of such land plane, except emergency exits over the wings which are more then six feet from the ground, have an approved means to assist the crew and passengers in descending to the ground.

(5) In subregulation (4), the reference to "six feet from the ground" shall be the distance measured with the aeroplane on the ground and with its landing gear extended.

### *Visual Signaling Devices and Survival Kits*

Visual signaling devices and survival kits

39. (1) An operator shall not conduct operations in an aircraft over water or across land areas which have been designated by the civil aviation authority of the State being overflown as areas in which search and rescue would be especially difficult, unless such aircraft is equipped with signaling devices as may be appropriate to the area overflown and which include—

*(a)* visual signals for use by intercepting and intercepted aircraft; and

*(b)* at least one pyrotechnic signaling device for each life raft required for over water operations.

(2) An operator shall not conduct operations in an aircraft across land areas which have been designated by the civil aviation authority of the State being overflown as areas in which search and rescue would be especially difficult, unless such aircraft is—

*(a)* equipped with enough survival kits for the number of occupants of the aircraft; and

*(b)* appropriately equipped for the route to be flown.

### *Portable Fire Extinguishers*

Portable fire extinguishers

40. (1) An air operator shall not conduct operations on an aircraft unless such aircraft is equipped with portable fire extinguishers of a type acceptable to the Authority and accessible for use in the crew, passenger and cargo compartments.

(2) A portable fire extinguisher under subregulation (1) shall—

*(a)* have the type and quantity of extinguishing agent which is suitable for the kinds of fires likely to occur in the compartment where the extinguisher is intended to be used; and

*(b)* be designed to minimize the hazard of toxic gas concentrations where used in an aircraft with passenger compartments.

(3) An air operator shall ensure that at least one portable fire extinguisher required under subregulation (1), is provided and available on an aircraft he operates or intends to operate and positioned in the following manner:

*(a)* conveniently located for use in each Class E cargo compartment in an aircraft which is easily accessible to crew members during flight;

*(b)* located in each upper and lower lobe galley;

*(c)* conveniently located on the flight deck for use by the flight crew; and

*(d)* conveniently located in the passenger compartment of an aeroplane having a passenger seating capacity of thirty or less.

(4) An air operator shall ensure when conducting operations on an aeroplane having a passenger seating capacity of more than thirty, such aeroplane has a minimum number of portable fire extinguishers conveniently located and uniformly distributed throughout the compartment as specified in Part A of Schedule 3. Schedule 3 Part A

***Lavatory Built-in Fire Extinguisher***

41. (1) An air operator shall not conduct passenger carrying operations on an aeroplane unless each lavatory in such aeroplane is equipped with a built-in fire extinguisher of a type approved by the Authority for each disposal receptacle for towels and paper within the lavatory. Built-in fire extinguisher in lavatory

(2) A built-in lavatory fire extinguisher under subregulation (1) shall be designed to discharge automatically into each disposal receptacle upon occurrence of a fire in such receptacle.

### *Lavatory Smoke Detector*

Requirement for lavatory smoke detector

42. An air operator shall not conduct passenger carrying operations on an aeroplane unless each lavatory on such aeroplane is equipped with a smoke detector system or equivalent system that provides—

*(a)* a warning light in the cockpit; or

*(b)* a warning light or aural warning in the passenger cabin, which would be readily, detected by a cabin attendant, taking into consideration the positioning of flight attendants throughout the passenger compartment during various phases of flight.

### *Crash Axe*

Requirement to have crash axe on board an aeroplane

43. An air operator shall not conduct operations on an aeroplane with a maximum certified take-off mass in excess of five thousand, seven hundred kilogrammes unless such aeroplane is equipped with a crash axe appropriate to effective use in that type of aeroplane, stored in a place not visible to passengers on the aeroplane.

### *Marking of Break-in Points*

Requirement for break-in points markings

44. (1) Where an operator installs break-in markings on the fuselage of an aeroplane suitable for break-in by rescue crews in an emergency, such markings shall be either red or yellow and where necessary, outlined in white to contrast with the background.

(2) Where the corner markings of the break-in markings are more than two metres apart, intermediate lines 9cm x 3cm shall be inserted so that there is no more than two metres between adjacent markings.

### *First-aid and Emergency Medical Kit*

Requirement to have first-aid and emergency medical kit on board an aircraft

45. (1) An air operator shall not conduct passenger carrying operations on an aircraft unless such aircraft is equipped with accessible first-aid kits and where an aircraft is authorized to carry more than two hundred and fifty passengers, an approved emergency medical kit for treatment of injuries or medical emergencies that might occur during flight time or in minor accidents.

(2) The number of first-aid kits required on an aircraft under subregulation (1), shall be in proportion to the number of passenger seats on an aircraft as outlined in Part B of Schedule 3.

Part B of Schedule 3

***Oxygen Storage and Dispensing Apparatus***

Oxygen storage and dispensing apparatus

46. (1) An operator shall ensure that where his aircraft operates at altitudes requiring the use of supplemental oxygen or where the atmospheric pressure is greater than ten thousand feet in the cabin area, such aircraft shall have adequate oxygen supply and dispensing apparatus stored.

(2) An operator shall ensure that the minimum rate of flow of oxygen supply and the oxygen apparatus under subregulation (1) shall meet applicable airworthiness standards for the type certification in the transport category of such aircraft as specified by the Authority.

(3) An air operator shall not conduct passenger carrying operations on—

*(a)* an aircraft at altitudes above ten thousand feet unless such aircraft is equipped with oxygen masks, located within the immediate reach of flight crew members while at their assigned duty station.

*(b)* a pressurized aircraft at altitudes above twenty-five thousand feet unless—

(i) the flight crew members have oxygen masks which are of a quick donning type and will readily supply oxygen when required;

(ii) sufficient spare outlets and masks or sufficient portable oxygen units with masks are distributed evenly throughout the cabin area to ensure immediate availability of oxygen to cabin crew members regardless of their location where a cabin pressurization failure occurs; and

(iii) there are oxygen-dispensing units connected to oxygen supply terminals that are immediately available to each occupant, wherever seated.

(4) The number of dispensing units and outlets under subregulation (3)*(b)*(iii) shall exceed the number of seats on such aircraft by at least 10% and the extra units shall be evenly distributed throughout the cabin area of the personnel compartments.

(5) The supplemental oxygen required to sustain a particular operation shall be determined on the basis of flight altitudes and flight duration, consistent with the operating procedures established for each operation, the emergency procedures specified in the Operations Manual of the aircraft and with the routes to be flown.

(6) An operator shall not conduct passenger carrying operations on an aircraft at flight altitudes where the atmospheric pressure in the personnel compartments of such aircraft will be greater than ten thousand feet, unless sufficient breathing oxygen is stored on such an aircraft to supply—

*(a)* all crew members and 10% of the passengers for any period in excess of thirty minutes where the pressure in compartments occupied by crew members and passengers will be between 10,000 feet and 13,000 feet; and

*(b)* the crew and passengers of such aircraft for any period, where the atmospheric pressure in such compartments occupied by crew members and passengers will be greater than thirteen thousand feet.

(7) An air operator shall ensure that where a flight to be operated in a pressurized aircraft such flight shall not be commenced unless a sufficient quantity of stored breathing oxygen is carried to supply all the crew members and passengers, as is appropriate to the circumstances of the flight being undertaken, in the event of loss of pressurization, for any period where the cabin altitude in any compartment occupied by them would be greater than 10,000 feet.

(8) When a pressurized aircraft is on a flight under subregulation (7), where the flight altitude is more than 25,000 feet and such pressurized aircraft cannot descend safely within four minutes to a flight altitude of 13,000 feet there shall be on board no less than a ten minute supply of breathing oxygen for the occupants of the passenger compartment.

### *Protective Breathing Equipment*

Protective breathing equipment

47. (1) An air operator shall not conduct passenger carrying operations on an aeroplane with a maximum certified take-off mass exceeding fifty-seven thousand kilogrammes or having a maximum approved seating configuration of more than nineteen seats unless such aeroplane—

*(a)* has sufficient protective breathing equipment to protect the eyes, nose and mouth of flight crew members while on flight deck duty and to provide oxygen for a period of not less than fifteen minutes; and

*(b)* has sufficient portable protective breathing equipment to protect the eyes, nose and mouth of all required cabin crew members on board the aircraft to provide breathing gas for such cabin crew members for a period of not less than fifteen minutes.

(2) An air operator, when providing oxygen for the protective breathing equipment under subregulation (1) on an aeroplane on which he conducts or intends to conduct operations, may provide such oxygen from the required supplemental oxygen system.

(3) An air operator shall ensure that the protective breathing equipment intended for the use of the flight crew under subregulation (1), is conveniently located on the flight deck and easily accessible for immediate use by each required flight crew member at his assigned duty station.

(4) An air operator shall ensure that the protective breathing equipment intended for cabin crew use is installed adjacent to each cabin crew member duty station.

(5) An air operator shall ensure that portable breathing equipment is installed, provided or located at or adjacent to each required hand fire extinguisher.

(6) An air operator shall ensure that portable breathing equipment is stowed outside and adjacent to the entrance to a cargo compartment in which a hand fire extinguisher is located.

(7) An air operator shall ensure that the portable breathing equipment required under this regulation shall not prevent required communication.

### *First-aid Oxygen*

First aid oxygen dispensing units

48. (1) An air operator shall not conduct passenger carrying operations on a pressurized aeroplane at altitudes above twenty-five thousand feet, where a cabin crew member is required to be carried on board unless such aeroplane is equipped with—

*(a)* undiluted first-aid oxygen for passengers who may require, undiluted first-aid oxygen for physiological reasons following a cabin depressurization; and

*(b)* a sufficient number of oxygen dispensing units but in no case less than two, for cabin crew to have access and use of the oxygen supply.

(2) An air operator shall ensure that the amount of first-aid oxygen required under regulation (1), for a particular operation and route is determined on the basis of—

*(a)* flight duration after cabin depressurization at cabin altitudes of more than eight thousand feet;

*(b)* an average flow rate of at least three litres per minute per person at standard temperature pressure; and

*(c)* at least 2% of the passengers carried on board such aeroplane, but in no case for less than one person.

### *Megaphone Requirement*

Requirement for mega-phones on board an aeroplane

49. (1) An air operator shall not conduct passenger-carrying operations on an aeroplane unless such aeroplane has a portable battery-powered megaphone or a megaphone approved by the Authority readily accessible to all crew members assigned to direct emergency evacuation.

(2) An air operator shall ensure that the number and location of megaphones required under subregulation (1) is determined as follows:

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

*(b)* on an aeroplane with a seating capacity of more than ninety-nine passengers, two megaphones in the passenger cabin on each aeroplane 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) The Director General may recommend that the Authority grant a deviation from the requirements under subregulation (2), where the Director General finds that a different location for the megaphone would be more effective in aiding the evacuation of persons on board such aeroplane during an emergency situation.

### *Individual Flotation Device*

Requirement for individual flotation devices on board an aircraft

50. (1) An air operator shall not conduct operations on an aircraft unless such aircraft is equipped with one life jacket or equivalent individual floatation device for each person on board the aircraft, when—

*(a)* operated on flights over water at a distance of more than fifty nautical miles from land suitable for making an emergency landing, or beyond gliding distance from the shore; or

*(b)* when taking off or landing at an aerodrome where, in the opinion of the Director General, the take-off or approach path is so disposed over water that in the event of a mishap there would be a likelihood of a ditching.

(2) An air operator shall ensure that all life jackets or equivalent individual floatation devices under this regulation are stowed on an aircraft in which he conducts or intends to conduct operations, in such a manner to ensure that it is easily accessible to a person to whom by seating assignment such device is assigned, from his seat or berth.

(3) An air operator shall ensure that on his aircraft used in extended over water operations, is fitted on each individual floatation device on board such aircraft a survivor locator light acceptable to the Authority.

(4) Notwithstanding subregulation (3) the Authority may approve operations of an aircraft over extended water operations without individual flotation devices, where the air operator proves to the satisfaction of the Authority that the water over which the aircraft is to be operated is not of such size and depth that individual flotation devices are necessary to ensure the safety of each person on board the aircraft.

(5) An operator shall not operate a seaplane unless such seaplane is equipped with one life jacket, or equivalent individual floatation device, for each person on board that seaplane, and that the life jacket or individual floatation device is stowed in such a manner that it is easily accessible from the seat or berth of such person on board the seaplane.

### *Life Raft Requirement*

Requirement to have life raft on board an aircraft

51. (1) An air operator shall not conduct commercial air transport extended over water operations unless the aircraft in which he conducts or intends to conduct operations is equipped with sufficient number of life rafts with rated capacity and buoyancy to accommodate the total number of persons on board such aircraft.

(2) Where excess rafts specified in subregulation (1), with adequate capacity are not available on board an aircraft, the buoyancy and seating capacity of such available rafts on board the aircraft shall be capable of accommodating all persons on board the aircraft in the event that a raft with the largest seating capacity is lost.

(3) A life raft specified in subregulation (1), on board an aircraft shall be stowed in such a manner that it can be readily available for use in an emergency situation.

(4) All life rafts under this regulation shall be equipped with—

*(a)* a survivor locator light;

*(b)* a survival kit; and

*(c)* a pyrotechnic signalling device.

***Emergency Locator Transmitter***

Emergency locator transmitter

52. (1) An operator shall not conduct operations on an aircraft unless such aircraft is equipped with at least one automatically activated Emergency Locator Transmitter on all flights.

(2) An air operator shall not conduct operations on an aeroplane on extended over water flights unless such aeroplane is equipped with at least two Emergency Locator Transmitter, one of which shall be a survival type that transmits simultaneously on 121.5 and 243.0 Megahertz and meet technical standards specified by the Authority.

(3) Subject to subregulation (4) until January 1st, 2005 an operator shall not conduct operations in a Class 1 or Class 2 helicopter on flights over water at a distance from land corresponding to more than ten minutes at normal cruise speed or in a Class 3 helicopter operating on flights over water beyond autorotational or safe landing from land, unless such helicopters are equipped with at least one emergency locator transmitter for every raft carried but not more than a total of two such emergency locator transmitters are required.

(4) The requirement for emergency locator transmitters under subregulaton (3), shall be in effect until January 1st, 2005.

(5) An operator shall ensure that a helicopter for which the individual certificate of airworthiness was first issued after 1st January 2002, operating on flights over water as described in subregulation (3) is equipped with at least one automatic Emergency Locator Transmitter and one Emergency Locator Transmitter in a raft.

(6) An operator shall ensure that from 1st January, 2005, a helicopter operating on flights over water as described in subregulation (3), is equipped with at least one automatic Emergency Locator Transmitter and one Emergency Locator Transmitter in a raft.

(7) Except as provided for in subregulation (8), an operator shall ensure that until 1st January 2005, a helicopter when operated across land areas which has been designated by the State concerned as areas in which search and rescue would be especially difficult, is equipped with at least one Emergency Locator Transmitter.

(8) An operator shall ensure that a helicopter for which the individual certificate of airworthiness was first issued after 1st January, 2002, on flights operated across land areas which have been designated as described in subregulation (7), is equipped with at least one automatic Emergency Locator Transmitter.

(9) An operator shall ensure that, from 1st January, 2005, a helicopter on flights operated across land areas which have been designated as described in subregulation (7), is equipped with at least one automatic Emergency Locator Transmitter.

(10) An operator shall not conduct operations on an aircraft unless all batteries used in an Emergency Locator Transmitter are replaced or recharged where applicable when—

*(a)* such Emergency Locator Transmitter has been in use for more than one cumulative hour; or

*(b)* 50% of the useful life of the batteries has expired or where the batteries are rechargeable, 50% of the useful life of charge has expired.

(11) An operator shall ensure that the expiration date for the replacement or rechargeable batteries for an Emergency Locator Transmitter is legibly marked on the outside of such Emergency Locator Transmitter.

(12) An operator shall take into consideration when making a determination under subregulation (11), that battery useful life or charge requirements of an Emergency Locator Transmitter does not apply to batteries such as water-activated batteries that are unlikely to be affected during probable storage intervals.

### *Flotation Device for Helicopter*

Flotation device for helicopter ditching

53. An operator shall ensure that all helicopters intended to be flown over water shall be fitted with a permanent or rapidly deployable means of flotation so as to ensure a safe ditching of the helicopter when—

*(a)* flying over water at a distance from land corresponding to more than ten minutes at normal cruise speed in the case of Performance Class 1 and 2 helicopters; or

*(b)* flying over water beyond autorotational or safe forced landing distance from land in the case of Performance Class 3 helicopters.

## PART IX

## MISCELLANEOUS SYSTEMS AND EQUIPMENT

### *Applicability of Part IX*

Applicability of Part IX

54. This Part prescribes the minimum requirements for miscellaneous systems and equipment on aircraft in Trinidad and Tobago.

### *Seats, Safety Belts and Shoulder Harnesses*

Seats, safety belts and shoulder harnesses

55. (1) An air operator shall not conduct passenger carrying operations on an aircraft unless such aircraft is equipped with the following seats, safety belts and shoulder harness that meet the airworthiness requirements for type certification of that aircraft:

*(a)* a seat or berth for each person on board such aircraft over the age of two years;

*(b)* a seat belt for each seat and a restraining belt for each berth;

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

*(d)* a combination safety belt and shoulder harness, for each flight crew seat which shall incorporate a device that will automatically restrain the torso of the occupant to prevent interference with the flight controls in the event of rapid decompression and sudden incapacitation of the pilot; and

*(e)* forward or rearward-facing seat, fitted with a safety harness for the use of each cabin crew required to be carried on board.

(2) The cabin crew seats referred to in subregulation (1)*(e)*, shall be located near floor level and at different emergency exits to facilitate evacuation as required by the Authority.

### *Passenger and Pilot Compartment Doors Safety and Security Requirements*

Passenger and pilot compartment doors safety requirement

56. (1) An air operator shall not conduct passenger-carrying operations in an aeroplane unless such aeroplane has a—

*(a)* flight crew compartment door between the passenger and pilot compartments with a locking mechanism that prevents passengers from opening it without the permission of the pilot;

*(b)* key for each door that separates a passenger compartment from another compartment that has emergency exit provisions;

*(c)* means for the crew, in an emergency situation, to unlock each door that leads to a compartment that is normally accessible to passengers that can be locked by passengers; and

*(d)* placard on each door used to access a required passenger emergency exit, indicating that such door shall be opened during take-off and landing.

(2) An air operator shall ensure that when conducting passenger-carrying operations with an aeroplane of a maximum certified take-off mass in excess of forty-five thousand five hundred kilogrammes or with a seating capacity greater than sixty, such aeroplane is equipped with an approved flight crew compartment door that is designed to resist penetration by small arms fire and grenade shrapnel and to resist forcible intrusion by unauthorized persons.

(3) An air operator conducting passenger carrying operations under subregulation (2), shall provide a means for monitoring from the station of each pilot, the entire door area outside the flight crew compartment to identify persons requesting entry and detect suspicious behaviour or potential threat.

(4) An air operator shall ensure that an aeroplane in which he conducts or intends to conduct operations, which is equipped with a flight crew compartment door required under subregulation (2), shall be capable of being locked and unlocked from the station of each pilot.

### *Passenger Information Signs*

Passenger information signs

57. (1) An air operator shall not conduct passenger carrying operations on an aeroplane, unless such aeroplane is equipped with passenger information signs using either letters or symbol displays to ensure that the following information and instructions are conveyed to passengers:

*(a)* when seatbelts are to be fastened;

*(b)* when and how oxygen is to be used where the carriage of oxygen is required to be carried on such aeroplane;

*(c)* restriction on smoking;

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

*(e)* location and method of opening emergency exits.

(2) An air operator shall ensure that passenger information sign under subregulation (1), when illuminated, is legible to each person seated in the passenger cabin under all probable conditions of cabin illumination.

(3) An air operator shall ensure that illuminated “No Smoking” and “Fasten Seatbelt” signs can be turned on and off by the crew.

(4) An air operator shall ensure that a sign or placard that reads “Fasten Seat Belt While Seated” shall be affixed to each forward bulkhead and each passenger seat back.

### *Public Address System Requirement*

Public address system requirement

58. An air operator shall not conduct passenger carrying operations on an aeroplane with a maximum approved passenger seating configuration of more than nineteen, unless a public address system is installed—

*(a)* which operates independently of the interphone systems except for hand-sets, microphones and the selector switch signalling devices;

*(b)* for each required floor level passenger emergency exit that has an adjacent cabin crew seat, has a microphone which is readily accessible to seated cabin crew member, except where one microphone serves more than one exit, and the proximity of the exits allows unassisted verbal communication between seated cabin crew members;

*(c)* that is capable of operating within ten seconds of being selected on by a cabin crew member at each of those stations in the compartment from which its use is accessible; and

*(d)* that is audible and intelligible from all passenger seats, toilets, cabin crew seats and workstations.

### *Material for Cabin Interiors*

Airworthiness requirement for materials for cabin interiors

59. (1) An air operator shall ensure that where materials in each compartment of an aeroplane in which he conducts or intends to conduct operations, used by the crew or passengers do not meet the current airworthiness requirements of materials to be used in the interior of cabin, for the applicable airworthiness requirements for the aeroplane type in the transport category, such materials are replaced with materials that meet the airworthiness requirements of such aeroplane type, upon the first major overhaul of such aeroplane or refurbishment of such cabin interior.

(2) An air operator shall ensure that all seat cushions, except those of flight crew member seats, in any compartment of an aeroplane on which he conducts or intends to conduct operations, which is occupied by crew or passengers meets the requirements pertaining to fire protection as specified by the airworthiness requirements for the aeroplane type.

### *Materials for Cargo and Baggage Compartments*

Ceiling and liner materials for cargo and baggage compart-ments

60. (1) Where an air operator conducts operations in a transport category aeroplane type certified after 1st January, 1958, with a Class C or D cargo compartment greater than two hundred cubic feet in volume, he shall ensure that such aeroplane has ceiling and sidewall liner panels that are constructed of—

(*a*) glass fiber reinforced resin;

*(b)* materials which meet the test requirements for flame resistance of cargo compartment liners required for the applicable type certificate; or

*(c)* aluminum, where the installations were approved prior to 20th March, 1989.

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

### *Power Supply Distribution and Indication System*

Power supply, distribution and indication system

61. (1) An air operator shall not conduct passenger carrying operations on an aeroplane unless such aeroplane is equipped with—

*(a)* a power supply and distribution system that meets the airworthiness requirements for certification of an aeroplane in the transport category, as specified by the Authority; or

*(b)* a power supply and distribution system that has the capability to produce and distribute the power supply to the required instruments and equipment, with use of an external power supply if any one power source or component of the power distribution system fails; and

*(c)* a means for indicating the adequacy of the power being supplied to required flight instruments.

(2) An air operator shall ensure that when engine-driven sources of energy are used for the power supply required in subregulation (1), they shall be on separate engines.

### *Protective Circuit Fuses*

Spare protective circuit fuses

62. An air operator shall not conduct passenger carrying operations on an aircraft on which protective fuses are installed, unless such aircraft has spare fuses available for use in flight equal to at least 10% of the number of fuses for each rating or three of each rating, whichever is the greater.

### *Icing Protection Equipment*

Icing protection equipment

63. (1) An operator shall not operate an aircraft in icing conditions unless such aircraft—

*(a)* is certified by the State of Design in respect of the airworthiness requirements for ice protection for transport category aircraft; and

*(b)* is equipped for the prevention or removal of ice on the windshields, wings, empennage, propellers, and other parts of the aircraft where ice formation will adversely affect the safe operation of the aircraft.

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

(3) Where illumination is used under subregulation (2) such illumination shall be of a type that will not cause glare or reflection that would hamper a crew member in the performance of his duties.

### *Pitot Indication Systems*

Pitot heat indicator systems

64. An air operator shall not operate an aircraft equipped with a flight instrument pitot heating system, unless such aircraft is equipped with an operable pitot heat indication system that complies with the following requirements:

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

*(b)* the indication system provided shall be designed to alert the flight crew if either—

(i) the pitot heat system is switched off; or

(ii) the pitot heat system is switched on and any pitot heater tube heating elements is inoperative.

### *Static Pressure System*

Independent static pressure system

65. An air operator shall not operate an aircraft unless such aircraft has two independent static pressure systems—

*(a)* vented to the outside atmospheric pressure to ensure that the effect on such static pressure systems by airflow variation or moisture or other foreign matter is minimal; and

*(b)* installed so as to be airtight except for the vent.

### *Windshield Wipers*

66. An air operator shall not operate an aircraft unless such aircraft is equipped with— Windshield wipers

*(a)* a windshield wiper on the windshield of such aircraft which corresponds to each pilot station; or

*(b)* an equivalent means, to maintain a clear portion of the windshield during precipitation to allow for clear forward vision a clear portion of the windshield during precipitation.

### *Chart Holder*

67. An air operator shall not conduct operations on an aeroplane unless such aeroplane has a chart holder installed in an easily readable position, which can be illuminated for night operations. Chart holder

### *Cosmic Radiation Measuring Equipment*

68. (1) An air operator shall not conduct operations in an aeroplane above forty-nine thousand feet unless such aeroplane is equipped with an instrument to continuously measure and indicate to flight crew the dose rate of total cosmic radiation being received and the cumulative dose on each flight. Cosmic radiation measuring equipment

(2) The display of instrument under subregulation (1) shall be readily visible to members of the flight crew.

### *Maritime Sound Signaling Device*

69. An operator shall not conducted operations in a seaplane unless such seaplane is equipped with equipment for making the sound signals prescribed by the International Regulations for Preventing Collisions at Sea or the Shipping (Distress signals and Prevention of Collision) Regulations, 1999. Maritime sound signaling device

No. 1242 of 1990

### *Anchors*

70. An operator shall not conduct operations in a seaplane or an amphibian, unless such seaplane or amphibian is equipped with a sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvering the aircraft on water, appropriate to its size, weight and handling characteristics. Anchors

### *Airborne Collision Avoidance System*

Airborne collision avoidance system

71. (1) An air operator shall not conduct operations in a turbine-engined aeroplane of a maximum certified take-off mass in excess of fifteen thousand kilogrammes and having a maximum approved passenger seating configuration of more than thirty passengers, unless such aeroplane is equipped with an airborne collision avoidance system.

(2) An air operator shall not conduct operations in a turbine-engined aeroplane with a maximum certified take-off mass in excess of fifteen thousand kilogrammes or having a maximum approved passenger seating configuration of more than nineteen passengers after 31st December, 2004, unless such turbine-engined aeroplane is equipped with an airborne collision avoidance system.

(3) The Authority may prescribe the manner in which an airborne collision avoidance system under this regulation shall operate.

### *Pressure Altitude Reporting Transponder*

Pressure Altitude Reporting Transponder

72. (1) An operator shall not operate an aircraft unless such aircraft is equipped with a pressure altitude reporting transponder.

(2) The Authority may prescribe the manner in which a pressure altitude reporting transponder under this regulation shall operate.

### *Implementing Standards*

Implementing Standards

Schedule 4

73. An air operator in meeting the requirements of Regulations 12, 38 and 46, shall ensure that he complies with the minimum implementing standards set out in Schedule 4.

### *Director General may amend Schedules*

Director General amend Schedules

74. The Director General may by Order amend any of the Schedules.

### *Commencement*

Commence-ment

75. The requirements of these Regulations shall come into effect six months from the date of publication of these Regulations.

SCHEDULE 1

*(Regulation 12)*

The following instruments and equipment shall be installed on an aircraft engaged in Category II operations in accordance with its aircraft group—

*(a)* Group I. Aircraft

(i) two localizer and glide slope receiving systems in which—

(A) each system shall provide a basic Instrument Landing System display; and

(B) each side of the instrument panel must have a basic Instrument Landing System display;

(ii) a communication system that does not affect the operation of at least one of the Instrumental Landing System;

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

(iv) two gyroscopic pitch and bank indicating systems;

(v) two gyroscopic direction indicating systems;

(vi) two airspeed indicators;

(vii) 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;

(viii) two vertical speed indicators; and

(ix) a flight control guidance system that consists of—

(A) either an automatic approach coupler; or

(B) a flight director system.

Note*: A flight director system must display computed information as steering command in relation to an Instrument Landing System localizer and, on the same instrument, either computed information as pitch command in relation to an Instrument Landing System glide slope or basic Instrument Landing System glide slope information. An automatic approach coupler must provide at least automatic steering in relation to an Instrument Landing System localizer. The flight control guidance system may be operated from one of the receiving systems required by paragraph (1)(a)(i).*

(x) 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.

*(b)* Group II. Aircraft

(i) all the items under paragraph (1);

(ii) warning systems for immediate detection by the pilot of system faults in paragraphs (1)*(a)*, *(d)*, *(e)* and *(i)* of Group I and, if installed for use in Category III operations—

(A) the Radio Altimeter system; and

(B) autothrottle system;

(iii) dual controls;

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

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

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

SCHEDULE 2

*[Regulation 33(a), (c)]*

PART A

The following parameters are required to be recorded to satisfy the requirements for a Type I Flight Data Recorder and parameters marked with an asterisk (*) are required to be recorded to satisfy the requirements for Types II and IIA Flight Data Recorders:

*(a)* time*;

*(b)* pressure-altitude*;

*(c)* indicated airspeed*;

*(d)* heading*;

*(e)* normal acceleration*;

*(f)* pitch attitude*;

*(g)* roll attitude*;

*(h)* radio transmission keying*;

*(i)* record sufficient inputs to determine power in each engine*;

*(j)* trailing edge flap or cockpit control selection*;

*(k)* leading edge flap or cockpit control selection*;

*(l)* thrust reverser position*;

*(m)* ground spoiler or speed brake position*;

*(n)* outside air temperature*;

*(o)* autopilot or auto-throttle or Automatic Flight Control System mode and engagement status*;

*(p)* longitudinal acceleration;

*(q)* lateral acceleration;

*(r)* pilot input and or control surface position-primary control (pitch, roll and yaw). (For aeroplanes with conventional control system “or” applies. For aeroplanes with non-mechanical control system “and” applies. In aeroplanes with split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately);

*(s)* pitch trim position;

*(t)* radio altitude;

*(u)* glide path deviation;

*(v)* localizer deviation;

*(w)* marker beacon passage;

*(x)* master warning;

*(y)* navigation system (1) and (2) frequency selection where signal available in digital form;

*(z)* Distance Measuring Equipment System 1 and 2 distance where signal is available in digital form recording of latitude and longitude from Inertia Navigation System or other navigation system is a preferred alternative;

*(aa)* landing gear squat switch status;

*(bb)* Ground Proximity Warning System;

*(cc)* angle of attack;

*(dd)* low pressure warning on each hydraulics system;

*(ee)* Navigation data and

*(ff)* landing gear position and landing gear position selector.

*[Regulation 33(b)]*

PART B

The following parameters are required to be recorded to satisfy the requirements for a Type IA Flight Data Recorder:

*Flight path and speed:*

*(a)* pressure altitude;
*(b)* indicated airspeed or calibrated airspeed;
*(c)* air-ground status and each landing gear air-ground sensor when practicable;
*(d)* total or outside air temperature.
*(e)* heading from the primary flight crew reference;
*(f)* normal acceleration;
*(g)* lateral acceleration;
*(h)* longitudinal acceleration reference from the body axis;
*(i)* time or relative time count;
*(j)* navigation data*: drift angle, wind speed, wind direction, latitude and longitude;
*(k)* groundspeed*; and
*(l)* radio altitude*.

*Attitude:*

*(a)* pitch attitude;
*(b)* roll attitude;
*(c)* yaw or sideslip angle*; and
*(d)* angle of attack*.

*Engine power:*

*(a)* engine thrust or power: propulsive thrust or power on each engine, cockpit thrust or power lever position;
(b) thrust reverse status*;
*(c)* engine thrust command*;
*(d)* engine thrust target*;
*(e)* engine bleed valve position*; and
*(f)* additional engine parameters*: EPR, N1, indicated vibration level, N2, EGT, TLA, fuel flow, fuel cut-off lever position.

*Configuration:*

*(a)* pitch trim surface position;
*(b)* flaps*: trailing edge flap position, cockpit control selection;
*(c)* slats*: leading edge flap position, cockpit control selection;
*(d)* landing gear*: landing gear, gear selector position;
*(e)* yaw trim surface position*;
*(f)* roll trim surface position*;
*(g)* cockpit trim control input position pitch*;
*(h)* cockpit trim control input position roll*;
*(i)* cockpit trim control input position yaw*;
*(j)* ground spoiler and speed brake*: ground spoiler position;
*(k)* ground spoiler selection, speed brake position, and speed brake selection;
*(l)* de-icing and or anti-icing systems selection*;
*(m)* hydraulic pressure each system*;
*(n)* fuel quantity*;
*(o)* alternate circuit electrical bus status*;
*(p)* direct circuit electrical bus status*;
*(q)* auxiliary power unit bleed valve position*; and
(r) computed center of gravity*.

*Operation:*

*(a)* warnings.
*(b)* primary flight control surface and primary flight control pilot input: pitch axis, roll axis, yaw axis;
*(c)* marker beacon passage;
*(d)* each navigation receiver frequency selection;
*(e)* manual radio transmission keying and cockpit voice recorder or Flight Data Recorder synchronization reference;
*(f)* autopilot or auto-throttle or Automatic Flight Control System mode and engagement status*;
*(g)* selected barometric setting*: pilot, first officer;
*(h)* selected altitude for all pilot selectable modes of operation*;
*(i)* selected speed for all pilot selectable modes of operation*;
*(j)* selected Mach for all pilot selectable modes of operation*;
*(k)* selected vertical speed for all pilot selectable modes of operation*;
*(l)* selected heading for all pilot selectable modes of operation*;
*(m)* selected flight path for all pilot selectable modes of operation*: course or desired track, path angle;
*(n)* selected decision height*;
*(o)* electronic flight engineer system display format*: pilot, first officer;
*(p)* multi-function or engine or alerts display format*;
*(q)* ground proximity warning system Terrain Awareness and Warning System Ground Awareness System status*: selection of terrain display mode including pop-up display status, terrain alerts, both cautions and warnings, and advisories, on or off switch position;
*(r)* low pressure warning*: hydraulic pressure, pneumatic pressure;
*(s)* computer failure*;
*(t)* loss of cabin pressure*;
*(u)* Traffic Collision Awareness System Airborne Collision Avoidance System*;
*(v)* ice detection*;
*(w)* engine warning each engine vibration*;
*(x)* engine warning each engine over temperature*;
*(y)* engine warning each engine oil pressure low*;
*(z)* engine warning each engine over speed*;
*(aa)* wind shear warning*;
*(bb)* operational stall protection, stick shaker and pusher activation*;
*(cc)* all cockpit flight control input forces*: control wheel, control column, rudder pedal cockpit input forces;
*(dd)* vertical deviation*: Instrument Landing System glide path, Microwave Landing System elevation, Global Navigation System approach path;
*(ee)* horizontal deviation*: Instrument Landing System localizer, Microwave Landing System azimuth, Global Navigational System approach path;
*(ff)* distance Measuring Equipment 1 and 2 distances*; and
(gg) primary navigation system reference*: Global Navigational System, Inertia Navigational System, Omni-directional Range or Distance Measuring Equipment, Microwave Landing System, Loran C.

*Instrument Landing System:*

*(a)* brakes*: left and right brake pressure, left and right brake pedal position;
*(b)* date*.
*(c)* event marker*;
*(d)* head up display in use*; and
*(e)* para visual display on*.

Note: *The number of parameters to be recorded will depend on aeroplane complexity. Parameters without an (*) are to be recorded regardless of aeroplane complexity. Those parameters designated by an (*) are to be recorded if an information source for the parameter is used by aeroplane systems and flight crew to operate the aeroplane.*

*[Regulation 33(d), (f)]*

PART C

The following parameters satisfy the requirements for a Type IV Flight Data Recorder and the parameters marked with an asterisk (*) satisfy the requirements a Type V Flight Data Recorder:

*(a)* time*;
*(b)* pressure-altitude*;
*(c)* indicated airspeed*;
*(d)* heading*;
*(e)* normal acceleration*;
*(f)* pitch attitude*;
*(g)* roll attitude*;
*(h)* radio transmission keying*;
*(i)* record sufficient inputs to determine power in each engine;
*(j)* main rotor speed*;
*(k)* pilot input and control surface position-primary controls for collective pitch, longitudinal cyclic pitch. Lateral cyclic pitch, tail rotor pedal*;
*(l)* low pressure for each hydraulics system*;
*(m)* outside air temperature*;
*(n)* autopilot or auto-throttle Automatic Flight Control System mode and engagement status*;
*(o)* stability augmentation system engagement;
*(p)* main gearbox oil pressure;
*(q)* main gearbox oil temperature;
*(r)* yaw acceleration;
*(s)* sling load force;
*(t)* longitudinal acceleration;
*(u)* lateral acceleration;
*(v)* radio altitude;
*(w)* glide path deviation;
*(x)* localizer deviation;
*(y)* marker beacon passage;
*(z)* master Warning;
*(aa)* NAV 1 and 2 frequency selection where signal is in digital form;
*(bb)* distance measuring equipment systems 1 and 2 where signal available in digital forms recording latitude and longitude from Inertia Navigation System or other navigation system is a preferred alternative;
*(cc)* navigation data; and
*(dd)* landing gear position and gear selector position.

*[Regulation 33(d)]*

PART D

The following parameters satisfy the requirements for a Type IVA Flight Data Recorder:

Flight path and speed:

*(a)* pressure altitude;
*(b)* indicated airspeed;
*(c)* outside air temperature;
*(d)* heading;
*(e)* normal acceleration;
*(f)* lateral acceleration;
*(g)* longitudinal acceleration (body axis);
*(h)* time or relative time count;
*(i)* navigation data*: drift angle, wind speed, wind direction, latitude/longitude; and
*(j)* radio altitude*.

*Attitude:*

*(a)* pitch attitude;
*(b)* roll attitude; and
*(c)* yaw rate.

*Engine power:*

*(a)* power on each engine: free power turbine speed (Nf), engine torque, engine gas generator speed (Ng), cockpit power control position;
*(b)* rotor: main rotor speed, rotor brake;
*(c)* main gearbox oil pressure*;
*(d)* gearbox oil temperature*: main gearbox oil temperature, intermediate gearbox oil;
*(e)* temperature, tail rotor gearbox oil temperature;
*(f)* engine exhaust gas temperature* and
*(g)* turbine inlet temperature*.

*Configuration:*

*(a)* landing gear or gear selector position*;
*(b)* fuel contents*; and
*(c)* ice detector liquid water content*.

*Operation:*

*(a)* hydraulics low pressure;
*(b)* warnings;
*(c)* primary Flight Controls—Pilot input and or control output position: collective pitch, longitudinal cyclic pitch, lateral cyclic pitch, tail rotor pedal, controllable stabilator, hydraulic selection;
*(d)* marker beacon passage;
*(e)* each navigation receiver frequency selection;
*(f)* Automatic Flight Control System mode and engagement status*;
*(g)* stability augmentation system engagement*;
*(h)* indicated sling load force*; and
*(i)* vertical deviation*: Instrument Landing System glide path, Microwave Landing System elevation.

*Ground Navigational System approach path:*

*(a)* horizontal deviation*: Instrument Landing System localizer, Microwave Landing System azimuth;
*(b)* Distance Measuring Equipment 1 and 2 distances*;
*(c)* altitude rate*;
*(d)* mice detector liquid water content*; and
*(e)* helicopter health and usage monitor system*: engine data, chip detectors, track timing, exceedances discretes, and broadband average engine vibration.

Note 1: *The number of parameters to be recorded will depend on helicopter complexity.*

Note 2: *Parameters without an (*) are to be recorded regardless of helicopter complexity.*

Note 3: *Those parameters designated by an (*) are to be recorded if an information source for the parameter is used by helicopter systems or flight crew to operate the helicopter.*

(Regulation 35)

PART E

| FLIGHT DATA RECORDER TYPE | DURATION |
|---|---|
| Type I | 25 hours |
| Type II | 25 hours |
| Type IIA | 30 minutes |
| Type IV | 10 hours |
| Type IVA | 10 hours |
| Type V | 10 hours |

SCHEDULE 3

(Regulation 40)

PART A

Where an aeroplane has the seating capacity specification under column 1, it shall have the corresponding fire extinguisher under column 2 or board.

| Passenger Seating | Minimum Number of Hand Fire Extinguishers Capacity |
|---|---|
| 30 through 60 | 2 |
| 61 through 200 | 3 |
| 201 through 300 | 4 |
| 301 through 400 | 5 |
| 401 through 500 | 6 |
| 501 through 600 | 7 |
| 601 or more | 8 |

(Regulation 45)

PART B

Where an aeroplane has the seating capacity specified under column 1, it shall have the corresponding first-aid kits under column 2 on board.

| Number of passenger seats installed | Number of first-aid kits required |
|---|---|
| 0 to 99 | 1 |
| 100 to 199 | 2 |
| 200 to 299 | 3 |
| 300 and more | 4 |

SCHEDULE 4

(Regulation 73)

**IMPLEMENTING STANDARDS**

The following standards are numbered to correspond numerically to the relevant provisions in the regulations:

***Regulation 12***

**Category II: Instruments and Equipment Approval and Maintenance Requirements**

1. The instruments and equipment required by regulation 12 shall be approved as provided in this implementing standard before being used in Category II operations. Before presenting an aircraft for approval of the instruments and equipment, it must be shown that since the beginning of the 12th month before the date of submission—

*(a)* the ILS localizer and glide slope equipment was bench checked according to the manufacturer's instructions and found to meet those standards specified in Radio Technical Commission for Aeronautics Paper 23-63/DO-177 dated March 14, 1963, "Standards Adjustment Criteria for Airborne Localizer and Glide slope Receivers."

*(b)* the altimeters and the static pressure systems were tested and inspected; and

*(c)* all other instruments and items of equipment specified in regulation 12 that are listed in the proposed maintenance programme were bench checked and found to meet the manufacturer's specifications.

2. All components of the flight control guidance system shall be approved as installed by the evaluation programme specified in paragraph 5 if they have not been approved for Category III operations under applicable type or supplemental type certification procedures. In addition, subsequent changes to make, model, or design of the components must be approved under this paragraph. Related systems or devices, such as the autothrottle and computed missed approach guidance system, shall be approved in the same manner if they are to be used for Category II operations.

3. A radio altimeter must meet the following performance criteria of this paragraph 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 ±5 feet or 5 percent, whichever is greater, under the following conditions:

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

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

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

(iv) sink rates from zero to 15 feet per second at altitudes from 100 to 200 feet;

*(c)* over level ground, it must track the actual altitude of the aircraft without significant lag or oscillation;

*(d)* with the aircraft at an altitude of 200 feet or less, any abrupt change in terrain representing no more than 10 per cent of the aircraft's altitude must not cause the altimeter to unlock, and indicator response to such changes must not exceed 0.1 seconds and, in addition, if the system unlocks for greater changes, it must reacquire the signal in less than 1 second;

*(e)* systems that contain a push to test feature must test the entire system (with or without an antenna) at a simulated altitude of less than 500 feet; and

*(f)* the system must 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;

4. All other instruments and items of equipment required by regulation 12 shall be capable of performing as necessary for Category II operations. Approval is also required after each subsequent alteration to these instruments and items of equipment.

5. Evaluation programme.

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

*(b)* unless otherwise authorized by the Authority, the evaluation programme for each aircraft requires the demonstrations specified in this paragraph. At least 50 ILS approaches shall be flown with at least five approaches on each of three different ILS facilities and no more than one half of the total approaches on any one ILS facility. All approaches shall be flown under simulated instrument conditions to a 100 foot decision height and 90 per cent of the total approaches made shall be successful. A successful approach is one in which—

(i) at the 100 foot decision height, the indicated airspeed and heading are satisfactory for a normal flare and landing (speed must be ±5 knots of programmed airspeed, but may not be less than computed threshold speed if autothrottles are used);

(ii) 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 runway extended;

(iii) deviation from glide slope after leaving the outer marker does not exceed 50 per cent of full-scale deflection as displayed on the ILS indicator;

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

(v) 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;

*(c)* during the evaluation programme the following records of information shall be maintained by the applicant for the aircraft with respect to each approach and made available to the Authority upon request:

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

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

(iii) speed control at the 100 foot DH if auto throttles are used;

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

(v) position of the aircraft at the middle marker and at the decision height indicated both on a diagram of the basic ILS display and a diagram of the runway extended to the middle marker. Estimated touchdown point shall be indicated on the runway diagram;

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

(vii) quality of overall system performance;

*(d)* 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.

6. Each maintenance programme for Category II instruments and equipment shall contain the following:

*(a)* a list of each instrument and item of equipment specified in regulation 12 that is installed in the aircraft and approved for Category II operations, including the make and model of those specified in regulation 12;

*(b)* a schedule that provides for the performance of inspections under subparagraph *(e)* of this paragraph within 3 months after the date of the previous inspection. The inspection shall be performed by a person authorized by the Civil Aviation [(No. 5) Airworthiness] Regulations, 2004, except that each alternate inspection may be replaced by a functional flight check. This functional flight check shall be performed by a pilot holding a Category II 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 12 within 12 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 12 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; and

*(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.

7. A bench check required by this section shall comply with the following paragraph:

*(a)* except as specified in paragraph *(b)* of this subsection, it shall be performed by a certified repair station holding one of the following ratings as appropriate to the equipment checked:

(i) an instrument rating; and

(ii) an avionics rating;

*(b)* it shall be performed by a certified air operator on aircraft identified in its approved specific operating provisions with the approved authorizations to perform maintenance and approve for return to service its own aircraft maintained under a continuous maintenance programme under an equivalent system identified in the Civil Aviation [(No. 3) Air Operator Certification and Administration] Regulations, 2004;

*(c)* it shall consist of removal of an instrument or item of equipment and performance of the following:

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

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

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

8. After the completion of one maintenance cycle of 12 months, a request to extend the period for checks, tests, and inspections is approved if it is shown that the performance of particular equipment justifies the requested extension.

***Regulation 38***

**Emergency Exit Equipment**

1. The assisting means for a floor level emergency exit shall meet the requirements under which the aeroplane was type certified.

2. The location of each passenger emergency exit shall be—

*(a)* recognizable from a distance equal to the width of the cabin; and

*(b)* indicated by a sign visible to occupants approaching along the main passenger aisle.

3. There shall be an emergency exit locating sign—

*(a)* above the aisle near each over-the-wing passenger emergency exit, or at another ceiling location if it is more practical because of low headroom;

*(b)* next to each floor level passenger emergency exit, except that one sign may serve two such exits if they both can be seen readily from that sign; and

*(c)* on each bulkhead or divider that prevents fore and aft vision along the passenger cabin, to indicate emergency exits beyond and obscured by it, except that if this is not possible, the sign may be placed at another appropriate location.

4. Each passenger emergency exit marking and each locating sign shall be manufactured to meet the interior emergency exit marking requirements under which the aeroplane was type certified, unless the Authority cites different requirements for compliance with this paragraph.

Note: *No sign may continue to be used if its luminescence or brightness decreases to below 250 microlamberts.*

5. Sources of general cabin illumination may be common to both the emergency and the main lighting systems if the power supply to the emergency light system is independent of the power supply to the main lighting system.

6. The emergency lighting system shall provide enough general lighting in the passenger cabin so that the average illumination, when measured at 40-inch intervals at seat armrest height, on the centerline of the main passenger aisle, is at least 0.05 foot-candles.

7. Each emergency light shall—

*(a)* be operable manually both from the flight crew station and from a point in the passenger compartment that is readily accessible to a normal flight attendant seat;

*(b)* have a means to prevent inadvertent operation of the manual controls;

*(c)* when armed or turned on at either station, remain lighted or become lighted upon interruption of the aeroplane's normal electric power; and.

*(d)* provide the required level of illumination for at least 10 minutes at the critical ambient conditions after emergency landing.

8. Have a cockpit control device that has an “on”, “off”, and “armed” position.

9. The location of each passenger emergency exit operating handle and instructions for opening the exit shall be shown in accordance with the requirements under which the aeroplane was type certified, unless the Authority cites different requirements for compliance with this paragraph.

10. No operating handle or operating handle cover may continue to be used if its luminescence or brightness decreases to below 100 microlamberts.

11. Access to emergency exits shall be provided as follows for each passenger carrying aeroplane:

*(a)* each passageway between individual passenger areas, or leading to a Type I or Type II emergency exit, shall be unobstructed and at least 20 inches wide;

*(b)* there shall be enough space next to each Type I or Type II emergency exit to allow a crew member to assist in the evacuation of passengers without reducing the unobstructed width of the passageway below that required in paragraph *(a)* of this section;

*(c)* there shall be access from the main aisle to each Type III and Type IV exit. The access from the aisle to these exits shall not be obstructed by seats, berths, or other protrusions in a manner that would reduce the effectiveness of the exit. In addition, the access shall meet the emergency exit access requirements under which the aeroplane was type certified, unless the Authority cites different requirements for compliance with this paragraph;

*(d)* if it is necessary to pass through a passageway between passenger compartments to reach any required emergency exit from any seat in the passenger cabin, the passageway shall not be obstructed. However, curtains may be used if they allow free entry through the passageway;

*(e)* no door may be installed in any partition between passenger compartments; and

*(f)* if it is necessary to pass through a doorway separating the passenger cabin from other areas to reach any required emergency exit from any passenger seat, the door shall have a means to latch it in open position, and the door shall be latched open during each takeoff and landing. The latching means shall be able to withstand the loads imposed upon it when the door is subjected to the ultimate inertia forces, relative to the surrounding structure, prescribed in the airworthiness standards for type certification in the transport category as cited by the Authority.

12. Each passenger emergency exit and the means of opening that exit from the outside shall be marked on the outside of the aeroplane with a 2-inch coloured band outlining the exit on the side of the fuselage.

13. Each passenger emergency exit marking, including the band, shall be readily distinguishable from the surrounding fuselage area by contrast in colour and shall comply with the following:

*(a)* if the reflectance of the darker colour is 15 per cent or less, the reflectance of the lighter colour shall be at least 45 per cent;

*(b)* if the reflectance of the darker colour is greater than 15 percent, at least a 30 per cent difference between its reflectance and the reflectance of the lighter colour shall be provided; and

Note: "*Reflectance*" *is the ratio of the luminous flux reflected by a body to the luminous flux it receives.*

*(c)* exits that are not in the side of the fuselage shall have external means of opening and applicable instructions marked conspicuously in red or, if red is inconspicuous against the background colour, in bright chrome yellow and, when the opening means for such an exit is located on only one side of the fuselage, a conspicuous marking to that effect shall be provided on the other side.

14. Each passenger-carrying aeroplane shall be equipped with exterior lighting that meets the requirements under which that aeroplane was type certified, unless the Authority cites different requirement for compliance with this paragraph.

15. Each passenger-carrying aeroplane shall be equipped with a slip-resistant escape route that meets the requirements under which that aeroplane was type certified, unless the Authority cites different requirements for compliance with this paragraph.

16. Each floor level door or exit in the side of the fuselage (other than those leading into a cargo or baggage compartment that is not accessible from the passenger cabin) that is 44 or more inches high and 20 or more inches wide, but not wider than 46 inches, each passenger ventral exit and each tail cone exit, shall meet the requirements of this section for floor level emergency exits.

Note 1. *The Authority may grant a deviation from this paragraph if he finds that circumstances make full compliance impractical and that an acceptable level of safety has been achieved.*

Note 2. *Approved emergency exits in the passenger compartments that are in excess of the minimum number of required emergency exits shall meet all of the applicable provisions of this subsection section and shall be readily accessible.*

17. On each large passenger-carrying turbojet powered aeroplane each ventral exit and tail cone exit shall be—

*(a)* designed and constructed so that it cannot be opened during flight; and

*(b)* marked with a placard readable from a distance of 30 inches and installed at a conspicuous location near the means of opening the exit, stating that the exit has been designed and constructed so that it cannot be opened during flight.

***Regulation 46***

**Oxygen Storage and Dispensing Apparatus**

1. The supplemental oxygen supply requirements for non-pressurized aircraft are as follows:

*(a)* each member of the flight crew on flight deck duty shall be supplied with supplemental oxygen in accordance with Table 1. If all occupants of flight deck seats are supplied from the flight crew source of oxygen supply then they shall be considered as flight crew on flight deck duty for the purpose of oxygen supply; and

*(b)* cabin crew and passengers shall be supplied with oxygen in accordance with Table 1. Cabin crew carried in addition to the minimum number of cabin crew required, and additional crew, shall be considered as passengers for the purpose of oxygen supply.

**Table 1—Supplemental Oxygen for Non-Pressurized Aeroplanes**

| SUPPLY FOR: | DURATION AND PRESSURE ALTITUDE |
|---|---|
| 1. All occupants of flight deck seats on flight deck duty | Entire flight time at pressure altitudes above 10,000 feet |
| 2. All required cabin crew members | Entire flight time at pressure altitudes above 13,000 feet and for any period exceeding 30 minutes at pressure altitudes above 10,000 feet but not exceeding 13,000 feet |
| 3. 100% of passengers | Entire flight time at pressure altitudes above 13,000 feet |
| 4. 10% of passengers | Entire flight time after 30 minutes at pressure altitudes greater than 10,000 feet but not exceeding 13,000 feet |

2. The supplemental oxygen supply requirements for pressurized aircraft are as follows:

*(a)* the amount of supplemental oxygen required shall be determined on the basis of cabin pressure altitude, flight duration and the assumption that a cabin pressurization failure will occur at the altitude or point of flight that is most critical from the standpoint of oxygen need, and that, after the failure, 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;

*(b)* following a cabin pressurization failure, the cabin pressure altitude shall be considered the same as the aeroplane 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 altitude. Under these circumstances, this lower cabin pressure altitude may be used as a basis for determination of oxygen supply;

*(c)* each member of the flight crew on flight deck duty shall be supplied with supplemental oxygen in accordance with Table 2. If all occupants of flight deck seats are supplied from the flight crew source of oxygen supply then they shall be considered as flight crew on flight deck duty for the purpose of oxygen supply. Flight deck seat occupants, not supplied by the flight crew source, are to be considered as passengers for the purpose of oxygen supply; and

*(d)* cabin crew, additional crew, and passengers:

(i) cabin crew and passengers shall be supplied with supplemental oxygen in accordance with Table 2. Cabin crew carried in addition to the minimum number of cabin crew required, and additional crew, shall be considered as passengers for the purpose of oxygen supply; and

(ii) the oxygen supply requirements, as specified in Table 2, for aeroplanes not certified to fly at altitudes above 25,000 feet, may be reduced to the entire flight time between 10,000 feet and 14,000 feet cabin pressure altitudes for all required cabin crew and for at least 10% of the passengers if, at all points along the route to be flown, the aeroplane is able to descend safely within 4 minutes to a cabin pressure altitude of 14,000 feet.

**Table 2—Requirements for Supplemental Oxygen-Pressurized Aeroplane During and Following Emergency Descent (Note 1)**

| SUPPLY FOR: | DURATION AND CABIN PRESSURE ALTITUDE |
|---|---|
| 1. All occupants of seats on flight deck duty flight | Entire flight time when the cabin pressure altitude exceeds 13,000 feet and entire time when the cabin pressure altitude exceeds 10,000 feet but does not exceed 13,000 feet after the first thirty minutes at those altitudes but in no case less than<br>*(a)* thirty minutes for aeroplanes certified to fly at altitudes not exceeding 25,000 feet (Note 2); and<br>*(b)* two hours for aeroplanes certified to fly at altitudes more than 25,000 feet (Note 3). |
| 2. All required cabin crew members | Entire flight time when cabin pressure altitude exceeds 13,000 feet but not less than 30 minutes and entire flight time when cabin pressure altitude is greater than 10,000 feet but does not exceed 13,000 feet after the first thirty minute at these altitudes (Note 2). |
| 3. 100% of passengers | 10 minutes or the entire flight time when the cabin pressure altitude exceeds 15,000 feet whichever is the greater (Note 4). |
| 4. 30% of passengers | Entire flight time when the cabin pressure altitude exceeds 14,000 feet but does not exceed 15,000 feet. |
| 5. 10% of passengers | Entire flight time when the cabin pressure altitude exceeds 10,000 feet but does not exceed 14,000 feet after the first 30 minutes at these altitudes. |

Note 1: *The supply provided shall 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 certified operating altitude to 10,000 feet in 10 minutes and followed by 20 minutes at 10,000 feet.*

Note 3: *The required minimum supply is that quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certified operating altitude to 10,000 feet in 10 minutes and followed by 110 minutes at 10,000 feet. The oxygen required to meet the Crew Protective Breathing Equipment provisions of this Part 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 certified operating altitude to 15,000 feet.*

Made by the Authority this 19th day of March, 2004

R. LUTCHMEDIAL
*Civil Aviation Authority*

Approved by the Minister of Works and Transport

F. KHAN
*Minister of Works and Transport*

Laid in the House of Representatives this day of , 2004.

*Clerk of the House*

Laid in the Senate this day of , 2004.

*Clerk of the Senate*

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