CIVIL AVIATION SAFETY AUTHORITY OF PAPUA NEW GUINEA

PNG
Civil Aviation Rule
Part 91

General Operating and Flight Rules

Applicable 04 November 2024

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DESCRIPTION

Part 91 is an important rule, as it forms the basis of general operating flight rules for the Papua New Guinea aviation environment. These requirements ensure that the safe operation of aircraft is possible with minimum endangerment to persons and property.

Part 91 applies to all operators of aircraft as well as passengers by establishing—

- general rules applicable to operators and passengers
- operating and general flight rules
- rules for VFR and IFR operations
- instruments and equipment requirements for aircraft
- operator maintenance requirements
- special flight operating requirements such as aerobatics, air displays, towing gliders and aircraft used in parachuting
- operating requirements for foreign registered aircraft in Papua New Guinea
- limitations on aircraft

Part 91 aligns with the various ICAO Annexes:

- Amendment 46 of Annex 2
- Amendment 44 of Annex 6 Part I
- Amendment 106 of Annex 8
- Amendment 12 of Annex 16 Volume I
- Amendment 9 of Annex 16 Volume II, Annex 16 Volume III and Volume IV and
- Amendment 16 of Annex 17.

BULLETIN

This Part first came into force on 1 January 2004 and now incorporates the following amendments:

Amendment	Effective Date
Amendment 1	01 January 2004
Amendment 2	01 April 2015
Amendment 3	01 May 2017
Amendment 4	01 February 2018
Amendment 5	13 November 2018
Amendment 6	01 April 2019
Amendment 7	11 December 2020
Amendment 8	02 November 2021
Amendment 9	03 November 2022
Amendment 10	04 November 2024

Summary of amendments:

Amendment 10:
(Docket24/14/CAR91/17)

- Rule 91.259 – inserted text "*Appendix D.5 and the air to air visual signals specified in Appendix D.6"*
- New Rule 91.267 transposing the requirements of Annex 12, Standard 5.7.
- New subparts under CAR 91.713 *(b)* - *(f).* transposing the requirements of Annex 12, Standard 5.6.
- Appendix A.9 (a) (1) – inserted *C139, 169, C170*
- Appendix D.5 (a) 1) = deleted the text "in accordance with the specification" and replaced with "*referred to in Appendix D.6(a)"*
- Appendix D.6 (a) – Deleted reference "Appendix D" and replaced with "*Papua New Guinea AIP"*

Schedule of Rules

Subpart A – General

91.1 Applicability

(a) This Part prescribes general operating and flight rules for the operation of civil aircraft.

(b) Subject to paragraphs (c)(1) and (d), the following rules shall also apply to members of the Papua New Guinea Defence Force and any aircraft operated by the Papua New Guinea Defence Force where such aircraft operate within the territorial limits of Papua New Guinea:

(1) 91.129:

(2) 91.223 to 91.225 inclusive, when operating in the vicinity of civil aircraft:

(3) 91.229, when operating in the vicinity of civil aircraft:

(4) 91.233;

(5) 91.241;

(6) 91.245 to 91.249 inclusive:

(7) 91.253;

(8) 91.309;

(9) 91.313;

(10) 91.407 to 91.411 inclusive:

(11) 91.419;

(12) 91.435;

(13) 91.541.

(c) This Part shall not apply to—

(1) any member of the Papua New Guinea Defence Force or any aircraft operated by the Papua New Guinea Defence Force acting in connection with—

(i) any war or other like emergency; or

(ii) the defence of Papua New Guinea and other Papua New Guinea interests; or

(iii) aid to the civil power in time of emergency; or

(iv) the provision of any public service; or

(v) any operation performed within a restricted, danger, or military prohibited area designated under Part 71 for military purposes; and

(2) persons operating aircraft to which Part 101 or Part 102 applies.

(d) The following rules shall not apply to any member of the Papua New Guinea Defence Force or any aircraft operated by the Papua New Guinea Defence Force performing training for an operation specified in paragraph (c)(1) if that training cannot be performed in accordance with rule:

(1) 91.225(b); or

(2) 91.233; or

(3) 91.313, if training outside controlled airspace; or

(4) 91.407, if training outside controlled airspace; or

(5) 91.435, if training outside controlled airspace.

91.3 Definitions and abbreviations

In this Part-

Appropriate, or Applicable, in respect of a licence or rating, means applicable to the same category or type of aircraft or aeroplane class:

Category Rating means, in respect of a commercial pilot licence, the issue of a category rating on an aircraft category that authorises the holder of a Commercial Pilot Licence to exercise privileges to conduct air operations in an aeroplane or a helicopter, as appropriate for the qualifications and experience of the holder. Category ratings shall not be endorsed on a licence when the category is included in the title of the licence itself.

Conflict Zone means an airspace over areas where armed conflict is occurring or is likely to occur between militarised parties and is also taken to include airspace over areas where such parties are in a heightened state of military alert or tension, which might endanger civil aircraft.

Reasonable Means means to denote the use, at the point of departure or while the aircraft is inflight, of information published by the aeronautical information services or readily obtainable from other sources.

91.5 Compliance with crew instructions and commands

(a) A passenger shall not smoke in any part of the aircraft when instructed not to by a crew member, or by passenger information signs, or byplacards.

(b) A passenger shall, when instructed by a crew member, or by passenger information signs, or by placards—

(1) occupy a seat or berth; and

(2) fasten and keep fastened about themselves any installed safety belt or safety harness.

(c) A passenger shall comply with any commands given to them by the pilot-in-command pursuant to 91.203.

91.7 Portable electronic devices

(a) No person may operate, nor may any operator or pilot-in-command of an aircraft allow the operation of, any cell phone or other portable electronic device that is designed to transmit electromagnetic energy, on any aircraft while that aircraft is operating under IFR.

(b) Except as provided in paragraph (c), no person may operate, nor may any operator or pilot-in- command of an aircraft allow the operation of, any portable electronic device on any aircraft flying under IFR during an instrument approach or departure procedure or during any other critical phase of flight.

(c) Paragraph(b) does not apply to-

(1) hearing aids;

(2) heart pacemakers;

(3) portable voice recorders;

(4) electric shavers;

(5) electronic watches; or

(6) any other portable electronic device if the operator of the aircraft has determined that the

portable electronic device to be operated will not cause interference with any aircraft system or equipment in the aircraft on which it is operated.

(d) In the case of-

(1) an aircraft being operated on air operations, the determination required by paragraph (c)(6) shall be made by that operator of the aircraft on which the particular device is to be used; and

(2) any other aircraft, the determination required by paragraph (c) (6) may be made by the pilot- in-command or the operator of the aircraft on which the particular device is to be used.

91.9 Carriage and discharge of firearms

(a) Except as provided in paragraphs (c) and (e) no person may-

(1) carry a firearm in an aircraft; or

(2) cause a firearm to be carried in an aircraft; or

(3) permit a firearm to be carried in an aircraft.

(b) Except as provided in paragraph (d) no person may discharge a firearm while on board an aircraft.

(c) A firearm may be carried in an aircraft if-

(1) the firearm-

(i) subject to paragraph (e), is stowed in a place that is inaccessible to any person during flight;

(ii) is disabled; or

(2) the aircraft is being used solely for the carriage of the person or group of persons associated with the firearm; and-

(i) the operator permits the carriage of the firearms; and

(ii) the firearm is disabled; or

(3) the aircraft is carrying livestock and the operator considers it may be necessary to immobilise livestock for the safety of the aircraft or its occupants; or

(4) the aircraft is being used for the purpose of shooting or immobilising animals on the ground if-

(i) the firearm is not loaded until the aircraft is in the area within which the firearm is intended to be discharged; and

(ii) the aircraft carries only those persons performing an essential function associated with the operation of the aircraft or the shooting or immobilisation of animals on the ground.

(d) A firearm may be discharged—

(1) in an aircraft carrying livestock if a crew member considers it necessary to immobilise livestock for the safety of the aircraft or its occupants; or

(2) from an aircraft for the purpose of shooting or immobilising animals on the ground if—

(i) the discharge of the firearm does not pose hazard or cause injury or damage to persons or property on the ground; and

(ii) the firearm is not discharge over any congested area of a city town or settlement, or over any open air assembly ofpersons.

(e) A firearm may be carried in an aircraft by a person employed by the police, another law enforcement agency, or military service if—

(1) the aircraft is being operated on an air transport operation, carrying fare paying passengers and the person carrying the firearm-

(i) is lawfully entitled to carry a firearm in the course of their duties;and

(ii) is carrying the firearm in the course of their duties; and

(iii) has been approved to carry the firearm on the aircraft by the Director under paragraph (f); and

(iv) complies with any conditions or restrictions imposed by the Director under paragraph (f); and

(v) ensures the firearm is disabled against unlawful use; or

(2) he aircraft is being operated solely for the carriage of such police officers, law enforcement officers, military personnel, and persons under their care of such officers or personnel, and the firearm is unloaded; or

(3) the aircraft is being operated for police, law enforcement, or military operation and only persons performing an essential function associated with the police, law enforcement, or military operation, or the operation of the aircraft, are carried in the aircraft.

(f) Upon application from the Commissioner of Police, the head of any other law enforcement agency, or the Chief of the Defence Force, the Director-

(1) may approve a police officer, a law enforcement officer, or a military service person to carry a firearm in an aircraft that is being operated on an air transport or commercial transport operation, carrying fare paying passengers, if the Commissioner of Police and the operator concerned consent to the carriage of a firearm in the aircraft and

(2) may impose such conditions or restrictions as the Director considers appropriate; and

(3) must advise the applicant, the operator, and the Commissioner of Police of the decision.

(g) Unless otherwise determined by the Director, an application to the Director under paragraph (f) must be made at least one working day before the air transport or commercial air transport operation is intended to commence.

(h) Before the commencement of an air operation where a firearm will be carried in an aircraft by a person approved under paragraph (f) (1), the operator must inform the pilot-in-command of the number of persons carrying firearms and their position in the aircraft.

91.11 Prohibition against interference with crew members, aircraft and aviation facilities

No person shall—

(1) interfere with a crew member in the performance of the crew member's duties aboard an aircraft; or

(2) tamper or interfere with any aircraft or its equipment, or with fixed or mobile equipment used for the operation or navigation of any aircraft.

91.13 Aircraft noise and vibration

A person shall be barred by section 320(1) of the Act from bringing an action for nuisance in respect of the noise or vibration caused by an aircraft or aircraft engine on an aerodrome if—

(1) the aircraft is taking off or landing; or

(2) the aircraft is manoeuvring on the ground or water; or

(3) any person is operating any engine in the aircraft for the purpose of ensuring—

(i) satisfactory engine performance; or

(ii) that the instruments, accessories, or other components are in a satisfactory condition

91.15 Fuelling of aircraft

A person refuelling of aircraft or defueling an aircraft must ensure that–

(1) the aircraft is not refuelled or defueled with a Class 3.1A flammable liquid when a person is embarking, on board, or disembarking the aircraft, or when one or more of the propulsion engines are running; or

(2) the aircraft is not refuelled or defueled with a Class 3.1C or a Class 3.1D flammable liquid when a person is embarking, on board, or disembarking the aircraft.

91.17 Alcohol, drugs and other psychoactive substances

(a) No person may act or attempt to act as a crew member of an aircraft or attempt to perform any other safety critical role-

(1) in a state of intoxication; and

(2) within 12 hours of consuming any alcoholicbeverage; and

(3) in a state of health in which the person's capacity to perform their duties would be impaired by reason of having consumed or used any alcohol, drugs and other psychoactive substances.

(b) here the Director has reasonable grounds to suspect a person of violating the requirements of paragraph (a), that person must submit to a test required by the Director for the presence of alcohol, drugs and other psychoactive substances.

(c) The test required by paragraph (b) must be conducted by a person authorised for the purpose by the Director within 4 hours of the person acting or attempting to act in their assigned role.

91.19 Electronic Cigarettes

(a) No person may use smokeless electronic cigarettes in an aircraft;

(b) A pilot-in-command of an aircraft must not allow the carriage of smokeless electronic cigarettes in checked baggage; the carriage of such devices is restricted to the passenger cabin only;

(c) A holder of an air operator certificate must establish a smokeless electronic cigarette policy that communicates to passengers the fire risks posed by smokeless electronic cigarettes and related devices when carried as checked baggage and ensure the policy is communicated to each passenger.

Subpart B — Operating Rules

91.101 Aircraft airworthiness

(a) Except as provided in paragraph (c), a person must not operate an aircraft unless—

(1) the aircraft

(i) has a current airworthiness certificate; and

(ii) is in an airworthy condition; and

(iii) the operational and emergency equipment necessary for the intended flight is serviceable; and

(iv) is maintained and released to service by an organisation approved under Part 145 or an equivalent system acceptable to the Director; or

(b) the aircraft is operated in accordance with a special flight permit issued in accordance with Subpart D of Part 21.A person operating an aircraft issued with an airworthiness certificate as required under paragraph (a) must comply with–

(1) any operating limitations issued with the airworthiness certificate; and

(2) the markings and placards that are required by the Civil Aviation Rules to be displayed in the aircraft.

(c) A person may operate an aircraft without a current airworthiness certificate for the purpose of demonstrating the eligibility of the aircraft for the issue, renewal, or reinstatement of an airworthiness certificate if—

(1) a type acceptance certificate for the aircraft type is in force in accordance with Part 21 Subpart B; and

(2) the aircraft complies with the requirements prescribed in 21.41, 21.43 or 21.44 as applicable; and

(3) a person meeting any of the requirements in rule 43.101(a)(1) to (5) certifies that the aircraft is fit for flight; and

(4) the pilot-in-command is the holder of an appropriate, current pilot licence and type rating issued in accordance with Part 61 for the aircraft; and

(5) no other person is carried unless that person performs an essential function in connection with the operation.

91.103 Restricted category airworthiness certificate – operating limitations

No person shall operate an aircraft issued with a restricted category airworthiness certificate under Part 21, Subpart D for flight instruction other than—

(1) conversion instruction for a type rating; or

(2) flight instruction for the issue of an agricultural rating; or

(3) flight instruction for the specific operational purpose for which the aircraft is certificated.

91.105 Special category airworthiness certificates – operating limitations

(a) Except as provided in paragraph (b), no person shall operate an aircraft that has a special category airworthiness certificate for the carriage of persons, or goods, for hire or reward.

(b) Paragraph (a) does not apply to a person operating an aircraft for the carriage of persons for hire and reward when the person being carried is—

(1) the holder of a flight instructor rating issued under Part 61; and

(2) giving conversion instruction to the operator.

(c) Except in the case of take-off and landing, no person shall operate an aircraft that has a special category airworthiness certificate over a congested area of a city, town, or settlement, unless the aircraft has been authorised to do so by the Director in writing.

(d) A person operating an aircraft that has a special category airworthiness certificate must advise each person carried in the aircraft of the category of airworthiness certificate held and the significance of that category.

91.107 Aircraft registration

No person shall operate an aircraft unless it is registered and identified in accordance with the requirements of—

(1) Part 47; or

(2) the appropriate aeronautical authorities of a contracting State of ICAO; or

(3) the appropriate authority of another State that is party to an agreement with the Government of Papua New Guinea or the Civil Aviation Authority of Papua New Guinea which provides for the acceptance of each other's registrations.

91.109 Aircraft flight manual

(a) A person must not operate an aircraft unless it is operated in accordance with the aircraft flight manual approved by the Director.

(b) The aircraft flight manual in paragraph (a), must:

(1) contain at least, the aircraft limitations, information and procedures; and

(2) clearly identify, the specific aircraft or series of aircraft to which it is related; and

(3) be updated by implementing changes made mandatory by the Director or the State of Registry.

(c) The Director may approve the aircraft flight manual if the Director is satisfied that it meets the contents of paragraph (b).

91.110 Documents to be carried

A person must not operate an aircraft unless the following documents are carried in the aircraft—

(1) except if 91.101(c) applies, the current airworthiness certificate or certified copy of the current airworthiness certificate; and

(2) the aircraft flight manual or an equivalent document acceptable tothe Director.

(3) for Papua New Guinea registered aircraft:

(i) the technical log required under 91.619, unless for aircraft operating under an air operator certificate from a fixed base, an alternative means acceptable to the Director is used to inform the pilot of the maintenance status of the aircraft:

(ii) a completed form CA 2173 Weight and Balance Data or equivalent:

(iii) a completed from CA 2129 Aircraft Radio Station Equipment Approval Levels:

(iv) the flight crew member licence or certified copy of the crew member licence

(4) for Papua New Guinea registered aircraft operating outside Papua NewGuinea:

(i) the certificate of registration for the aircraft:

(ii) the Radio Station Licence:

(iii) for aircraft operated under an air operator certificate, a copy of the air operator certificate and a copy of the operations specifications certified as true copies by a senior person named in the operations specifications:

(iv) written evidence or the type acceptance certificate to demonstrate that the aircraft complies with the requirements of rule 91.803 regarding noise level compliance and rule 91.807 regarding engine emission compliance.

(5) for foreign aircraft operating to and from Papua New Guinea.

(i) the current certificate of registration and certificate of airworthiness for the aircraft.

(ii) written evidence that the aircraft complies with the applicable requirements of rule 91.803 regarding aircraft noise level compliance and rule 91.807 regarding engine emission compliance.

(6) for an aircraft operating under an Article 83 bis agreement entered into between the State of Registry and the State of the Operator;

(i) shall carry a certified true copy of the agreement summary, in either an electronic or hard copy format; and

(ii) when the summary is issued in a language other than English, an English translation shall be included; and

(iii) the agreement summary of an Article 83 bis agreement shall be accessible to a civil aviation safety inspector to determine which functions and duties are transferred under the agreement by the State of Registry to the State of the Operator, when conducting surveillance activities such as ramp checks; and

(iv) the agreement summary shall be transmitted to ICAO together with the Article 83 bis Agreement for registration with the ICAO Council by the State of Registry or the State of the Operator.

(7) Certification of certificates of registration and airworthiness certificate, and licences as true copies in accordance with rules 91.110(1), 91.110 (3)(iv) must be made by a Commission of Oaths or Notary Public except in the case of certificates for aircraft operated under the authority of an air operator certificate in which case a senior person nominated on the air operators' operations specifications may make the certification.

91.111 Daily flight records

(a) Except as provided in paragraph (c), an operator of an aircraft must keep accurate daily flight records that contain for each flight the following-

(1) the name of the operator:

(2) the name of the pilot-in-command:

(3) the names of other crew members:

(4) the registration markings of the aircraft:

(5) the date of the flight:

(6) the purpose of the flight:

(7) the time of commencement of the flight:

(8) the name of the departure aerodrome:

(b) An operator must retain each daily flight record for a period of 12 months after the date of the flight.

(c) A person required to keep daily flight records in accordance with 135.857 is not required to comply with paragraphs (a) and (b).

(d) The pilot-in-command must be responsible for the daily flight records containing the information listed under paragraph (a).

91.112 Requirement for licence and ratings

(a) **Pilot licence** – **Papua New Guinea registered aircraft flown in Papua New Guinea:** Except as provided in paragraph (k), each pilot of a Papua New Guinea registered aircraft flown within Papua New Guinea must hold an appropriate current pilot licence—

(1) issued under Part 61; or

(2) issued by the Director on the basis of holding a licence issued by a Contracting State accepted by the Director as meeting equivalent standards for licence issue; or

(3) validated by the Director.

(b) **Pilot licence – Papua New Guinea registered aircraft flown overseas**: Except as provided in paragraph (k) each pilot of a Papua New Guinea registered aircraft flown within a foreign country must hold an appropriate current pilot licence—

(1) issued under Part 61; or

(2) issued by the Director on the basis of holding a licence issued by a Contracting State

accepted by the Director as meeting equivalent standards for licenceissue; or

(3) issued or validated by the country in which the aircraft is operated; or

(4) validated for that aircraft by the Director.

(c) **Pilot licence – Foreign registered aircraft flown in Papua New Guinea:** Except as provided in paragraph (k) each pilot of a foreign registered aircraft flown within Papua New Guinea must hold an appropriate current pilot licence—

(1) issued under Part 61; or

(2) issued by the Director on the basis of holding a licence issued by a Contracting State accepted by the Director as meeting equivalent standards for licenceissue; or

(3) issued or validated by the country of aircraft registry; or

(4) validated by the Director.

(d) **Aircraft type rating:** Except as provided in paragraphs (e) and (k) each pilot of a Papua New Guinea registered aircraft, or of a foreign registered aircraft flown within Papua New Guinea, must hold a current type rating for that aircraft—

(1) issued under Part 61; or

(2) attached to a licence recognised under paragraphs (a), (b), or (c).

(e) **Aeroplane class rating:** Except if required to hold a specific aircraft type rating, each pilot of a Papua New Guinea registered aircraft, or of a foreign registered aircraft within Papua New Guinea must hold a current aeroplane classrating.

(f) **Agricultura**l **rating:** Except as provided in paragraph (k), each pilot-in-command of a Papua New Guinea registered aircraft, or of a foreign registered aircraft within Papua New Guinea, must hold an appropriate current agricultural rating issued under Part 61, when conducting agricultural aircraft operations.

(g) **Pilot chemical rating:** Each pilot-in-command of a Papua New Guinea registered aircraft, or of a foreign registered aircraft within Papua New Guinea, must hold a current pilot chemical rating issued under Part 61, when dispensing an agricultural chemical.

(h) **Instrument rating:** Each pilot of a Papua New Guinea registered aircraft, or of a foreign registered aircraft within Papua New Guinea, operating under IFR, must hold—

(1) an appropriate current instrument rating issued under Part 61; or

(2) an appropriate current instrument rating attached to a foreign licence recognised by the Director.

(i) **Flight instructor rating:** Each person exercising the privileges of a flight instructor must hold an appropriate current flight instructor rating issued under Part 61.

(j) **Authorised flight examiner.** Each person exercising the functions of an authorised flight examiner must hold an appropriate current authorisation issued under Part 183.

(k) **Pilots** of balloons, gliders, hang gliders, microlights, or powered gliders, are not required to hold pilot licences or ratings issued under Part 61 if the pilot is not flying the aircraft for hire or reward.

91.113 Aircraft flight crew members

(a) No person shall operate an aircraft without at least the number of flight crew members required by the aircraft flight manual.

(b) No person shall permit the operation of an aircraft unless—

(1) the flight crew hold the applicable and current flight crew licences, including ratings, and medical certification, and

(2) the pilots are competent to operate the aircraft under normal and emergency situations.

(c) No flight crew shall operate an aircraft unless they—

(1) are holders of the applicable and current flight crew licences, including ratings, and medical certification; and

(2) meet the currency requirements applicable to the operation.

(d) A flight crew member assessed as fit to exercise the privileges of a licence, subject to the use of suitable correcting lenses, shall have a spare set of the correcting lenses readily available when exercising those privileges.

91.115 Cabin Crew requirements

(a) Except as provided in paragraph (b), no person may operate an aircraft carrying more than 19 passengers unless at least the following number of cabin crew members are carried as crew members on the aircraft—

(1) for aircraft carrying more than 19 but less than 51 passengers, at least one cabin crew member:

(2) for aircraft carrying more ~~that~~ than 50 but less than 101 passengers, at least two cabin crew members:

(3) for aircraft carrying more than 100 passengers, at least two plus one additional cabin crew member for every unit, or part of a unit of 50 passengers in excess of 100 passengers carried.

(b) A cabin crew member is not required to be carried—

(1) in an aircraft that is carrying persons engaged in parachute operations; or

(2) in a balloon; or

(3) in a DHC6-300 series or DHC6-400 series aircraft type; or

(4) in an aircraft when the only passengers being carried in excess of 19 are children less than 4 years of age who are carried in accordance with 91.207 provided that the total number of passengers does not exceed 24.

(c) No person shall operate an aircraft unless any cabin crew member carried have demonstrated that they are—

(1) familiar with the necessary functions to be performed—

(i) in an emergency; and

(ii) in a situation requiring emergency evacuation; and

(2) capable of using the emergency equipment installed in that aircraft.

91.117 Designation of pilot-in-command

(a) No person shall operate an aircraft with more than one pilot unless, when the flight is planned, the operator designates a pilot-in-command for each period of the flight.

(b) For the purposes of this rule, operator means the person who causes or permits an aircraft to fly.

91.119 Aircraft taxiing

No person other than a flight crew member shall taxi an aircraft on the movement area of an aerodrome unless that person has been duly authorised in writing by the operator or by a maintenance organisation, and—

(1) is competent to taxi the aircraft; and

(2) competent to use the radiotelephone if radio communications are required; and

(3) is familiar with the aerodrome layout and any procedures applicable to ground movements at that aerodrome.

91.121 Stowage of passenger service equipment

No person shall taxi, take-off, or land an aircraft equipped with —

(1) any passenger food and beverage tray, or table; or

(2) any passenger serving cart; or

(3) any viewing screen that extends into the aisle— unless that equipment is secured in a stowed position.

91.123 Flight instruction and testing – general requirements

(a) No person shall give flight instruction, or conduct a flight test, in an aircraft, except a balloon, unless that aircraft is equipped with—

(1) fully functioning dual controls; or

(2) pitch, roll, yaw, and engine power controls which can be operated at either crew station; and

(3) those instruments essential to the manoeuvres planned to be demonstrated during the flight visible to both pilots without excessive parallax error.

(b) No person shall give, and no person permit, flight instruction or conduct a flight test in an aircraft unless the person giving instruction holds the appropriate aviation documents, including the appropriate instructor rating and where appropriate, holds an appropriate flight examiner authorisation.

91.125 Simulated instrument flight

No person shall operate an aircraft in simulated instrument flight unless—

(1) the aircraft has two pilot stations and one pilot station is occupied by a safety pilot, who is the holder of a current pilot licence other than a student pilot; and

(2) the safety pilot has—

(i) adequate vision forward and to each side of the aircraft; or

(ii) a competent observer to adequately supplement the vision of the safety pilot; and

(3) the aircraft is equipped with—

(i) fully functioning dual controls; or

(ii) pitch, roll, yaw, and engine power controls which can be operated at either flight crew station.

91.125 In-flight simulation of emergency situations

No person shall simulate emergency or abnormal situations in an aircraft when passengers or cargo are being carried.

91.127 Use of aerodromes

(a) No person may use any place as an aerodrome unless that place is suitable for the purpose of taking- off or landing of the aircraft concerned.

(b) No person may operate an aircraft at an aerodrome unless—

(1) that person complies with any limitations and operational conditions on the use of the aerodrome notified by the aerodrome operator; and

(2) the runway, heliport, or water channel, is equipped with operative lighting, appropriate to that type of aircraft, when landing or taking off at night, and that the lighting is activated; and

(3) that person manoeuvres the aircraft clear of any manoeuvring area or part of any manoeuvring area that has been notified or marked as unsafe for aircraft use by the aerodrome operator; and

(4) the runway, heliport, or water channel, is clear of all persons, animals, vehicles, vessels, or other obstructions during landing or take-off, other than persons, vehicles, or vessels essential to the operation; and

(c) No pilot shall operate an aircraft in an aerodrome traffic circuit unless the aircraft can be manoeuvred—

(1) clear of any obstructions; and

(2) without conflicting with the aerodrome traffic circuit or instrument approach procedure of any other aerodrome.

(d) In addition to fulfilling the requirements of paragraphs (a), (b), and (c), no person may operate a helicopter without ensuring that—

(1) any place used as a heliport or as a place to hover within a congested area of a city, town, or settlement has

(1) physical characteristics; and

(2) obstacle limitation surfaces, and

(3) visual aids-commensurate with the ambient light conditions and the characteristics of the helicopter being operated; and

(e) any place used as a heliport or as a place to hover that is outside a congested area of a city, town, or settlement; and

(1) is suitable for the helicopter to hover clear of obstructions; and

(2) for a heliport, has a surface area suitable for touch down and lift-off; and

(3) unless the helicopter is a Class 1 helicopter, any place used as a heliport or as a place to hover has such approach and take-off paths such that an autorotative landing can be conducted without causing a hazard to any persons or property on the surface.

91.129 Restricted danger and prohibited areas

(a) A pilot must not operate an aircraft within a restricted area designated under Part 71 unless that pilot-

(1) has the approval of the administering authority responsible for the restricted area to operate within that area; and

(2) complies with any conditions promulgated for operation within the restricted area; and

(3) complies with any conditions imposed by the administering authority for operation within the restricted area.

(b) A pilot must not operate an aircraft within a danger area designated under Part 71 unless that pilot has determined that the activity associated with the danger area will not affect the safety of the aircraft.

(c) A pilot must not operate an aircraft within a prohibited area designated under Part 71.

91.131 Low flying zones

(a) A pilot must not operate an aircraft within a low flying zone designated under Part 71—

(1) during the night; or

(2) during the day unless-

(i) the pilot-

(A) is receiving dual flight instruction; or

(B) holds an instructor rating issued under Part 61; or

(C) is briefed on the boundaries of low flying zone and the method of entry and exit from the low flying zone and is authorised for that flight by the holder of an instructor rating issued under Part 61; and

(ii) the pilot has been briefed verbally or in writing on the conditions of operation within the low flying zone specified by the using agency; and

(iii) the pilot complies with the conditions of operation for flight within the low flying zone; and

(iv) before entering the low flying zone, the pilot broadcasts on the appropriate VHF frequency details of the flight and the proposed duration in the low flying zone; and

(v) the pilot maintains a listening watch on the appropriate VHF frequency while in the low flying zone and broadcasts or reports on vacating the low flying zone.

(b) A pilot operating an aircraft within a low flying zone designated under Part 71 must ensure that the aircraft is operated without hazard to persons or property on the surface.

(c) A pilot operating an aircraft within a low flying zone designated under Part 71 must not

carry a passenger on the aircraft.

91.133 Volcanic hazard zones

(a) A pilot must not operate an aircraft within a volcanic hazard zone designated under Part 71-

(1) during the night; or

(2) in IMC; or

(3) in VMC during the day

unless the pilot determines that, after considering all the information required under paragraph (b), that the volcanic hazard will not affect the safety of the flight:

(b) Information that must be considered under paragraph (a)includes:

(1) relevant meteorological information contained in a SIGMET:

(2) NOTAM information;

(3) Other information provided for this purpose by an organisation that holds a meteorological service certificate issued by the Director under the Act and Part 174 or legitimate source of information from the Darwin VAAC.

91.135 Mandatory broadcast zones

(a) Except as provided in paragraphs (b) and (c), a pilot must not operate an aircraft within a mandatory broadcast zone designated under Part 71 unless that pilot—

(1) makes the following broadcasts on the radio frequency assigned to the mandatory broadcast zone:

(i) at entry – the aircraft call-sign, position and altitude, and the pilot's intentions for flight within the mandatory broadcast zone; and

(ii) when joining the aerodrome traffic circuit of an aerodrome within the mandatory broadcast zone – the aircraft call sign, position and altitude, and the pilot's intentions:

(iii) before entering a runway for take-off from an aerodrome within the mandatory broadcast zone – the aircraft call-sign, the runway to be used for take-off, and the pilot's intentions for flight within the mandatory broadcast zone after take-off; and

(iv) at any other time at least at the intervals prescribed for the mandatory broadcast zone – the aircraft call-sign, position and altitude, and the pilot's intentions for flight within the mandatory broadcast zone; and

(2) maintains a listening watch on the radio frequency assigned to the mandatory broadcast zone; and

(3) activates, if equipped, the aircraft's landing lights or anti-collision lights.

(b) Pilots of aircraft information may operate within a mandatory broadcast zone without complying with paragraphs (a)(1) and (a)(2), but only if-

(1) all the pilots of the aircraft in formation comply with paragraph (a)(3); and

(2) the pilot of the lead aircraft complies with paragraphs (a)(1) and (a)(2).

(c) A pilot-in-command of an aircraft without an operable radio may operate within a mandatory broadcast zone for the purpose of enabling repairs to be made to that radio, but only if-

(1) the pilot-in-command complies with paragraph (a)(3); and

(2) if practicable, the pilot-in-command arranges for another person to make the broadcasts required in paragraph (a)(1) on the pilot's behalf.

(d) The pilot-in-command of a parachute-drop aircraft intending to drop a parachutist within or into a mandatory broadcast zone must make a broadcast on the radio frequency assigned to the mandatory broadcast zone stating the aircraft call-sign, position, altitude, and the intentions of the person making the parachute descent before authorising that person to exit the aircraft to make the parachute descent.

91.137 Test Pilots

A person must not act as a test pilot for the purpose of testing a prototype aircraft or carrying out experimental flying in an aircraft, unless the person holds a valid pilot licence or validation permit issued in accordance with Part 61 and is approved in writing by the Director to act as a test pilot for the type of prototype testing or experimental flying that is being undertaken.

91.139 Hazardous flight conditions

(a) A pilot of an aircraft must report hazardous flight conditions encountered, other than those associated with meteorological conditions to the appropriate aeronautical station as soon as possible.

(b) The reports provided in paragraph (a), must give such details as may be pertinent to the safety of other aircraft.

91.141 Conflict Zones

A pilot must not operate an aircraft within a conflict zone designated under Part 71 unless-

(1) it has been ascertained by every reasonable means available that the airspace containing the intended route from aerodrome of departure to aerodrome of arrival, including the intended take-off, destination and en-route alternate aerodromes, can be safely used for the planned operation; and

(2) a risk assessment shall be conducted and appropriate risk mitigation measures taken to ensure a safe flight.

Subpart C — General Flight Rules

91.201 Safety of aircraft

A pilot-in-command of an aircraft must—

(1) before operating the aircraft, be satisfied that the aircraft is airworthy and in a conditions for safe flight after –

(i) the documents required under rule 91.111 have been inspected; and

(ii) the aircraft has been inspected; and

(2) during the flight, ensure the safe operation of the aircraft and the safety of its occupants; and

(3) on completion of the inspections required by paragraph (1), and on completion of the flight, record in the technical log or other equivalent document acceptable to the Director any aircraft defects that are identified by the crew during the inspections and during the flight.

91.203 Authority of the pilot-in-command

A pilot-in-command of an aircraft must give any commands necessary for the safety of the aircraft and of persons and property carried on the aircraft, including disembarking or refusing the carriage of—

(1) any person who appears to be under the influence of alcohol or any drug where, in the opinion of the pilot-in-command, their carriage is likely to endanger the aircraft or its occupants; and

(2) any person, or any part of the cargo, which, in the opinion of the pilot-in- command, is likely to endanger the aircraft or its occupants.

91.205 Crew members at duty stations

(a) A crew member on duty during take-off and landing in an aircraft, other than in a balloon, must—

(1) be at their crew member station; and

(2) have their safety belt fastened while at the crew member station.

(b) A crew member on duty during take-off and landing in an aircraft, other than in a balloon, must have their shoulder harness fastened while at their crew member station, unless—

(1) the seat at the crew member station is not equipped with a shoulder harness;

or

(2) the crew member would be unable to perform their duties with the shoulder harness fastened

(c) A flight crew member required to be on flight deck duty during en route must remain at their stations unless their absence is necessary to perform duties in connection with the operation of the aircraft or for physiological needs.

91.207 Occupation of seats and wearing of restraints

(a) A pilot-in-command of an aircraft must require each passenger to occupy a seat or berth and to fasten their safety belt, or restraining belt, or, if equipped, safety harness or safety belt with single diagonal shoulder strap—

(1) during each take-off and landing; and

(2) when the aircraft is flying at a height of less than 1000 feet above the surface; and

(3) during aerobatic flight; and

(4) at all times in an open cockpit aircraft; and

(5) at other times when the pilot-in-command considers it necessary for their safety.

(b) A pilot-in-command of an aircraft may permit a passenger to unfasten a safety harness or safety belt with single diagonal shoulder strap -

(1) during take-off and landing; and

(2) when the aircraft is flying at a height of less than 1000 feet above the surface-if the pilot-in-command is satisfied that such action is necessary for the passenger's performance of an essential function associated with the purpose of the flight.

(c) A pilot-in-command of an aircraft must require each passenger to place their seat in the take-off and landing configuration during take-off and landing.

(d) Paragraphs (a)(1), (2), and (5) do not apply to a child under 4 years of age if the child—

(1) is held by an adult who is occupying a seat or berth, and the child is secured by a safety belt attached to the adult's safety belt; or

(2) occupies a seat equipped with a child restraint system, if the child does not exceed the specified weight limit for that system and is accompanied by a parent, guardian, or by an attendant designated by the child's parent or guardian to attend to the safety of the child during the flight.

(e) Paragraph (d)(1) and (2) do not apply to the carriage of children under 4 years of age on domestic flights operated within PNG.

(f) Paragraph (a) shall not apply to persons carried in balloons or engaged in parachute operations.

91.209 Use of oxygen equipment

(a) A pilot-in-command of an unpressurised aircraft must, during any time that the aircraft is being operated above 14 000 feet AMSL and during any period of more than 30 minutes that the aircraft is being operated between 10000 feet and up to and including 14 000 feet AMSL, require—

(1) each crew member and each passenger to use supplemental oxygen; and

(2) each crew member to use portable oxygen equipment, including a regulator and attached oxygen mask, for any duty requiring movement from their usual station.

(b) A pilot-in-command operating a pressurised aircraft must –

(1) during any time, the cabin pressure altitude is above 10 000 feet AMSL, require-

(i) each crew member to use supplemental oxygen; and

(ii) each crew member to use portable oxygen equipment, including a regulator and attached oxygen mask, for any duty requiring movement from their usual station; and

(2) during any time, the aircraft is being operated from flight level 350 up to and including 410, require—

(i) one pilot at a pilot station to wear and use an oxygen mask that either supplies supplemental oxygen at all times or automatically supplies supplemental oxygen whenever the cabin pressure altitude exceeds 14 000 feet AMSL; or

(ii) two pilots to be at their pilot stations and each pilot to have access to an oxygen mask that can be placed on the face and supplying oxygen within 5 seconds; and

(3) during any time, the aircraft is being operated above flight level 410, require one pilot at a pilot station to wear and use a demand oxygen mask at all times.

(c) A pilot in command of a pressurised aircraft must, following pressurisation failure, require each passenger to use supplemental oxygen during any time that the cabin pressure is above 14 000 feet AMSL, unless the aircraft can descend to 14 000 feet AMSL or below within 4 minutes.

91.211 Passenger briefing

(a) A person operating an aircraft carrying passengers must ensure that each passenger has been briefed on—

(1) the conditions under which smoking is permitted; and

(2) the requirement under 91.121 that any tray table, foot rest, and in-flight entertainment equipment must be stowed during take-off and landing; and

(3) the occupation of seats and wearing of restraints required under 91.207; and

(4) the location and means for opening the passenger entry doors and emergency exits; and

(5) when required to be carried by this Part—

(i) the location of survival; and

(ii) emergency equipment for passenger use; and

(iii) the use of flotation equipment required under 91.525 for a flight overwater; and

(iv) the normal and emergency use of oxygen equipment installed in the aircraft for passenger use; and

(6) procedures in the case of an emergency landing; and

(7) the use of portable electronic devices in accordance with 91.7

(b) The briefing required under paragraph (a)—

(1) must be given by the pilot-in-command, a member of the crew, a person nominated by the operator, or by a recorded presentation; and

(2) must, for flights above FL 250, include a demonstration on the use of supplemental oxygen equipment; and

(3) must, include a demonstration on the use of life preservers when required to be carried under 91.525; and

(4) must include a statement, as appropriate, that Civil Aviation Rules require passenger compliance with lighted passenger signs and crewmember instructions;and

(5) may be supplemented by printed cards for the use of each passenger containing—

(i) diagrams of, and methods of operating the emergency exits; and

(ii) other instructions necessary for the use of emergency equipment for use by passengers; and

(6) is not required if the pilot-in-command determines that all the passengers are familiar with the contents of the briefing.

(c) Where printed cards are used in accordance with paragraph (b)(5), the operator must place them in convenient locations on the aircraft for the use of each passenger and ensure that they contain information that is pertinent only to the type and model of aircraft on which they are carried.

91.213 Carry-on baggage

A person operating an aircraft, other than a balloon, shall not permit a passenger to stow baggage aboard that aircraft during take-off or landing accept—

(1) in a baggage locker; or

(2) under a passenger seat in such a way that it will not—

(i) in aircraft having a seating configuration of 20 or more passenger seats, slide forward under crash impact; or

(ii) in all aircraft, hinder evacuation of the aircraft in the event of an emergency.

91.215 Carriage of cargo

(a) An operator must not permit cargo to be carried in an aircraft unless it is—

(1) carried on a seat, in a cargo rack or bin, or in a cargo or baggage compartment; and

(2) properly secured by a safety belt or other restraining device having enough strength to ensure that the cargo does not shift under all normally anticipated flight and ground conditions; and

(3) packaged and covered to avoid injury to passengers.

(b) An operator who permits the carriage of cargo in an aircraft must not permit cargo—

(1) to exceed the load limitation for the seats, berths, or floor structure as prescribed by the aircraft flight manual, or by placards;and

(2) to be located in a position that restricts the access to or use of any required emergency exit, or the use of the aisle between the crew and the passenger compartments.

91.216 Cargo Compartment Safety

(a) An air operator must establish policy and procedures for the transportation of items which include

(1) the conduct of a specific safety risk assessment; and

(2) the risk assessment shall include at least the:

(i) hazards associated with the properties of the items to be transported; and

(ii) capabilities of the operator; and

(iii) operational considerations (e.g. area of operations, diversion time); and

(iv) capabilities of the aeroplane and its systems (e.g. cargo compartment fire suppression capabilities); and

(v) containment characteristics of unit load devices; and

(vi) packing and packaging; and

(vii) safety of the supply chain for items to be transported; and

(viii) quantity and distribution of dangerous goods items to be transported.

(b) An air operator must ensure that it provides in the aeroplane flight manual or other documentation supporting the operation of the aeroplane;

(i) elements of the cargo compartment(s) fire protection system as approved by the State of Design or State of Registry; and

(ii) a summary of the demonstrated cargo compartment fire protection certification standards.

(c) An air operator must establish policy and procedures;

(1) that address the items to be transported in the cargo compartment; and

(2) these must ensure to a reasonable certainty that in the event of a fire involving those items, it can be detected and sufficiently suppressed or contained by the elements of the aeroplane design associated with cargo compartment fire protection, until the aeroplane makes a safe landing.

91.217 Pre-flight action

Before commencing a flight, a pilot-in-command must become familiar with all information concerning that flight including—

(1) where practicable, the current meteorological information; and

(2) the fuel requirements; and

(3) the alternatives available if the planned flight cannot be completed; and

(4) any known or likely traffic delays that have been notified by ATS; and

(5) the status of the communication and navigation facilities intended to be used; and

(6) the current conditions of the aerodrome and runway lengths at aerodromes of intended use; and

(7) the take-off and landing distance data contained in the aircraft flight manual; and

(8) in the case of aircraft powered by two or more engines—

(i) engine inoperative procedures; and

(ii) one engine inoperative performance data.

91.219 Familiarity with operating limitations and emergency equipment

A pilot of an aircraft must, before beginning a flight, be familiar with—

(1) the aircraft flight manual for that aircraft; and

(2) any placards, listings, instrument markings, or any combination thereof, containing any operating limitation prescribed for that aircraft by the manufacturer or the Director; and

(3) the emergency equipment installed on the aircraft; and

(4) which crew member is assigned to operate the emergency equipment; and

(5) the procedures to be followed for the use of the emergency equipment in an emergency situation.

91.221 Flying equipment and operating information

(a) A pilot-in-command of an aircraft must ensure that the following equipment and information, in current and appropriate form, is accessible to every flight crew member of the aircraft—

(1) an accurate means of indicating the time; and

(2) appropriate aeronautical charts; and

(3) for IFR operations, every appropriate navigational en route, terminal area, approach, and instrument approach and departure charts; and

(4) for night operations, an operable electric torch for every crew member.

(b) In addition to paragraph (a), a pilot-in-command of an aircraft in excess of 5700kg MCTOW, or having a certificated seating capacity of 10 passenger seats or more, must ensure that every flight crew member uses a cockpit checklist covering the normal and emergency procedures for the operation of the aircraft in accordance with the aircraft flight manual.

91.223 Operating on and in the vicinity of an aerodrome

(a) Except as provided in paragraph (b), a pilot of an aeroplane operating on or in the vicinity of an aerodrome must—

(1) observe other aerodrome traffic for the purpose of avoiding a collision; and

(2) unless otherwise authorised or instructed by ATC, conform with or avoid the aerodrome traffic circuit formed by other aircraft; and

(3) performed a left hand aerodrome traffic circuit when approaching for a landing at and after take-off from an aerodrome that is published in the PNG AIP unless—

(i) the pilot is otherwise authorised or instructed by ATC; or

(ii) the IFR procedure published in the PNGAIP for the runway being used specifies a right-hand turn and the approach for landing or the take-off is being

performed in accordance with the instrument approach procedure; or

(iii) the aircraft is circling or manoeuvring off an instrument approach procedure published in the PNGAIP; and

(4) perform a right hand aerodrome traffic circuit when approaching for a landing at and after take-off from an aerodrome that is published in the PNGAIP, if the details published in the PNGAIP for the aerodrome specify a right-hand aerodrome traffic circuit for the runway being used unless –

(i) the pilot is otherwise authorised or instructed by ATC; or

(ii) the IFR procedure published in the PNGAIP for the runway being used specifies a left- hand turn and the approach for landing or the take-off is being performed in accordance with the instrument approach procedure; or

(iii) the aircraft is circling or manoeuvring off an instrument approach procedure published in the PNGAIP' and

(5) unless otherwise authorised or instructed by ATC, comply with any special aerodrome traffic rules prescribed in Part 93 by the Director.

(b) Paragraphs (a)(3) (a)(4) and (a)(5) do not apply to the pilot-in-command of an aircraft operating at an aviation event in accordance with rule 91.703.

(c) Subject to paragraph (b), a pilot-in-command of a helicopter operating on or in the vicinity of an aerodrome must comply with paragraph (a) or avoid the aerodrome traffic circuit being used by an aeroplane operating on or in the vicinity of the aerodrome.

91.225 Radio communications for operations on or in the vicinity of aerodromes

(a) A pilot-in-command of an aircraft on or in the vicinity of an aerodrome with an aerodrome control service in operation shall—

(1) unless otherwise authorised by ATC, maintain two-way radio communications with that service on the prescribed frequency; and

(2) obtain a clearance from that service prior to—

(i) taxiing on any portion of the manoeuvring area; or

(ii) landing at or taking-off from any runway or heliport at that aerodrome; or

(iii) entering a control zone.

(b) A pilot-in-command of an aircraft on or in the vicinity of an aerodrome without an aerodrome control service in operation shall, on the radio frequency allocated for that aerodrome by the Director, broadcast their intention prior to—

(3) taxiing on any portion of the manoeuvring area; and

(4) landing at or taking-off from any runway or heliport; and

(5) entering the aerodrome traffic circuit; and

(6) departing the aerodrome traffic circuit- at that aerodrome.

91.227 Operating near other aircraft

No pilot shall operate an aircraft—

(1) so close to another aircraft as to create a collision hazard; or

(2) in formation flight except by prior arrangement with the pilot-in-command of each aircraft in the formation; or

(3) other than an aircraft performing a parachute-drop operation, in formation flight while carrying passengers for hire or reward.

91.229 Right-of-way rules

(a) ***Right-of-Way***. A pilot of an aircraft—

(1) shall, when weather conditions permit, regardless of whether the flight is performed under IFR or under VFR, maintain a visual lookout so as to see and avoid other aircraft; and

(2) that has the right of way, shall maintain heading and speed, but shall not be relieved from the responsibility of taking such action, including collision- avoidance manoeuvres based on resolution advisories provided by ACAS equipment, that will best avert collision; and

(3) that is obliged to give way to another aircraft, shall avoid passing over, under, or in front of the other aircraft, unless passing well clear of the aircraft, taking into account the effect of wake turbulence.

(b) ***Approaching Head-On***. A pilot of an aircraft shall, when approaching another aircraft head-on, or nearly so, ***alter*** heading to the right.

(c) ***Aircraft Converging***. A pilot of an aircraft that is converging at approximately the same altitude with another ***aircraft*** that is to its right, shall give way, except that the pilot operating—

(1) a power-driven heavier-than-air aircraft shall give way to airships, gliders, and balloons; and

(2) an airship shall give way to gliders and balloons; and

(3) a glider shall give way to balloons; and

(4) a power-driven aircraft shall give way to aircraft that are towing other aircraft or objects; and

(5) all aircraft shall give way to parachutes.

(d) ***Overtaking Aircraft***. A pilot of an aircraft that is overtaking another aircraft shall, if a turn is necessary to avoid that aircraft, alter heading to the right, until it is entirely past and clear of the other aircraft.

(e) For the purpose of paragraph (d), an overtaking aircraft is an aircraft that approaches another from the rear on a line forming less than 70 degrees with the plane of symmetry of the latter.

(f) ***Landing aircraft***. A pilot of an aircraft in flight or on the surface shall—

(1) give way to any aircraft that is on final approach to land or is landing; and

(2) when the aircraft is one of two or more heavier-than-air aircraft approaching an aerodrome for the purpose of landing, give way to the aircraft at the lower altitude; and

(3) not take advantage of right-of-way under subparagraph (2) to pass in front of another aircraft, which is on final approach to land, or overtake that aircraft.

(g) ***Taking-Off***. A pilot of an aircraft shall not take-off if there is an apparent risk of collision with another aircraft.

(h) ***Taxiing***. A pilot of an aircraft taxiing on the manoeuvring area of an aerodrome shall—

(1) give way to aircraft landing, taking-off, or about to take-off; and

(2) when two aircraft are approaching head on, or nearly so, stop or, where practicable, alter course to the right so as to keep well clear of the other aircraft; and

(3) when two aircraft are on a converging course, give way to other aircraft on the pilot's right; and

(4) when overtaking another aircraft, give way and keep well clear of the aircraft being overtaken.

(i) ***Aircraft in Distress***. A pilot of an aircraft shall give way to any aircraft that is in distress.

91.231 Right-of-way rules – water operations

A pilot of an aircraft on the water shall comply with the requirements of the International Regulations for Preventing Collisions at Sea.

91.233 Aircraft lights

(a) A pilot of an aircraft must not—

(1) operate an aircraft at night unless it has lighted position lights; or

(2) moor or move an aircraft at night on a water aerodrome unless the aircraft complies with the lighting requirement of the International Regulations for Preventing Collisions at Sea; or

(3) operate an aircraft at night that is required by Subpart F to be equipped with an anti-collision light system unless the system is operating.

(b) A person must not park or move an aircraft at night on a manoeuvring area of an aerodrome that is in use for aircraft operations, unless the aircraft—

(1) is clearly illuminated; or

(2) has lighted position lights; or

(3) is in an area that is marked by obstruction lights.

(c) Notwithstanding paragraph (a)(3), a pilot of an aircraft is not required to operate the anti-collision light system if the pilot determines that, because of operating conditions, it is in the best interest of safety to turn the system off.

91.235 Dropping of objects

A pilot of an aircraft shall not allow any object to be dropped from that aircraft in flight unless the pilot has taken reasonable precautions to ensure the dropping of the object does not endanger persons or property.

91.237 Aircraft speed

(a) A pilot shall not operate an aircraft at an indicated speed of more than 250 kts below an altitude of 10 000 feet AMSL when that aircraft is operated in Class F airspace.

(b) A pilot shall not operate an aircraft below 1500 feet above aerodrome elevation and within 5 km of that aerodrome at an indicated speed of more than 200 kts when that aircraft is operated in Class F airspace.

(c) Paragraph (a) and (b) shall not apply when—

(1) the minimum safe speed of the aircraft prescribed in the flight manual is more than the prescribed speed limitation and the aircraft is operated at that minimum safe speed; or

(2) the minimum speed specified for a procedure for flight under IFR is more than the prescribed speed limitation; or

(3) the aircraft is being operated at an aviation event in accordance with 91.703.

91.239 Altimeter settings

(a) A pilot of an aircraft must maintain the cruising altitude or flight level of the aircraft by reference to an altimeter that is set in accordance with the following—

(1) when operating at or above flight level 210, set altimeter to 1013.2hPa; and

(2) when operating at or below 20 000 feet, set altimeter to the appropriate area QNH zone or aerodrome QNH altimeter setting; and

(3) when operating between 20 000 feet and flight level 210, set altimeter to the appropriate area QNH zone setting as advised by ATC.

(b) A pilot of an aircraft that is ascending or descending must—

(1) when ascending above 20 000 feet, set the altimeter to 1013.2hPa; and

(2) when descending through flight level 210, set the altimeter to the appropriate area QNH zone or aerodrome QNH altimeter setting.

91.241 Compliance with ATC clearances and instructions

(a) A pilot of an aircraft operating in a control area or control zone designated under Part 71 must—

(1) except when manoeuvring in accordance with an ACAS resolution advisory or a GPWS or TAWS alert, comply with any ATC clearance or instruction issued by the ATC unit responsible for the control area or control zone; and

(2) when a deviation from an ATC clearance or instruction is required for the safe operation of the aircraft, notify ATC of the deviation as soon as possible.

(b) A pilot of an aircraft need not comply with an ATC clearance or instruction if compliance would cause the pilot to endanger the safe outcome of the flight.

(c) A pilot of an aircraft who elects not to comply with an ATC clearance or instruction under paragraph (b) must immediately notify the appropriate ATC unit of the non- compliance.

91.243 ATC light signals

A pilot of an aircraft shall comply with the clearance or instruction specified for ATC light signals in Table 1.

Table 1. ATC light signals.

Light Signal	Aircraft in Flight	Aircraft on the Ground
Steady green	Cleared to land	Cleared for take-off
Steady red	Give way to other aircraft and continue circling	Stop
Series of green flashes	Return for landing (clearance to land and to taxi will be given in due course)	Cleared to taxi
Series of red flashes	Aerodrome unsafe, do not land	Taxi clear of landing area in use
Flashing white	Land at this aerodrome and proceed to apron	Return to starting point on aerodrome
Alternating red and green flashes	Danger, be on the alert	Danger, be on the alert

91.245 Operations in classified and designated airspace

(a) A pilot-in-command of an aircraft shall obtain an ATC clearance prior to entering airspace designated under Part 71 as Class A or C.

(b) A pilot-in-command of an aircraft operating in Class A airspace, unless otherwise authorised by ATC, shall—

(1) perform the operation under IFR; and

(2) maintain two-way communications with ATC on the prescribed frequency.

(c) A pilot-in-command of an aircraft operating in Class C airspace shall, unless otherwise authorised by ATC, maintain two-way radio communications with ATC on the prescribed frequency.

(d) Where different classes of airspace adjoin one above the other, at the common level, a pilot may comply with the requirements of the less restrictive class of airspace.

91.247 Operations in RNP designated airspace

(a) No person shall operate an aircraft in RNP designated airspace in a Papua New Guinea registered aircraft unless—

(1) there is available in the aircraft a RNP operations procedures manual, incorporating all amendments, approved in accordance with this rule for that aircraft and aircraft navigation system; and

(2) the operations in RNP designated airspace are performed in accordance with the procedures, instructions, and limitations in the approved manual; and

(3) the instruments and equipment required by 91.519 for a particular RNP operation have been inspected and maintained in accordance with an approved maintenance programme; and

(4) each flight crew member has demonstrated an adequate knowledge of, and familiarity with—

(i) the aircraft; and

(ii) the aircraft navigation system; and

(iii) the normal and abnormal procedures to be used, including the applicable contingency procedures; and

(5) each pilot-in-command ensures that the aircraft and aircraft navigation system are both approved by the Director for RNP operations and that the RNP performance can be met for the planned route and any alternate routes; and

(6) a flight plan is submitted to the appropriate ATS unit that includes in item 10 of the ICAO standard flight plan—

(i) the letter 'R' when indicating an aircraft approved for RNP operations; and

(ii) the letter 'G' when indicating an aircraft equipped with an approved GNSS capability.

(b) Each operator of an aircraft performing RNP operations shall keep a current copy of the RNP operation procedures manual at its principal base of operation and shall make it available for inspection upon request by the Director.

(c) Each applicant for the approval of a RNP operation procedures manual, or an amendment to an approved RNP operation procedures manual, shall submit the proposed manual or amendment to the Director.

(d) The Director may approve a RNP operation procedures manual and any amendment to a RNP operation procedures manual.

(e) Each RNP operation procedures manual shall contain—

(1) the name of the operator; and

(2) the registration, make, and model of the aircraft to which it applies; and

(3) the type, manufacturer, and model of the aircraft navigation system to which it applies; and

(4) a maintenance programme including procedures for the—

(i) test and inspection of each instrument and item of equipment required by 91.519 for RNP operations at intervals that ensure the RNP performance required for the particular operation is maintained; and

(ii) recording in the maintenance records the date, departure airport, destination airport, and reasons for each RNP operation discontinued because of instrument or equipment malfunction; and

(5) procedures and instructions related to—

(i) the mitigation of large navigational errors due to equipment malfunction or operational error; and

(ii) in-flight drills that include cross checking procedures to identify navigation errors in sufficient time to prevent inadvertent deviation from ATC cleared routes; and

(iii) updating the navigation system to ensure that the required RNP performance is maintained during operations in RNP designated airspace; and

(iv) the maximum permissible deviations of the RNP system within the RNP designated airspace; and

(v) the calculation of time limits to meet RNP criteria; and

(vi) instrument and equipment failure warning systems; and

(vii) navigation system failure; and

(viii) navigation system monitoring and the collection of reliability and performance data; and

(ix) other procedures, instructions, and limitations that may be found necessary by the Director.

(f) The procedures manual required by paragraphs (a), (b), (c), and (e) may be incorporated in the operations procedures required of the holder of an air operator certificate issued under Part 119.

(g) Each pilot-in-command shall—

(1) Unless authorised by ATC, ensure that two independent LRNS are service able and accurate—

(i) 30 minutes prior to entry to RNP designated airspace; and

(ii) on entry to RNP designated airspace; and

(2) when operating in, or within 30 minutes prior to entry of, RNP designated airspace—

(i) notify ATC whenever the aircraft cannot meet RNP criteria; and

(ii) notify ATC whenever the aircraft is operating with a single LRNS; and

(iii) if unable to communicate with ATC, proceed in accordance with the contingency procedures in ICAO Regional Supplementary Procedures, Document 7030.

91.249 Use of transponder and altitude reporting equipment

(a) Except as provided in paragraph (e), a pilot-in-command of an aircraft operating in transponder- mandatory airspace designated under Part 71 must, unless otherwise authorised or instructed by ATC—

(1) operate a pressure-altitude reporting transponder in accordance with procedures acceptable to the Director; and -

(2) except if paragraph (3) applies or if operating Mode S equipment, set the transponder code—

(i) to the code assigned by ATC for the flight; or

(ii) if not assigned a code by ATC, in accordance with Table 2; and

(3) in the event of an in-flight emergency, loss of radio communication, or an act of unlawful interference, set the transponder to the appropriate code in accordance with Table 3.

(b) A person must not operate an aircraft with Mode S transponder equipment installed unless the State of Registry has assigned the aircraft a unique Mode S address code.

(c) A pilot-in-command of an aircraft intending to operate without an operable transponder in transponder mandatory airspace that is within controlled airspace must obtain specific authorisation from the ATC facility having jurisdiction over the relevant airspace as part of the ATC clearance to enter that airspace.

(d) A pilot-in-command of an aircraft operating in transponder mandatory airspace must immediately advise the ATC unit having jurisdiction over the relevant airspace of any failure or partial failure of the transponder equipment.

(e) Unless otherwise authorised by ATC, only one of the aircraft in a formation flight is required to operate a transponder in accordance with paragraph (a).

Table 2. Airspace Codes

Type of operation	SSR Code
All civil flights in controlled airspace	3000
All civil flights performed under IFR outside controlled airspace	2000
All civil flights performed under VFR outside controlled airspace	1200
All military flights in controlled airspace	5000

Table 3. Emergency Codes

Occurrence	Code
Unlawful interference	7500
Loss of radio communication	7600
In flight emergency	7700

91.251 Aircraft call signs

(a) If required to communicate by radiotelephone under the Civil Aviation Rules, a pilot- in-command of a Papua New Guinea registered aircraft must use one of the following radiotelephony call signs—

(1) the telephony designator of the aircraft operating agency as approved by the Director, followed by the flight identification; or

(2) the telephony designator of the aircraft operating agency as approved by the Director, followed by the last three letters of the aircraft registration marking; or

(3) the name of the aircraft manufacturer, or the aircraft model, and last three letters of the aircraft registration marking.

(b) Notwithstanding (a)(2), the pilot-in-command may, after establishing two-way communication with an appropriate ATS unit, use an abbreviated call sign consisting of the last three letters of the aircraft registration marking.

(c) The Director may only approve the call signs prescribed in paragraphs (a)(1) and (2) for the use of—

(1) the holder of an air operator certificate issued under Part 119 or Part 129 conducting—

(i) a regular air operation; or

(ii) a search and rescue flight; or

(iii) a medical transfer or medical emergency flight; and

(2) aircraft being flown on a police operation that is authorised by the Commissioner of Police.

(d) An applicant for the approval of a telephony designator must submit to the Director in writing the name of the aircraft operating agency and a payment of the appropriate application fee prescribed by regulations made under the Act.

91.253 Notification of facility malfunctions

(a) A pilot-in-command of an aircraft shall notify ATS as soon as practicable after a malfunction of any aeronautical telecommunication facility during flight.

(b) The notification required by paragraph (a), shall include the—

(1) aircraft type; and

(2) aircraft registration and, if applicable, the flight number; and

(3) name of pilot-in-command; and

(4) name of the operator; and

(5) aircraft position and altitude; and

(6) phase of flight; and

(7) facility affected; and

(8) brief details of the malfunction; and

(9) effect on the flight.

91.255 In-flight fuel management

(a) Each operator must establish policies and procedures, approved by the Director, to ensure that inflight fuel checks and fuel management are performed.

(b) A pilot-in-command of an aircraft must continually ensure that the amount of usable fuel remaining on board is not less than the fuel required to proceed to an aerodrome where a safe landing can be made with the planned final reserve fuel remaining upon landing.

(c) A pilot-in-command of an aircraft must request delay information from ATC when unanticipated circumstances may result in landing at the destination aerodrome with less than the final reserve fuel plus any fuel required proceeding to an alternate aerodrome or the fuel required to operate to an isolated aerodrome.

91.257 Minimum and emergency fuel declarations

(a) A pilot-in-command of an aircraft must advise ATC of a minimum fuel state by declaring MINIMUM FUEL when, having committed to land at a specific aerodrome, the pilot calculates that any change to the existing clearance to that aerodrome may result in landing with less than the planned final reserve fuel.

(b) A pilot-in-command of an aircraft must declare a situation of fuel emergency by broadcasting MAYDAY, MAYDAY, MAYDAY FUEL, when the calculated usable fuel predicted to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the planned final reserve fuel.

91.259 Interception of civil aircraft

A pilot-in command of a civil aircraft, when intercepted, must comply with the requirements in Appendix D.5 and the air to air visual signals specified in Appendix D.6.

91.261 Aircraft meteorological observations and reports

A pilot-in-command of a civil aircraft operating on international air routes shall arrange, according to the requirements in Appendix F of this Part, for meteorological observations and reporting of these observations.

91.263 Stabilised approach

Each operator must establish policies and procedures to ensure that:

(1) all flights are stabilised by l000 feet above airport elevation in IMC and by 500 feet above airport elevation in VMC.

(2) an approach is stabilised when all of the following criteria are met:

(i) The aircraft is on the correct flight path;

(ii) Only small changes in heading/pitch are required to maintain the correct flight path;

(iii) The aircraft speed is not more than Vref + 20 knots indicated airspeed and not less than Vref;

(iv) The aircraft is in the correct landing configuration;

(v) Sink rate is no greater than I000 feet per minute; if an approach requires a

sink rate greater than l000 feet per minute, a special briefing should be conducted;

(vi) Power setting is appropriate for the aircraft configuration and is not below the minimum power for approach as defined by the aircraft operating manual;

(vii) All briefings and checklists have been completed;

(viii) Specific types of approaches are stabilised if they also fulfil the following:

(A) instrument landing system (ILS) approaches must be flown within one dot of the glideslope and localizer;

(B) a Category II or Category III ILS approach must be flown within the expanded localizer band;

(C) during a circling approach, wings should be level on final when the aircraft reaches 300ft above airport elevation; and

(ix) Unique approach procedures or abnormal conditions requiring a deviation from the above elements of a stabilized approach require a special briefing.

(3) an immediate go-around is carried out when an approach becomes unstable below 1000 feet above airport elevation in IMC or 500 feet above airport elevation in VMC.

91.265 Ground proximity warning system and controlled flight into terrain

Each operator must establish:

(1) instructions and training requirements for the avoidance of controlled flight into terrain (CFIT); and

(2) policy on the use of ground proximity warning system which has a forward looking terrain avoidance function; and

(3) limitations on high rates of descent near the surface.

91.267 Intercepting a distress transmission

A pilot in command who intercepts a distress transmission must as soon as practicable;

(a) acknowledge the distress transmission; and

(b) record the position of the aircraft in distress if given; and

(c) take a bearing on the transmission; and

(d) inform the appropriate rescue coordination center or air traffic services unit of the distress transmission, giving all available information; and

(e) at the pilot’s discretion, proceed to the position given in the transmission.

Subpart D — Visual Flight Rules

91.301 VFR meteorological minima

(a) Except as provided in rule 91.303 and paragraphs (b) and (c), a pilot-in-command must not operate an aircraft under VFR—

(1) when the flight visibility is less than that prescribed for the corresponding class of airspace in Table 4; or

(2) at a distance from clouds that is less than that prescribed for the corresponding class of airspace in Table 4; or

(3) more than 5 nm from the aerodrome of departure at night.

(b) Except as provided in rule 91.303, a pilot-in-command must not take-off or land an aircraft, or fly in the vicinity of an aerodrome, under VFR when the flight visibility, or the cloud ceiling, is less than—

(1) at aerodromes within a control zone that prescribed in Table 5; and

(2) at aerodromes within an aerodrome traffic zone or in uncontrolled airspace, that prescribed in Table 6.

(c) A pilot-in-command of—

(1) an aircraft may operate in Class F airspace over areas with terrain rising to more than 5000 feet AMSL clear of cloud and in sight of the surface and with a flight visibility of not less than 5 km;

(2) a helicopter may operate in Class F airspace with a flight visibility of less than 5 km if manoeuvred at a speed that gives adequate opportunity to observe other traffic or any obstructions in order to avoid collisions; and

(3) an aircraft performing agricultural aircraft operations, may operate in Class F airspace with a flight visibility of less than 5 km but not less than 1500m.

Table 4. Airspace VFR meteorological minima

<table>
<tr><th colspan="2">Class of airspace</th><th>Distance from cloud</th><th>Flight visibility</th></tr>
<tr><td colspan="2">C</td><td>2 km horizontally
1000 feet vertically outside a control zone
500 feet vertically within a control zone</td><td rowspan="2">8 km at or above 10 000 feet AMSL

5 km below 10 000 feet AMSL</td></tr>
<tr><td rowspan="2">F</td><td>Above 3000 feet AMSL or 1000 feet above terrain whichever is the higher</td><td>2 km horizontally
1000 feet vertically</td></tr>
<tr><td>At or below 3000 feet or 1000 feet above the terrain whichever is the higher</td><td>Clear of cloud and in sight of the surface</td><td>5 km</td></tr>
</table>

Table 5. VFR minima at aerodromes within a control zone.

		Ceiling	Flight Visibility
All aircraft	Day and Night	1500 feet	5 km

Table 6. VFR minima at aerodromes within an aerodrome traffic zone or in uncontrolled airspace.

		Ceiling	Flight Visibility
All aircraft	Day	600 feet	5 km
All aircraft	Night	1500 feet	8 km

91.303 Special VFR weather minima

A pilot-in-command of an aircraft may perform a VFR operation within controlled airspace in meteorological conditions below those prescribed in 91.301 if—

(1) the ceiling and visibility is—

(i) at least 600 feet and at least 1500 m respectively; or

(ii) for helicopters, less than 600 feet and less than 1500 m respectively if the helicopter is operated at a speed that will give adequate opportunity to observe other traffic or any obstructions in order to avoid collisions; and

(2) for helicopters, less than 600 feet and less than 1500 m respectively if the helicopter is operated at a speed that will give adequate opportunity to observe other traffic or any obstructions in order to avoid collisions; and the aircraft equipped with two-way radio capable of communicating with ATC on the appropriate frequency; and

(3) the operation is conducted-

(i) in compliance with an ATC clearance and any ATC instructions; and

(ii) only during the day; and

(iii) clear of clouds.

91.305 Fuel requirements for flight under VFR

(a) A pilot-in-command of an aeroplane shall not begin a flight under VFR unless, in the forecast weather conditions, the aeroplane has enough fuel to fly, including fuel required for taxi, take-off and climb, to the first point of intended landing at the planned normal cruising speed, and to fly after that for at least 45 minutes; and

(b) A pilot-in-command of a helicopter shall not begin a flight under VFR unless, in the forecast weather conditions, the helicopter has enough fuel to fly to the first point of intended landing at the planned cruising speed, and to fly after that for at least 20 minutes.

91.307 VFR flight plan

(a) Except as provided in paragraph (d), a pilot-in-command of an aircraft must—

(1) where practical, submit a flight plan to an appropriate ATS unit before starting any flight conducted under VFR; or

(2) otherwise, submit a flight plan by radio to the appropriate ATS unit as soon as practical after take-off.

(b) The VFR flight plan required by paragraph (a) must include the following information—

(1) the identification of the aircraft to be used; and

(2) the type of aircraft to be used; and

(3) the proposed time of departure; and

(4) the aerodrome of departure, the route, the aerodromes of intended landing, the true airspeed, the estimated elapsed times (EET) for each route segment, and the time on the ground at each intermediate aerodrome; and

(5) fuel endurance; and

(6) the radio frequencies of the communication equipment in the aircraft; and

(7) the navigation and approach aids carried in the aircraft; and

(8) the total number of persons in the aircraft; and

(9) the name of the pilot-in-command; and

(10) the identity of the operator; and

(11) the emergency and survival equipment carried on board the aircraft; and

(12) any information requested by ATS which they believe is necessary for their purposes.

(c) If a VFR flight plan has been submitted to an ATS unit under paragraph (a), the pilot- in-command must–

(1) inform an appropriate ATS unit of any changes to the details of the flight plan; specifically, any change to the arrival time at the destination aerodrome exceeding 30 minutes; and

(2) terminate the flight plan by advising an appropriate ATS unit of the completion of the flight-

(i) as soon as practicable after landing; or

(ii) by radio when in the traffic circuit area of the destination aerodrome.

(d) Paragraph (a) does not apply to the pilot-in-command of an aircraft when-

(1) the aircraft is to be flown back to the same aerodrome from which it is to take- off and throughout the flight will remain within 10nm of the aerodrome; or

(2) the aircraft is to be operated within the boundaries of a designated danger area for flight training; or

(3) otherwise authorised by ATS.

(e) VFR flights which are operated as controlled flights shall be equipped in accordance with rule 91.517.

91.309 Position reports

(a) Each pilot-in-command of an aircraft on a VFR flight shall report the position of the aircraft to ATS-

(1) at least every 30 minutes; or

(2) at the times or reporting points required by ATS.

(b) Each pilot-in-command shall advise ATS of a revised ETA when the estimated ETA to the next reporting point notified to ATS is found to be in error by more than 2minutes.

91.311 Minimum heights for VFR flights

(a) A pilot-in-command of an aircraft must not operate an aircraft under VFR—

(1) over any congested area of a city, town or settlement, or over any open air assembly of persons-

(i) at a height of less than 1000 feet above the surface; or

(ii) at a height of less than 1000 feet above any obstacle that is within a horizontal radius of 600 metres from the point immediately below the aircraft; or

(2) over any other area-

(i) at a height less than 500 feet above the surface; or

(ii) at a height of less than 500 feet above any obstacle, person, vehicle, vessel, or structure that is within a horizontal radius of 150 metres from the point immediately below the aircraft; and

(3) for any operation, at a height less than that required to execute an emergency landing in the event of engine failure, without hazard to persons or property on the surface.

(b) Paragraph (a) does not apply to a pilot-in-command of an aircraft—

(1) conducting a take-off, or landing; or

(2) conducting a balked landing or discontinued approach; or

(3) taxiing.

(c) Paragraph (a)(2) does not apply to a pilot-in-command of an aircraft if the bona fide purpose of the flight requires the aircraft to be flown at a height lower than that prescribed in paragraph (a)(2), but only if—

(1) the flight is performed without hazard to persons or property on the surface; and

(2) only persons performing an essential function associated with the flight are carried; and

(3) the aircraft is not flown at a height lower than that required for the purpose of the flight; and

(4) the horizontal distance that the aircraft is flown from any obstacle, person, vessel, vehicle, or structure, is not less than that necessary for the purpose of the flight, except that in the case of an aeroplane, the aeroplane remains outside a horizontal radius of 150 metres of any person, vessel, vehicle, or structure that is not associated with the operation.

(d) Paragraph (a)(2) does not apply to a pilot-in-command—

(1) who is the holder of, or authorised by the holder of, a current instructor rating issued under Part 61 and who is conducting flight training or practice flights consisting of—

(i) simulated engine failure after take-off commencing below 1000 feet above the surface; or

(ii) simulated engine failure commencing above 1000 feet above the surface provided that, descent below 500 feet above the surface is conducted within a low flying zone in accordance with 91.131; or

(2) who is the holder of a current instrument rating issued under Part 61 and who is conducting IFR training, testing, or practice flights under VFR, but only if the pilot-in- command conducts the flight in accordance with 91.413, 91.417 and 91.419; or

(3) operating an aircraft within a low flying zone in accordance with91.131; or

(4) operating an aircraft at an aviation event in accordance with 91.703.

91.313 VFR cruising altitude and flight level

(a) Each pilot-in-command of an aircraft operating within the Port Moresby FIR under VFR in level cruising flight at more than 3000 feet above the surface shall, unless otherwise authorised by ATC, maintain the following altitude or flight levels when operating at or below 20 000 feet AMSL—

(1) on a magnetic track of 000° clockwise to 179°, any odd thousand-foot altitude AMSL; or

(2) on a magnetic track of 180° clockwise to 359°, any even thousand-foot altitude AMSL; and

(b) Each pilot-in-command of an aircraft operating within the Port Moresby FIR under VFR shall not operate at any level above 20 000 feet AMSL unless otherwise authorised by ATC.

91.315 Operating in snow and ice conditions under VFR

A pilot-in-command of an aircraft must not perform a take-off under VFR in an aircraft that has snow, ice, or frost, adhering to—

(1) the wings, stabilisers, or control surfaces; or

(2) any propeller, windscreen or power-plant installation; or

(3) any sensor of an airspeed or altimeter system.

91.317 VFR radio communications

(a) Except as provided under paragraph (b), a pilot-in-command of an aircraft operating under VFR shall—

(1) maintain a continuous listening watch on the appropriate frequency; and

(2) report as soon as possible to an appropriate ATS unit—

(i) the time and altitude of passing each designated reporting point, or the reporting points or the times specified by ATC; and

(ii) any other information relating to the safety of the flight.

(b) A pilot-in-command of an aircraft under radar control while operating under VFR shall report passing only those reporting points specifically requested by ATC.

(c) A pilot-in-command of an aircraft operating under VFR within controlled airspace shall, unless otherwise authorised by ATC, report as soon as possible to the appropriate ATC unit—

(1) on departure after take-off; and

(2) on reaching and leaving levels assigned by ATC,

(d) A pilot-in-command of an aircraft operating under VFR within Class F airspace shall broadcast the reports required by paragraph (c) on the frequency allocated to that aerodrome.

91.319 VFR operations – radio communications failure

(a) Unless otherwise authorised by ATC, a pilot-in-command of an aircraft that has radio communications failure when operating under VFR must land as soon as practicable at the nearest suitable aerodrome and report its arrival by the most expeditious means to the appropriate air traffic service unit.

(b) Unless otherwise authorised by ATC, a pilot-in-command of an aircraft that has radio communications failure when operating under VFR where the maintenance of such conditions is uncertain, must continue the flight in VMC and land as soon as practicable at the nearest suitable aerodrome and report its arrival by the most expeditious means to the appropriate air traffic service unit.

(c) The aircraft shall attempt to establish communications with the appropriate air traffic service unit using all other available means. In addition, the aircraft, when forming part of the aerodrome traffic at a controlled aerodrome, shall keep a watch for such instructions as may be issued by visual signals.

Subpart E — Instrument Flight Rules

91.401 Minimum flight crew

A pilot-in-command must not operate an aircraft under IFR without another pilot, unless—

(1) the aircraft flight manual authorises operation of the aircraft with one pilot; and

(2) the aircraft is equipped with—

(i) communication equipment that can be operated by the pilot without releasing the aircraft flight controls; and

(ii) an operative autopilot or stabilisation system capable of operating the aircraft controls to maintain flight and manoeuvre the aircraft about the roll and pitch axes with an automatic heading hold.

91.403 Fuel requirements for flights under IFR

(a) A pilot-in-command must not operate an aircraft under IFR unless the aircraft carries sufficient amount of usable fuel including contingency fuel as specified in (b), taking into account weather reports, forecasts and conditions, to complete the planned flight safely and to allow for deviations from the plannedoperation.

(b) The amount of usable fuel to be carried required under paragraph (a) shall, as a minimum, be based on:

(1) the following data:

(i) current aeroplane-specific data derived from a fuel consumption monitoring system, if available; or

(ii) if current aeroplane-specific data are not available, data provided by the aeroplane manufacturer; and

(2) the operating conditions for the planned flight including:

(i) anticipated aeroplane mass;

(ii) Notices to Airmen;

(iii) current meteorological reports or a combination of current reports and forecasts;

(iv) air traffic services procedures, restrictions and anticipated delays; and

(v) the effects of deferred maintenance items and/or configuration deviations.

(c) The pre-flight calculation of usable fuel required shall include:

(1) *taxi fuel*, which shall be the amount of fuel expected to be consumed before take- off, taking into account local conditions at the departure aerodrome and auxiliary power unit (APU) fuel consumption;

(2) *trip fuel*, which shall be the amount of fuel required to enable the aeroplane to fly from take-off, or the point of inflight re-planning, until landing at the destination aerodrome taking into account the operating conditions of (b)(2);

(3) *contingency fuel*, which shall be the amount of fuel required to compensate for unforeseen factors and is five per cent of the planned trip fuel or of the fuel required from the point of in-flight re- planning based on the consumption rate used to plan the trip fuel but, in any case, shall not be lower than the amount required to fly for five minutes at holding speed at 450 m (1500 ft.) above the destination aerodrome in

standard conditions;

(4) *destination alternate fuel*, which shall be:

(i) where a destination alternate aerodrome is required by 91.405, the amount of fuel required to enable the aeroplane to:

(A) perform a missed approach at the destination aerodrome;

(B) climb to the expected cruising altitude;

(C) fly the expected routing;

(D) descend to the point where the expected approach is initiated; and

(E) conduct the approach and landing at the destination alternate aerodrome; or

(ii) where two destination alternate aerodromes are required, the amount of fuel, as calculated in (c)(4), required to enable the aeroplane to proceed to the destination alternate aerodrome which requires the greater amount of alternate fuel; or

(iii) where a flight is operated without a destination alternate aerodrome, the amount of fuel required to enable the aeroplane to fly for 15 minutes at holding speed at 450 m (1 500 ft.) above destination aerodrome elevation in standard conditions; or

(iv) where the aerodrome of intended landing is an isolated aerodrome:

(A) for a reciprocating engine aeroplane, the amount of fuel required to fly for 45 minutes plus 15 per cent of the flight time planned to be spent at cruising level, including final reserve fuel, or two hours, whichever is less; or

(B) for a turbine-engine aeroplane, the amount of fuel required to fly for two hours at normal cruise consumption above the destination aerodrome, including final reserve fuel;

(v) for helicopters:

(A) when an alternate aerodrome is not required, fly after that for 30 minutes at holding speed at a height of 1500 feet above aerodrome; or

(B) when an alternate aerodrome is required, fly from the aerodrome of intended landing to the alternate aerodrome and fly after that for 45 minutes at holding speed at a height of 1500 feet above the aerodrome.

(5) *final reserve fuel*, which shall be the amount of fuel calculated using the estimated mass on arrival at the destination alternate aerodrome, or the destination aerodrome when no destination alternate aerodrome is required:

(i) for a reciprocating engine aeroplane, the amount of fuel required to fly for 45 minutes, under speed and altitude conditions acceptable to the Director; or

(ii) for a turbine-engine aeroplane, the amount of fuel required to fly for 30 minutes at holding speed at 450 m (1500 ft.) above aerodrome elevation in standard conditions;

(6) *additional fuel*, which shall be the supplementary amount of fuel required if the minimum fuel calculated in accordance with (c)(2), (3), (4), and (5) is not sufficient to:

(i) allow the aeroplane to descend as necessary and proceed to an alternate

aerodrome in the event of engine failure or loss of pressurization, whichever requires the greater amount of fuel based on the assumption that such a failure occurs at the most critical point along the route;

(A) fly for 15 minutes at holding speed at 450 m (1500 ft.) above aerodrome elevation in standard conditions; and

(B) make an approach and landing;

(ii) allow an aeroplane engaged in EDTO to comply with the EDTO critical fuel scenario established under Part 121 Subpart N;

(iii) meet additional requirements not covered above;

(7) *discretionary fuel*, which shall be the extra amount of fuel to be carried at the discretion of the pilot- in-command

(d) A pilot in command must not operate an aircraft unless the usable fuel on board meets the requirements under paragraphs (1), (2), (3), (4), (5) and (6) if required and shall not continue from the point of in-flight re-planning unless the usable fuel on board meets the requirements under paragraphs (2), (3), (4), (5) and (6) if required.

(e) Notwithstanding provisions under paragraphs (c)(1), (2), (3), (4), and (6), the Director may, based on the results of a specific safety risk assessment conducted by the operator which demonstrates how an equivalent level of safety will be maintained, approve variations to the pre-flight fuel calculation of taxi fuel, trip fuel, contingency fuel, destination alternate fuel, and additional fuel.

(f) The specific safety risk assessment under paragraph (e) shall include at least the:

(1) flight fuel calculations;

(2) capabilities of the operator to include:

(i) a data-driven method that includes a fuel consumption monitoring programme; or

(ii) the advanced use of alternate aerodromes; and

(3) specific mitigation measures.

(g) The use of fuel after flight commencement for purposes other than originally intended during pre-flight planning shall require a re-analysis and, if applicable, adjustment of the planned operation.

91.405 IFR alternate aerodrome requirement

(a) A pilot-in-command of an aircraft operating under IFR must list in the flight plan at least one alternate aerodrome unless—

(1) at least 30 minutes before and 30 minutes after the estimated time of arrival at the aerodrome of intended landing the meteorological forecast, or meteorological reports, or a combination of the two indicate that—

(i) the ceiling and visibility are at or above the alternate minima prescribed under Part 95; and

(ii) there is no probability of reduced visibility due to fog, mist or dust; and

(2) if the aerodrome of intended landing only has an instrument approach procedure based on GPS, at least 30 minutes before and 30 minutes after the estimated time of arrival at the aerodrome of intended landing the meteorological forecast, or meteorological reports, or a combination of the two indicate that—

(i) the ceiling is at least 500 feet above the minimum approach altitude prescribed under Part 95 for the final route segment; and

(ii) the visibility is at least 3 km above the publish visibility for the approach; and

(3) if the aerodrome of intended landing does not have an instrument approach procedure prescribed under Part 95, at least 30 minutes before and 30 minutes after the estimated time of arrival at the aerodrome of intended landing the meteorological forecast, or meteorological reports, or a combination of the two indicate that—

(i) the ceiling at the aerodrome is at least 500 feet above the lowest safe altitude prescribed under Part 95 for the final route segment or the lowest MSA; and

(ii) the visibility is at least 8 km; and

(4) if the meteorological conditions are forecast to deteriorate below the limits required to carry an alternate, intermittently (INTER) or temporarily (TEMP), in addition to the requirements of 91.403, sufficient fuel based on holding speed is carried for an additional—

(i) 30 minutes for intermittent deteriorations; and

(ii) 60 minutes for temporary deteriorations.

(b) A pilot-in-command of an aircraft required to make provision for an alternate aerodrome under paragraph (a) must not list any aerodrome as an alternate unless the meteorological forecasts at the time of submitting the flight plan indicate, at the time of planned arrival at the alternate aerodrome, that—

(1) if the alternate aerodrome has an instrument approach procedure prescribed under Part 95 based on a navigation aid other than GPS, the ceiling and visibility are at or above the alternate minima prescribed under Part 95; and

(2) if the alternate aerodrome does not have an instrument approach procedure or only has an instrument approach procedure based on GPS prescribed under Part 95

(i) the ceiling is at least 500 feet above the lowest safe altitude prescribed under Part 95 for the final route segment; and

(ii) the visibility is at least 8km.

(c) A pilot-in-command of an aircraft must not list any aerodrome as an alternate aerodrome in the IFR flight plan under paragraph (a) unless that alternate aerodrome is equipped with a secondary electric power supply for—

(1) the ground based electronic navigation aids necessary for the instrument approach procedure to be used; and

(2) the aerodrome lighting for night operations.

(d) A pilot-in-command of an aircraft must select two destination alternate aerodromes and specify in the operational and ATS flight plans when, for the destination aerodrome:

(1) meteorological conditions at the estimated time of use will be below the operator's established aerodrome operating minima for that operation; or

(2) meteorological information is not available.

91.407 IFR flight plan

(a) A pilot-in-command of an aircraft, unless otherwise authorised by ATS, shall—

(1) submit a flight plan to an appropriate ATS unit prior to each flight under IFR; and

(2) submit the flight plan at least 30 minutes prior to the beginning of the flight; and

(3) include the following information in the flight plan—

(i) the identification of the aircraft to be used; and

(ii) the type of aircraft to be used, its aeroplane category as prescribed in Table 10, and its wake turbulence category; and

(iii) the radio communications equipment in the aircraft to be used; and

(iv) the navigation and approach aid equipment in the aircraft to be used including any applicable GPS and RNP approvals; and

(v) the departure aerodrome(s) and time of departure; and

(vi) the cruising speed, altitude, and route; and

(vii) the aerodrome(s) of destination, total EET, and any alternate aerodrome required by 91.405; and

(viii) any other information the pilot-in-command or ATS believes is necessary for ATS purposes; and

(ix) the fuel endurance; and

(x) total number of persons carried in the aircraft; and

(xi) emergency and survival equipment carried in the aircraft; and

(4) advise an ATS unit, as soon as possible, of any delay exceeding 30 minutes in beginning the flight or departing from any aerodrome of intended landing; and

(b) A pilot-in-command of an aircraft using GPS for non-precision approach procedures shall include information in the flight plan as follows—

(1) for a domestic flight, include the letter "G" in item 10 and "NAV/GPSRNAV" in item 18; and

(2) for international flights, include the letter "Z" in item 10 and "NAV/GPSRNAV" in item 18.

(c) A pilot-in-command of an aircraft using GPS as primary means for navigation shall include in the flight plan the letter "Z" in item 10 and "NAV/GPSOCEANIC" in item 18.

(d) A pilot-in-command who submits a IFR flight plan required by paragraph (a) shall terminate the flight plan by advising an appropriate ATS unit of the completion of the flight—

(1) as soon as practicable after landing; or

(2) by radio when in the vicinity of the destination aerodrome.

(e) For the purpose of this rule, aircraft wake turbulence categories are defined in ICAO Doc 8643

91.409 Adherence to flight plan

(a) A pilot-in-command of an aircraft shall, when an IFR flight plan has been submitted adhere to the current flight plan submitted, or the applicable portion of a current flight plan submitted, unless—

(1) for flights in controlled airspace, a request for change has been made and clearance obtained from an appropriate ATS unit; or

(2) for all flights, an emergency situation arises which necessitates immediate action to deviate from the flight plan; and

(b) If a deviation from a flight plan is made under paragraph (a)(2), the pilot-in- command shall notify an appropriate ATS unit as soon as practicable; and

(c) In-flight operational instructions involving a change in the ATS flight plan must, when practicable, be coordinated with the appropriate ATS unit before transmission to the aircraft.

91.411 Inadvertent change to flight plan

A pilot-in-command of an aircraft operating under IFR, shall in the event of an inadvertent departure from the current flight plan—

(1) advise an appropriate ATS unit of—

(i) any deviation from track; and

(ii) any variation of 5% or more of the true airspeed or any variation of ± 0.01 or more of the Mach number given in the flight plan; and

(iii) a revised ETA when the estimated ETA to the next reporting point notified to the ATS unit is found to be in error by more than two minutes; and

(2) regain track as soon as practicable.

91.412 Change from IFR to VFR

(a) A pilot-in-command of an aircraft electing to change the conduct of its flight from IFR to VFR shall, if a flight plan was submitted and subject to flight rules requirements of the airspace in which it is operating, notify the appropriate air traffic services unit specifically that the IFR flight is cancelled and communicate the changes to be made to its current flight plan.

(b) When an aircraft operating under IFR is flown in or encounters visual meteorological conditions it shall not cancel its IFR flight unless it is anticipated, and intended, that the flight will be continued in uninterrupted visual meteorological conditions.

91.413 Take-off under IFR

(a) ***Take-off minima***. Except as provided in paragraph (b), a pilot-in-command of an aircraft shall not take-off from an aerodrome under IFR unless weather conditions are—

(1) at or above the weather minima for IFR take-off prescribed for that aerodrome under Part 95; or

(2) if weather minima for IFR take-off are not prescribed under Part 95 for a particular aerodrome, a ceiling of at least 500 feet and at least 4000 m visibility.

(b) ***Reduced take-off minima***. A pilot-in-command of an aircraft may take-off under IFR from an aerodrome at a take-off minimum of zero cloud ceiling and visibility of at least 800 m provided that—

(1) the runway to be used has centre-line marking and runway edge lighting; and

(2) the take-off visibility is confirmed by the pilot-in-command by observing the number of visible runway edge lights; and

(3) Part 95 authorises reduced take-off minima on the runway to be used; and

(4) any obstacles in the take-off flight path are taken into account; and

(5) if the aircraft is a two-engine propeller-driven aeroplane, the aircraft is equipped with an operative auto-feather or auto-coarse system.

(c) ***Instrument Departure Procedures***. When an instrument departure procedure from an aerodrome is necessary, a pilot-in-command of an aircraft operating under IFR shall, if an instrument departure procedure is specified under Part 95 for that aerodrome

(1) comply with that instrument departure procedure; and

(2) unless otherwise prescribed for the procedure—

(i) maintain a climb gradient of at least 3.3% or 200 feet per nm; and

(ii) maintain a track based on the runway centreline to at least 400 feet above the elevation of the end of the departure runway, prior to commencing a turn; and

(iii) not exceed the IAS specified in Table 7 for the category of aircraft being operated during any turn specified for that procedure; and

(3) on completion of the departure procedure, intercept the en-route track at an angle of not less than 30° to that track.

Table 7. Maximum speeds: Instrument Departure Turns

Aircraft Category *	Maximum IAS in knots
A	120
B	165
C	265
D	290
H	90

* For the purpose of this rule **Aircraft category** means —

(i) in the case of a helicopter, category H; and

(ii) in the case of an aeroplane, a category based on the speed of the aeroplane, in knots, at the runway threshold (Vat) based on Vs multiplied by 1.3 with Vs being the stalling speed in the landing configuration at maximum certificated landing weight of the aeroplane being operated, in accordance with Table 7a.

Table 7a. Threshold Speed (Vat) Aeroplane Category

Aeroplane Vat in knots	Aeroplane Category
less than 91	A
91 to 120	B
121 to 140	C
141 to 165	D
166 to 210	E

91.415 En-route under IFR

(a) A pilot-in-command of an aircraft operating under IFR shall, where practicable—

(1) navigate along the route using the navigation aids, or way points, prescribed under Part 95 for that route to operate along the defined centre line of that route; or

(2) when on any other route, operate directly between the navigation facilities and points defining the route; or

(3) when on an area navigation route or parallel offset route, operate along the centreline of the route specified by ATS.

(b) A pilot-in-command of an aircraft operating under IFR shall, unless there is a crossing altitude, climb to be at or above a higher minimum altitude for the next route segment prior to the point at which the higher minimum altitude applies.

91.417 Minimum altitudes for IFR flights

(a) Except when necessary for take-off or landing, a pilot-in-command must not operate an aircraft under IFR below—

(1) the applicable minimum altitudes prescribed in Part 95; or

(2) the applicable area minimum altitude prescribed under Part 95; or

(3) if no applicable minimum altitude is prescribed in that Part—

(i) in the case of operations over terrain with a height in excess of 10 000 feet, a height of 2000 feet above the highest obstacle within a horizontal radius of 5 nm within the navigation tolerance area; or

(ii) in the case of operations over terrain with a height in excess of 5000 feet, a height of 1500 feet above the highest obstacle within a horizontal radius of 5 nm within the navigation tolerance area; or

(iii) in any other case, a height of 1000 feet above the highest obstacle within a horizontal radius of 5 nm within the navigation tolerance area.

(b) A pilot-in-command must establish the navigation tolerance area required under paragraph (a)(3) in a manner that is acceptable to the Director.

91.419 IFR cruising altitude or flight level

(a) Subject to paragraph (c), a pilot-in-command of an aircraft operating within the Port Moresby FIR under IFR in level cruising flight must, unless otherwise authorised by ATC, maintain the following altitude or flight levels—

(1) when operating at or below 20 000 feet AMSL—

(i) on a magnetic track of 000° clockwise to 179°, any odd thousand-foot altitude AMSL; or

(ii) on a magnetic track of 180° clockwise to 359°, any even thousand-foot altitude AMSL; and

(2) when operating at or above flight level 210 up to flight level 290—

(i) on a magnetic track of 000° clockwise to 179°, any odd flight level; or

(ii) on a magnetic track of 180° clockwise to 359°, any even flight level; and

(3) when operating at or above flight level 290 up to and including flight level 410—

(i) on a magnetic track of 000° clockwise to 179°, any odd flight level, at 2000 foot intervals beginning at flight level 290; or

(ii) on a magnetic track of 180° clockwise to 359°, any even flight level at 2000 foot intervals beginning at and including flight level 300; and

(4) when operating above flight level 410—

(i) on a magnetic track of 000° clockwise to 179°, any odd flight level, at 4000 foot intervals beginning at flight level 430; or

(ii) on a magnetic track of 180° clockwise to 359°, any odd flight level at 4000 foot intervals beginning at and including flight level 450.

(b) A pilot-in-command of an aircraft operating within the Port Moresby FIR under IFR must not maintain level cruising flight at any level between 20 000 feet AMSL and flight level 210 unless otherwise authorised by ATC.

(c) A pilot-in-command of an aircraft operating within the Port Moresby FIR under IFR at or above flight level 210 must not maintain level cruising flight below flight level-

(1) 220 when the zone QNH is less than 1013 Hectopascal; and

(2) 230 when the zone QNH is less than 980 Hectopascal.

91.421 IFR holding pattern

When an instrument holding pattern procedure is necessary, a pilot-in-command of an aircraft operating under IFR shall—

(1) conduct the applicable instrument holding pattern prescribed under Part 95; and

(2) not exceed the applicable speeds (in knots) specified in Tables 8 and 9 when entering into and conducting the holding pattern unless the holding pattern specifies otherwise; and

(3) make all turns at a rate of 3° per second up to a maximum bank angle of 25°; and

(4) enter the holding pattern in accordance with—

(i) Appendix B; or

(ii) the procedures prescribed under Part 95; and

(5) maintain the inbound and outbound tracks of the holding pattern: and

(6) maintain the outbound track—

(i) if a DME distance and time is prescribed, not beyond that DME distance or time that is reached first; or

(ii) if a DME distance is not prescribed, for one minute when conducted at or below FL 140, or for one and a half minutes when conducted above FL140; and

(7) make due allowance to headings, and the timing prescribed under (6)(ii), to compensate for the known wind effect.

Table 8. Instrument Holding Pattern — Aeroplanes — Maximum IAS in knots

Level	Maximum IAS in Normal conditions	Maximum IAS in Turbulent conditions
Up to and including 14 000 feet AMSL	230 170 [2]	280 [1] 170 [2]
Above 14 000 AMSL to 20 000 feet AMSL inclusive	240	280 or 0.80 Mach whichever is the lesser [1]
Above 20 000 feet AMSL to FL340 inclusive	265	280 or 0.80 Mach whichever is the lesser [1]
Above FL340	0.83 Mach	0.83 Mach

[1] The speed limit of 280 knots or 0.80 Mach for turbulent conditions shall be used for holding only after prior clearance from ATC, unless the procedure indicates that the holding area can accommodate aircraft flying at those higher speeds.

[2] Holding procedures limited to Category A and B aircraft only.

Table 9. Instrument Holding Pattern — Helicopters — Maximum IAS in Knots

Levels	Maximum IAS
Up to and including 6000 feet AMSL	100
Above 6000 feet AMSL	170

91.423 Approach to land under IFR

(a) ***Instrument approaches to aerodromes***. When an instrument approach to an aerodrome is necessary, a pilot-in-command of an aircraft operating under IFR shall—

(1) use an instrument approach procedure prescribed for the aerodrome under Part 95 and comply with that procedure; and

(2) not descend below the minimum altitudes prescribed for each approach segment of that instrument approach except in accordance with paragraphs (e) and (f); and

(3) unless otherwise specified for that procedure, not exceed the approach procedure segment IAS —

(i) for the aeroplane category as specified in Table 10; or

(ii) for helicopters, as specified in Table 11; or

(iii) for helicopters, when a helicopter instrument approach has not been prescribed, as specified for category Aeroplanes.

Table 10. Aeroplane instrument approach IAS (knots) limitations

Aeroplane Category	Vat	IAS for Initial Approach	Maximum IAS for Circling Approach	Range of IAS for Final Approach	Maximum IAS for Missed Approach
A	< 91	170	100	70 to 100	110
B	91/120	170	135	85 to 130	150
C	121/140	200	180	115 to 160	240
D	141/165	200	205	130 to 185	265

Table 11. Helicopter instrument approach IAS (knots) limitations

Range of IAS for Initial Approach	Maximum IAS for Reversal Procedures	Range of IAS for Final Approach	Maximum IAS for Missed Approach
70 to 120	100 up to 6000 ft. AMSL 110 above 6000 ft. AMSL	60 to 90	90

(b) Notwithstanding paragraph (a)(3), a pilot-in-command may operate an aeroplane at the IAS specified for an aeroplane of a higher category, but in no circumstance a lower category, in Table 10 provided that—

(1) the approach procedure segments are flown at those IAS specified for that higher category; and

(2) any other procedures or limitations prescribed for that higher category are complied with; and

(3) the appropriate ATC unit has been given prior notification of the intention to operate at that higher category.

(c) ***Reversal procedures***. When the instrument approach procedure specifies a reversal procedure, a pilot-in-command shall, on reaching the navigation aid or fix specified for the procedure—

(1) not exceed the maximum IAS for reversal procedures—

(i) specified in Table 10 for the initial approach segment; or

(ii) a lower IAS prescribed under Part 95; and

(2) enter the reversal procedures in accordance with Appendix C; and

(3) if a 45° reversal procedure as illustrated in Figure 1 is specified—

(i) intercept and maintain the outbound track or radial for the time or fix, as specified for commencing the procedure; and

(ii) then turn to a heading of 45° from the reciprocal of the inbound track for one minute for Category A and B aeroplanes or for one minute and fifteen seconds for Category C and D aeroplanes; and

(iii) on completion of the outbound leg, turn in the opposite direction to the reciprocal heading of the outbound leg to intercept the specified inbound track; or

(4) if an 80° reversal procedure as illustrated in Figure 1 is specified—

(i) intercept and maintain the outbound track or radial to the fix or for the time specified for commencing the procedure; and

(ii) turn to a heading of 80° from the reciprocal heading of the inbound track in the direction specified for the reversal procedure; and

(iii) on completion of the turn, turn in the opposite direction through 260° to intercept the specified inbound track; and

(iv) conduct either a 45° or 80° reversal procedure unless either procedure is specifically excluded in the procedure reversal procedure, may alternatively conduct an 45° reversal procedure in accordance with paragraph (2); and

(5) if a base turn as illustrated in Figure 1 is specified, turn to the prescribed track and maintain the outbound track

(i) intercept and maintain the prescribed inbound and outbound tracks; and

(ii) if a DME distance is prescribed, maintain the outbound track not beyond that DME distance; or

(iii) if a DME distance is not prescribed, maintain the outbound track for the specified time; or

(6) if a racetrack procedure, as illustrated in Figure 1, is specified—

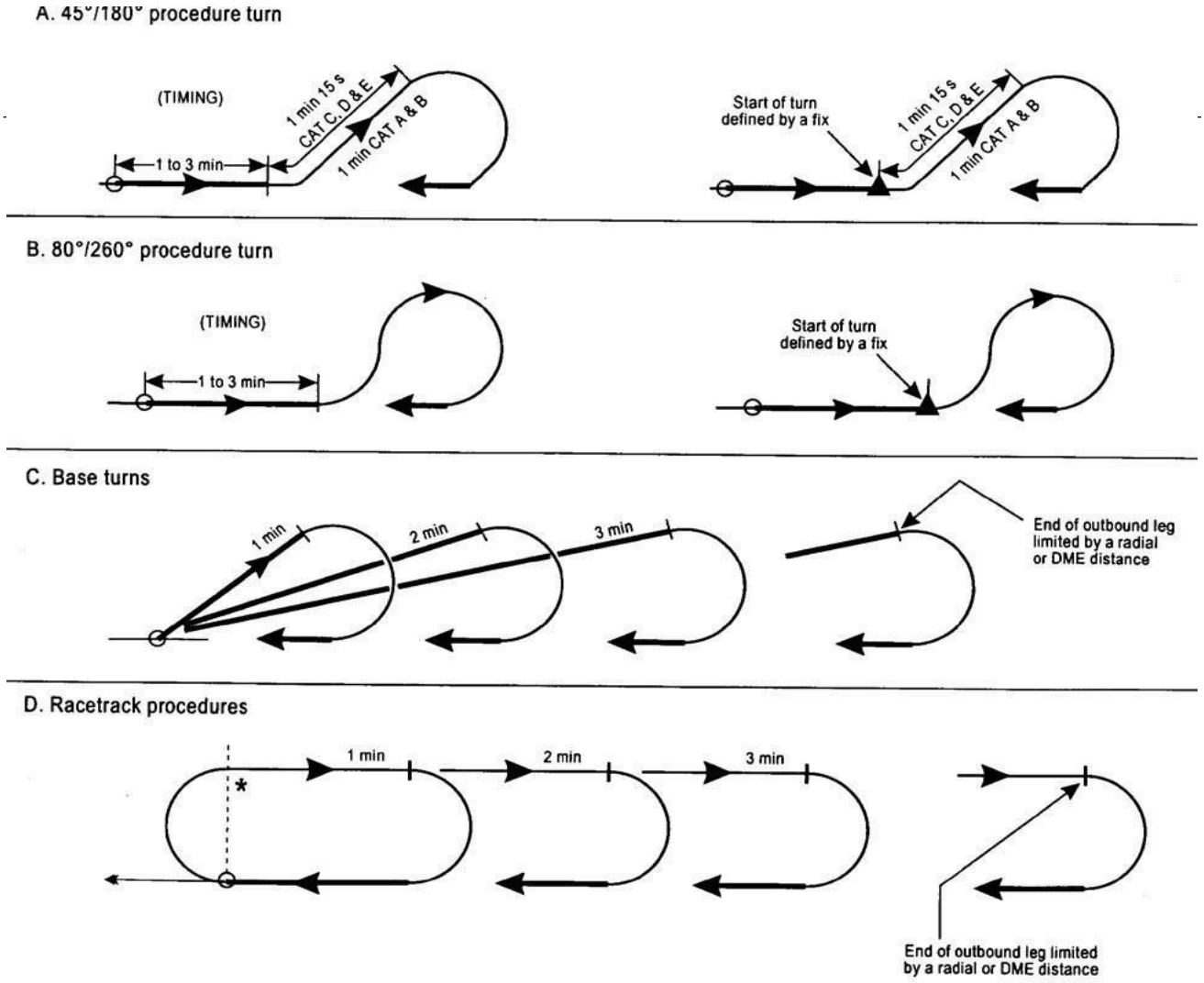
(i) enter the racetrack procedure at or above the minimum altitude prescribed for the holding procedure and in accordance with the entry procedures for holding patterns specified under 91.421 (4); and

(ii) on completion of the entry procedure, maintain the prescribed inbound and outbound tracks; and

(iii) if a DME distance is prescribed, maintain the outbound track not beyond that DME distance; or

(iv) if a DME distance is not prescribed, maintain the outbound track for the specified time.

Figure 1: Reversal Procedures



(d) ***Authorised DA, DH, MDH, or MDA***. When the instrument approach procedure required by paragraph (a)(1) provides for and requires the use of a DA, DH, MDH, or MDA, a pilot-in- command shall use—

(1) the highest DA, DH, MDH, or MDA prescribed by the instrument approach procedure—

(i) in accordance with the aeroplane category; or

(ii) in accordance with a higher aeroplane category if the approach is being conducted in accordance with paragraph (b); or

(iii) for a helicopter; or

(2) the DA, DH, MDH, or MDA prescribed for the pilot-in-command; or

(3) the DA, DH, MDH or MDA for which the aircraft is equipped.

(e) ***Operation below DA, DH, MDH, or MDA***. Where a DA, DH, MDH, or MDA is applicable, no pilot-in-command shall operate an aircraft at any aerodrome below the MDA or MDH, or continue an instrument approach procedure below the DA or DH prescribed in paragraph (d), unless—

(1) the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal manoeuvres that will allow touchdown to occur within the touchdown zone of the runway of intended landing; and

(2) the flight visibility is not less than the visibility prescribed under Part 95 for the instrument approach procedure being used; and

(3) except for a Category III precision approach procedure prescribed under Part 95 for that aerodrome that includes any necessary visual reference requirements, at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot—

(i) the approach lighting system; or

(ii) the threshold markings; or

(iii) the threshold lights; or

(iv) the runway-end identification lights; or

(v) the visual approach slope indicator; or

(vi) the touchdown zone or touchdown zone markings; or

(vii) the touchdown zone lights; or

(viii) the runway or runway markings; or

(ix) the runway lights.

(f) ***Circling approach procedure***. A pilot-in-command conducting a circling approach shall—

(1) when a visual manoeuvring area has been prescribed under Part 95, not conduct the approach within a sector of the area prescribed as no circling; and

(2) not exceed—

(i) the maximum IAS for circling approaches specified in Table 10; or

(ii) a lower IAS prescribed under Part 95; and

(3) unless otherwise prescribed under Part 95, not descend below the MDA for that approach until the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal manoeuvres that will allow touchdown to occur within the touchdown zone of the runway of intended landing.

(g) ***Cloud break procedures***. A pilot-in-command of an aircraft conducting a cloud break procedure prescribed under Part 95 shall

(1) not proceed beyond the prescribed MAPt unless the aircraft can be flown

(i) clear of cloud and in sight of the surface; and

(ii) at or above the minimum height and visibility prescribed for the procedure; and

(2) if applicable, approach the aerodrome in accordance with the preceding paragraph (f); and

(3) conduct the prescribed missed approach at any time during the approach when the requirements of paragraphs (1) and (2) cannot be complied with.

(h) ***Visual approach procedures***. A pilot-in-command may, subject to ATC authorisation in controlled airspace, conduct a visual approach under IFR, from the applicable minimum altitudes prescribed under Part 95, provided that—

(1) if the visual approach is to be commenced en route, the aircraft is within 30 nm from the aerodrome of intended landing; and

(2) the visibility is at least 5 km; and

(3) the approach can be conducted with continuous visual reference to the surface; and

(4) at night, the aircraft is-

(i) within the circling area; or

(ii) aligned with the runway centreline at a distance of 7 nm if conducting an ILS approach otherwise at a distance of 5 nm; and

(5) at night, the runway approach or runway lighting is in sight throughout the approach; and

(6) until the aircraft is continuously in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal manoeuvres that will allow touchdown to occur within the touchdown zone of the runway of intended landing, the visual approach is not conducted below the minimum heights—

(i) prescribed for VFR flight under 91.311(a)(2) and (3); and

(ii) where applicable, for noise abatement procedures prescribed by the Director—

(i) ***Landing***. A pilot-in-command shall not land an aircraft when the flight visibility is less than the visibility prescribed under Part 95 for the instrument approach procedure used.

(j) ***Missed approach procedures***. A pilot-in-command shall—

(1) immediately execute the missed approach procedure prescribed under Part 95 if the requirements of paragraph (e) are not met at any of the following times—

(i) when the aircraft is being operated below MDA; or

(ii) in the event of a loss of navigation guidance; or

(iii) upon arrival at the missed approach point, or at a specified DA or DH, required to be used, and any time after that until touchdown; and

(2) not exceed the maximum IAS for missed approaches—

(i) specified under Table 10; or

(ii) a lower IAS prescribed under Part 95; and

(3) if executing a missed approach prior to the missed approach point, track to the missed approach point before conducting the prescribed missed approach procedure.

91.425 Category II and III precision approach procedures

(a) A person must not operate an aircraft performing a Category II or III precision approach procedure unless—

(1) each flight crew member has adequate knowledge of, and familiarity with, the aircraft and the procedures to be used; and

(2) the instrument panel in front of the pilot who is controlling the aircraft has appropriate instrumentation for the type of flight-control guidance system that is being used; and

(3) the RVR information for the runway in use is provided to the pilot in command; and

(4) specific approval is authorised by the Director.

(b) Except as otherwise authorised by the Director, a person must not operate an aircraft performing a Category II or III precision approach procedure unless the ground component required for the operation, and the related airborne equipment, is installed and operating.

(c) For the purpose of paragraph (d), when the precision approach procedure being used provides for and requires the use of a DH, the authorised DH must be the highest of the following—

(1) the DH prescribed by the instrument approach procedure; or

(2) the DH prescribed for the pilot-in-command; or

(3) the DH for which the aircraft is equipped.

(d) Except as otherwise authorised by the Director, a pilot of an aircraft performing a Category II or III precision approach procedure that provides for and requires the use of a DH must not continue the approach below the authorised DH unless the following conditions are met—

(1) the aircraft is in a position from which a descent to a landing on the intended runway can be made at a normal rate of descent using normal manoeuvres, and that descent rate allows touchdown to occur within the touchdown zone of the runway of intended landing; and

(2) at least one of the following visual references for the intended runway is distinctly visible and identifiable—

(i) the runway threshold:

(ii) the runway threshold markings:

(iii) the runway threshold lights:

(iv) the runway touchdown zone or touchdown zone markings:

(v) the runway touchdown zone lights.

(e) Except as otherwise authorised by the Director, a pilot of an aircraft performing a Category II or III precision approach procedure must immediately execute a missed approach procedure whenever, prior to touchdown, the requirements of paragraph (d) are not met.

(f) A pilot of an aircraft, performing a Category III precision approach procedure without a DH must not land the aircraft except in accordance with the provisions of an authorisation issued by the Director.

91.427 Category II and III precision approach procedure manual

(a) No person shall perform a Category II or III precision approach procedure in a Papua New Guinea registered aircraft unless—

(1) there is available in the aircraft—

(i) for Category II precision approach procedures, a current Category II precision approach procedure manual approved in accordance with 91.429 for that aircraft; or

(ii) for Category III precision approach procedures, a current Category III precision approach procedure manual approved in accordance with 91.429 for that aircraft; and

(2) the Category II or III precision approach procedure is performed in accordance with the procedures, instructions, and limitations in the approved manual; and

(3) the instruments and equipment listed in the approved manual that are required for a particular Category II or III precision approach procedure have been inspected and maintained in accordance with the maintenance programme in that manual.

(b) Each operator of an aircraft performing a Category II or III precision approach procedure shall keep a current copy of the approved manual at its principal base of operation and shall make it available for inspection upon request by the Director.

(c) The procedures manual required by paragraphs (a) and (b) may be incorporated in the operations procedures required of the holder of an air operator certificate issued under Part 119.

91.429 Approval of category II and III precision approach procedure manual

(a) Each applicant for the approval of a Category II or III precision approach procedure manual, or an amendment to an approved Category II or III precision approach procedure manual, shall submit the proposed manual or amendment to the Director.

(b) If the applicant requests an evaluation programme that requires the demonstration of a Category II or III precision approach procedure, the application shall include the following—

(1) the location of the aircraft and the place where any demonstration is to be conducted; and

(2) the date any demonstration is to commence.

(c) Each Category II or III precision approach procedure manual shall contain—

(1) the registration, make, and model of the aircraft to which it applies; and

(2) a maintenance programme including procedures for the—

(i) test and inspection of each instrument and item of equipment required for Category II or III precision approach procedures at 3 month intervals; and

(ii) bench testing of each instrument and item of equipment required for Category II or III precision approach procedures at 12 month intervals; and

(iii) test and inspection of each static pressure system in accordance with Part 43 at 12 month intervals; and

(iv) recording in the maintenance records the date, airport, and reasons for each

discontinued Category II or III precision approach procedures because of instrument or equipment malfunction; and

(3) the procedures and instructions related to—

(i) the recognition of decision height; and

(ii) the use of runway visual range information; and

(iii) approach monitoring; and

(iv) the maximum permissible deviations of the basic ILS indicator within the decision region; and

(v) a missed approach; and

(vi) the use of airborne low approach equipment; and

(vii) the minimum altitude for the use of the autopilot; and (viii) instrument and equipment failure warning system; and

(ix) instrument failure; and

(x) other procedures, instructions, and limitations that may be found necessary by the Director.

(d) Notwithstanding paragraph (c)(2)(i), a functional flight test may replace each alternate inspection in which case the maintenance programme shall include procedures for the completion and recording of this flight test.

91.430 Continuous Descent Final Approach

Each operator shall ensure that:

(1) it establishes and document operational procedure for the proper use of continuous descent final approach (CDFA) technique on the final segment of a non-precision approach (NPA); and

(2) flight crew are provided with appropriate ground and flight training prior to performing CDFA.

91.431 Use of GNSS for air navigation

(a) No pilot-in-command of an aircraft operating under IFR shall use GNSS equipment for air navigation—

(1) unless the receiver database contains data that is current with respect to the routes to be flown and the IFR procedures to be conducted; and

(2) that does not comply with the requirements of 91.519(c) other than for the provision of supplementary navigation information; and

(3) if being used as a primary means of navigation unless prior to commencing the flight, a RAIM prediction has been obtained—

(i) derived from the GPS equipment to be used; or

(ii) from the holder of an air traffic service organisation holding a certificate issued under Part 172.

(b) A pilot-in-command of an aircraft operating under IFR using GPS for air navigation shall—

(1) ensure that en route navigation is conducted by cross checking each GPS database

selected track and distance between reporting points, for accuracy and reasonableness by reference to current en route and area charts; and

(2) when a RAIM warning has been displayed for more than ten minutes, or the GPS equipment has operated in the DR mode for more than one minute—

(i) advise the appropriate ATS unit; and

(ii) verify the aircraft position every 10 minutes using another IFR-approved navigation system; and

(3) when providing distance information that is GPS derived, state the distance as a GPS distance relative to a specified reference point that is contained in the GPS database; and

(4) when RAIM is unavailable and has been unavailable for the preceding 10 minutes, not provide distance derived from the GPS equipment; and

(c) A pilot-in-command of an aircraft operating under IFR using GPS to conduct an instrument approach shall, if a loss of RAIM or a RAIM warning is indicated—

(1) prior to the approach, not conduct the procedure; and

(2) during the approach, immediately conduct a prescribed missed approach procedure.

91.432 Operation in ADS-B mandatory airspace

(a) Except as provided for in paragraph (b), a pilot-in-command of an aircraft operating in ADS-B mandatory airspace must operate the ADS-B OUT transmitting equipment in accordance with procedures acceptable to the Director.

(b) A pilot-in-command of an aircraft intending to operate without an operable ADS-B OUT transmitter in ADS-B mandatory airspace that is within controlled airspace must obtain specific authorisation from the ATC facility having jurisdiction over the relevant airspace as part of the ATC clearance to enter that airspace.

91.433 Operating in icing conditions

(a) Except as provided in paragraph (b), a pilot-in-command operating an aircraft under IFR shall not—

(1) perform a take-off in an aircraft that has—

(i) snow, ice, or frost adhering to any propeller, windscreen, or power plant installation, or to an airspeed, altimeter, rate of climb, or flight attitude instrument system; or

(ii) snow, ice, or frost adhering to the wings, stabilisers, or control surfaces; and

(2) fly an aircraft into known or forecast icing conditions unless the aircraft is certificated with ice protection equipment for flight in the type of known icing conditions.

(b) A pilot-in-command may perform a take-off in an aircraft that has snow, ice, or frost, adhering to the aircraft if the take-off is performed in accordance with the aircraft flight manual, or instructions and data provided by the aircraft manufacturer, for take-off in such conditions.

(c) If weather reports and briefing information immediately prior to the flight indicate to the pilot- in- command that the forecast icing conditions that would otherwise prohibit the flight will not be encountered during the flight because of changed weather conditions, the restrictions in paragraph (a)(2) based on forecast conditions shall not apply.

(d) All aeroplanes shall be equipped with suitable de-icing or anti-icing devices when operated in circumstances in which icing conditions are reported to exist or are expected to be encountered.

91.435 IFR radio communications

(a) Except as provided under paragraph (b), a pilot-in-command of an aircraft operating under IFR shall, unless otherwise authorised by ATC—

(1) maintain a continuous listening watch on the appropriate frequency; and

(2) report as soon as possible to an appropriate ATS unit—

(i) the time and altitude of passing each designated reporting point, or the reporting points or the times specified by ATC; and

(ii) any other information relating to the safety of the flight.

(b) A pilot-in-command of an aircraft under radar control while operating under IFR shall report passing only those reporting points specifically requested by ATC.

(c) A pilot-in-command of an aircraft operating under IFR within controlled airspace shall, unless otherwise authorised by ATC, report as soon as possible to the appropriate ATC unit—

(1) on departure after take-off; and

(2) on reaching and leaving levels assigned by ATC; and

(3) when entering a holding pattern; and

(4) during an instrument approach procedure, when—

(i) overhead the navigation aid prior to commencing a reversal turn; and

(ii) commencing initial approach overhead, the navigation aid or fix, or established on the DME arc; and

(iii) commencing the turn of a reversal procedure to intercept final approach; and

(iv) commencing final approach; and

(v) established on final approach after radar vectoring; and

(d) A pilot-in-command of an aircraft operating under IFR within Class F airspace shall broadcast the reports in accordance with paragraph (c) on the frequency allocated to that aerodrome.

91.437 IFR operations – radio communications failure

(a) Unless otherwise authorised by ATC, a pilot-in-command of an aircraft that has radio communications failure when operating under IFR in VMC flight conditions, or if VMC flight conditions are encountered after the failure, must continue the flight under VFR and land as soon as practicable at the nearest suitable aerodrome.

(b) Unless otherwise authorised by ATC, a pilot-in-command of an aircraft that has radio communications failure when operating under IFR in IMC flight conditions, or that is operating in VMC flight conditions where the maintenance of such conditions is uncertain, must continue the flight in accordance with the flight plan; and

(1) in airspace where procedural separation is being applied, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 20 minutes following the aircraft's failure to report its position over a compulsory reporting point and thereafter adjust level and speed in accordance with the filed flight plan;

(2) in airspace where an ATS surveillance system is used in the provision of air traffic control, maintain the last assigned speed and level, or minimum flight altitude if higher, for a period of 7 minutes following-

(i) the time the last assigned level or minimum flight altitude is reached; or

(ii) the time the transponder is set to Code 7600 or the ADS-B transmitter is set to indicate the loss of air-ground communications; or

(iii) the aircraft's failure to report its position over a compulsory reporting point; whichever is later and thereafter adjust level and speed in accordance with the filed flight plan;

(3) when being vectored or having been directed by ATC to proceed offset using RNAV without a specified limit, proceed in the most direct manner possible to re-join the current flight plan route no later than the next significant point, taking into consideration the applicable minimum flight altitude;

(4) proceed according to the current flight plan route to the appropriate designated navigation aid or fix serving the destination aerodrome and, when required to ensure compliance with (5), hold over this aid or fix until commencement of descent;

(5) commence descent from the navigation aid or fix specified in (4) at, or as close as possible to, the expected approach time last received and acknowledged; or, if no expected approach time has been received and acknowledged, at, or as close as possible to, the estimated time of arrival resulting from the current flight plan;

(6) complete a normal instrument approach procedure as specified for the designated navigation aid or fix; and

(7) land, if possible, within 30 minutes after the estimated time of arrival specified in (5) or the last acknowledged expected approach time, whichever is later.

Subpart F — Instrument and Equipment Requirements

91.501 General requirements

A person must not operate an aircraft unless—

(1) the aircraft is equipped with the type and number of instruments and equipment required by this Subpart; and

(2) the instruments and equipment installed in the aircraft must comply with-

(i) the specifications and airworthiness design standards listed in—

(A) Appendix A to this Part; or

(B) Appendix B to Part 21; or

(C) Part 26; or

(D) an alternative specification and design standard approved by the Director; and

(ii) equipment requirements under A.28 for all aeroplanes operated under VFR; and

(3) the instruments and equipment installed in the aircraft have been installed in accordance with the aircraft manufacturer's instructions or other equivalent instructions acceptable to the Director; and

(4) except as provided in rule 91.537, the instruments and equipment installed in the aircraft are in operable condition.

91.503 Location of instruments and equipment

Each operator shall ensure that—

(1) any instruments and equipment operated or used by one pilot can be readily seen and operated from that pilot's normally seated position; and

(2) any single instrument or item of equipment operated or used by two pilots, is installed so that it can be readily seen and operated from each pilot's normally- seated position.

91.505 Seating and restraints

(a) Except as provided in paragraph (k), each aircraft, other than balloon must be equipped with a seat or berth for each person on board.

(b) Except as provided in paragraph (c) and (d), each passenger seat of an aircraft must be fitted with—

(1) a safety belt; or

(2) a safety belt with a diagonal should strap; or a safety harness.

(c) Except for multi-engine aeroplanes type certificated under SFAR41, SFAR23 or FAR Commuter category, each passenger seat of an aeroplane below 5700kg MCTOW manufactured after December 1986 must be fitted with-

(1) a safety belt with a diagonal shoulder strap; or

(2) a safety harness.

(d) Each passenger seat of a rotorcraft manufactured after 16 September 1992 must be fitted with-

(1) a safety belt with a diagonal shoulder strap, or

(2) a safety harness.

(e) Each berth must be equipped with restraining belts.

(f) Except as provided for in paragraph (g), each flight crew seat musts be fitted with a safety harness.

(g) For aeroplanes engaged in flight training, each flight crew seat may be fitted with a safety belt with a diagonal shoulder strap or a safety harness.

(h) Each crew seat of an aeroplane must be fitted with a safety harness, except that restraints consisting of a safety belt and single diagonal shoulder strap may continue in service if installed and approved before 6 March 1980.

(i) Each seat alongside a pilot's seat, where there is a potential for the occupant to impede the pilot's functions in the event of a rapid deceleration, must be fitted with a safety harness.

(j) Notwithstanding paragraphs (b) and (c)—

(1) each seat in an aircraft certified for aerobatic flight must be equipped with a safety harness; and

(2) each cockpit front seat must be equipped with a safety belt with a diagonal shoulder strap or a safety harness.

(k) A seat or berth is not required for a person being carried in a balloon or on parachuting operations where rule 91.207(d) applies.

(l) All aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 1981 must be—

(1) equipped with a forward or rearward facing seat, within 15 degrees of the longitudinal axis of the aeroplane, fitted with a safety harness for the use of each cabin crew member required to satisfy the intent of emergency evacuation under rule 91.115; and

(2) located near floor level and other emergency exits acceptable to the Director for emergency evacuation.

91.507 Passenger information signs

Each aircraft, except a balloon, having a certificated seating capacity of 10 passenger seats or more in passenger compartments separated from direct communication from the flight crew compartment shall be equipped with signs operated by the crew that are visible to passengers and flight attendants to notify them when—

(1) smoking is prohibited; and

(2) when safety belts must be fastened.

91.509 Minimum instruments and equipment

(a) A powered aircraft with an airworthiness certificate, except a powered glider, must be equipped with a means of indicating—

(1) airspeed; and

(2) Mach number, if the speed limitation specified in the aircraft flight manual is expressed in terms of Mach number; and

(3) altitude in feet; and

(4) magnetic heading; and

(5) fuel tank contents; and

(6) engine revolutions of each engine; and

(7) oil pressure of each engine using a pressure lubricating system; and

(8) coolant temperature of each liquid-cooled engine; and

(9) oil temperature of each engine rated at over 250 brake horsepower using a pressure lubricating system; and

(10) manifold pressure of each supercharged, or turbocharged piston engine and each piston engine fitted with a constant speed propeller; and

(11) cylinder head temperature of each air-cooled piston engine rated at over 250 brake horsepower; and

(12) flap position, if flaps are fitted, unless the position of the flaps can be determined visually by the flight crew; and

(13) landing gear position, if the aircraft has retractable undercarriage; and

(14) the correct functioning of electrical power generation equipment; and

(15) from 1 June 2009, the presence of carbon monoxide in the cabin if the aircraft is fitted with an exhaust manifold cabin heater or a combustion cabin heater; and

(16) an accurate timepiece indicating the time in hours, minutes and seconds.

(b) An aircraft equipped with a lockable door leading to any compartment normally accessible to passengers must be equipped with a means for the crew to unlock the door.

91.511 Night instruments and equipment

(a) Each powered aircraft with an airworthiness certificate operated by night shall be equipped in accordance with 91.509 and have—

(1) except as provided in paragraph (b), a means of indicating rate of turn and slip; and

(2) position lights; and

(3) an anti-collision light system; and

(4) illumination for each required instrument or indicator or charts.

(b) An aircraft equipped with a third attitude instrument indicator that is usable through 360° of pitch and roll does not need to be equipped with a means of indicating rate of turn.

91.513 VFR communication equipment

Each aircraft operating under VFR shall be equipped with radio communications equipment that meets level 1 or 2 standards specified in Appendix A, A.9 that is capable of providing continuous two-way communications with an appropriate ATS unit.

91.515 Communication and navigation equipment – VFR over-water

Each aircraft operating under VFR over water, at a distance that is more than 30 minutes flying time from the nearest shore, shall be equipped with—

(1) communication equipment that—

(i) meets level 1 or 2 standards specified in Appendix A, A.9; and

(ii) is capable of providing continuous two-way communications with an appropriate ATS unit or aeronautical telecommunications facility; and

(2) navigation equipment that is capable of navigating the aircraft in accordance with the flight plan.

91.517 IFR instruments and equipment

Each powered aircraft issued with an airworthiness certificate and operating under IFR, shall be equipped in accordance with 91.509 and 91.511 and have the means of indicating —

(1) aircraft attitude, by gyroscopic or inertial means; and

(2) magnetic heading, by gyroscopic or inertial means; and

(3) that the power supply to any gyroscopic instruments is adequate; and

(4) sensitive pressure altitude, in feet, adjustable for barometric pressure in Hectopascal or millibars; and

(5) outside air temperature; and

(6) time in hours, minutes, and seconds; and

(7) airspeed in knots, with a means of preventing malfunctioning due to either condensation or icing; and

(8) rate of climb and descent.

91.519 IFR communication and navigation equipment

(a) An aircraft operating under IFR must be equipped with communication equipment that-

(1) meets level 1 standards specified in Appendix A, A.9 and

(2) is capable of providing continuous two-way communications with an appropriate ATS unit or aeronautical telecommunications facility.

(b) An aircraft operating under IFR must be equipped with a navigation system which—

(1) meets level 1 standards specified in Appendix A, A.9; and

(2) will enable the aircraft to proceed in accordance with—

(i) the flight plan required under 91.407; and

(ii) the designated RNP airspace where applicable; and

(iii) the requirements of ATC.

(c) An aircraft operating under IFR using GPS as the primary or sole means for navigation must be equipped with GPS equipment that is approved on form CA 2129-

(1) to equipment Level 1; and

(2) for use on the intended IFR operation as a primary or sole means navigation system.

(d) An aircraft operating in airspace with an MNPS designated under ICAO Doc 7030 must—

(1) be equipped with navigation equipment capable of continuously indicating to the flight crew adherence to or departure from track, in accordance with the MNPS, at any point along that track; and

(2) be authorised by the Director for MNPS operations.

(e) An aircraft operating in an airspace where a RVSM of 300 m (1000 ft.) is applied between FL 290 and FL 410 inclusive by ATC must be—

(1) issued a specific approval by the Director for operation in the airspace concerned; and

(2) equipped with equipment capable of—

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

(ii) automatically maintaining a selected flight level; and

(iii) for aircraft type certificated before 1 January 1997, providing an aural and visual alert to the flight crew when a deviation of 300 feet from the selected flight level occurs; and

(iv) for aircraft type certificated after 31 December 1996, providing an aural and visual alert to the flight crew when a deviation of 200 feet from the selected flight level occurs; and

(v) automatically reporting pressure altitude with the capability for switching to operate from either altitude measurement system referred to in paragraph (f).

(3) The operator of an aircraft issued with a specific approval by the Director to operate in RVSM airspace must ensure that—

(i) a minimum of two aircraft of each aircraft type grouping of the operator have their height- keeping performance monitored, at least once every two years or

within intervals of 1 000 flight hours per aircraft, whichever period is longer; and

(ii) if an operator aircraft type grouping consists of a single aircraft, monitoring of that aircraft is accomplished within the specified period; and

(iii) the vertical navigation performance capability of the aeroplane satisfies the requirements specified in Appendix A10; and

(iv) it has instituted appropriate procedures in respect of continued airworthiness (maintenance and repair) practices and programmes; and

(v) it has instituted appropriate flight crew procedures for operations in RVSM airspace.

(f) The equipment required in paragraph (e)(2)(i) must consist of at least two altitude measurement systems.

91.520 Performance-based Navigation (PBN)

(a) An aircraft operating with a navigation specification where performance-based navigation (PBN) has been prescribed, shall, in addition to the requirements specified under paragraph (b):

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

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

(3) have information relevant to the aeroplane navigation specification capabilities included in the MEL.

(b) The Operator of an aircraft approved with a navigation specification for PBN must ensure that the following are established and documented:

(1) normal and abnormal procedures including contingency procedures;

(2) flight crew qualification and proficiency requirements in accordance with the appropriate navigation specifications;

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

(4) appropriate maintenance procedures to ensure continued airworthiness in accordance with the appropriate navigation specifications.

(c) The Director shall issue a specific approval for operations based on PBN authorization required (AR) navigation specifications.

91.521 Category II and III precision approach equipment

(a) Each aircraft performing a Category II or III precision approach procedure shall be equipped in accordance with 91.509, 91.511, and 91.517, and have—

(1) two localiser and glide slope receiving systems that—

(i) each provide a basic ILS display at each pilot station; and

(ii) have at least one localiser antenna and one glide slope antenna; and

(2) at least one ILS system required under paragraph (1) that is not affected by the use of the aircraft communication equipment; and

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

(4) two gyroscopic or inertial aircraft attitude indicators; and

(5) two gyroscopic or inertial magnetic heading indicators; and

(6) two airspeed indicators calibrated in knots with a means of preventing malfunctioning due to either condensation or icing; and

(7) two sensitive altimeters, calibrated in feet, each having a placard correction for altimeter scale error and for the wheel height of the aircraft; and

(8) two rate of climb and descent indicators; and

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

(i) an automatic approach coupler, with, at least, automatic steering in relation to an ILS localiser at one pilot station; or

(ii) a flight director system that shall display computed information as steering commands in relation to an ILS localiser, and on the same instrument, either computed information as pitch commands in relation to an ILS glide slope or basic ILS glide slope information; and

(10) for operation with a decision height below 150 feet—

(i) a marker beacon receiver providing aural and visual indications of the inner marker; or

(ii) a radio altimeter; and

(11) warning systems, for immediate detection by the pilot of system faults in—

(i) items required by subparagraphs (1), (4), (5), and (9); and

(ii) if installed for use in Category III precision approach procedures, the radio altimeter and auto throttle system; and

(12) fully functioning dual controls; and

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

(14) a windshield wiper, or equivalent means of providing adequate cockpit visibility for a safe transition, by either pilot, to touchdown and rollout.

(b) The number of instruments and equipment required under paragraphs (a)(4), (5), (6), (7), and (8) includes the instruments and equipment required for IFR operations under 91.517.

91.523 Emergency equipment

(a) An aircraft must be equipped with the number of first aid kits specified in Table 12, which must be distributed and readily accessible in each passenger compartment for the treatment of injuries likely to occur in flight or in minor accidents.

(b) An aircraft must be equipped with a survival kit appropriate to the terrain over which the aircraft is to be flown and of sufficient size to cater for all occupants.

(c) An aircraft with a certificated seating capacity of 10 passenger seats or more must be

equipped with the number of hand-held fire extinguishers specified in Table 13, which must be readily accessible, and distributed in accordance with Table 13.

(d) Except for the DHC6-300 series and the DHC6-400 series, an aircraft with a certificated seating capacity of 20 passenger seats or more must be equipped with an axe that is readily accessible to the crew.

(e) An aircraft with a certificated seating capacity of 61 passenger seats or more must be equipped with portable battery-powered megaphones—

(1) readily accessible from the cabin crew seat for crew members who are assigned to direct emergency evacuation; and

(2) distributed in accordance with Table 14.

(f) Each item of equipment that is required under paragraphs (c), and (e) must clearly indicate its method of operation.

(g) Each compartment or container that contains any item of equipment required by paragraphs (a), (b), (c) and (e) must be marked to indicate its contents.

(h) Paragraph (e) does not apply when the aircraft is carrying cargo exclusively in any passenger compartment converted for the carriage of cargo.

(i) An aircraft operated across land areas which have been designated by the Director as areas in which search and rescue would be especially difficult, must be equipped with such signalling devices and life-saving equipment, including means of sustaining life as may be appropriate to the area overflown.

Table 12. First aid kit

Passenger numbers of—	Total number of kits
1 through 19	1
20 through 50	2
51 through 250	3
251 or more	4

Table 13. Hand-held fire extinguishers

Use	Location	Distribution
Pilot or Flight Crew	Readily accessible to the pilot or from a flight crew station in a flight deck compartment.	1
Cargo Compartment	Accessible to crew members near the entrance to each Class A, B, and E cargo compartment.	1
Galleys	Readily accessible at the entrance to each galley in a passenger compartment or readily accessible to crew within each galley in a passenger compartment.	1
	Within, or at the entrance to, a galley not located in a passenger, crew, or cargo compartment.	1
Passenger Compartment *(The number of extinguishers required in the passenger compartment is additional to those required at the pilot station, cargo compartment and galleys).*	10 through 30	1
	31 through 60	2
	61 through 200	3
	201 through 300	4
	301 through 400	5
	401 through 500	6
	501 through 600	7
	501 through 600	7

Table 14. Megaphones

Certificated seating capacity of—	Distribution	
	Forward end	Most rearward location
61 through 99		1
100 or more	1	1

91.525 Flights over water to more than 200 nm

(a) An aircraft that is operated on a flight over water must be equipped with one life jacket or equivalent individual floatation device for each person on board and stowed in a position easily accessible from the seat or berth of the person for whose use it is provided if —

(1) the aircraft is a single-engine aircraft, and the flight distance to shore is more than gliding distance for the aircraft; or

(2) the aircraft is a multi-engine aircraft that is unable to maintain a height of at least 1000 feet AMSL with one engine inoperative, and the flight distance to shore is more than gliding distance for the aircraft; or

(3) the aircraft is a multi-engine aircraft that is capable of maintaining a height of at least 1000 feet AMSL with one engine inoperative and the flight distance to shore is more than 50 nm.

(b) A single engine aircraft, or multi-engine aircraft that is unable to maintain a height of at least 1000 feet AMSL with one engine inoperative, that is operated on a flight over water that extends to more than 100 nm from shore must be equipped with—

(1) enough life-rafts with buoyancy and rated capacity to accommodate all the occupants of the aircraft; and

(2) a survival locater light on each life-raft; and

(3) a survival kit, appropriately equipped for the route to be flown, attached to each required life-raft; and

(4) at least one pyrotechnic signalling device on each life-raft; and

(5) one ELT(S) or one EPIRB.

(c) A multi-engine aircraft that is capable of continuing flight with one or more engines inoperative, that is operated on a flight over water that extends to more than 200 nm from shore must be equipped with the equipment specified in paragraph (b).

(d) An aircraft in excess of 5700 kg MCTOW that is operated on a flight over water that extends to more than 200 nm from shore must be equipped with-

(1) the equipment specified in paragraph (b); and

(2) an additional ELT(S) or EPIRB.

(e) The life jacket or equivalent floatation device, life-rafts, and signalling devices required under any paragraphs (a) to (d) must be installed in conspicuously identified locations and must be easily accessible in the event of a ditching of the aircraft.

(f) An aircraft taking off or landing at an aerodrome where, 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 must be equipped with one life jacket or equivalent floatation device for each person on board, stowed in a position easily accessible from the seat or berth occupied by the person.

91.526 All aeroplanes on long-range over-water flights

(a) In addition to the equipment prescribed in 91.525 or 91.527, whichever is applicable, the following equipment shall be installed in all aeroplanes when used over routes on which the aeroplane may be over water and at more than a distance corresponding to 120 minutes at cruising speed or 740 km (400 NM), whichever is the lesser, away from land suitable for making an emergency landing in the case of aircraft operated in accordance with en route engine inoperative limitations under Part 121 Subpart D or 185 km (100 NM), whichever is the lesser, for all other aeroplanes:

(1) life-saving rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in emergency, provided with such life-saving equipment including means of sustaining life as is appropriate to the flight to be undertaken;

(2) equipment for making the pyrotechnical distress signals described in Part 172; and

(3) with a maximum certificated take-off mass of over 27 000 kg, a securely attached automatically activated underwater locating device operating at a frequency of 8.8 kHz; and

(4) the automatically activated underwater locating device under paragraph (3) shall operate for a minimum of 30 days and shall not be installed in wings or empennage.

(b) Each life jacket and equivalent individual flotation device, when carried in accordance with 91.525(a) and 91.527(1), shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons, except where the requirement of 91.525(f) is met by the provision of individual flotation devices other than life jackets.

91.527 Aircraft operations on water

Each aircraft operating on water shall be equipped with—

(1) one life jacket, or equivalent individual flotation device, for each person on board, stowed in a position easily accessible from each seat or berth of the person for whose use it is provided; and

(2) one sea anchor (drogue); and

(3) equipment for making the sound signals prescribed in the International Regulations for Preventing Collisions at Sea, where applicable.

91.528 All Aeroplanes on Flights Over Designated Land Areas

Aeroplanes, when operated over land areas which have been designated by the State concerned as areas in which search and rescue would be especially difficult, shall be equipped with such signalling devices and life-saving equipment (including means of sustaining life) as may be appropriate to the area overflown.

91.529 Emergency locator transmitter

(a) A person must not operate an aircraft without an automatic ELT installed in the aircraft except as provided in paragraphs (b), (d) and (e), rule 121.353(b) and 129.109(a).

(b) An aircraft may be operated without an ELT installed if-

(1) the operation is to ferry the aircraft from the place where the operator takes possession of the aircraft to a place where the automatic ELT is to be installed; and

(2) the aircraft does not carry any passenger.

(c) Notwithstanding rule 91.501(4), an aircraft may be operated with an inoperative automatic ELT if-

(1) the operation is to ferry the aircraft from a place where repairs or replacement cannot be made to a place where the repairs or replacement can be made; and

(2) the aircraft does not carry any passenger.

(d) Notwithstanding rule 91.501(4) and further to the provisions of paragraph (c), an aircraft may be operated with an inoperative automatic ELT for a period of not more than 7 days if the aircraft is equipped with an ELT(S) or PLB that is accessible to any person on board the aircraft.

(e) Paragraph (a) does not apply to the following aircraft:

(1) an aircraft that is equipped with no more than 1 seat if the pilot is equipped with an ELT(S) or PLB;

(2) a glider or microlight if at least 1 person carried in the glider or microlight aircraft is equipped with an ELT(S) or PLB;

(3) a glider, or powered aircraft, including microlight aircraft, that is equipped with no more than 2 seats, if the glider or powered aircraft is operated not more than 10 nm from the aerodrome from which the glider or aircraft took off;

(4) a manned free balloon

(f) A holder of a certificate of registration for a Papua New Guinea registered aircraft that is equipped with an automatic ELT, or carries an ELT(S), EPIRB or PLB that operates on 406 MHZ must not operate the aircraft unless-

(1) for an automatic ELT or ELT(S), the ELT is coded with the International Telecommunication Union (ITU) country code for Papua New Guinea, and any of the following:

(i) the ELT serial number:

(ii) the 15bit aircraft address:

(iii) the ICAO aircraft operating agency designator:

(iv) the aircraft nationality and registration marks; and

(2) for an EPIRB or PLB, the EPIRB or PLB is coded with-

(i) the International Telecommunication Union (ITU) country code for Papua New Guinea; and

(ii) a unique code to identify the EPIRB or PLB: and

(3) the holder of the certificate of registration has notified the Rescue Coordination Centre of Papua New Guinea of-

(i) code, in accordance with paragraph (f)(1) or (f)(2), for each ELT,

EPIRB, or PLB that is installed or carried in the aircraft; and

(ii) the name and emergency contact details of the aircraft operator.

(g) A person must not operate a foreign aircraft in Papua New Guinea that is equipped with or carries an ELT that operates on 406 MHZ unless the ELT is coded with-

(1) the International Telecommunication Union (ITU) country code of the State of registry; and

(2) any of the following:

(i) the ELT serial number:

(ii) the 15bit aircraft address:

(iii) the ICAO aircraft operating agency designator:

(iv) the aircraft nationality and registration marks.

(h) Except as provided for in (i) all aeroplanes authorized to carry more than 19 passengers shall be equipped with at least one automatic ELT or two ELTs of any type.

(i) All aeroplanes authorized to carry more than 19 passengers for which the individual certificate of airworthiness is first issued after 1 July 2008 shall be equipped with either:

(i) at least two ELTs, one of which shall be automatic; or

(ii) at least one ELT and a capability that meets the requirements of Part 91.530

(iii) in the case where the requirements for Part 91.530 are met by another system, no automatic ELT is required.

(j) Except as provided for in (k), all aeroplanes authorized to carry 19 passengers or less shall be equipped with at least one ELT of any type.

(k) All aeroplanes authorized to carry 19 passengers or less for which the individual certificate of airworthiness is first issued after 1 July 2008 shall be equipped with at least one automatic ELT.

(l) ELT equipment carried to satisfy the requirements of (h), (i), (j), (k) and (l) shall operate in accordance with the relevant provisions of Annex 10, Volume III.

91.531 Location of an Aeroplane in Distress

(a) Each aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2023, shall autonomously transmit information from which a position can be determined by the operator at least once every minute, when in distress, in accordance with Appendix E.

(b) Each operator shall make position information of a flight in distress available to the appropriate organisations, in accordance with procedures acceptable to the Director.

91.532 Oxygen indicators

Each aircraft operated at altitudes above 14 000 feet AMSL, or for more than 30 minutes between 10 000 feet up to and including 14 000 feet AMSL, shall be equipped with a means of indicating—

(1) to the flight crew—

(i) the amount of oxygen available in each source of supply and whether the oxygen is being delivered to the dispensing units; and

(ii) of a pressurised aircraft, by visual or aural warning when the cabin pressure altitude exceeds 10000 feet AMSL; and

(2) to each user of an individual dispensing unit, the amount of oxygen available and whether the oxygen is being delivered to the dispensing unit.

91.533 Oxygen for non-pressurised aircraft

(a) An aircraft with a non-pressurised cabin that is operated at altitudes above 10 000 feet AMSL must—

(1) If operating at altitudes up to and including 14 000 feet AMSL be equipped with-

(i) supplemental oxygen for continuous use by every crew member and 10% of passengers if the aircraft is operated above an altitude of 10 000 feet AMSL for any period in excess of 30 minutes; and

(ii) therapeutic oxygen for continuous use by not less than 3% of the passengers; and

(2) if operating at altitudes above 14 000 feet AMSL and up to and including 25 0000 feet AMSL be equipped with-

(i) supplemental oxygen for continuous use by every crew member and passenger; and

(ii) therapeutic oxygen for continuous use by not less than 1% of the passengers; and

(iii) portable protective breathing oxygen equipment for use by one crew member that is readily accessible for immediate use and containing the greater of 120 litres of oxygen or the quantity of oxygen required for continuous use during the period that the cabin pressure altitude would exceed 14 000feet.

(b) The requirements in paragraphs (a) may be satisfied by substituting an equivalent quantity of supplemental oxygen for therapeutic oxygen or an equivalent quantity of therapeutic

oxygen for supplemental oxygen.

91.535 Oxygen for pressurised aircraft

Flights above 14.000 ft. AMSL and up to 25,000 ft. AMSL

(a) An aircraft with a pressurised cabin that is to be operated at altitudes above 14 000 feet AMSL up to and including 25 000 feet AMSL must be equipped with—

(1) an on-demand oxygen mask for each flight crew member, that is readily accessible to the flight crew member at his or her normally-seated position and capable of providing a continuous supply of supplemental oxygen for the period that the cabin altitude exceeds 14,000 feet AMSL if the cabin pressurisation system fails; and

(2) the following equipment that is readily accessible to each flight attendant, at his or her normally-seated position-

(i) a passenger oxygen mask; and

(ii) portable oxygen equipment accessible for immediate use and containing the greater of 120 litres of oxygen or quantity of oxygen required for continuous use for the period that the cabin pressure altitude exceeds 14,000 feet AMSL if the cabin pressurization system fails; and

(3) sufficient spare oxygen masks, or portable oxygen equipment, distributed to provide immediate availability of oxygen to each crew member, regardless of their location; and

(4) subject to paragraph (b), a minimum quantity of supplemental oxygen that must provide—

(i) 45 minutes supply for each flight crew member; or

(ii) 12 minutes of supply for each cabin crew and each passenger; and

(5) subject to paragraph (b), the greater of the quantity of supplemental or therapeutic oxygen that may be required by any one of the following—

(i) if the aircraft is capable of descending from its flight altitude to below 14 000 feet AMSL within four minutes, a quantity to provide oxygen for 10% of the passengers for any period that the cabin pressure altitude exceeds 10 000 feet AMSL:

(ii) if the aircraft cannot descend to below 14 000 feet AMSL within 4 minutes, a quantity to provide oxygen for all passengers for the period the cabin pressure altitude exceeds 14 000 feet AMSL:

(iii) a quantity to provide oxygen for 10% of the passengers for a period of 30 minutes:

(iv) a quantity to provide oxygen for continuous use by 1% of the passengers.

(b) The calculation of the quantity of oxygen that is required to meet the requirements under paragraphs (a)(4) and (a)(5) in the event of a cabin pressurization system failure must take into account—

(1) the time that is required for the aircraft to make an emergency descent and recover to level flight at a safe altitude; and

(2) the time that is required for the aircraft to be flown at a pressure altitude above 10 000 feet during any subsequent stage of the flight prior to landing.

Flights above 25,000 ft. AMSL and up to 30,000 ft. AMSL

(c) An aircraft with a pressurised cabin that is operated at altitudes above 25 000 feet AMSL and up to and including 30 000 feet AMSL must be equipped with the equipment required in paragraph and—

(1) a quick donning on-demand mask for each flight crew member that is readily accessible to the flight crew member at his or her normally seated position; and

(2) oxygen masks capable of providing supplemental oxygen—

(i) to every passenger and cabin crew; and

(ii) in each washroom and each separate lavatory; and

(3) therapeutic oxygen capable of providing not less than 45 minutes supply for 10% of the passengers carried.

Flights above 30,000 ft. AMSL

(d) An aircraft with a pressurized cabin that is to be operated at altitudes above 30 000 feet AMSL must be equipped with the equipment required under paragraphs (a) and (c) with the following additional requirements:

(1) the total number of oxygen outlets and masks in the passenger compartments, including those in each washroom and lavatory, must be at least 10% greater than the number of passenger seats:

(2) the extra oxygen units must be uniformly distributed throughout the aircraft:

(3) the oxygen masks must be automatically presented to the passengers and cabin crew in the passenger compartment if the cabin pressure altitude exceeds 14 000 feet AMSL:

(4) the flight crew must be provided with a manual means of making the passenger masks available if the automatic system fails.

91.537 Inoperative instruments and equipment

(a) An aircraft with inoperative instruments or equipment may be operated if—

(1) an MEL has been approved for the aircraft in accordance with rule 91.539; and

(2) the aircraft is certified for release-to-service with the inoperative instruments and equipment in accordance with the requirements of rule 43.107; and

(3) the aircraft is operated in accordance with every applicable condition and limitation contained in the MEL.

(b) An aircraft that does not exceed 5700 kg MCTOW and does not have a MEL approved under 91.539 may be operated under this Part with inoperative instruments and equipment if—

(1) the inoperative instruments and equipment are—

(i) not instruments and equipment prescribed for day VFR certification in the applicable airworthiness requirements under which the aircraft was type certificated; and

(ii) not required by this Subpart for specific operations; and

(iii) not required by an airworthiness directive to be in operable condition; and

(2) the aircraft is certified for release to service with the inoperative instruments or equipment in accordance with the requirements of rule 43.107.

(c) An aircraft that does not meet the requirements of paragraphs (a) and (b) may be operated with inoperative instruments and equipment if a special flight permit has been issued in respect of the aircraft in accordance with Subpart D of Part 21.

91.539 Approval of minimum equipment list

(a) An applicant for the approval of a MEL must complete form CA 91/01, and submit it to the Director together with a payment of the appropriate application fee prescribed by regulations made under the Act.

(b) A MEL must contain—

(1) the type and model of the aircraft to which it applies; and

(2) a list of instruments and equipment for the aircraft that may be partially or fully inoperative that—

(i) has been approved by the manufacturer of the aircraft; or

(ii) has been approved by the Contracting state that issued the type certificate for the aircraft; or

(iii) is acceptable to the Director on the grounds that the inoperative instruments and equipment do not affect the safe operation of the aircraft.

(c) A MEL must not contain any instruments or equipment that are—

(1) either specifically or otherwise required by the airworthiness requirements under which the aircraft is type certificated; or

(2) required by this Subpart for specific operations; or

(3) required by an airworthiness directive to be inoperable condition.

(d) The Director may prescribe such operating conditions and limitations on the MEL as the Director considers necessary in the interest of safety.

91.541 Transponder and altitude reporting equipment

Except as provided in 91.249(c) and (e), an aircraft operating in transponder mandatory airspace designated under Part 71 must be equipped with: -

(1) a data source that provides pressure-altitude information with a resolution of 25 ft. or better; and

(2) a pressure-altitude reporting transponder having an operational capability acceptable to the Director.

91.543 Altitude alerting system or device – turbojet or turbofan

(a) Except as provided in paragraph (b), each turbojet or turbofan powered aeroplane shall be equipped with an altitude alerting system or device that—

(1) alerts the pilot upon approaching a preselected altitude in either ascent or descent—

(i) by a sequence of both aural and visual signals in sufficient time to establish level flight at that preselected altitude; or

(ii) by a sequence of visual signals in sufficient time to establish level flight at that preselected altitude, and when deviating above or below that preselected altitude, by an aural signal; and

(2) provides the required signals from sea level to the highest operating altitude approved for the aeroplane in which it was installed; and

(3) enables use of preselected altitudes in increments that are commensurate with the altitudes at which the aeroplane can be operated; and

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

(5) accepts barometric pressure settings if the system or device operates on barometric pressure.

(b) Paragraph (a) shall not apply—

(1) to the operation of any aeroplane that has an airworthiness certificate issued in the restricted, or special category; or

(2) to the operation of any aeroplane for the purposes of—

(i) ferrying a newly acquired aeroplane from the place where possession of it was taken to a place where the altitude alerting system or device is to be installed; or

(ii) conducting an airworthiness flight test or flight check of the aeroplane; or

(iii) ferrying an aeroplane to a place outside Papua New Guinea for the purpose of registering it in a foreign country; or

(iv) training foreign flight crews in the operation of the aeroplane before ferrying to a place outside Papua New Guinea for the purpose of registering it in a foreign country.

91.545 Assigned altitude indicator

(a) Each aeroplane operating under IFR that is not equipped with an altitude alerting system or device shall be equipped with a means of indicating an altitude assigned by ATC.

(b) The means of indicating assigned altitude required by paragraph (a) shall—

(1) be located so that it may be readily adjusted for setting from each pilot station; and

(2) display assigned altitude information that is clearly visible to all flight crew members whose duties involve altitude assignment monitoring; and

(3) enable use of preselected altitudes in increments that are commensurate with the altitudes at which the aeroplane can be operated.

91.547 Automatic Dependent Surveillance – Broadcast OUT equipment

Except as provided in 91.432(b), an aircraft operating in ADS-B mandatory airspace designated under Part 71 must be equipped with ADS-B OUT equipment that meets the standards specified in Appendix A. A.27.

91.549 Automatic landing systems (ALS), head-up-display (HUD) or equivalent displays, enhanced vision system (EVS), synthetic vision system (SVS), and combined vision system (CVS)

(a) An aircraft equipped with automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS, or any combination of those systems into a hybrid system, criteria for the use of such systems for the safe operation of an aircraft:

(1) must be established by the Director; and

(2) advanced aircraft must have operational credits authorised by the Director; and

(3) where the operational credit relates to low visibility operations, a specific approval shall be required from the Director; and

(4) such authorisations shall not affect the classification of the instrument approach procedure.

(b) The operator of an aircraft applying for a specific approval for the operational credit must ensure that—

(1) the aeroplane meets the appropriate airworthiness certification requirements;

(2) the information necessary to support effective crew tasks for the operation is appropriately available to both pilots where the number of flight crew members specified in the operations manual is more than one; and

(3) the operator has carried out a safety risk assessment of the operations supported by the equipment; and

(4) the operator has established and documented normal and abnormal procedures and MEL; and

(5) the operator has established a training programme for the flight crew members and relevant personnel involved in the flight preparation; and

(6) the operator has established a system for data collection, evaluation and trend monitoring for low visibility operations for which there is an operational credit; and

(7) the operator has instituted appropriate procedures in respect of continuing airworthiness (maintenance and repair) practices and programmes.

(c) For operations with operational credit where minima are above those related to low visibility operations, criteria for the safe operation of the aeroplane shall be established by the Director.

91.551 Electronic navigation data management

(a) Each operator must not employ electronic navigation data products that have been processed for application in the air and on the ground unless—

(1) the operator's procedures for ensuring that the process applied and the products delivered have met acceptable standards of integrity and approved by the Director; and

(2) the products are compatible with the intended function of the equipment that will use

them.

(b) Each operator must ensure that it continues to monitor both process and products.

91.553 Electronic Flight Bag (EFB)

(a) Each operator must ensure that the use of portable EFBs on board an aeroplane:

(1) do not affect the performance of the aeroplane systems, equipment or the ability to operate the aeroplane; and

(2) is issued with a specific approval by the Director.

(b) Where EFBs are used on board an aeroplane the operator shall:

(1) assess the safety risks associated with each EFB function;

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

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

(c) Each operator must ensure that:

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

(2) it has assessed the safety risks associated with the operations supported by the EFB functions;

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

(4) it has established and documented procedures for the management of the EFB functions including any database it may use; and

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

Subpart G — Operator Maintenance Requirements

91.601 Purpose

(a) This Subpart prescribes the requirements to maintain Papua New Guinea registered aircraft operating within or outside of Papua New Guinea.

(b) Except for the following rules, this Subpart does not apply to a microlight aircraft that is maintained in accordance with maintenance procedures acceptable to the Director:

(1) rule 91.605(e)(2) (test and inspection of automatic pressure altitude reporting system if the microlight aircraft is equipped with a SSR transponder):

(2) rule 91.605(e)(3) (SSR transponder);

(3) rule 91.605 (e)(8) (floatation equipment);

(4) rule 91.616 (maintenance logbook – Class 2 microlight aircraft);

(5) rule 91.617 (maintenance records – Class 2 microlight aircraft);

(6) rule 91.621 (transfer of maintenance records);

(7) rule 91.623 (retention of records).

(c) Except for the following rules, this Subpart does not apply to a glider that is maintained in accordance with maintenance procedures acceptable to the Director:

(1) rule 91.605(e) (maintenance of instruments and equipment);

(2) rule 91.613 (operational flight check);

(3) rule 91.615 (aircraft airworthiness review);

(4) rule 91.616 (maintenance logbook);

(5) rule 91.617 (maintenance records);

(6) rule 91.621 (transfer of maintenance records);

(7) rule 91.623 (retention of records).

91.602 Maintenance requirements before flight

(a) Except as provided in paragraph (b) and rule 91.611, a person must not operate an aircraft unless the requirements prescribed in rules 91.603, 91.605, and 91.615 have been complied with.

(b) Paragraph (a) does not apply to a person operating an aircraft if a special category – special flight permit airworthiness certificate has been issued in respect of the aircraft in accordance with Subpart H or Part 21.

91.603 General maintenance requirements

(a) The operator of an aircraft must ensure that—

(1) the aircraft is maintained in an airworthy condition;and

(2) every applicable airworthiness directives are complied with in accordance with the requirements in Part 39; and

(3) the aircraft is inspected in accordance with this Subpart; and

(4) except for instruments and equipment that are permitted to be inoperative under rule 91.537, every defect is rectified before flight; and

(5) any inoperative instrument or item of equipment, that is permitted to be inoperative under rule 91.537, is repaired, replaced, removed or inspected at the next inspection required by the maintenance programme under which the aircraft is maintained; and

(6) maintenance on the aircraft is performed in accordance with the requirements prescribed in this Subpart, Part 43 or any other applicable Rule; and

(7) the aircraft is certified for release-to-service in accordance with the requirements prescribed in Part 43 after the performance of any maintenance on the aircraft; and

(8) every system that is required under Subpart F for indicating the presence of carbon monoxide in the cabin of the aircraft is serviceable and within any applicable life limit for the system.

(b) The operator must ensure compliance with airworthiness limitations mandated by the airworthiness authority of the State of Design in the instructions for continued airworthiness issued for the aircraft.

(c) Except as provided in paragraphs (d), (e), and (f) the operator of an aircraft must ensure compliance with the manufacturer's recommended overhaul intervals.

(d) Products and components may be operated beyond the manufacturer's recommended TBO if the operator complies with TBO escalation procedures that are detailed in a maintenance programme that is approved under Part 119 or approved under rule 91.607.

(e) In spite of paragraph (d), a piston engine fitted to an aircraft that is not used for hire or reward operations may be operated beyond the manufacturer's recommended TBO if the piston engine is maintained in accordance with an engine TBO escalation programme that is acceptable to the Director.

(f) In spite of paragraph (d), a propeller fitted to an aircraft that is not used for air operations may be operated beyond the manufacturer's recommended calendar TBO if the propeller is inspected in accordance with methods acceptable to the Director at 5 yearly intervals, except that the propellers must be overhauled at the manufacturer's recommended operating hours TBO.

91.605 Maintenance programmes and schedules

(a) Subject to paragraphs (b), (c), and (d), the operator of an aircraft must maintain the aircraft in accordance with—

(1) a maintenance programme approved under Part 119; or

(2) a maintenance programme approved under rule 91.607; or

(3) the manufacturer's maintenance schedule; or

(4) if the aircraft is powered by a piston engine and has a MCTOW of 2730 kg or less, a maintenance programme that is acceptable to the Director and includes at least the following:

(i) details of the responsibilities and standards for maintenance of the aircraft in accordance with the applicable rule requirements:

(ii) details of the pre-flight checks:

(iii) details of the scheduled maintenance checks and inspections.

(b) The operator of an aircraft that is -

(1) used for air operations under the authority of an air operator certificate issued in accordance with Part 119 must maintain the aircraft in accordance with the maintenance programme that is required under Part 119 for the issue of the air operator certificate; or

(2) issued with a special category – experimental airworthiness certificate must maintain the aircraft in accordance with a maintenance programme approved under rule 91.607

(c) If the manufacturer's maintenance schedule referred to in paragraph (a)(3) does not provide for an aircraft that operates for less than 100 hours of time in service per year, the operator must ensure that the manufacturer's 100-hour inspection or an equivalent inspection is completed within the preceding 12 months.

(d) If the Director determines that a manufacturer's maintenance schedule referred to in paragraph (a)(3) is deficient, the Director may require the operator to submit a maintenance programme for approval under rule 91.607.

(e) Except as provide in paragraph (f) and rule 91.611, the operator of an aircraft must not operate the aircraft unless-

(1) every aircraft radio station that is required to be installed in the aircraft under Subpart F for operations under IFR has been tested and inspected in accordance with Part 43, Appendix B within the preceding 24 months; and

(2) every static pressure system, altimeter instrument, or automatic pressure altitude reporting system that is required to be installed in the aircraft under Subpart F, or required for transponder installed in the aircraft, has been tested and inspected in accordance with Part 43, Appendix D-

(i) within the preceding 24 months; and

(ii) following any opening and closing of the static pressure system, except for the use of the system drain and alternate static pressure valves, or where self-sealing disconnect coupling is provided; and

(iii) following installation of, or maintenance on, the automatic pressure altitude reporting system where data correspondence error could be introduced; and

(3) every transponder that is required to be installed in the aircraft under subpart F has been tested and inspected, in accordance with Part 43, Appendix E within the preceding 24 months; and

(4) every emergency locator transmitter that is required to be installed in the aircraft under subpart F-

(i) has been tested and inspected in accordance with Part 43, Appendix F within the preceding 12 months; and

(ii) has had its batteries replaced or recharged after the transmitter has been in use for more than 1 cumulative hour; and

(iii) has had its batteries replaced or recharged when their useful life or, for

rechargeable batteries, their useful life of charge, as established by the manufacturer, has expired; and

(5) every compass that is required to be installed in the aircraft under subpart F has been calibrated-

(i) within the preceding 24 months; and

(ii) following any out of phase event that may affect the calibration of the compass unless the aircraft manufacturer specifies otherwise; and

(6) every first aid kit that is required to be installed in the aircraft under subpart F has been inspected-

(i) within the preceding 12 months to ensure that appropriate quantities of items are included and time expired items are replaced; and

(ii) after every reported use to ensure that appropriate quantities of items are included; and

(7) every portable fire extinguisher that is required to be installed in the aircraft under subpart F has been inspected for condition and tested in accordance with the manufacturer's instructions or other equivalent instructions acceptable to the Director within the preceding 12 months; and

(8) all floatation equipment that is required to be installed in the aircraft under subpart F has been inspected for condition and tested-

(i) in accordance with the manufacturer's instructions; or

(ii) other equivalent instructions acceptable to the Director within the preceding 12 months; and

(9) the aircraft's empty weight and centre of gravity is re-established if-

(i) changes have been made to the aircraft that could affect the empty weight and centre of gravity; or

(ii) the operator has any reason to suspect that the information in the aircraft's flight manual is no longer accurate; and

(10) for a powered aircraft with a maximum certificated seating capacity of 4 or more seats, the aircraft has been weighed within the preceding 5 years.

(f) The operator of an aircraft that is maintained in accordance with a maintenance programme referred to in paragraphs (a)(1) or (a)(2) is not required to comply with any particular requirement in paragraph (e) if the maintenance programme for the aircraft includes a test, inspection, or other action that is equivalent to the particular requirement in paragraph (e).

(g) The operator of an aircraft must –

(1) identify in the maintenance logbook for the aircraft which maintenance option under paragraph (a) is to be used for the aircraft; and

(2) if the maintenance programme is one that is accepted under Part 119 or approved under rule 91.607, identify in the maintenance programme the person who is responsible for scheduling the maintenance that is required in the programme; and

(3) if changing from the maintenance programme or option identified under paragraph (g)(1) to another programme or option under paragraph (a), schedule the inspections required by the new programme or schedule, as the case may be, to provide for the continued airworthy condition of the aircraft; and

(4) provide a copy of the applicable maintenance programme or schedule to the person who performs maintenance on the aircraft, and upon request to the Director.

91.607 Approval of maintenance programmes

(a) An applicant for the approval of a maintenance programme referred to in rule 91.605(a)(2) must complete form CAA 91/02, and submit it to the Director together with the document required by paragraph (b) and a payment of the appropriate application fee prescribed by Regulations made under the Act.

(b) The applicant for the approval of a maintenance programme must provide the Director with a document containing –

(1) the scope of the maintenance programme and identification of the aircraft to which it applies; and

(2) procedures for the control of maintenance; and

(3) instructions and procedures for the conduct of the maintenance for the particular aircraft type, including required inspections and tests; and

(4) an inspection schedule that is consistent with-

(i) the manufacturer's recommendations; and

(ii) the operator's service experience; and

(iii) the type of operation in which the aircraft is engaged; and

(5) procedures for extending inspection intervals in accordance with rule 91.611, if applicable; and

(6) procedures for assessing and controlling engine, propeller and component TBO escalations, if applicable; and

(7) instructions for changing an inspection interval on the basis of service experience, if applicable; and

(8) instructions for inducting an aircraft on to the programme; and

(9) a list of inspection forms and instructions for their use; and

(10) identification of reports and records and instructions for their processing and handling.

(c) The Director may approve a maintenance programme for an applicant if the Director is satisfied that-

(1) the programme meets the requirements of paragraph (b); and

(2) the approval of the maintenance programme is not contrary to the interests of aviation safety.

91.609 Changes to maintenance programmes and schedules

(a) An operator of an aircraft must, upon a written request from the Director amend a maintenance programme or schedule for an aircraft if the Director considers that an amendment is necessary to satisfy the continuing airworthiness requirements for the aircraft.

(b) If an operator discontinues a maintenance programme that is approved under rule 91.607, the operator must—

(1) notify the Director in writing within 7 days of the programme being discontinued; and

(2) reschedule the inspections required by the new maintenance programme from the date or time, as applicable, that the equivalent inspection was last completed for the aircraft.

91.611 Inspection planning latitude

(a) Unless expressly prohibited by these rules, an airworthiness directive, or a manufacturer's mandatory inspection requirement, the inspection intervals required by 91.605 may be extended by up to 10% to allow for maintenance planning purposes.

(b) If the extension provisions of paragraph (a) are applied to aircraft—

(1) the new extended date, or aircraft operating hours or cycles, whichever is applicable for the inspection must be recorded in the appropriate maintenance logbook and technical log; and

(2) the next required inspection interval must start from the beginning of the extension period to ensure that any extension that is applied to an inspection interval is not cumulative.

91.612 Compass calibration

Unless otherwise prescribed in the operator's maintenance programme, no person shall operate an aircraft unless each installed compass has been calibrated within the preceding 24 months.

91.613 Operational flight check

(a) A person performing an operational flight check that is required by rule 43.103(a)(4)(i) must-

(1) hold a valid pilot licence and type rating for the aircraft; and

(2) check that the flight characteristics of the aircraft have not appreciably changed as a result of the maintenance; and

(3) record any defects found during the operational flight check in the technical log.

(b) A person performing an operational flight check under paragraph (a) must not carry any other person on the aircraft unless that person is required to perform an essential function that is associated with the flight check.

91.615 Aircraft airworthiness review

A person must not operate an aircraft unless—

(1) an airworthiness review for the aircraft has been certified as completed in accordance with subpart D of Part 43 within the preceding 365 days; or

(2) the aircraft has been issued with an airworthiness certificate in accordance with Part 21 within the preceding 365 days.

91.616 Maintenance logbooks

An operator of an aircraft, except a Class 1 microlight aeroplane, must—

(1) provide appropriate maintenance logbooks for the aircraft; and

(2) ensure that the maintenance logbooks are not carried in the aircraft.

91.617 Maintenance records

(a) An operator of an aircraft must ensure that for each airframe, and each product and component that has a finite life or a TBO recommended by the manufacturer, accurate records are compiled in the appropriate maintenance logbook for the total time-in-service, and if applicable the total cycles.

(b) An operator of an aircraft must ensure that for each product and component, the maintenance records required under rule 43.68 are compiled and retained.

(c) An operator of an aircraft must ensure that for each airframe, product and component that is modified or repaired using a design change approved under Part 21 that details of the modification or repair are recorded in the appropriate logbook and the records of the certification required by Part 43 Subpart E are retained.

(d) An operator of an aircraft that is involved in an accident must ensure that descriptive details of the circumstances of the accident, and descriptive details of the resultant damage to the aircraft are recorded in the appropriate maintenance logbook.

(e) The records required in paragraphs (a), (b), and (c) may be kept in plain language form, or in coded form provided that the coded form provides for the preservation and retrieval of information that is required to be recorded.

91.619 Technical log

(a) Except as provided for in paragraph (c) the operator of an aircraft must provide a technical logbook for the aircraft with provision for recording the following information:

(1) the name of the operator;

(2) the registration mark, type, and model of the aircraft;

(3) the identity of the maintenance programme or schedule required under rule 91.605(a), to which the aircraft is maintained;

(4) a statement of the maintenance status of the aircraft including-

(i) the identity of the next scheduled inspection and the date or hours due; and

(ii) any requirement under rule 43.103(a)(4)(i) for an operational flight check to be carried out;

(5) the date or hours at which any other maintenance is due prior to the next scheduled inspection;

(6) the date at which the next aircraft airworthiness review is due;

(7) the daily hours flown;

(8) the total time in service;

(9) if applicable—

(i) the daily cycles used; and

(ii) the total cycles;

(10) any defects found during the pre-flight inspection, during a flight, or following a flight;

(11) details of rectification of defects occurring between scheduled inspections and the certification of release-to-service for that rectification;

(12) details of any deferred rectification of defects including any instruments and equipment that are inoperative in accordance with rule 91.537.

(b) The operator of an aircraft must ensure that the information specified in paragraph (a) is accurately recorded in the technical log and that the information is current.

(c) The holder of an air operator certificate issued in accordance with Part 119 may record the following information in a format other than in the technical log, if that format and the associated procedures are acceptable to the Director, and the information is accurate and available to the pilot- in- command on request:

(1) the identity of the next scheduled inspection and the date or hours due:

(2) the date or hours at which any other maintenance is due prior to the next scheduled inspection:

(3) the total time-in-service:

(4) the total cycles.

91.621 Transfer of maintenance records

The holder of a Papua New Guinea certificate of registration for an aircraft who transfers the possession of the aircraft to another person in accordance with Part 47 must, at the time of the transfer of the aircraft, transfer to that person—

(1) the records specified in rule 91.617 (b); and

(2) the records specified in rule 91.617(a) if they are not included in the records transferred under paragraph (1).

91.623 Retention of Records

(a) Except as provided in paragraphs (b) and (c), the operator of an aircraft must retain the records specified in rule 91.617 for at least 12 months after the product or component is withdrawn from service.

(b) The record of maintenance information required under rule 43.68 (a)(1) only needs to be

retained until the maintenance is repeated or superseded by other maintenance of equivalent scope and detail, or for a period of at least 5 years after the maintenance is performed, whichever occurs first.

(c) The operator of an aircraft must retain the technical log required under rule 91.619 for a period of at least 12 months after the date of the last entry in the technicallog.

91.625 Reserved

91.627 Reserved

91.629 Reserved

91.631 Reserved

91.633 Reserved

Subpart H — Special Flight Operations

91.701 Aerobatic flight

A pilot shall not operate an aircraft in aerobatic flight—

(1) over a congested area of a city, town, or settlement, or over any open air assembly of persons; and

(2) unless sufficiently distanced from a congested area of a city, town, or settlement, or any open air assembly of persons so as not to cause undue risk to persons or property on the ground; and

(3) within any controlled airspace except with the authorisation of ATC; and

(4) unless the pilot is the holder of an aerobatic rating issued under Part 61 or is authorised by the holder of a current instructor rating issued under Part 61.

91.703 Aviation events

(a) No person shall conduct an aviation event, and no person shall operate an aircraft in an aviation event, unless the organiser of the event is the holder of an aviation event authorisation issued by the Director.

(b) An applicant for an aviation event authorisation shall submit an aviation event plan to the Director at least 90 days prior to the start of the aviation event.

(c) The aviation event plan required by paragraph (b) shall—

(1) contain the following information about the proposed aviation event—

(i) name, position, and address of the organiser; and

(ii) place, date, and time; and

(iii) type of event; and

(iv) details of the structure of the organisation including persons who are responsible for supervising the aviation event; and

(v) details of the flying programme; and

(vi) detailed plan and description of the site with sufficient detail to show compliance with the requirements of paragraph (d); and

(vii) details of the standard operating procedures to be used during the event; and

(viii) details of control methods to be used for the safety of the spectators; and

(ix) details of emergency services to be provided; and

(2) be acceptable to the Director.

(b) An applicant is entitled to an aviation event authorisation if the Director is satisfied that—

(1) the requirements of this rule are satisfied; and

(2) the grant of the authorisation is not contrary to the interests of aviation safety.

(c) A pilot-in-command of an aircraft participating in an aviation event shall—

(1) conduct flights in accordance with the standard operating procedures detailed in the aviation event plan; and

(2) operate at a height of at least 100 feet above the surface for display flights, other than—

(i) a display of agricultural operations; or

(ii) display flights, such as crazy flying acts, conducted by aircraft not exceeding 2700 kg MCTOW and operating not above 100 knots IAS; or

(iii) helicopter operations; and

(3) fly the aircraft aligned with reference to a display line sufficiently distanced from spectators so as not to cause undue risk to persons or property on the surface; and

(4) not carry any passengers; and

(5) not fly over any spectator area; and

(6) not conduct any manoeuvre between the display line and any spectator area; and

(7) with the exception of a helicopter hovering or taxiing, not initiate any manoeuvre in the direction of any spectator area.

91.705 Parachute-drop operations

(a) A pilot performing a parachute-drop operation shall hold a current Commercial Pilot Licence or higher licence issued under Part 61.

(b) A pilot performing a parachute-drop operation shall ensure that—

(1) the aircraft performing the operation has a valid standard category airworthiness certificate; and

(2) the configuration of the aircraft is appropriate for the parachute-drop operation; and

(3) the aircraft has adequate interior room and satisfactory egress for the parachutists to be carried; and

(4) the aircraft cabin has no handles or fittings which could cause the inadvertent opening of a parachute in the aircraft or during egress by any parachutist; and

(5) suitable points on the aircraft are used for the attachment of static lines; and

(6) the aircraft flight manual authorises flight with a door removed, or open, in flight; and

(7) each person carried in the aircraft, other than persons engaged in parachute operations, —

(i) occupies a seat and fastens their safety belt during take-off and landing; and

(ii) wears an emergency or reserve parachute assembly; and

(iii) is trained in the use of the emergency or reserve parachute assembly; and

(iv) is briefed on the general procedures to be followed in an aircraft emergency including the method to be used for exiting the aircraft; and

(8) each person carried in the aircraft for the purpose of parachute operations—

(i) is not in a position in the aircraft that could hazard the safety of the aircraft or its occupants through inadvertent interference with the controls; and

(ii) is briefed on the general procedures to be followed in an aircraft emergency including the method to be used for exiting the aircraft.

(c) A pilot performing a parachute-drop operation shall not permit a person to make a parachute descent from the aircraft, unless—

(1) the person or persons making the descent have provided the pilot with the details of the proposed descent prior to take-off; and

(2) the pilot is satisfied that each person's descent is approved by the Director.

91.707 Emergency parachute assemblies

A pilot-in-command shall not allow a parachute assembly that is available for emergency use to be carried in an aircraft unless it—

(1) meets the requirements of Appendix A.25; and

(2) has been adequately protected from damage from any condition or substance that may be harmful to the materials from which the parachute assembly has been constructed; and

(3) has been maintained in accordance with the manufacturer's instructions and packed within the preceding calendar year by—

(i) the parachute manufacturer; or

(ii) a person otherwise approved by the Director; and

(4) is accompanied by a packing card containing certification of serviceability by the person who maintained or packed the parachute.

91.709 Towing gliders

(a) No person shall tow a glider, or gliders in flight unless that person holds a glider tow rating issued under Part 61.

(b) No person shall tow a glider, or gliders in flight unless—

(1) the aircraft used for towing is operated at airspeeds below the maximum airspeed specified for aero-tow in the glider flight manual; and

(2) the towing load does not exceed the maximum load specified in the aircraft flight manual; and

(3) that person has checked the operation of the tow hook of the aircraft to be used prior to flight; and

(4) that person uses the take-off, glider release, airspeed, and emergency signals established for the pilots of tow aircraft and gliders; and

(5) the take-off distance to clear a 50-foot obstacle with the glider, or gliders in tow does not exceed 85% of the take-off run available; and

(6) the aircraft is capable of maintaining a rate of climb of at least 200 feet per minute at 1000 feet above the aerodrome with the glider, or gliders in tow.

(c) No person shall operate an aircraft to tow a glider, or gliders in flight unless—

(1) the aircraft to be used is equipped with—

(i) a tow hook and attachment assembly; and

(ii) a pilot-activated quick-release capable of releasing the tow rope with loads of up to 450 kg in any direction on the tow hook; and

(2) the tow line to be used meets the requirements of Appendix A.26; and

(3) if more than one glider is being towed, the tow lines to be used are—

(i) one for each glider; and

(ii) of a length that provides a distance of not less than 50 m between any glider and the towing aircraft; and

(iii) of a length that provides a trailing separation of not less than 30 m between each glider; and

(iv) attached to a single tow ring to the aircraft, and capable of separation on release from the aircraft.

(d) No pilot operating an aircraft that is towing a glider shall carry any passengers.

91.711 Towing objects other than gliders

(a) No pilot shall tow an object other than a glider in flight unless—

(1) they hold—

(i) a private pilot licence and a tow rating issued under Part 61; or

(ii) a commercial pilot licence issued under Part 61; or

(iii) an airline transport pilot licence issued under Part 61; and

(2) the aircraft—

(i) is equipped with a tow hook and attachment assembly which has a quick release mechanism; and

(ii) has a positive rate of climb at the altitudes to be operated.

(b) No pilot operating an aircraft that is towing an object other than a glider shall carry any passengers.

91.713 Search and Rescue Flights

(a) Each aircraft participating in Search and Rescue Operations must:

(1) be equipped to be able to communicate on the aeronautical distress and on-scene frequencies and on such other frequencies as may be prescribed; and

(2) be equipped with a device for homing on distress frequencies; and

(3) when used over maritime areas, shall be equipped to be able to communicate with vessels; and

(4) carry a copy of the International Code of Signals to enable it to overcome language

difficulties that may be experienced in communication with such ships.

(b) Where a pilot in command observes another aircraft in distress, the pilot must as soon as possible, unless in the interest of safety of the aircraft and its occupants;

(1) keep the aircraft in distress in sight until compelled to leave the scene or advised by a rescue coordination center that it is no longer necessary; and

(2) determine the position of the aircraft in distress; and

(3) report as appropriate, to the rescue coordination center or air traffic services unit as much of the following information as possible:

(i) type of craft in distress, its identification and condition; and

(ii) its position, expressed in geographical or grid coordinates or in distance and true bearing from a distinctive landmark or from a radio navigation aid; and

(iii) time of observation expressed in hours and minutes Coordinated Universal Time (UTC); and

(iv) number of persons observed; and

(v) whether persons have been seen to abandon the craft in distress; and

(vi) on-scene weather conditions; and

(vii) apparent physical condition of survivors; and

(viii) apparent best ground access route to the distress site; and

(4) act as instructed by the rescue coordination center or the air traffic services unit.

(c) Where an aircraft that is not a search and rescue aircraft reaches the scene of an accident first, it must unless in the interest of safety of the aircraft and its occupants;

(1) take charge of on-scene activities of all other aircraft subsequently arriving until the first search and rescue aircraft reaches the scene of the accident; or

(2) if such aircraft is unable to establish communication with the appropriate rescue coordination center or air traffic services unit, by mutual agreement hand over to an aircraft capable of establishing and maintaining such communications until the arrival of the first search and rescue aircraft.

(d) An aircraft who intends to convey information to survivors or surface rescue units, without two-way communication, must if practicable,

(1) drop communication equipment that would enable direct contact to be established; or

(2) convey the information by dropping a hard copy message.

(e) Where a ground signal has been displayed by survivors or rescue units referred to in paragraph (d), the aircraft must indicate;

(1) whether the signal has been understood; or

(2) by making the appropriate visual signal.

(f) Where an aircraft intends to direct a surface craft to the place where an aircraft or surface craft is in distress, the aircraft shall do so by;

(1) transmitting precise instructions by any means at its disposal; or

(2) if no radio communication can be established, the aircraft shall make the appropriate visual signal. in accordance with Part 176 Appendix A.

Subpart I — Foreign Registered Aircraft Operations and Operation of PNG Registered Aircraft Outside Papua New Guinea

91.751 Applicability

This Subpart applies to the operation of Papua New Guinea registered aircraft outside Papua New Guinea and the operation of foreign registered aircraft within Papua New Guinea.

91.753 Operations of Papua New Guinea registered aircraft outside Papua New Guinea

Each person operating a Papua New Guinea registered aircraft shall—

(1) when over the high seas, comply with Annex 2 to the Convention on International Civil Aviation; and

(2) when operating within a foreign State, comply with the operating and flight rules of that State; and

(3) comply with this Part, so far as it is not inconsistent with applicable rules of the foreign country where the aircraft is being operated.

91.755 Special rules for foreign aircraft operations

(a) ***General***. In addition to the other applicable rules of this Part, each person operating a foreign registered aircraft within Papua New Guinea shall comply with this rule.

(b) ***Communication***. No person shall operate an aircraft unless-

(1) at least one flight crew member on that aircraft is able to conduct two- way radio communications in the English language and is on duty during that operation; and

(2) that aircraft is equipped with radio equipment allowing two-way radio communications with ATS.

(c) ***IFR***. No person shall operate under IFR unless—

(1) that aircraft is equipped with a navigation system which will enable the aircraft to proceed in accordance with its flight plan; and

(2) each person piloting the aircraft—

(i) holds a current Papua New Guinea instrument rating, or holds a current instrument rating issued by the country of that aircraft's registry; and

(ii) is familiar with the Papua New Guinea IFR en route, holding, and approach procedures prescribed in Part 95.

Subpart J — Operating Noise Limits.

91.801 Applicability

This Subpart prescribes operating noise limits that apply to the operation of civil aircraft in Papua New Guinea.

91.803 Noise level compliance

(a) No person may operate an aircraft to or from an aerodrome within Papua New Guinea

after 01 January 2011 unless-

(1) for Papua New Guinea registered aircraft, the Director is satisfied that the aircraft complies with the applicable aircraft noise standards specified in Appendix B to Part 21; and

(2) for foreign registered aircraft, that aircraft is certificated or validated by the State of Registry to comply with standards that are equivalent to the applicable aircraft noise standards specified in ICAO Annex 16, Volume I.

(b) Notwithstanding paragraph (a), a person may not operate a subsonic turbojet or turbofan powered aeroplane to or from an aerodrome within Papua New Guinea unless that aeroplane is certificated to comply with noise standards that are at least equal to the aircraft noise standards specified in ICAO Annex 16, Volume I, Chapter 3.

91.805 Aircraft sonic boom

(a) No person may operate an aircraft at a Mach number greater than 0.92 unless approved by the Director and in compliance with any conditions and limitations specified in the approval. No person may operate an aircraft for which the maximum operating speed exceeds a Mach number of 0.92, unless information available to the pilot-in-command includes flight limitations that ensure that flights entering or leaving Papua New Guinea will not cause a sonic boom to reach the surface within Papua New Guinea.

(b) A pilot-in-command of an aircraft for which the maximum operating speed exceeds a Mach number of 0.92 must comply with the flight limitations prescribed in paragraph (b).

Subpart K — Operating Emissions Limits

91.901 Applicability

This Subpart prescribes operating emission limits that apply to civil aircraft operating to, from or within Papua New Guinea.

91.903 Engine emission compliance

No person may operate a turbojet or turbofan powered aircraft to or from an aerodrome within Papua New Guinea after 01 January 2011, unless –

(1) for Papua New Guinea registered aircraft, the Director is satisfied that the aircraft complies with the applicable aircraft engine emission standards specified in Appendix B to Part 21; and

(2) for foreign registered aircraft, that aircraft is certificated or validated by the State of Registry to comply with standards that are equivalent to the applicable aircraft engine emission standards specified in ICAO Annex 16, Volume II.

91.905 Aeroplane CO2 emissions compliance

No person may operate an aeroplane to or from an aerodrome within Papua New Guinea unless –

(1) for Papua New Guinea registered aeroplane, the Director is satisfied that the aeroplane complies with the applicable aeroplane CO2 emissions monitoring, reporting and verification standards specified in Annex 16 Volume IV; and

(2) for foreign registered aeroplane, that aeroplane is certificated or validated by the State of Registry to comply with standards that are equivalent to the applicable aeroplane CO2 emissions standards specified in ICAO Annex 16, Volume III.

Appendix A - Instrument and equipment specifications

Instruments and equipment required by Subpart F must meet the following specifications and requirements:

A.1 Markings and placards

(a) A marking and placard that is required to be displayed on or in an aircraft must be displayed in a conspicuous place and in such a manner to minimise the risk of erasure, disfigurement, obscuring, or removal.

(b) Each unit of measure used on a marking or placard must be the same as that on any related instrument or in the related flight manual.

(c) A placard must have any numbering in Arabic numerals and any writing in the English language.

A.2 Fuel and oil markings

(a) Fuel contents gauge. Each fuel contents gauge calibrated in US gallons shall be clearly marked to show that the calibration is in US gallons.

(b) Fuel and oil placards. Each aircraft shall be placarded in the immediate vicinity of each fuel and oil filler with the specification and/or grade of fuel or oil as appropriate.

A.3 Seating

Each seat and berth shall meet the requirements of TSO C25 or TSO C39 as applicable.

A.4 Restraints

(a) Each safety belt must: –

(1) meet the requirements of-

(i) TSO C22; or

(ii) ISO/FIA 8853; or

(iii) FIA8854; or

(iv) UK CAA Airworthiness Specification No.1; or

(2) be proof loaded to 50% of the rated strength required by those standards every twelve months if the identification labels required by the standards in paragraph (a)(1) are missing.

(b) Each safety belt with single diagonal shoulder strap must meet the requirements of—

(1) TSO C22; or

(2) UK CAA Airworthiness Specification No.13.

(c) Each safety harness must meet the requirements of—

(1) TSO C114; or

(2) UK CAA Airworthiness Specification No.4.

(d) Where it is necessary to enable the occupant of a flight crew seat to reach all essential controls

and exert adequate control forces with a safety harness fastened, that harness must incorporate an inertia reel meeting the requirements of US Military Specification MIL-R-8236.

A.5 Child restraint systems

A child restraint system must—

(1) be secured to the aircraft seat or berth by a safety belt meeting the requirements of TSO C22; and

(2) not be fitted with a tether strap that secures the top of the infant or child seat; and

(3) meet the requirements of—

(i) TSO C100; or

(ii) Australia/New Zealand Standard AS/NZS/1754; or

(iii) United States Standard FMVSS 213; or

(iv) European Standard ECE 44.

A.6 Aircraft lights

(a) Each aircraft anti-collision light system must comprise—

(1) a red rotating beacon; or

(2) an aviation red or aviation white capacitor discharge light that meets the requirements of—

(i) TSO C96; or

(ii) the minimum standards of the applicable aircraft design; or

(iii) another standard acceptable to the Director.

(b) For an aircraft that was first issued with a type certificate before 11 August 1971 the anti-collision light system must meet the requirements of FAR Part 23, 25, 27, or 29 as applicable, except that the colour may be either aviation red or aviation white.

(c) Aircraft position light must-

(1) meet the requirements of TSO C30; and

(2) consist of -

(i) an unobstructed steady red light projected above and below the horizontal plane through an angle from dead ahead to 110 degrees left; and

(ii) an unobstructed steady green light projected above and below the horizontal plane through an angle from dead ahead to 110 degrees right; and

(iii) an unobstructed steady white light projected above and below the horizontal plane rearward through an angle of 140 degrees equally distributed on the left and right sides.

A.7 Reserved

A.8 Pressure altimeters

(a) For pressurized aircraft to be operated at altitudes above 25 000 feet, each sensitive pressure altimeter shall—

(1) for a MCTOW not exceeding 5700 kg, be—

(i) a counter/pointer or drum pointer altimeter at the normal pilot-in- command position; and

(ii) a counter/pointer, drum pointer, or three pointer altimeter at other crew stations; or

(2) for a MCTOW exceeding 5700 kg, be—

(i) a counter/pointer type at the normal pilot-in-command position; and

(ii) either a counter/pointer or drum/pointer type at other crew stations.

(b) For aircraft to be operated IFR at altitudes not above 25 000 feet, each sensitive pressure altimeter shall be counter/pointer, drum/pointer, or three pointer type.

(c) Each three pointer altimeter shall have a striped low altitude warning sector that is fully displayed at all altitudes up to 10 000 ft. and progressively withdrawn above that altitude and either—

(1) a 10 000 ft. pointer that cannot be obscured by any other pointers; or

(2) a concentric track indicating 10 000 ft. intervals; or

(3) a combination of subparagraphs (1) and (2).

(d) Each sensitive pressure altimeter shall—

(1) meet the requirements of—

(i) TSO C10; or

(ii) British Standards G115, G201, or G226; or

(2) be adjustable for barometric pressure in Hectopascal or millibars and be presented so as to enable altitudes to be easily read to within 20 ft.

(e) Aircraft not required to be fitted with a sensitive pressure altimeter shall be fitted with an altimeter calibrated in increments of not more than 200 ft.

A.9 Communication and navigation equipment

(a) Except as provided in paragraph (c), radio communication and navigation equipment must meet the requirements of—

(1) for Level 1—

(i) communication equipment, one of the following TSO as applicable: C31, C32, C37, C38, C50; C139, C169 or C170; or

(ii) navigation equipment, one of the following TSO as applicable: C34, C35, C36, C40, C41, C60, C94, C129, C145 or C146; or

(iii) United Kingdom Civil Aviation Authority approval for Category WR, VC, or LA

Class I; or

(iv) Australian Airborne Radio Navigation Publication No. 50 (Pub 50) Class I; or

(2) for Level 2-

(i) United Kingdom Civil Aviation Authority approval for Category LA Class II; or

(ii) Pub 50 V or L; or

(3) for Level 3, United Kingdom Civil Aviation Authority approval for Category LA Class III or Category G; or

(4) for Level 4—

(i) the requirements of the Radio-communications (Radio) Regulations 1993; and

(ii) compass safe distances determined in accordance with British Standard 3G,100: Part 2, Section 2.

(b) If 2 independent radio communication systems are required-

(1) each system must have an independent antenna; or

(2) the two systems may use a single rigidly supported non-wire antenna.

(c) The following equipment may be used to meet the radio communication equipment requirements for operation in gliders, amateur built aircraft, and microlight aircraft, if the equipment installation conforms to acceptable technical data, and the transceiver is connected to a half-wave antenna mounted in the aircraft—

(1) equipment listed in the United Kingdom Civil Aviation Authority approval for Category G(a); or

(2) any other equipment shown by a test programme and accepted by the Director as capable of meeting the applicable requirements of the United Kingdom Civil Aviation Authority approval referred to in paragraph (c)(1).

A.10 RNP, MNPS, and VSM equipment

Navigation systems and equipment installed for operation in RNP, MNPS, or VSM airspace must—

(1) meet the performance requirements of ICAO Regional Supplementary Procedures Doc 7030 applicable to the airspace and routes being flown; and

(2) for RNP operations, consist of two independent LRNS comprising INS, IRS/FMS, or GPS; and

(3) meet the equipment and functional requirements—

(i) for operation in RNP airspace, contained in the ICAO Manual on Required Navigation Performance (RNP) Doc 9613; or

(ii) for operation in airspace designated with a VSM of 1000 feet above flight level 290, contained in the ICAO Manual on Implementation of a 300M (1000ft) Vertical Separation Minimum between FL 290 and FL 410 Inclusive Doc 9574.

A.11 Category II and III equipment

(a) ILS localiser and glide slope equipment must meet the requirements of Radio Technical Commission for Aeronautics (RTCA) document number DO-195 for ILS localiser equipment and D- 192 for ILS glide slope equipment.

(b) A flight control guidance system must meet the performance requirements of an evaluation programme.

(c) A radio altimeter must—

(1) display to the flight crew the wheel height of the main landing gear above the terrain to an accuracy of plus or minus 5 ft. or 5%, whichever is greater, when the—

(i) pitch angle is plus or minus 5 degrees about the mean approach attitude; and

(ii) roll angle is 20 degrees in either direction; and

(iii) forward velocity is between the minimum approach speed and 200 knots; and

(iv) sink rate is not greater than 15 ft. per second at altitudes from 100 ft. to 200 ft.; and

(v) over level ground track actual altitude without significant lag or oscillation; and

(2) when the aircraft is below 200 ft. altitude and a change in terrain representing 10% of the aircraft's altitude occurs—

(i) not unlock; and

(ii) have its display respond within 0.1 seconds; and

(iii) if the radar altimeter unlocks, re-acquire the signal in less than 1 second; and

(3) if using a push to test feature, test the entire system at a simulated altitude of less than 500 ft.; and

(4) incorporate a positive failure warning any time there is a power loss or absence of ground return signals within the desired range of operating altitudes.

(d) Other required instruments and equipment must be capable of performing the necessary Category II or III operations as listed in the operator's precision approach procedure manual required by 91.417.

A.12 First aid kits

Each first aid kit must—

(1) be placed in a container that—

(i) minimizes the risk of theft or deterioration of the contents; and
(ii) ensures that any theft may be readily detected; and

(2) be located and secured in such a manner that—

(i) the possibility of damage or loss as the result of an accident is minimised; and

(ii) there is no danger to the occupants of the aircraft; and

(3) have its location marked

(i) on the outside of any compartment containing the kit; and
(ii) for aircraft that do not exceed 5700 kg MCTOW, on the outside of the aircraft; and

(4) when containing narcotics, be installed in an aircraft—

(i) in accordance with regulation 28 of the Misuse of Drugs Regulations 1977; and

(ii) that when not in use can be locked, or placed in a lockable hangar, or have the first aid kit containing narcotics removed to a safe and secure location.

Note: *Life-rafts shall be considered to be safe and secure locations for the storage of first aid kits containing narcotics.*

A.13 Fire extinguishers

Each fire extinguisher must—

(1) be installed and secured in such a manner that it will not interfere with the safe operation of the aircraft or adversely affect the safety of crew or passengers; and

(2) subject to subparagraph (4), be of a type and quantity of extinguishing agent suitable for the kinds of fires likely to occur in the compartment where the fire extinguisher is intended to be used; and

(3) minimise the hazards of toxic gas concentrations; and

(4) contain as an extinguishing agent only—

(i) bromotrifluoro methane (halon 1211); or

(ii) bromotrifluoro methane (halon 1301); or

(iii) carbon dioxide; or

(iv) another agent that provides an equivalent extinguishing action.

A.14 Emergency equipment

(a) A life preserver must have a survival locator light that meets the requirements of TSO C85 and—

(1) for inflatable life preservers—

(i) a minimum inflated buoyancy of 150 newtons’’’; and

(ii) manually operated CO2 inflation with oral top up; and

(2) for constant wear anti-exposure coveralls, a minimum inherent buoyancy of 75 newton’s provided by non-flammable closed cell buoyancy foam.

(b) A life preserver must meet the requirements of—

(1) for inflatable life preservers—

(i) TSO C13; or

(ii) European Norm EN 396; or

(iii) New Zealand Standard NZ 5823; and

(2) for constant wear anti-exposure coveralls, US Coastguard Type VPFD.

(c) life-raft must meet the requirements of TSO C70 and contain a survival kit.

(d) The survival kit required in paragraph (c) must include-

(1) one canopy; and

(2) one radar reflector or flare kit; and

(3) one life-raft repair kit; and

(4) one bailing bucket; and

(5) one signalling mirror; and

(6) one whistle; and

(7) one raft knife; and

(8) one compressed gas bottle for emergency inflation; and

(9) one inflation pump; and

(10) one 25 m retaining line; and

(11) one magnetic compass; and

(12) one dye marker; and

(13) one flashlight having at least 2 'D' cells or equivalent; and

(14) one fishing kit; and

(15) two oars or 2 glove paddles; and

(16) a 2-day supply of food rations supplying at least 1000 calories per day for every person that the raft is rated to carry; and

(17) 1200 millilitres of water for every 2 persons that the raft is rated to carry, or 1 sea water desalting kit; and

(18) one first aid kit suitable for treatment of minor injuries; and

(19) on book on survival appropriate for the area over which the aircraft is operated; and

(20) a sea anchor; and

(21) a water collection bag or cups.

(e) A survival locator light must meet the requirements of TSOC85.

A.15 Emergency locator transmitters

(a) Except as provided in paragraph (j), an automatic ELT and an ELT(S) must—

(1) meet the requirements of TSO 126; and

(2) transmit on both frequencies of 406 MHz and 121.5 MHz

(b) An automatic ELT must-

(1) be attached to the aircraft in such a manner that—

(i) the probability of damage to the ELT in the event of an accident or impact is minimised; and

(ii) the ELT mounting is to a primary load-carrying structure provided the attachment does not degrade the structural capability of the aircraft; and

(iii) a force of 450 newton's applied to the ELT mounting in the most flexible direction does not cause a static deflection greater than 2.5 mm relative to a section of adjacent structure located between 0.3 m and 1.0 m from the attachment site; and

(iv) the ELT and any external antenna can support a 100 g load in the plus and minus directions of the three principle axes of the aircraft; and

(v) the ELT and any external antenna are as close to each other as possible; and

(vi) for a fixed and deployable automatic ELT, the ELT and external antenna are attached as far as possible; and

(2) have its crash activation sensor—

(i) located so as to prevent inadvertent operation; and

(ii) axis orientated to sense a primary crash pulse along the longitudinal axis of the aircraft; and

(3) have its antenna—

(i) mounted to provide vertical polarisation with the aircraft in normal flight; and

(ii) for an external antenna, mounted not less than 0.6 m from any other VHF antenna unless the manufacturer specifies that a closer mounting may be used; and

(iii) for an internal antenna, insulated from metal parts and exposed to a window of at least 0.3 m square; and

(4) be fitted with vibration proof RF connectors on each end of the ELT antenna coaxial cable; and

(5) have its location identified near the point of access.

(c) An EPIRB must-

(1) meet the requirements of Australian/New Zealand Standard AS/NZ 4280.1; and

(2) transmit on both frequencies of 406 MHz and 121.5 MHz

(d) An ELT(S) and EPIRB must—

(1) be self-buoyant; and

(2) be water resistant; and

(3) be portable.

(e) A PLB must operate on both frequencies of 406 MHz and 121.5 MHz, and must-

(1) meet the requirements of Australian/New Zealand Standard AS/NZS 4280.2; or

(2) be COSPAS-SARSAT type approved.

(f) An ELT(S) must be stowed in the aircraft in a manner that allows it to be readily available to any person on the aircraft in the event of an emergency.

(g) An ELT or ELT(S) meeting the requirements of TSO-C126 must be uniquely coded in accordance with the coding format specified in the Cospas-Sarsat Guidelines on 406MHz Beacon Coding, Registration and Type Approval, document C/S G.005 current issue with -

(1) the International Telecommunication Union (ITU) country code for Papua New Guinea; and

(2) the transmitter serial number; or

(3) aircraft operating agency ICAO designator and a serial number from 0001 to 4096; or

(4) 15-bit aircraft address for the aircraft to which the ELT is installed; or

(5) aircraft nationality and registration marks for the aircraft to which the ELT is installed.

A.16 Oxygen

Oxygen used in aircraft shall be of Aviation Oxygen Standard which is gaseous oxygen with a minimum purity of 99%, maximum moisture of 0.0056 grams per cubic metre, and nil carbon monoxide.

A.17 Passenger oxygen masks

Each passenger oxygen mask shall meet the requirements of TSO C 64.

A.18 Crew member on-demand oxygen masks

(a) Each crew member on-demand oxygen mask shall meet the requirements of TSO C78.

(b) Each on-demand mask for flight crew members must, without causing undue delay in proceeding with emergency duties, be—

(1) capable of being placed on the face with one hand from the stowed position; and

(2) properly secured, sealed, and capable of supplying oxygen upon demand within five seconds; and

(3) able to provide for—

(i) the use of corrective eyeglasses without undue impairment of vision or loss of protection; and

(ii) communication by interphone with each flight crew member while in their normally seated position; and

(iii) communication between each of two flight crew member stations and at least one crew member station in each passenger compartment.

A.19 Oxygen equipment

(a) Flight crew member oxygen equipment must provide an oxygen flow rate—

(1) for continuous flow equipment, that is the greater of—

(i) 2 litres per minute STPD; or

(ii) that which will maintain a MTOPP of 149 mm Hg when breathing 15 litres per minute BTPS with a tidal volume of 700 millilitres; and

(2) for on-demand equipment—

(i) for flights up to 35 000 feet AMSL, not less than that which will maintain a MTOPP of 122 mm Hg; and

(ii) for flights above 35 000 feet AMSL, not less than 20 litres per minute BTPS; and

(iii) for flights above 41 000 feet AMSL, that progressively increases until not less than 15 mm Hg above ambient pressure and 30 litres per minute BTPS is achieved at 45 000 feet AMSL; and

(3) for protective equipment, of 30 litres per minute BTPD at a pressure altitude of 8 000 feet AMSL.

(b) Crew member and passenger oxygen equipment must provide an oxygen flow rate of—

(1) for flights from 10 000 feet to 18 500 feet AMSL, not less than that which will maintain a MTOPP of 100 mm Hg when breathing 15 litres per minute BTPS with a tidal volume of 700 millilitres; and

(2) for flights from 18 500 feet to 40 000 feet AMSL, not less than that which will maintain a MTOPP of 83.8 mm Hg when breathing 30 litres per minute BTPS with a tidal volume of 1100 millilitres; and

(3) for flights from 40 000 feet to 45 000 feet AMSL, not less than that which will maintain a MTOPP of 55 mm Hg when breathing 30 litres per minute BTPS with a tidal volume of 1100 millilitres.

(c) Portable oxygen equipment must provide an oxygen flow rate of not less than—

(1) 2 litres per minute STPD on a high setting.

(d) On-demand oxygen regulators must meet the requirements of TSO C89.

A.20 Protective breathing equipment

Protective breathing equipment must—

(1) meet the requirements of TSO C99; and

(2) protect users from the effects of—

(i) smoke; or

(ii) carbon dioxide; or

(iii) other harmful gases; or

(iv) an oxygen deficient environment caused by other than aeroplane depressurisation.

A.21 Crew member portable protective breathing equipment

(a) Except as provided in paragraph (b), crew member portable protective breathing equipment must meet the requirements of TSO C116.

(b) Crew member portable protective breathing equipment may consist of a portable oxygen supply connected to protective breathing equipment that allows unrestricted performance of crew member duties.

A.22 Transponder equipment

A transponder must meet–

(1) the requirements of TSO C74c; or

(2) for Mode S capable equipment, the appropriate class of TSO C112.

A.23 Altitude encoder equipment

An altitude encoder must meet the requirements of TSO C 88.

A.24 Altitude alerting system or device

For operation below 3000 feet AGL, the altitude alerting system or device need only provide one signal, either visual or aural.

A.25 Parachute assembly for emergency use

A parachute assembly for emergency use must meet the requirements of—

(1) an applicable type certificate; or

(2) TSO C23; or

(3) a military drawing and order number or any other military designation or specification number.

A.26 Glider tow lines

Glider tow lines must—

(1) except as provided in paragraph (2), have a breaking strength of not less than 80% or more than 200% of the MCTOW of the glider to be towed; and

(2) if the tow line used has a breaking strength of more than 200% of the MCTOW of the glider to be towed, have a safety link installed at the point of attachment to the—

(i) the glider with a breaking strength of not less than 80% of the glider's MCTOW but not more than twice the glider's MCTOW; and

(ii) the aircraft with a breaking strength of at least 100% of the glider's MCTOW but not more than twice the glider's MCTOW.

A.27 ADS-B OUT equipment

ADS-B OUT equipment must-

(1) Meet the requirements of EASA AMC 20-24; or

(2) TSO-C 166b or

(3) Meet equivalent standards acceptable to the Director

A.28 All Aeroplanes operated as VFR Flights

(a) All aeroplanes when operated as VFR flights shall be equipped with:

(1) magnetic compass;

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

(3) a sensitive altimeter;

(4) an airspeed indicator; and

(5) such additional instruments or equipment as may be prescribed by the authority.

Appendix B — Instrument Holding Patterns - Entry Procedures

B.1 Instrument holding pattern entry sectors

The entry sectors for the following procedures are those described in Figure 2. The entry sectors in Figure 2 have a tolerance of ± 5° for the purpose of sector selection.

B.2 Sector 1 procedure (Parallel entry)

On arrival overhead the navigation aid or on reaching the fix—

(1) the aircraft is turned to the reciprocal of the holding pattern inbound track for the period of time or distance specified under B.5; then

(2) the aircraft is turned onto the holding side to intercept the inbound track of the holding pattern until reaching the navigation aid or fix; then

(3) the aircraft is turned to follow the holding pattern

B.3 Sector 2 procedure (Offset entry)

On arrival overhead the navigation aid or on reaching the fix—

(1) the aircraft is turned onto a heading to make good a track making an angle of 30° from the reciprocal of the inbound track or VOR radial of the holding pattern on the holding pattern side; then

(2) the aircraft maintains track for the period of time or distance specified under B.5; then

(3) the aircraft is turned to intercept the inbound holding track until reaching the navigation aid or fix; then

(4) the aircraft is turned to follow the holding pattern.

B.4 Sector 3 procedure (Direct entry)

On arrival overhead the navigation aid or on reaching the fix, the aircraft is turned to follow the holding pattern.

B.5 Entry procedure — Time or distance

The entry headings specified under B.2 and B.3 shall —

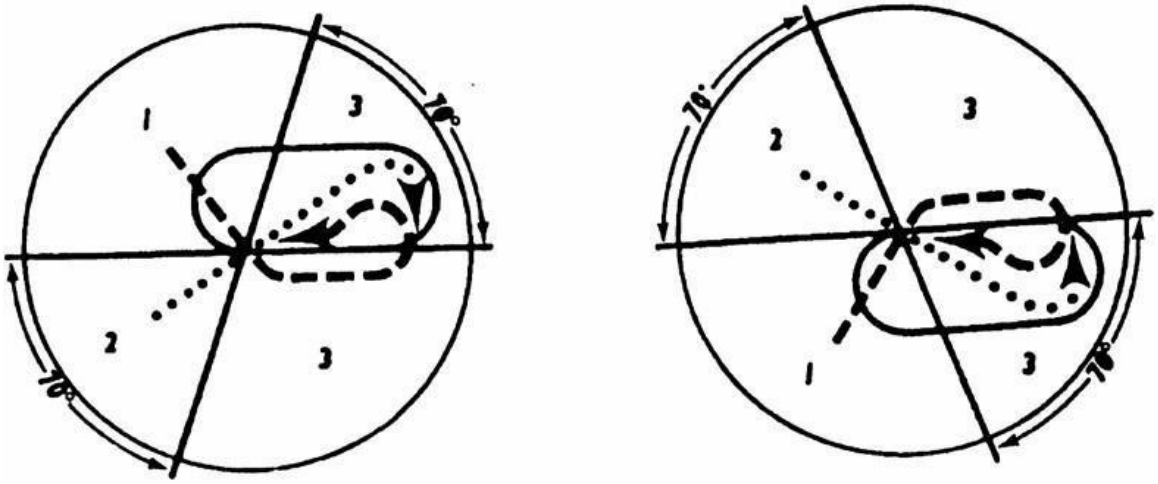
(1) if a DME distance is prescribed, not exceed that DME distance; or

(2) be maintained in still air conditions for no longer than—

(i) when conducted at or below FL 140, one minute; or

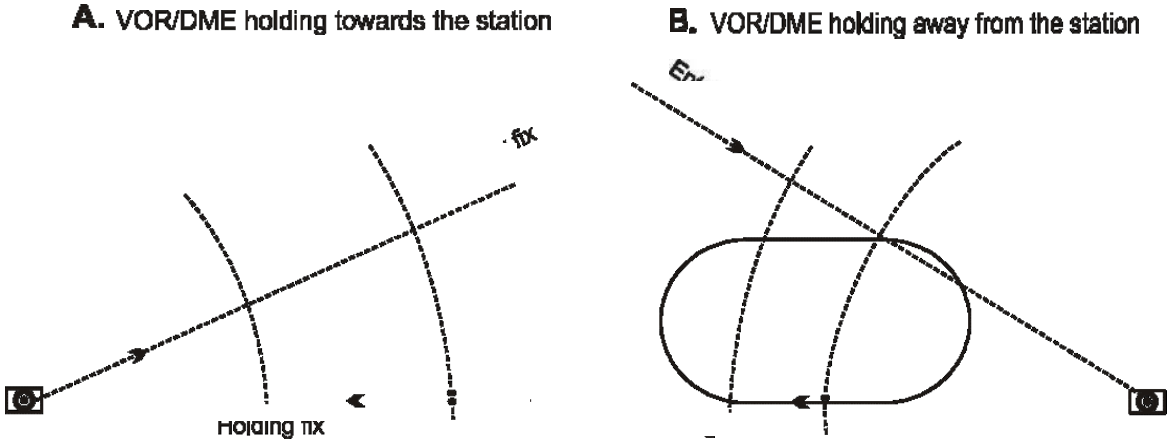
(ii) when conducted above FL 140, one and a half minutes.

Figure 2. Holding Pattern Entry Sectors



B.6 VOR/DME Holding Pattern Entry

The entry procedures for holding patters over a VOR/DME fix shall be those described in Figures A. and B. below.



Appendix C — Reversal Procedures and Base Turns - Entry Procedures

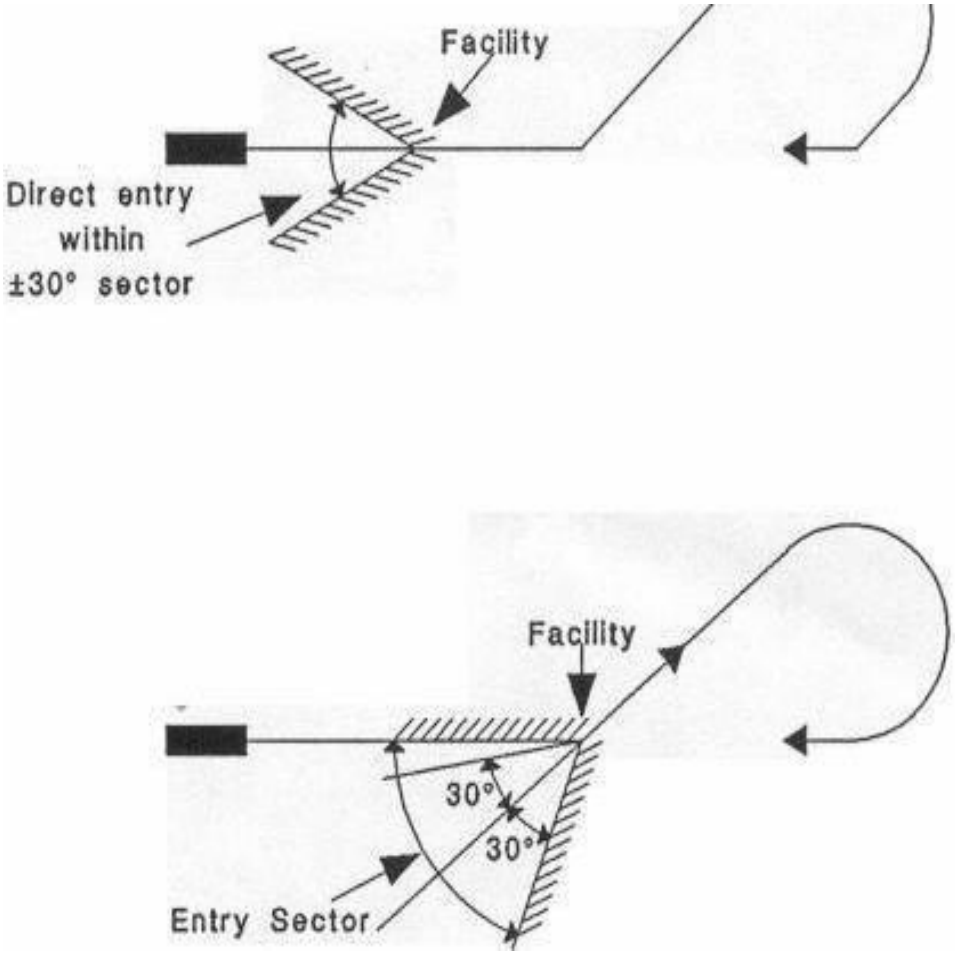
C.1 Reversal procedure entry.

Reversal procedures shall be entered from a track that is within ±30° sector of the outbound track as described in Figure 3. If the arrival inbound track is outside the entry sector limits, the entry procedure shall be that prescribed in Appendix B for entry into instrument holding patterns.

C.2 Base turn entry.

Base turns shall be entered from a track that is within ±30° sector of the outbound track expanded to the reciprocal track of the inbound track as described in Figure 3. If the arrival inbound track is outside the entry sector limits, the entry procedure shall be that prescribed in Appendix B for entry into instrument holding patterns.

Figure 3.



Appendix D — Interception of civil aircraft

D.1 General requirements

(a) Interception of civil aircraft must be avoided and must be undertaken only as a last resort. If undertaken, the interception shall be limited to-

(1) determining the identity of the aircraft,

(2) unless it is necessary to return the aircraft to its planned track,

(3) direct it beyond the boundaries of national airspace,

(4) guide it away from a prohibited, restricted or danger area or

(5) instruct it to effect a landing at a designated aerodrome.

(b) To eliminate or reduce the need for interception of civil aircraft, it is important that:

(1) all possible efforts be made by intercept control units to secure identification of any aircraft which may be a civil aircraft,

(2) issue any necessary instructions or advice to such aircraft, through the appropriate air traffic services units.

(3) reliable communications between intercept control units and air traffic services units be established

(4) agreements must be formulated concerning exchanges of information between such units on the movements of civil aircraft, in accordance with the provisions of Annex 11;

(c) To eliminate or reduce the hazards inherent in interceptions undertaken as a last resort, all possible efforts shall be made to ensure coordinated actions by the pilots and ground units concerned are taken to ensure that:

(1) all pilots of civil aircraft be made fully aware of the actions to be taken by them and the visual signals to be used, as specified in Chapter 3 and Appendix 1 of this Annex;

(2) operators or pilots-in-command of civil aircraft implement the provisions in Annex 6, Parts I, II and III, regarding the capability of aircraft to communicate on 121.5 MHz and the availability of interception procedures and visual signals on board aircraft;

(3) all air traffic services personnel must be made fully aware of the actions to be taken by them in accordance with the provisions of Annex 11, Chapter 2.24.2, and the PANS-ATM (Doc 4444 chapter 15);

(4) all pilots-in-command of intercepting aircraft be made aware of the general performance limitations of civil aircraft and of the possibility that intercepted civil aircraft may be in a state of emergency due to technical difficulties or unlawful interference;

(5) clear and unambiguous instructions are issued to intercept control units and to pilots-in- command of potential intercepting aircraft,

(i) covering interception manoeuvres, guidance of intercepted aircraft;

(ii) action by intercepted aircraft, air-to-air visual signals, radio communication with intercepted aircraft; and

(iii) the need to refrain from resorting to the use of weapons.

(6) intercept control units and intercepting aircraft shall be provided with radiotelephony equipment compatible with the technical specifications of Annex 10, Volume I, so as to enable them to communicate with intercepted aircraft on the emergency frequency 121.5 MHz

(7) secondary surveillance radar and/or ADS-B facilities shall be made available to the extent possible to permit intercept control units to identify civil aircraft in areas where they might otherwise be intercepted. Such facilities should permit recognition of aircraft identity and immediate recognition of any emergency or urgency conditions.

D.2 Interception manoeuvres

(a) A standard method must be established for the manoeuvring of aircraft intercepting a civil aircraft in order to avoid any hazard for the intercepted aircraft. Such method should take due account of the:

(1) performance limitations of civil aircraft;

(2) the need to avoid flying in such proximity to the intercepted aircraft that a collision hazard may be created; and

(3) the need to avoid crossing the aircraft's flight path or to perform any other manoeuvre in such a manner that the wake turbulence may be hazardous, particularly if the intercepted aircraft is a light aircraft.

(b) An aircraft equipped with an airborne collision avoidance system (ACAS), which is being intercepted, may perceive the interceptor as a collision threat and thus initiate an avoidance manoeuvre in response to an ACAS resolution advisory. Such a manoeuvre might be misinterpreted by the interceptor as an indication of unfriendly intentions. It is important, therefore,

(1) that pilots of intercepting aircraft equipped with a transponder suppress the transmission of pressure-altitude information (in Mode C replies or in the AC field of Mode S replies)

(i) within a range of at least 37 km (20 NM) of the aircraft being intercepted.

(ii) This shall prevent the ACAS in the intercepted aircraft from using resolution advisories in respect of the interceptor, while the ACAS traffic advisory information will remain available

(c) The following method is recommended for the manoeuvring of intercepting aircraft for the purpose of visually identifying a civil aircraft with Phase I:

(1) The intercepting aircraft should approach the intercepted aircraft from astern.

(2) The element leader, or the single intercepting aircraft, should normally take up a position on the left (port) side, slightly above and ahead of the intercepted aircraft, within the field of view of the pilot of the intercepted aircraft, and initially not closer to the aircraft than 300m.

(3) Any other participating aircraft should stay well clear of the intercepted aircraft, preferably above and behind. After speed and position have been established, the aircraft should, if necessary, proceed with Phase II of the procedure.

(d) Phase II – The element leader, or the single intercepting aircraft:

(1) must begin closing in gently on the intercepted aircraft at the same level, until no closer

than absolutely necessary to obtain the information needed;

(2) must use caution to avoid startling the flight crew or the passengers of the intercepted aircraft, keeping constantly in mind the fact that manoeuvres considered normal to an intercepting aircraft may be considered hazardous to passengers and crews of civil aircraft.

(3) any other participating aircraft should continue to stay well clear of the intercepted aircraft. Upon completion of identification, the intercepting aircraft should withdraw from the vicinity of the intercepted aircraft as outlined in Phase III.

(e) Phase III - The element leader, or the single intercepting aircraft, shall break gently away from the intercepted aircraft in a shallow dive. Any other participating aircraft should stay well clear of the intercepted aircraft and re-join their leader.

D.3 Manoeuvres for Navigational Guidance

(a) If, following the identification manoeuvres in Phase I and Phase II above, it is considered necessary to intervene in the navigation of the intercepted aircraft, the element leader, or the single intercepting aircraft, should normally take up a position on the left (port) side, slightly above and ahead of the intercepted aircraft, to enable the pilot-in-command of the latter aircraft to see the visual signals given.

(b) It is indispensable that the pilot-in-command of the intercepting aircraft be satisfied that the pilot- in-command of the intercepted aircraft is aware of the interception and acknowledges the signals given. If repeated attempts to attract the attention of the pilot-in-command of the intercepted aircraft by use of the Series 1 signal in Appendix D Table A-2, are unsuccessful, other methods of signalling may be used for this purpose, including as a last resort the visual effect of the reheat/afterburner, provided that no hazard is created for the intercepted aircraft.

(c) It is recognized that meteorological conditions or terrain may occasionally make it necessary for the element leader, or the single intercepting aircraft, to take up a position on the right (starboard) side, slightly above and ahead of the intercepted aircraft. In such case, the pilot- in-command of the intercepting aircraft must take particular care that the intercepting aircraft is clearly visible at all times to the pilot-in-command of the intercepted aircraft.

D.4 Guidance of an intercepted aircraft

(a) Navigational guidance and related information should be given to an intercepted aircraft by radiotelephony, whenever radio contact can be established.

(b) When navigational guidance is given to an intercepted aircraft, care must be taken that the aircraft is not led into conditions where the visibility may be reduced below that required to maintain flight in visual meteorological conditions and that the manoeuvres demanded of the intercepted aircraft do not add to already existing hazards in the event that the operating efficiency of the aircraft is impaired.

(c) In the exceptional case where an intercepted civil aircraft is required to land in the territory over flown, care must also be taken that:

(1) the designated aerodrome is suitable for the safe landing of the aircraft type concerned, especially if the aerodrome is not normally used for civil air transport operations;

(2) the surrounding terrain is suitable for circling, approach and missed approach manoeuvres;

(3) the intercepted aircraft has sufficient fuel remaining to reach the aerodrome;

(4) if the intercepted aircraft is a civil transport aircraft, the designated aerodrome has a runway with a length equivalent to at least 2 500 m at mean sea level and a bearing strength sufficient to support the aircraft; and

(5) whenever possible, the designated aerodrome is one that is described in detail in the relevant Aeronautical Information Publication

(d) When requiring a civil aircraft to land at an unfamiliar aerodrome, it is essential that sufficient time be allowed it to prepare for a landing, bearing in mind that only the pilot-in- command of the civil aircraft can judge the safety of the landing operation in relation to runway length and aircraft mass at the time.

(e) It is particularly important that all information necessary to facilitate a safe approach and landing be given to the intercepted aircraft by radiotelephony.

D.5 Action by intercepted aircraft

(a) An aircraft which is intercepted by another aircraft shall immediately:

(1) follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals referred in Appendix D.6(a);

(2) notify, if possible, the appropriate air traffic services unit;

(3) attempt to establish radio communication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 121.5 MHz, giving the identity of the intercepted aircraft and the nature of the flight; and if no contact has been established and if practicable, repeating this call on the emergency frequency 243 MHz;

(4) if equipped with SSR transponder, select Mode A, Code 7700, unless otherwise instructed by the appropriate air traffic services unit.

(5) if equipped with ADS-B or ADS-C, select the appropriate emergency functionality, if available, unless otherwise instructed by the appropriate air traffic services unit.

(b) If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the intercepted aircraft shall request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft.

(c) If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by radio, the intercepted aircraft shall request immediate clarification while continuing to comply with the radio instructions given by the intercepting aircraft.

D.6 Air-to-air visual signals

(a) The visual signals to be used by intercepting and intercepted aircraft are those set forth in the Papua New Guinea AIP.

(b) It is essential that intercepting and intercepted aircraft adhere strictly to those signals and interpret correctly the signals given by the other aircraft, and that the intercepting aircraft pay particular attention to any signals given by the intercepted aircraft to indicate that it is in a state

of distress or urgency.

D.7 Radio communication between intercepted control unit or the intercepting aircraft and the intercepted aircraft.

(a) When an interception is being made, the intercept control unit and the intercepting aircraft shall:

(1) first attempt to establish two-way communication with the intercepted aircraft in a common language on the emergency frequency 121.5 MHz, using the call signs "INTERCEPT CONTROL", "INTERCEPTOR (call sign)" and "INTERCEPTED AIRCRAFT" respectively; and

(2) failing this, attempt to establish two-way communication with the intercepted aircraft on such other frequency or frequencies as may have been prescribed by the appropriate ATS authority, or to establish contact through the appropriate ATS unit(s).

(b) If radio contact is established during interception but communication in a common language is not possible, attempts must be made to convey instructions, acknowledgement of instructions and essential Information by using the phrases and pronunciations in Table A-1 of Appendix D and transmitting each phrase twice.

D.8 Refraining from the use of weapons

The use of tracer bullets to attract attention is hazardous, and it is expected that measures will be taken to avoid their use so that the lives of persons on board and the safety of aircraft will not be endangered.

D.9 Coordination between intercepted control units and ATS units

It is essential that close coordination be maintained between an intercept control unit and the appropriate air traffic services unit during all phases of an interception of an aircraft which is, or might be, a civil aircraft, in order that the air traffic services unit is kept fully informed of the developments and of the action required of the intercepted aircraft.

Appendix E — Location of an aeroplane in distress

E.1 Purpose and Scope

Location of an aeroplane in distress aims at establishing, to a reasonable extent, the location of an accident site within a 6 NM radius.

E.2 Operations

E.2.1 An aeroplane in distress shall automatically activate the transmission of information from which its position can be determined by the operator and the position information shall contain a time stamp. It shall also be possible for this transmission to be activated manually. The system used for the autonomous transmission of position information shall be capable of transmitting that information in the event of aircraft electrical power loss, at least for the expected duration of the entire flight.

Note: *Guidance on the location of an aeroplane in distress is provided in Annex 6 Attachment K.*

E.2.2 An aircraft is in a distress condition when it is in a state that, if the aircraft behaviour event is left uncorrected, can result in an accident. Autonomous transmission of position information shall be active when an aircraft is in a distress condition. This will provide a high probability of locating an accident site to within a 6 NM radius. The operator shall be alerted when an aircraft is in a distress condition with an acceptable low rate of false alerts. In case of a triggered transmission system, initial transmission of position information shall commence immediately or no later than five seconds after the detection of the activation event.

Note 1: *Aircraft behaviour events can include, but are not limited to, unusual attitudes, unusual speed conditions, collision with terrain and total loss of thrust/propulsion on all engines and ground proximity warnings.*

Note 2: *A distress alert can be triggered using criteria that may vary as a result of aircraft position and phase of flight.*

Further guidance regarding in-flight event detection and triggering criteria may be found in the EUROCAE ED-237, Minimum Aviation System Performance Specification (MASPS) for Criteria to Detect In-Flight Aircraft Distress Events to Trigger Transmission of Flight Information.

E.2.3 When an aircraft operator or an air traffic service unit (ATSU) has reason to believe that an aircraft is in distress, coordination shall be established between the ATSU and the aircraft operator.

E.2.4 The State of the Operator shall identify the organizations that will require the position information of an aircraft in an emergency phase. These shall include, as a minimum:

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

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

E.2.5 When autonomous transmission of position information has been activated, it shall only be able to be deactivated using the same mechanism that activated it.

E.2.6 The accuracy of position information shall, as a minimum, meet the position accuracy requirements established for ELT.

Appendix F — Aircraft observations and reports

F.1 Types of aircraft observation

(a) The following aircraft observations shall be made:

(i) routine aircraft observations during en-route and climb-out phases of the flight for aircraft equipped with air-ground data link; and

(ii) special and other non-routine aircraft observations during any phase of the flight.

F.2 Routine aircraft observations – designation

(a) When air-ground data link is used and automatic dependent surveillance (ADS) or secondary surveillance radar (SSR) Mode S is being applied, automated routine observations shall be made every 15 minutes during the en-route phase and every 30 seconds during the climb-out phase for the first 10 minutes of the flight.

(b) In the case of air routes with high-density air traffic, an aircraft from among the aircraft operating at each flight level shall be designated, at approximately hourly intervals, to make routine observations in accordance with sub-regulation

(c) In the case of the requirement to report during the climb-out phase, an aircraft shall be designated, at approximately hourly intervals, at each aerodrome to make routine observations in accordance with F.2 (a).

F.3 Routine aircraft observations – exemptions

Aircraft not equipped with air-ground data link are exempted from making routine aircraft observations.

F.4 Special aircraft observations

(a) All aircraft shall make special observations whenever the following conditions are encountered or observed:

(1) moderate or severe turbulence; or

(2) moderate or severe icing; or

(3) severe mountain wave; or

(4) thunderstorms, with or without hail, that are obscured, embedded, widespread or in squall lines; or

(5) heavy dust storm or heavy sandstorm

(6) volcanic ash cloud; or

(7) pre-eruption volcanic activity or a volcanic eruption.

F.5 Other non- routine aircraft observations

When other meteorological conditions not listed under F.4 (a) are encountered and which, in the opinion of the pilot-in-command, may affect the safety or markedly affect the efficiency of other aircraft operations, the pilot-in-command shall advise the appropriate ATS unit as soon as practicable.

F.6 Reporting of aircraft observations during flight

(a) Aircraft observations shall be reported by air-ground data link. Where air-ground data link is not available or appropriate, special and other non-routine aircraft observations during flight shall be reported by voice communications.

(b) Aircraft observations shall be reported during flight at the time the observation is made or as thereafter, as is practicable.

(c) Aircraft observations shall be reported as air-reports.

F.7 Recording and post-flight reporting of aircraft observations of volcanic activity

Special aircraft observations of pre-eruption volcanic activity, a volcanic eruption or volcanic ash cloud shall be recorded on the special air-report of volcanic activity. A copy of the special air-report of volcanic activity (refer to ICAO Doc. 4444, Appendix 1) shall be included with the flight documentation provided to flights operating on routes, which, could be affected by volcanic ash clouds.

F.8 Notification required from operators

(a) An operator requiring meteorological service or changes in existing meteorological service shall notify, sufficiently in advance, meteorological service provider or the aerodrome meteorological office concerned. The minimum amount of advance notice required shall be as agreed between the meteorological service provider or aerodrome meteorological office and the operator concerned.

F.9 The meteorological service provider or the aerodrome meteorological office shall be notified by the operator requiring service when:

(1) new routes or new types of operations are planned;

(2) changes of a lasting character are to be made in scheduled operations; and

(3) other changes, affecting the provision of meteorological service, are planned.

(a) Such information shall contain all details necessary for the planning of appropriate arrangements by the meteorological service provider or the aerodrome meteorological office.

(b) The operator or a flight crewmember shall ensure that, where required by the meteorological service provider or the aerodrome meteorological office is notified:

(4) of flight schedules;

(5) when non-scheduled flights are to be operated; and

(6) when flights are delayed, advanced or cancelled.