

**Civil Aviation**

**CIVIL AVIATION (INSTRUMENTS AND EQUIPMENT)  
REGULATIONS, 2007**

**ARRANGEMENTS OF REGULATIONS**

REGULATION

**PART I**

*Preliminary*

1. Citation.
2. Interpretation.
3. General applicability of these Regulations.

**PART II**

*General Requirements*

4. Applicability of Part II.
5. General requirements for instruments and equipment.

**PART III**

*Flight and Navigational Instruments*

6. General applicability of Part III.
7. General flight and navigational requirements.
8. Navigational instruments for VFR operations.
9. Instruments for operations requiring 2 pilots.
10. Instruments for instrument flight rules operations.

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REGULATION

11. Standby altitude indicator.
12. Instruments and equipment for Category II operations.
13. Navigation equipment for operations in minimum navigational performance specifications airspace.

PART IV

Communication Equipment

14. General applicability of Part IV.
15. Radio equipment.
16. Flight crew interphone system.

PART V

*Aircraft Light and Instrument Illumination*

17. Applicability of Part V.
18. Aircraft lights and instrument illumination.

PART VI

*Engine Instruments*

19. Applicability of Part VI.
20. Engine instruments.

PART VII

Warning Instruments and Systems

21. Applicability of Part VII.
22. Mach number indicator.
23. Requirement for loss of pressurization indicator.

## REGULATION

24. Landing gear aural warning device.
25. Altitude alerting system.
26. Ground proximity warning system.
27. Airborne weather radar equipment.

## PART VIII

*Flight Recorders*

28. Applicability of Part VIII.
29. Flight recorder system requirements.
30. Cockpit voice recorder system requirements.
31. Duration of recordings of a cockpit voice recorder system.
32. Recording of data link communication.
33. Requirements for flight data recorder system.
34. Alternative flight recorder system.
35. Duration of recordings of a flight data recorder system.

## PART IX

*Emergency, Rescue and Survival Equipment*

36. Applicability of Part IX.
37. Emergency equipment.
38. Emergency exit equipment.
39. Visual signaling devices and survival kits.
40. Portable fire extinguishers.

REGULATION

41. Built-in fire extinguisher in lavatory.
42. Lavatory smoke detector.
43. Crash axe.
44. Marking of break-in points.
45. First-aid and emergency medical kit.
46. Oxygen storage and dispensing apparatus.
47. Protective breathing equipment.
48. First-aid oxygen.
49. Requirement for battery powered megaphones.
50. Individual flotation devices for each person on board an aircraft.
51. Life raft requirement.
52. Emergency Locator Transmitter.
53. Flotation device for helicopter ditching.

PART X

*Miscellaneous Systems and Equipment*

54. Applicability of Part X.
55. Seats, safety belts and shoulder harnesses.
56. Passenger and pilot compartment door, safety and security requirements.
57. Passenger information signs.
58. Public address system requirement.
59. Material for cabin interiors.

## REGULATION

60. Materials for cargo and baggage compartments.
61. Power supply distribution and indication system.
62. Protective circuit fuses.
63. Icing protection equipment.
64. Pitot heat indication systems.
65. Static pressure system.
66. Windshield wipers.
67. Chart holder.
68. Cosmic radiation measuring equipment.
69. Maritime sound signaling device.
70. Anchors.
71. Airborne collision avoidance system.
72. Pressure altitude reporting transponder.
73. Implementing Standards.
74. Director may make standards or amend standards.



**Civil Aviation**

Cap. 288B.

**CIVIL AVIATION (INSTRUMENT AND EQUIPMENT)  
REGULATIONS, 2007**

2007/178.

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**Commencement:** 7th January, 2008.

**PART I***Preliminary*

**1.** These Regulations may be cited as the *Civil Aviation (Instruments and Equipment) Regulations, 2007*. Citation.

**2.** In these Regulations,

Interpreta-  
tion.

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

"attitude" means the orientation of an aircraft with respect to the horizon, whether in level flight, turning or descending;

"class C cargo compartment" means a cargo compartment on an aircraft

- (a) which is not accessible by the flight crew and one in which the presence of a fire would not be easily discovered;
- (b) in which there is a separate approved fire detector or fire detector system which will give a warning in the cockpit if activated;

- (c) in which there is a built-in fire extinguisher or suppression system which if activated will give a warning in the cockpit;
- (d) in which there are means of excluding hazardous quantities of smoke, flames or extinguishing agents from any compartment occupied by crew or passengers; and
- (e) in which there are means of controlling ventilation and drafts within the compartment so that an extinguishing agent used can control any fire that may start in 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 of shutting 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 of excluding hazardous quantities of smoke, flames or noxious gases 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 communication 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 aircraft which is at floor level with a rectangular opening of not less than 24 inches wide by 48 inches high with corner radii not greater than 8 inches;
- (b) a Type II exit in an aircraft which is a rectangular opening of not less than 20 inches wide by 44 inches high with corner radii not greater than 7 inches, located at floor level except over the wing in which case a step up inside the aircraft of more than 10 inches or a step down outside the aircraft of more than 17 inches shall not exist;
- (c) a Type III exit in an aircraft which is a rectangular opening of not less than 20 inches wide by 36 inches high with corner radii not greater than 7 inches and with a step up inside the aircraft of not more than 20 inches and where located over the wing, the step down outside the aircraft of not more than 27 inches;
- (d) a Type IV exit in an aircraft which is a rectangular opening of not less than 19 inches wide by 26 inches high with corner radii of not greater than  $6 \frac{3}{10}$  inches located over the wing with a step up inside the aircraft of not more than 29 inches and a step down outside the aircraft of not more than 36 inches;
- (e) a ventral exit in an aircraft 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 aircraft 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 at 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 operation 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;

2007/173.

"national air operator" means a person, organisation or enterprise who has been issued an air operator's certificate in accordance with the *Civil Aviation (Air Operator Certification and Administration) Regulations, 2007*;

"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, organisation 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 or organisation deemed to be engaged in the operation of aircraft within the meaning of the Act;

"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;

"RNP type" means a containment value expressed as distance in nautical miles from the intended position within which flights would be for at least 95 per cent of the flying time. For example - RNP4 represents a navigation accuracy of plus or minus 7.4 km (4 NM) on a 95 per cent containment basis;

"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.

**3.** These Regulations shall apply to all aircraft operating in Barbados in respect of the minimum requirements for such aircraft to have instruments and equipment.

General  
applicability  
of these  
Regulations.

PART II

*General Requirements*

Applicability of Part II.

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

General requirements for instruments and equipment. 2007/175.

**5.** (1) Notwithstanding the minimum equipment specified in the general type certificate of an aircraft and required for the issuance of a certificate of airworthiness under *Civil Aviation (Airworthiness) Regulations, 2007*, an operator shall ensure that additional instruments, equipment and flight documents are installed or carried, as appropriate, in the aircraft according to the circumstances under which the flight is to be conducted.

(2) An operator shall ensure that the additional instruments and equipment referred to in paragraph (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 to be on board an aircraft for flight

- (a) are installed in accordance with the instructions of such State of Design to meet the airworthiness requirements;
- (b) meet the minimum performance standard and the operational and airworthiness requirements prescribed by the Director;
- (c) are 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) are in an operable condition for the kind of operation being conducted, except as provided in the minimum equipment list.

(4) The operator of a civil aircraft that is not registered in Barbados shall prior to operating the aircraft in Barbados ensure that all instrument and equipment requirements by the Director with respect to airworthiness 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 III

#### *Flight and Navigational Instruments*

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

General applicability of Part III.

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

General flight and navigational instrument requirements.

(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 services

except when, if not so precluded by the Director, navigation for flights under the visual flight rules is accomplished in the case of commercial flights by visual reference to land marks, in all other cases by visual reference to landmarks situated at least every 60 nautical miles.

(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 clearly indicate 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 the flight crew member to readily see the indications 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;
- (b) reduced vertical separation minimum; and
- (c) RNP type requirements

of these Regulations, where applicable.

**8.** (1) No operator shall operate an aircraft under visual flight rules unless the aircraft is equipped with the following flight and navigational instruments for VFR operations:

Navigational instruments for VFR operations.

- (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, that is 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) any additional instruments or equipment as may be required by the Director.

(2) Where an operator intends to conduct operations in an aircraft under visual flight rules as a controlled flight, he shall ensure that the aircraft is equipped with instruments specified in regulation 10.

**9.** An operator shall ensure that, where 2 pilots are required to operate an aircraft, the stations of each pilot shall have separate flight instruments which include

Instruments for operations requiring 2 pilots.

- (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, that is 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.

**10.** (1) No operator shall conduct operations in an aircraft under instrument flight rules, at night or when the aircraft cannot be maintained in a desired altitude without reference to one or more flight instruments, unless the 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, that is adjustable for any barometric pressure likely to be set during flight;
- (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 Director.



(2) The requirements of sub-paragraphs *(e)*, *(f)* and *(g)* of paragraph (1) may be met by a combination of instruments or by an integrated flight director system, provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

(3) No air operator shall operate an aeroplane 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, or to controlled VFR flights unless such aircraft is equipped with

- (a)* the instruments required in paragraph (1); and
- (b)* a sensitive pressure altimeter, calibrated in feet with a sub-scale setting calibrated in hectopascals or millibars, that is adjustable for any barometric pressure likely to be set during flight, with counter-drum pointer or equivalent presentation.

(4) No air operator shall operate a helicopter under instrument flight rules, or at night or when the helicopter cannot be maintained in a desired attitude without reference to one or more flight instruments, unless such helicopter is equipped with

- (a)* the instruments required in paragraph (1);
- (b)* an altitude indicator; and
- (c)* a stabilizing system.

(5) A stabilization system referred to in paragraph (4)*(c)* may not be required where it is demonstrated to the satisfaction of the State of Design that the helicopter possesses, by nature of its design, adequate stability without the stabilization system.

(6) No air operator shall operate an aeroplane under instrument flight rules, or under visual flight rules over routes that cannot be navigated by reference to visual landmarks, unless that 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 for 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 airport at which it is intended to land in instrument meteorological conditions; and
- (c) any designated alternate airport.
- (8) No air operator shall 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.
- 11.** (1) No operator shall operate
- (a) an aeroplane with a maximum certified take-off mass exceeding 5 700 kilogrammes;

- (b) an aircraft having a maximum approved passenger seating configuration of more than 9 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

- (i) is operated and illuminated independently of any other altitude indicating system;
- (ii) is powered continuously during normal operations; and
- (iii) is automatically powered for a minimum of 30 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.

**12.** An operator shall ensure that, where his aircraft is engaged in Category II operations, it is installed with the instruments and equipment listed in the Instruments and Equipment Standards appropriate to its group.

Instruments and equipment for Category II operations.

Navigation  
equipment  
for  
operations in  
minimum  
navigational  
performance  
specifica-  
tions  
airspace.

**13.** (1) No air operator shall 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 authorised by the Director 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 Director.

(3) Where an air operator is conducting operations in an aircraft in defined portions of airspace as on routes where an RNP type has been prescribed, he shall ensure that such aircraft has the required equipment that would enable it to operate in accordance with the prescribed RNP type.

(4) Where an operator is conducting operations in an aeroplane in defined portions of airspace based on a Regional Air Navigation Agreement and where a Reduced Vertical Separation Minimum of 1 000 feet is applied above FL 290, he shall ensure that such aeroplane

(a) has the required equipment that is capable of

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

(ii) automatically maintaining a selected flight level;

- (iii) automatically reporting pressure-altitude;
  - (iv) providing an alert at a maximum threshold of plus or minus 300 feet to the flight crew when a deviation occurs from the selected flight level; and
- (b) is authorised by the Authority for operations in the airspace concerned.

#### PART IV

##### *Communication Equipment*

**14.** This Part prescribes the minimum radio equipment requirements for aircraft operating in Barbados.

General applicability of Part IV.

**15.** (1) No operator shall operate an aircraft unless it is equipped with the required radio equipment for the type of operation being conducted.

Radio equipment.

- (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 rule conditions,

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

- (3) No air operator shall 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 the 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 referred to in paragraph (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) No operator shall 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) No operator shall 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.

Flight crew  
interphone  
system.

**16.** (1) No air operator shall 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) No air operator shall conduct operations in an aircraft with a maximum certified take-off mass exceeding 15 000 kilogrammes or having a maximum approved passenger seating configuration of more than 19, 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 V

*Aircraft Light and Instrument Illumination*

Applicability Part V.      **17.** This Part prescribes the minimum aircraft lights and instrument illuminations for aircraft operating in Barbados.

Aircraft lights and instrument illumination.      **18.** (1) No operator shall conduct operations in an aircraft at night unless the 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 the 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 Director.

(2) No air operator shall conduct operations in an aircraft by day or night unless the aircraft is equipped with

- (a) the lights mentioned in paragraph (1);
- (b) two landing lights or a single landing light having two separately energized filaments; and
- (c) lights that conform to international regulations for the prevention of collisions at sea where the aircraft is a seaplane or an amphibian aircraft.



PART VI

*Engine Instruments*

**19.** This Part prescribes the minimum engine instrument requirements for aircraft operating in Barbados. Applicability of Part VI.

**20.** (1) No air operator shall conduct commercial air transport operations without the following engine instruments installed in the aeroplane: Engine instruments.

- (a) a fuel pressure indicator for each engine;
- (b) a fuel flow meter;
- (c) a means for indicating fuel quantity in each fuel tank;
- (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 in-oil 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 paragraph (1), the Director may require an air operator to have different instrumentation for turbine engine powered aeroplanes, which provide for an equivalent level of safety.

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

### *Warning Instruments and Systems*

Applicability of Part VII.

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

Mach number indicator.

**22.** An operator shall ensure that an aircraft which has speed limitations expressed in terms of mach number in the aircraft flight manual is equipped with a mach number 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 25 000 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.

Requirement for loss of pressurization indicator.

**24.** (1) An air operator shall ensure that an aeroplane in which he conducts operations which has a landing gear also has a landing gear aural warning system that gives continuous aural warning under the following conditions:

Landing gear aural warning device.

(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 in paragraph (1) may be installed at any suitable place on the aeroplane.

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

(4) Where an aeroplane has a throttle activated device installed, the air operator of the aeroplane shall in addition, 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 referred to in paragraph (4) may utilize any part of the throttle-actuated system as part of the landing gear aural warning system.

Altitude alerting system.

**25.** No air operator shall operate

(a) a turbine propeller-powered aeroplane with a maximum certified take-off mass in excess of 5 700 kilogrammes or having a maximum approved passenger seating configuration of more than 9 seats; or

(b) a turbojet-powered aeroplane,

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

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

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

(2) Where an operator is conducting operations in an aircraft in defined portions of airspace, based on a Regional Air Navigation Agreement and a vertical separation minimum of 1 000 feet is applied above FL 290, such aircraft shall be provided with equipment which

(a) has been authorised by the Director for such operations;

(b) is capable of providing an alert at a maximum threshold of plus or minus 300 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.

**26.** (1) No operator shall conduct operations in a turbine-engined aeroplane having a maximum certified take-off mass in excess of 5 700 kilogrammes or having a maximum approved passenger seating configuration of more than 9 seats for which a certificate of airworthiness was first issued after 31st December, 2003 and all

such aeroplanes after 31st December, 2007 unless it is equipped with a ground proximity warning system which has a forward-looking terrain avoidance function.

(2) No operator shall 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 altitude loss after take-off or go-around; and
- (c) unsafe terrain clearance.

(3) No air operator shall conduct operations in a turbine-engined aeroplane with a maximum certified take-off mass in excess of 5 700 kilogrammes or having a maximum approved passenger seating configuration of more than 9 seats unless it is equipped with a ground proximity warning system.

(4) No air operator shall conduct operations in a turbine-engined aeroplane with a maximum certified take-off mass in excess of 15 000 kilogrammes or having a maximum approved passenger seating configuration of more than 30 seats unless it is equipped with a ground proximity warning system which has a predictive terrain hazard warning function.

(5) No air operator shall conduct operations in a piston- engined aeroplane of a maximum certified take-off mass in excess of 5 700 kilogrammes or having a maximum approved passenger seating configuration of more than 9 passengers unless it is equipped with a ground proximity warning system which provides the warnings specified in paragraph (6)(a) and (c), warning of unsafe terrain clearance and a forward-looking terrain avoidance function.

(6) No air operator shall 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) the gear is not down and locked;
  - (ii) the flaps are not in a landing position; and
- (e) excessive descent below the instrument glide path.

Airborne  
weather  
radar  
equipment.

**27.** No air operator shall 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 the aircraft is equipped with airborne weather radar equipment.

## PART VIII

### *Flight Recorders*

Applicabil-  
ity of Part  
VIII.

**28.** This Part prescribes the minimum requirements for flight recorder systems installed on aircraft operating in Barbados.

**29.** (1) No operator shall conduct operations in an aircraft in Barbados unless the aircraft is equipped with the applicable flight recorder system specified for such aircraft under this regulation.

Flight recorder system requirements.

(2) An operator shall ensure that the flight recorder system required in paragraph (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 the aircraft so 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 Director;

(d) meet the specifications approved or accepted by the Director 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 the aircraft is de-activated by the pilot in command upon completion of flight time so as to preserve data.

(5) No person shall re-activate a flight recorder system under paragraph (4) before the examination of such system and approval has been granted to re-activate the 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 the 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 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 paragraph (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 12 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 in paragraph (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.

**30.** (1) No operator shall operate the following unless it is equipped with a cockpit voice recorder system installed for the recording of the aural environment on the cockpit during flight time:

Cockpit voice recorder system requirements.

- (a) an aeroplane with a maximum certified take-off mass of over 5 700 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 3 180 kilogrammes, for which a certificate of airworthiness was first issued after 31st December, 1986.

(2) No air operator shall operate the following aircraft unless it is equipped with a cockpit voice recorder system installed for the recording of the aural environment on the cockpit during flight time:

- (a) a multi-engine turbine-powered aeroplane with a maximum certified take-off mass of 5 700 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 5 700 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 5 700 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.

**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 30 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 5 700 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 2 hours of operation.

Recording of data link communication.

**32.** (1) An operator shall ensure that an aircraft

- (a) in which he conducts operations and for which an individual certificate of airworthiness is first issued after 1st January, 2005;
- (b) that 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, and 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 referred to in paragraphs (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 paragraphs (1) and (2), is installed on the 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.

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

Require-  
ments for  
flight data  
recorder  
system.

- (a) the aeroplane flight path, speed, altitude, engine power
  - (i) configuration and operations specified in the Instruments and Equipment Standards for a Type I flight data recorder;
  - (ii) configuration and operations specified in the Instruments and Equipment Standards for a Type IA flight data recorder;
  - (iii) configuration of lift and drag devices specified in the Instruments and Equipment Standards for a Types II and IIA flight data recorder;
- (b) the helicopter flight path, speed, altitude, engine power
  - (i) and operations specified in the Instruments and Equipment Standards for a Type IV flight data recorder;
  - (ii) configuration and operations specified in the Instruments and Equipment Standards for a Type IVA flight data recorder; or

- 
- (iii) specified in the Instruments and Equipment Standards 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 27 000 kilogrammes that the aeroplane is equipped with a Type I flight data recorder;
  - (b) is first issued after 1st January, 2005 and with a maximum certified take-off mass of over 5 700 kilogrammes that the 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 5 700 kilogrammes up to and including 27 000 kilogrammes that the 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 5 700 kilogrammes and for which a certificate of airworthiness was first issued
- (a) after 31st December, 1986 but before 1st January, 1989, that the 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 altitude, roll altitude, radio transmission keying and power on each engine;
  - (b) before 1st January, 1987, that the aeroplane is equipped with a flight data recorder to record time, altitude, airspeed, normal acceleration and heading.
- (4) Notwithstanding paragraph (3), an air operator shall ensure when conducting operations in a turbine-engined aeroplane
- (a) with a maximum certified take-off mass of over 27 000 kilogrammes;

- (b) that is of a type of which the prototype was certified by the State of Design after 30th September, 1969;
  - (c) and the individual certificate of airworthiness was issued after 31st December, 1986 but before 1st January, 1989, that the aeroplane is 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
- (a) with a maximum certified take-off mass of over 27 000 kilogrammes;
  - (b) that is of a type for which its prototype was certified by the State of Design of the aeroplane after 30th September, 1969;
  - (c) for which an individual certificate of airworthiness was issued before 1st January, 1987

that 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

- (i) the altitude of the aeroplane in achieving the flight path of such aeroplane; and
  - (ii) the basic forces acting upon the aeroplane resulting in the achieved flight path and the origin of the 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 5 700 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 7 000 kilogrammes that 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 2 700 kilogrammes up to and including 7 000 kilogrammes that 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 3 180 kilogrammes that such helicopter is equipped with a Type IVA flight data recorder.

(8) No operator shall 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.

**34.** (1) An aeroplane with a maximum certified take-off mass of over 5 700 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 5 700 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 2 700 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.

**35.** An operator shall ensure that a flight data recorder system installed in the aircraft in which he conducts operations is capable of retaining recorded information for the duration specified for such flight recorder data recorder set out in the Instruments and Equipment Standards.

Duration of recordings of a flight data recorder system.

## PART IX

### *Emergency, Rescue and Survival Equipment*

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

Applicability of Part IX.

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

Emergency equipment.

- (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.

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

- (a) each passenger emergency exit, the exit's 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 the aeroplane was type certified.

(4) No air operator shall conduct operations in a land plane unless the emergency exits of such land plane, except emergency exits over the wings which are more than six feet from the ground, have an approved means to assist the crew and passengers in descending to the ground.

(5) In paragraph (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.



**39.** (1) No operator shall conduct operations in an aircraft over water or across land areas which have been designated by the Civil Aviation Authority of the State being overflowed 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 overflowed and which include

Visual signaling devices and survival kits.

- (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) No operator shall conduct operations in an aircraft across land areas which have been designated by the Civil Aviation Authority of the State being overflowed 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) is appropriately equipped for the route to be flown.

**40.** (1) No air operator shall conduct operations on an aircraft unless the aircraft is equipped with portable fire extinguishers of a type acceptable to the Director and accessible for use in the crew, passenger and cargo compartments.

Portable fire extinguishers.

- (2) A portable fire extinguisher referred to in paragraph (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 in paragraph (1) is provided and available on an aircraft he operates or intends to operate and is positioned in the following manner:

- (a) in each Class E cargo compartment in an aircraft which is easily accessible to crew members during flight;
- (b) in each upper and lower lobe galley;
- (c) on the flight deck for use by the flight crew; and
- (d) in the passenger compartment of an aeroplane having a passenger seating capacity of 30 or less.

(4) An air operator shall ensure, when conducting operations on an aeroplane having a passenger seating capacity of more than 30, that such aeroplane has a minimum number of portable fire extinguishers conveniently located and uniformly distributed throughout the compartment as specified in the Instruments and Equipment Standards.

Built-in fire extinguisher in lavatory.

**41.** (1) No air operator shall conduct passenger-carrying operations on an aircraft unless each lavatory in the aircraft is equipped with a built-in fire extinguisher of a type approved by the Director for each disposal receptacle for towels and paper within the lavatory.

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

Lavatory smoke detector.

**42.** No air operator shall conduct passenger-carrying operations on an aircraft unless each lavatory on the aircraft 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.

**43.** No air operator shall conduct operations on an aeroplane with a maximum certified take-off mass in excess of 5 700 kilogrammes unless the aircraft is equipped with a crash axe appropriate to effective use in that type of aeroplane, that is stored in a place not visible to passengers on the aircraft.

Crash axe.

**44.** (1) Where an operator installs break-in markings on the fuselage of an aircraft 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.

Marking of break-in points.

(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 a space of no more than two metres between adjacent markings.

**45.** (1) No air operator shall conduct passenger-carrying operations on an aircraft unless the aircraft is equipped with accessible first-aid kits and, where an aeroplane is authorised to carry more than 250 passengers, an approved emergency medical kit for treatment of injuries or medical emergencies that might occur during flight time or in minor accidents.

First-aid and emergency medical kit.

(2) The number of first-aid kits required on an aircraft referred to in paragraph (1) shall be in proportion to the number of passenger seats on an aircraft as outlined in the Instruments and Equipment Standards.

**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 10 000 feet in the cabin area, the aircraft shall have adequate oxygen supply and dispensing apparatus stored.

Oxygen storage and dispensing apparatus.

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

- 
- (3) No air operator shall conduct passenger-carrying operations on
- (a) an aircraft at altitudes above 10 000 feet unless the 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 25 000 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 referred to in paragraph (3)(b)(ii) shall exceed the number of seats on such aircraft by at least 10 per cent 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 the routes to be flown.

(6) No operator shall 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 10 000 feet, unless sufficient breathing oxygen is stored on the aircraft to supply

- (a) all crew members and 10 per cent of the passengers for any period in excess of 30 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 the aircraft for any period, where the atmospheric pressure in the compartments occupied by crew members and passengers will be greater than 13 000 feet.

(7) An air operator shall ensure that where a flight is to be operated in a pressurized aeroplane the 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 aeroplane is on a flight referred to in paragraph (7) and where the flight altitude is more than 25 000 feet, and the pressurized aeroplane cannot descend safely within 4 minutes to a flight altitude of 13 000 feet, there shall be on board a supply of breathing oxygen for at least 10 per cent of the occupants of the passenger compartment.

**47.** (1) No air operator shall conduct passenger-carrying operations on an aeroplane with a maximum certified take-off mass exceeding 5 700 kilogrammes or having a maximum approved seating configuration of more than 19 seats unless the aeroplane has sufficient

Protective  
breathing  
equipment.

- (a) 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 15 minutes; and

- (b) 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 15 minutes.
- (2) An air operator, when providing oxygen for the protective breathing equipment referred to in paragraph (1) on an aircraft 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 in paragraph (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.

- 48.** (1) No air operator shall conduct passenger-carrying operations on a pressurized aeroplane at altitudes above 25 000 feet, where a cabin crew member is required to be carried on board, unless the 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 in 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 8 000 feet;

(b) an average flow rate of at least 3 litres per minute per person at standard temperature pressure; and

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

**49.** (1) No air operator shall conduct passenger-carrying operations on an aeroplane unless the aeroplane has a portable battery-powered megaphone or a megaphone approved by the Director readily accessible to all crew members assigned to direct emergency evacuation. Requirement for battery powered megaphones.

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

(a) on an aeroplane with a seating capacity of more than 60 and less than 100 passengers, one megaphone shall be located at the most rearward location in the passenger cabin where it would be readily accessible to a normal flight attendant seat; and

(b) on an aeroplane with a seating capacity of more than 99 passengers, 2 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 may grant a deviation from the requirements referred to in paragraph (2) where the Director finds that a different location for the megaphone would be more effective in aiding the evacuation of persons on board the aeroplane during an emergency situation.

Individual flotation devices for each person on board an aircraft.

**50.** (1) No air operator shall conduct operations on an aircraft unless such aircraft is equipped with one life jacket or equivalent individual flotation device for each person on board the aircraft, when

- (a) operated on flights over water at a distance of more than 50 nautical miles from land suitable for making an emergency landing, or beyond gliding distance from the shore; or
- (b) taking off or landing at an airport where, in the opinion of the Director, 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 flotation devices under this regulation are stowed on an aircraft in which he conducts or intends to conduct operations in such a manner as to ensure that they are easily accessible to a person to whom by seating assignment the devices are assigned, from his seat or berth.

(3) An air operator shall ensure that, where an aircraft is used in extended over-water operations, there is fitted on each individual flotation device on board the aircraft a survivor locator light that is acceptable to the Director.

(4) Notwithstanding paragraph (3), the Director may approve operations of an aircraft over extended water operations without individual flotation devices, where the air operator proves to the satisfaction of the Director 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) No operator shall operate a seaplane unless the seaplane is equipped with one life jacket or equivalent individual flotation device for each person on board the seaplane, and the life jacket or individual flotation device is stowed in such a manner that it is easily accessible from the seat or berth of each person on board the seaplane.

**51.** (1) No air operator shall conduct commercial air transport extended over water operations unless the aircraft in which he conducts or intends to conduct operations is equipped with a sufficient number of life rafts with rated capacity and buoyancy to accommodate the total number of persons on board the aircraft. Life raft requirement.

(2) Where excess rafts specified in paragraph (1), with adequate capacity are not available on board the aircraft, the buoyancy and seating capacity of the 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 paragraph (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.

**52.** (1) No operator shall conduct operations on an aircraft unless the aircraft is equipped with at least one automatically activated Emergency Locator Transmitter on each flight. Emergency Locator Transmitter.

(2) No air operator shall conduct operations on an aeroplane on extended over water flights unless the aeroplane is equipped with at least two Emergency Locator Transmitters, one of which shall be a survival type that transmits simultaneously on 121.5 and 243.0 megahertz and meets the technical standards specified by the Director.

(3) No operator shall conduct operations in a Class 1 or Class 2 helicopter on flights over water at a distance from land corresponding to more than 10 minutes at normal cruise speed or in a Class 3 helicopter operating on flights over water beyond autorotational or safe landing from land, unless it is equipped with at least one automatic Emergency Locator Transmitter and one Emergency Locator Transmitter in a raft.

(4) An operator shall ensure that an aircraft, when operated across land areas which have been designated as areas in which search and rescue would be especially difficult, is equipped with at least one automatic Emergency Locator Transmitter.

(5) No operator shall conduct operations on an aircraft unless all batteries used in an Emergency Locator Transmitter are replaced or recharged where applicable when

- (a) the Emergency Locator Transmitter has been in use for more than one cumulative hour; or
- (b) 50 per cent of the useful life of the batteries has expired or where the batteries are rechargeable, 50 per cent of the useful life of charge has expired.

(6) 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.

(7) An operator shall take into consideration, when making a determination in paragraph (6), that useful battery 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.

(8) An operator shall ensure that Emergency Locator Transmitter equipment carried on board an aircraft complies with the relevant provisions of Annex 10, Volume II.

(9) In this regulation,

"Emergency Locator Transmitter" is a generic term used to describe equipment which broadcasts distinctive signals on designated frequencies;

"Survival Emergency Locator Transmitter" means an Emergency Locator Transmitter which is removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by survivors;

"Automatic Emergency Locator Transmitter" means an Emergency Locator Transmitter, attached to the aircraft, which is automatically deployed and activated by impact, and in some cases, also by hydrostatic sensors;

"long-range over-water flight" means a flight in which an aeroplane may be over water more than a distance corresponding to 120 minutes at cruising speed or 400 nautical miles, whichever is the lesser, away from land suitable for making an emergency landing operating under en route limitations of the *Civil Aviation (Aircraft Operations) Regulations, 2007*.<sup>2007/174.</sup>

**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 ditching when flying over water

Flotation device for helicopter ditching.

- (a) at a distance from land corresponding to more than 10 minutes at normal cruise speed, in the case of Performance Class 1 and 2 helicopters; or
- (b) beyond autorotational or safe forced landing distance from land, in the case of Performance Class 3 helicopters.

PART X

*Miscellaneous Systems and Equipment*

Applicability of Part X. **54.** This Part prescribes the minimum requirements for miscellaneous systems and equipment on aircraft in Barbados.

Seats, safety belts and shoulder harnesses. **55.** (1) No air operator shall conduct passenger-carrying operations on an aircraft unless the 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 2 years;
- (b) a seat belt for each seat and a restraining belt for each berth;
- (c) an approved safety belt for use by 2 occupants during en route flight only for a berth designed to be occupied by 2 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 deceleration or sudden incapacitation of the pilot; and
- (e) a 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 paragraph (1)(e) shall be located near floor level and at different emergency exits to facilitate evacuation as required by the Director.

Passenger and pilot compartment door, safety and security requirements. **56.** (1) No air operator shall conduct passenger-carrying operations in an aeroplane unless the aeroplane has a

- (a) flight crew compartment door between the passenger and pilot compartments with a locking mechanism that prevents passengers from opening the door 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 45 500 kilogrammes or with a seating capacity greater than 60, the 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 unauthorised persons.

(3) An air operator conducting passenger-carrying operations referred to in paragraph (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 in paragraph (2), shall be capable of being locked and unlocked from the station of each pilot.

**57.** (1) No air operator shall conduct passenger-carrying operations on an aircraft unless such aircraft is equipped with passenger information signs using either letters or symbol displays to ensure that the following information and instructions are conveyed to passengers:

Passenger information signs.

- (a) when seat belts are to be fastened;

- (b) when and how oxygen is to be used where the carriage of oxygen is required to be carried on the aircraft;
- (c) restriction on smoking;
- (d) location in the cabin of all other items of emergency equipment such as oxygen bottles, fire, axe and first-aid kits;
- (e) location and method of opening emergency exits.

(2) An air operator shall ensure that the passenger information sign referred to in paragraph (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.

**58.** No air operator shall conduct passenger-carrying operations on an aeroplane with a maximum approved passenger seating configuration of more than 19 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, that 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 10 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.

**59.** (1) An air operator shall ensure that materials used by the crew or passengers in the cabin interior and in each compartment of the aeroplane shall be materials that meet the airworthiness requirements of the aeroplane type. Material for cabin interiors.

(2) Where the materials referred to in paragraph (1) do not meet the current airworthiness requirements for the aeroplane type in the transport category, those materials shall be replaced by materials that meet the airworthiness requirements of such aeroplane type during the first major overhaul of the aeroplane or refurbishment of a cabin interior.

(3) 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.

**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 200 cubic feet in volume, he shall ensure that such aeroplane has ceiling and sidewall liner panels that are constructed of Material for cargo and baggage compartments.

- (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) aluminium, 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.

**61.** (1) No air operator shall conduct passenger-carrying operations on an aeroplane unless the 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 Director; 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 paragraph (1), they shall be on separate engines.

Protective circuit fuses.

**62.** No air operator shall conduct passenger-carrying operations on an aircraft on which protective fuses are installed, unless the aircraft has spare fuses available for use in flight equal to at least 10 per cent of the number of fuses for each rating or 3 of each rating, whichever is the greater.

Icing protection equipment.

**63.** (1) No operator shall operate an aircraft in icing conditions unless the 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) No air operator shall operate an aircraft in expected or actual icing conditions at night unless the aircraft is equipped with a means to illuminate or detect the formation of ice.

(3) Where illumination is used in paragraph (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.

**64.** No air operator shall operate an aircraft equipped with a flight instrument pitot heating system, unless the aircraft is equipped with an operable pitot heat indication system that complies with the following requirements:

Pitot heat indication systems.

(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 element is inoperative.

**65.** No air operator shall operate an aircraft unless that aircraft has 2 independent static pressure systems

Static pressure system.

(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.** No air operator shall operate an aircraft unless the aircraft is equipped with

- (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 through a clear portion of the windshield during precipitation.

Chart holder.      **67.** No air operator shall conduct operations on an aeroplane unless the aeroplane has a chart holder which is installed in an easily readable position and can be illuminated for night operations.

Cosmic radiation measuring equipment.      **68.** (1) No air operator shall conduct operations in an aeroplane above 49 000 feet unless the 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.

(2) The display of the instrument referred to in paragraph (1) shall be readily visible to members of the flight crew.

Maritime sound signaling device.      **69.** No operator shall conduct operations in a seaplane unless the 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, 1996 (U.K. S.I. 1996 No. 75)*.

Anchors.      **70.** No operator shall 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 manoeuvring the aircraft on water and appropriate to its size, weight and handling characteristics.

**71.** (1) No air operator shall conduct operations in a turbine-engined aeroplane of a maximum certified take-off mass in excess of 15 000 kilogrammes and having a maximum approved passenger seating configuration of more than 30 passengers unless the aeroplane is equipped with an airborne collision avoidance system.

Airborne collision avoidance system.

(2) No air operator shall conduct operations in a turbine-engined aeroplane with a maximum certified take-off mass in excess of 15 000 kilogrammes or having a maximum approved passenger seating configuration of more than 19 passengers unless the turbine-engined aeroplane is equipped with an airborne collision avoidance system.

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

**72.** (1) No operator shall operate an aircraft unless the aircraft is equipped with a pressure altitude reporting transponder.

Pressure altitude reporting transponder.

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

**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 the Instruments and Equipment Standards.

Implementing Standards.

**74.** (1) The Director may make standards or amend standards and incorporate them by reference into these Regulations.

Director may make standards or amend standards.

(2) The Director shall not make a standard or an amendment to a standard unless the Director has undertaken consultations with interested parties concerning the standard or the amendment.

(3) No standard or amendment may come into effect less than 30 days after it is made.

(4) A standard or an amendment to a standard may be made and brought into effect by the Director without regard to paragraph (2) or (3) where the standard or amendment is urgently required to ensure aviation safety or the safety of the public.