



CIVIL AVIATION SAFETY AUTHORITY OF PNG

PNG Civil Aviation Rules Part 125

Air Operations -Medium Aeroplanes

Applicable 14 December 2020

DESCRIPTION

Part 125 prescribes the operating requirements for air operations conducted by a holder of an Air Operator Certificate issued in accordance with Part 119 using an aeroplane that has —

- (1) a passenger seating configuration of 10 to 19 seats; or
- (2) a payload capacity of 2500kg or less, and MCTOW of greater than 5700kg; or
- (3) a single engine and is performing an IFR operation.

The objective is to standardise the rules for all operators of aircraft in these categories by establishing rules applicable to —

- a person performing an air operation
- a holder of an air operator certificate conducting an air operation
- a pilot- in- command performing an air operation
- the use of an aeroplane to perform a SEIFR passenger operation
- additional aircraft equipment, instrument, and certification requirements and specifications
- aircraft maintenance
- crew training and competency
- management of flight crew fatigue

Part 125 aligns with:

- Amendment 43 of Annex 6 Part I and
- Amendment 106 of Annex 8.

BULLETIN

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

Amendment	Effective Date
Amendment 1	1 January 2011
Amendment 2	1 April 2015
Amendment 3	1 May 2017
Amendment 4	1 April 2019
Amendment 5	14 December 2020

Summary of amendments:

Amendment 5:

(Docket 20/08/CAR125/31)

Various rules amended for editorial edits and corrections.

New Rule. 125.159 Aerodrome operating minima – IFR Flight adopted from New Zealand CAA Part 125.159

New Rule. 125.160 aerodrome operating minima to be used for each aerodrome - rule adopted from New Zealand CAA Part 125.159A

Rule 125.362 Ground Proximity Warning System: Paragraph (c) added to align with ICAO Annex 6 Part I Amendment 44 standard 6.15.2

Rule 125.553 (d) (3) – new addition to ensure training program is approved by the Director.

Rule 125.563 (a):

(8) incorporation of instructions and training on the avoidance of controlled flight into terrain (CFIT) to resolve OPS protocol question 4.153:

(9) incorporation of training on policy and use of ground proximity warning system (GPWS) to resolve OPS protocol question 4.153

(10) incorporation of training on continuous descent final approach (CDFA) including stabilised approach criteria

(11) incorporation of training on performance based navigation

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Subpart A — General

125.1 Purpose

- (a) Subject to paragraph (b), this Part prescribes rules governing air operations using an aeroplane—
- (1) having a seating configuration of 10 to 19 seats, excluding any required flight crew member seat, or
 - (2) having a payload capacity of 2500 kg or less and a MCTOW of greater than 5700 kg; or
 - (3) to perform a SEIFR operation.
- (b) If either the seat numbers or payload capacity of the aeroplane falls into the applicability for Part 121, then the operation shall be conducted under Part 121.

125.3 Definitions and Abbreviations

In this Part—

Certificate holder means the holder of an air operator certificate:

HUMS means health and usage monitoring system:

Net take-off flight path, take-off flight path, take-off distance, and take-off run have the same meaning as prescribed in the rules under which the aeroplane was certificated:

Threshold means that point where a 1:20 obstacle-free approach surface intersects the runway surface.

V₁ means take-off decision speed:

V₂ means the initial climb out speed:

V_{EF} means the calibrated speed at which the critical engine is assumed to fail:

V_S means the stalling speed:

125.5 Laws, regulations, and procedures

The certificate holder shall ensure that all persons employed, engaged, or contracted by the holder of an air operator certificate are familiar with the appropriate sections of the Act, Civil Aviation Rules, and procedures specified in the certificate holder's exposition.

125.7 Exemptions

The Director shall not grant any exemption to the requirements in this Part concerning the HUMS.

125.9 SEIFR passengers' operations

The certificate holder shall not conduct an SEIFR passenger operation unless—

- (1) the SEIFR passenger operation is specified in their operations specifications under rule 119.13(b)(5); and
- (2) the operation is performed in accordance with the requirements of this Part; and

- (3) the aeroplane used has a passenger seating configuration of 14 seats or less, excluding any required crew member's seat, and a payload capacity of 2500kg or less.

Subpart B — Operating Rules

125.51 Purpose

This Subpart prescribes operating rules governing air operations.

125.53 Aeroplane airworthiness

The certificate holder shall ensure that each aeroplane it uses in conducting an air operation has a current standard category airworthiness certificate.

125.55 Common language

The certificate holder shall ensure that—

- (1) all crew members can communicate in a common language with at least one flight crew member being able to communicate in the English language; and
- (2) all operations personnel are able to understand the language in which the applicable parts of the certificate holder's exposition are written.

125.57 Authorisation and control of operations

The certificate holder shall establish procedures for the authorisation and control of air operations including initiation, continuation and termination of an air operation or series of air operations.

125.59 Flight preparation

- (a) The holder of an air operator certificate must ensure that for each air operation conducted under the authority of that certificate, appropriate information is available to the pilot-in-command to complete the preparation for the intended operation.
- (b) The holder of an air operator certificate must ensure that prior to each air operation conducted under the authority of that certificate, a flight plan meeting the requirement of rule 91.307(c) or rule 91.407 as appropriate for the type of operation is prepared, and if the flight plan is not prepared by the pilot-in-command, the pilot-in-command is advised of its contents before the intended operation.
- (c) Where a person other than the pilot-in-command prepares a flight plan, the certificate holder shall ensure that the person—
 - (1) is trained and competent to perform the task; and
 - (2) is notified as soon as practicable of each change in equipment and operating procedure or facilities.
- (d) Notwithstanding rule 91.307(a) and rule 91.407(a), a certificate holder may, instead of the pilot-in-command, submit the flight plan to an appropriate ATS.
- (e) Notwithstanding rule 91.307(a) and rule 91.407(a), the flight plan required to be submitted to an ATS unit under paragraph (d) may be submitted by the holder of the air operator certificate provided the pilot-in-command is advised of the flight plan contents in accordance with paragraph (b) and that the flight plan has been submitted to ATS.

125.61 Search and rescue information

The certificate holder must ensure that each aeroplane that is operated under the authority of the certificate carries on board relevant information concerning the search and rescue services in the area of which the aeroplane is to be flown.

125.63 Emergency and survival equipment information

- (a) The certificate holder shall have available, for immediate communication to rescue co-ordination centres, information on the emergency and survival equipment carried on board each of its aeroplanes.
- (b) For air operations performed in excess of 50 nm from shore the information required by paragraph (a) shall, include—
 - (1) the number, colour, and type of life rafts; and
 - (2) whether pyrotechnics are carried; and
 - (3) details of emergency medical supplies and water supplies; and
 - (4) the type and operating frequencies of any emergency portable radio equipment.

125.65 Fuel

- (a) The certificate holder shall establish a fuel policy for the purpose of flight planning, and en-route re-planning, to ensure that each aeroplane carries sufficient fuel for the planned flight meeting the applicable requirements of Part 91, including reserves to cover deviations from the planned flight.
- (b) The fuel policy shall ensure that the planning of fuel requirements is based upon—
 - (1) Fuel consumption—
 - (i) procedures, tables, and graphs, that are contained in, or derived from, the manufacturer's manuals and that conform to the parameters contained in the aeroplane's type certificate; or
 - (ii) procedures derived from actual fuel consumption data compiled by the certificate holder that is acceptable to the Director; and
 - (2) the operating conditions under which the planned flight is to be conducted, including—
 - (i) normal aeroplane fuel consumption data; and
 - (ii) anticipated weights; and
 - (iii) expected meteorological conditions; and
 - (iv) ATS requirements and restrictions; and
 - (v) the geographic location of the destination aerodrome; and
 - (vi) the effect on fuel consumption of identified contingencies.
- (c) Except as provided in paragraph (d) the certificate holder shall ensure that the calculation of usable fuel required for a flight takes into account the following factors—
 - (1) taxi fuel; and
 - (2) trip fuel; and

- (3) reserve fuel, consisting of—
 - (i) contingency fuel; and
 - (ii) alternate fuel, if an alternate aerodrome is required; and
 - (iii) fixed fuel reserve; and
 - (iv) contingency additional fuel, if required by the type of operation.
- (d) The certificate holder may vary the factors required to be taken into account in paragraph (c) to accommodate en-route re-planning procedures if the variation is provided for in the certificate holder's exposition.

125.67 Flight check systems

- (a) The certificate holder shall establish a flight check system for use by flight crew members of each aeroplane that is operated under the authority of the certificate.
- (b) When establishing the flight check system required by paragraph (a), the certificate holder must have regard to the principles of human factors and crew resource management to ensure that the flight crew members can make safe decisions for the management of the aeroplane.
- (c) The flight check system required by paragraph (a) must-
 - (1) provide instructions and guidelines for the safe and efficient management of the flight deck; and
 - (2) specify methods to be used for ensuring the safe conduct of the flight; and
 - (3) include the procedures and checklists for ensuring compliance with-
 - (i) the aeroplane flight manual; and
 - (ii) the manufacturer's technical and safety instructions; and
 - (4) include –
 - (i) expanded checklists in the operations manual; and
 - (ii) scan checks; and
 - (iii) abbreviated checklists for quick reference, including emergency procedures; and
 - (5) when used for a SEIFR passenger operation, include procedures for ensuring that when a person performing a pre-flight check removes a flight critical item during the pre-flight check, another person authorised by the certificate holder checks that the item has been replaced in accordance with the aeroplane flight manual before the flight commences.
- (d) Each flight crew member performing an air operation must use a cockpit checklist in accordance with the flight check system required by paragraph (a)-
 - (i) before, during, and after every phase of the operation; and
 - (ii) in non-normal, and emergency situations.

125.69 Passenger safety

The certificate holder shall ensure that—

- (1) passengers are seated where, in the event of an emergency evacuation, they will not hinder evacuation from the aeroplane; and

- (2) any passenger who appears to be under the influence of alcohol or drugs or exhibits behavioural characteristics, to the extent where the safety of the aeroplane or its occupants is likely to be endangered, is refused embarkation or, where appropriate, removed from the aeroplane; and
- (3) disabled passengers are appropriately cared for, including allocation of appropriate seating positions and handling assistance in the event of an emergency; and
- (4) escorted passengers do not constitute a safety hazard to other passengers or to the aeroplane, and that prior arrangements for their carriage have been made in accordance with procedures in the certificate holder's exposition; and
- (5) the pilot-in-command is notified when a disabled or escorted person is to be carried on board the aeroplane.

125.71 Passenger information

- (a) If illuminated Fasten Seat Belt signs are installed in the aeroplane, they must be lit—
 - (1) while the aeroplane is moving on the ground; and
 - (2) for each takeoff; and
 - (3) for each landing; and
 - (4) at any other time considered necessary by the pilot-in-command.
- (b) The certificate holder shall ensure that passengers are informed, either by illuminated *No Smoking* signs or by approved *No Smoking* placards, when smoking is prohibited in the aeroplane.
- (c) If illuminated *No Smoking* signs are installed in an aeroplane, they must be lit when smoking is prohibited.

125.73 Flight compartment admission

- (a) The certificate holder shall ensure that no person, other than the flight crew members assigned to the flight, is admitted to, or carried in, the flight compartment, or occupies a pilot seat, unless that person is permitted by the pilot-in-command, and is—
 - (1) a crew member; or
 - (2) an authorised representative of the Director; or
 - (3) permitted by the holder of the air operator certificate in accordance with procedures specified in the certificate holder's exposition.
- (b) The certificate holder shall ensure that all persons admitted to the flight compartment or occupying a pilot seat are familiarised with the appropriate safety procedures specified in the certificate holder's exposition.

125.75 Manipulation of controls

- (a) Except as provided in paragraph (b) no person shall manipulate the controls of an aeroplane performing an air operation.
- (b) The certificate holder shall take reasonable care to ensure that no person manipulates the flight controls of its aeroplanes performing an air operation, unless the person is—

- (1) a flight crew member; or
- (2) an authorised representative of the Director who—
 - (i) has the permission of the certificate holder and the pilot-in-command; and
 - (ii) is performing a required duty.

125.77 Flight recorder requirements

- (a) A flight crew member shall ensure that, when a cockpit-voice recorder is required by rule 125.367—
 - (1) it is operated continuously from the start of the checklist commenced before engine start until the completion of the final checklist at the termination of flight; and
 - (2) if the aeroplane is equipped to record the uninterrupted audio signals received from a boom or a mask microphone, boom microphones are used below 10 000 feet altitude; and
 - (3) if an erasure feature is used in the cockpit-voice recorder, only information recorded more than 2 hours earlier than the last record is erased or otherwise obliterated.
- (b) A flight crew member shall ensure that when a flight data recorder is required by rule 125.369—
 - (1) it is operated continuously from the instant the aeroplane begins the take-off until it has completed the landing; and
 - (2) all recorded data is kept until the aeroplane has been operated for at least 25 hours after each operating cycle; and
 - (3) no more than 1 hour of recorded data is erased for the purpose of testing the flight recorder or the flight recorder system; and
 - (4) any erasure made in accordance with paragraph (b)(3) is—
 - (i) of the oldest recorded data accumulated at the time of testing; and
 - (ii) recorded in the appropriate maintenance documentation.

125.79 Refuelling and de-fuelling operations

- (a) Despite the requirements of rule 91.15(2), a person operating an aeroplane under the authority of an air operator certificate may refuel or de-fuel with Class 3.1C or a Class 3.1D flammable liquid (aviation turbine grade fuel) when a person is embarking, on board, or disembarking the aeroplane, providing the person operating the aeroplane ensures that safety and aeroplane evacuation precautions are taken in accordance with procedures specified in the certificate holder's exposition.
- (b) A person operating an aeroplane under the authority of an air operator certificate may refuel or defuel with Class 3.1C or a Class 3.1D flammable liquid (aviation turbine grade fuel) with one or more propulsion engines running, provided that—
 - (1) every passenger is disembarked under supervision of a crew member and is clear of the immediate area before refuelling or de-fuelling commences; and
 - (2) the pilot-in-command is responsible for every aspect of the refuelling or de-fuelling operation.

125.81 Fuel spillage

The certificate holder shall ensure that, where fuel is spilled onto an impermeable surface while fuelling an aeroplane and that fuel is likely to endanger persons or property—

- (1) refuelling or de-fuelling is stopped; and
- (2) immediate action is taken to cover the fuel with sand, sawdust, dry earth, or an agent such as foam or dry chemical extinguisher powder, to reduce the fire hazard; and
- (3) the aeroplane is then moved clear of the contaminated area before any engine is started.

125.83 Use of aerodromes

- (a) The certificate holder shall ensure that any aerodrome to be used in its operations has physical characteristics, obstacle limitation surfaces, and visual aids that meet the requirements for—
 - (1) the characteristics of the aeroplane being used; and
 - (2) the lowest meteorological minima to be used.
- (b) The certificate holder shall, where its aeroplanes use an aerodrome not promulgated in the PNGAIP, maintain a register containing—
 - (1) the aerodrome data; and
 - (2) procedures to ensure that the condition of the aerodrome is safe for that operation; and
 - (3) procedures to ensure that the condition of any required equipment, including safety equipment, is safe for that operation; and
 - (4) details of any limitations on the use of the aerodrome.
- (c) The certificate holder shall ensure that any aeroplane operating under VFR by day does not use any place for the purpose of taking-off or landing unless the runway used—
 - (1) has a width that is at least twice the outer main gear span of the aeroplane; and
 - (2) has a surface without irregularities and of sufficient strength for take-off and landing of the aeroplane being used; and
 - (3) the width of the runway strip surrounding the runway being used is at least two and half times the wing span of the aeroplane, or 30m whichever is greater.
- (d) The certificate holder shall ensure that any aeroplane operating under IFR or at night does not use any place for the purpose of landing or taking-off unless—
 - (1) the aerodrome reference code of the aeroplane being used is determined by reference to Table 1 of Appendix B; and
 - (2) the runway width is at least that width determined by reference to the aeroplane code number in Table 2 of Appendix B; and
- (e) Notwithstanding paragraphs (c) and (d), the certificate holder may use a lesser minimum runway width than that prescribed in paragraph (c) or (d) for an aeroplane type if—
 - (1) a lesser minimum runway width determined by certificated flight testing is prescribed in the aeroplane's flight manual; or
 - (2) a lesser minimum runway width is acceptable to the Director.

125.85 Restriction or suspension of operations

The certificate holder shall, on becoming aware of any condition that is a hazard to safe operations, restrict or suspend operations as necessary until the hazard is removed.

125.87 Flights over water

The certificate holder shall ensure that an aeroplane that is operated under the authority of the certificate is not operated on an extended over-water operation beyond—

- (1) 50 nm from shore unless that aeroplane is a multi-engine aeroplane capable of maintaining a height of 1500 feet AMSL with the critical engine inoperative; and
- (2) 100 nm from shore is conducted under IFR; and
- (3) the crews are trained in ditching procedures for the aeroplane; and
- (4) a risk assessment has been made to determine the risk to the survival of the occupants of the aeroplane in the event of a ditching taking into account the operating environment and the climatic conditions.

125.89 Emergency situation action plan

- (a) The certificate holder shall ensure action plans are developed for handling in-air and on-ground emergency situations and minimising risk of injury to persons.
- (b) The certificate holder's emergency situation action plan shall include procedures to be followed when management personnel—
 - (1) become aware of an emergency situation requiring immediate action in regard to an aeroplane that is in flight, including communication with the pilot-in-command; and
 - (2) are unable to communicate with a pilot-in-command in regard to the actions required by paragraph (b)(1); and
 - (3) become aware of an emergency situation involving an aeroplane on the ground; and
 - (4) are advised by ATS that contact with an aeroplane has been lost and an emergency has been declared.
- (c) The procedures required by paragraph (b) shall—
 - (1) where appropriate, ascertain the decisions of the pilot-in-command; and
 - (2) identify the persons authorised to make decisions in regard to the emergency situation; and
 - (3) identify organisations and persons who must be contacted; and
 - (4) contain the actions to be taken by all affected personnel.
- (d) The certificate holder shall ensure appropriate staff are trained and competent to perform their duties during emergencies in accordance with the emergency situation action plan.

Subpart C — Operating Limitations and Weather Requirements

125.151 Purpose

This Subpart prescribes the rules governing VFR and IFR operations, and associated weather requirements.

125.153 Meteorological information

- (a) A person performing air operation must plan, perform, and control using meteorological information provided for aviation purposes by the holder of an aviation meteorological service organisation certificate issued in accordance with Part 174.
- (b) A pilot-in-command of an aeroplane may, for each flight that originates and terminates within Papua New Guinea, use the meteorological information in a basic weather report that is provided in accordance with rule 174.6 to perform an instrument approach and landing.

125.155 Meteorological conditions – VFR flight

- (a) A pilot-in-command of an aeroplane shall not commence a flight under VFR unless, if available, current meteorological reports, or a combination of current reports and forecasts, indicate that VFR minima prescribed in rule 91.301 and in paragraph (b) can be complied with along the route, or that part of the route to be flown under VFR.
- (b) A pilot-in-command of an aeroplane shall not perform an air operation under VFR above more than scattered cloud unless the aeroplane—
 - (1) meets the requirements for IFR flight and the minimum number of flight crew members required for operating the aeroplane under IFR operation, holding current instrument rating qualifications, are at the controls; and
 - (2) is equipped with operative instruments and equipment, including radio navigation equipment, that are required for flight under IFR; and
 - (3) if it is multi-engine, is capable, with one engine inoperative, of maintaining a net flight path that has a positive slope at 1000 feet above the cloud; and
 - (4) carries radio navigation equipment enabling it to be navigated by IFR to an aerodrome where an instrument approach procedure may be carried out for landing; and
 - (5) carries sufficient fuel and fuel reserves to proceed under IFR to an aerodrome where an instrument approach procedure may be carried out for landing.

125.157 Reserved

127.159 Aerodrome Operating Minima – IFR Flight

- (a) A pilot-in-command of an aeroplane must not continue an instrument approach to an aerodrome past the final approach fix or, if a final approach fix is not used, must not commence the final approach segment of the instrument approach procedure if, before

passing the final approach fix or before commencing the final approach segment, current meteorological information indicates that the visibility at the aerodrome is less than the visibility published in the applicable AIP for the instrument approach procedure being used.

- (b) For the purpose of paragraph (a), the final approach segment begins—
- (1) at the final approach fix or facility specified in the instrument approach procedure; or
 - (2) if a final approach fix is not specified in the instrument approach procedure and the procedure includes a procedure turn, at the point where the procedure turn is completed and the aeroplane is established on the final approach course within the distance specified in the instrument approach procedure.

125.160 Aerodrome operating minima to be used for each aerodrome

- (a) A holder of an air operator certificate must ensure that a pilot-in command performing an air operation complies with the aerodrome operating minima that applies to the aerodrome, as published in the applicable AIP.
- (b) The holder of an air operator certificate may increase the aerodrome operating minima by including the increased aerodrome operating minima in the certificate holder's exposition.
- (c) A pilot-in-command who operates under an increased aerodrome operating minima in accordance with paragraph (b) must comply with any requirements specified in the certificate holder's exposition in relation to the increased aerodrome operating minima

125.161 IFR departure limitations

The pilot-in-command shall not commence a flight under IFR when weather conditions at the aerodrome of departure are below the authorised minimum altitude prescribed under Part 95 for the instrument approach procedure likely to be used at the aerodrome of departure, unless there is an appropriate aerodrome meeting the requirements of rule 125.81—

- (1) for a single-engine or two-engine aeroplane, within a maximum of one hour flying time, in still air at one engine inoperative cruising speed, of the aerodrome of departure; or
- (2) for an aeroplane having three or more engines, within a maximum of two hours flying time, in still air at one engine inoperative cruising speed, of the aerodrome of departure.

125.163 Reduced take-off minima

- (a) The certificate holder may operate an aeroplane at lower take-off minima than that prescribed in rule 91.413(a) if the certificate holder ensures that the operation is conducted in accordance with the reduced minima take-off procedure specified in their exposition.

- (b) The reduced take-off minima procedure shall ensure that, in addition to the requirements of rule 91.413(b) —
- (1) each flight crew member is qualified for reduced minima take-offs; and
 - (2) the runway visibility is established using RVR; and
 - (3) the method for observing and confirming that the required visibility exists for that take-off is acceptable to the Director.

125.165 IFR procedures

- (a) The pilot-in-command of an aeroplane performing an air operation under IFR must conduct the operation on a route prescribed under Part 95 except when—
- (1) it is necessary to avoid potentially hazardous conditions; or
 - (2) operating under radar control from an ATS; or
 - (3) operating under an off-route clearance obtained from an ATC unit; or
 - (4) otherwise specified in the exposition of the holder of the air operator certificate that authorises the operation.
- (b) Unless a clearance has been obtained from the appropriate ATC unit, in controlled airspace, a pilot-in-command shall comply with any IFR departure and approach procedures prescribed under Part 95 for the appropriate aerodrome.
- (c) In uncontrolled airspace a pilot-in-command shall comply with any IFR departure and approach procedures prescribed under Part 95 for the appropriate aerodrome.

Subpart D — Performance

125.201 Purpose

This Subpart prescribes aeroplane performance operating limitations applicable to aeroplanes used in performing air operations.

125.203 Applicability

- (a) A certificate holder shall ensure that each aeroplane it operates that is certificated to
- (1) SFAR Part 23 airworthiness standards or equivalent standards; or
 - (2) SFAR 41 airworthiness standards or equivalent standards; or
 - (3) FAR 23 commuter category airworthiness standards; or
 - (4) FAR Part 135 Appendix A airworthiness standards— complies with this Subpart.
- (b) A certificate holder shall ensure that each aeroplane it operates that is certificated to FAR Part 25 standards or equivalent airworthiness standards complies with the requirements of Subpart D of Part 121.
- (c) Notwithstanding paragraphs (a) and (b), limitations contained in the aeroplane flight manual relating to aircraft performance shall be complied with.

- (d) Notwithstanding paragraphs (a) and (b), a certificate holder may continue to operate into aerodromes classified as X, Y and Z aerodromes and promulgated in the AIP prior to 1 January 2004, in accordance with performance data approved by the Director prior to that date.
- (e) After 1 January 2004, a certificate holder that cannot fully comply with the requirements of this Subpart may be approved to operate in accordance with alternative performance operating data acceptable to the Director.

125.205 General aeroplane performance

A certificate holder shall ensure that, for each aeroplane it operates—

- (1) the take-off weight at the start of its take-off is not greater than the weight permitted under this Subpart for the flight to be undertaken allowing for the expected reductions in weight as the flight proceeds; and
- (2) the performance data used to determine compliance with the performance requirements of this Subpart is—
 - (i) contained in the aeroplane flight manual; or
 - (ii) in the case of contaminated landing distance data, provided by the aeroplane manufacturer and acceptable to the Director.

125.207 Take-off limitations

- (a) A certificate holder shall ensure that the take-off weight does not exceed the maximum take-off weight specified in the aeroplane flight manual.
- (b) When calculating the maximum take-off weight to determine compliance with paragraph (a), the holder of an air operator certificate shall, assuming that the critical engine fails at VEF and using a single V1, ensure that—
 - (1) the required accelerate-stop distance does not exceed the accelerate-stop or accelerate slow distance available; and
 - (2) the take-off distance required does not exceed the take-off distance available; and
 - (3) any clearway forming part of the take-off distance available shall not exceed half the length of the take-off run available; and
 - (4) the take-off run does not exceed the take-off run available, using V1 for the rejected and continued take-off.
- (c) When calculating the maximum take-off weight in accordance with paragraph (b), the holder of an air operator certificate shall take account of—
 - (1) aerodrome elevation; and
 - (2) pressure altitude of the aerodrome when the atmospheric pressure varies by more than 1% from the International Standard Atmosphere; and
 - (3) ambient temperature at the aerodrome; and
 - (4) the type of runway surface and the runway surface condition; and
 - (5) the runway slope in the direction of take-off; and
 - (6) not more than 50% of the reported headwind component or not less than 150% of the reported tailwind component.

125.209 Runway surface and slope correction factors

A certificate holder shall ensure that, unless alternative performance data acceptable to the Director is available and used, the take-off distance calculated for a runway surface type under rule 125.207(c)(4) and the landing distance calculated under rule 125.223(c)(3)—

- (1) are corrected for use of other runway surface types by applying the factors in Table 1; and
- (2) are corrected for runway slope by—
 - (i) increasing the take-off distance by 5% for each 1% of uphill slope up to a maximum of 3% upslope; or
 - (ii) decreasing the landing distance by 5% for each 1% of uphill slope up to a maximum of 3% upslope; or
 - (iii) decreasing the take-off distance by 5% for each 1% downslope up to a maximum of 3% downslope; or
 - (iv) increasing the landing distance by 5% for each 1% downslope up to a maximum of 3% downslope.

Table 1

Surface Type	Take-off distance Factor	Accelerate Stop Distance Factor	Landing Distance Factor
Paved	x 1.00	x 1.00	x 1.00
Coral	x 1.00	x 1.03	x 1.05
Metal	x 1.05	x 1.06	x 1.08
Rolled earth	x 1.08	x 1.14	x 1.16
Grass	x 1.14	x 1.20	x 1.18

125.211 Net take-off flight path

- (a) A certificate holder shall ensure that, for each aeroplane it operates assuming that the critical engine is inoperative, all obstacles within the net take-off flight path are cleared vertically by at least—
 - (1) 35 feet in the case of a take-off performed by an aeroplane that is intended to use a bank angle not exceeding 15°; and
 - (2) 50 feet in the case of a take-off performed by an aeroplane that is intended to use a bank angle exceeding 15°.
- (b) For the purpose of paragraph (a), an obstacle shall be deemed to be within the net take-off flight path if the lateral distance from the obstacle to the intended line of flight does not exceed—
 - (1) where the intended flight path does not require a track change exceeding 15°—
 - (i) 45 m plus 0.10D, to a maximum of 600 m or, if the holder of an air

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- operator certificate has established visual or radio navigation track guidance procedures for the pilot, to a maximum of 300 m; or
- (ii) for day operations in VMC, 30 m plus 0.10D to a maximum of 600 m or, if the holder of an air operator certificate has established visual or radio navigation track guidance procedures for the pilot, to a maximum of 300 m.
- (2) where the intended flight path requires a track change exceeding 15°—
- (i) 45 m plus 0.10D, to a maximum of 900 m or, if the holder of an air operator certificate has established visual or radio navigation track guidance procedures for the pilot, to a maximum of 600 m; or
 - (ii) for day operations in VMC, 30 m plus 0.10D to a maximum of 600 m or, if the holder of an air operator certificate has established visual or radio navigation track guidance procedures for the pilot, to a maximum of 300 m.
- (c) For the purpose of paragraph (b), D is the horizontal distance the aeroplane will travel from the end of the take-off distance available.
- (d) When calculating the net take-off flight path in accordance with paragraph (a), the holder of an air operator certificate shall ensure—
- (1) the following factors are taken into account—
 - (i) take-off weight at the commencement of the take-off run; and
 - (ii) aerodrome elevation; and
 - (iii) pressure altitude at the aerodrome when the atmospheric pressure varies by more than 1% from the International Standard Atmosphere; and
 - (iv) ambient temperature at the aerodrome; and
 - (v) not more than 50% of the reported headwind component or not less than 150% of the reported tailwind component; and
 - (2) a track change is not made before a height of 50 feet above the take-off surface has been achieved; and
 - (3) unless otherwise authorised by the Director—
 - (i) a bank angle exceeding 15° is not made before a height of 50 feet above the take-off surface has been achieved; and
 - (ii) the bank angle up to and including a height of 400 feet above the take-off surface does not exceed 20°; and
 - (iii) the bank angle above a height of 400 feet above the take-off surface does not exceed 25°; and
 - (4) adequate allowance is made for—
 - (i) the effect of the bank angle on operating speeds and flight path; and
 - (ii) distance increments resulting from increased operating speeds; and

- (iii) retention of stall margin and loss of climb gradient in accordance with rule 125.213.

125.213 Engine inoperative – gradient and stall corrections

A certificate holder shall, unless performance data is available that authorises an alternative, for compliance with rule 125.211(d)(4)(iii), retain stall margin and calculate loss of climb gradient by applying the factors in Table 2.

Table 2

Bank angle	Speed correction	Gradient correction
15° to 19°	V ₂	1 x Aeroplane flight manual 15° gradient loss
20° to 24°	V ₂ + 5 knots	2 x Aeroplane flight manual 15° gradient loss
25°	V ₂ + 19 knots	3 x Aeroplane flight manual 15° gradient loss

125.215 En-route – critical engine inoperative

- (a) A certificate holder shall ensure that, for each aeroplane it operates having two or more engines, the aeroplane is capable of continuing flight at a positive slope at or above the relevant minimum safe altitudes, to a point 1000 feet above an aerodrome under the following conditions—
- (1) in the forecasted meteorological conditions expected for the flight; and
 - (2) with the critical engine inoperative; and
 - (3) with the remaining engines operating within the maximum continuous power conditions specified.
- (b) When calculating the en-route limitations in accordance with paragraph (a), the holder of an air operator certificate shall ensure—
- (1) the aeroplane is not assumed to be flying at an altitude exceeding that at which the rate of climb is not less than 300 feet per minute with all engines operating within the maximum continuous power conditions specified in the aeroplane flight manual; and
 - (2) the assumed en-route gradient with one engine inoperative is the gross gradient minus 0.5% gradient.

125.217 En-route – 90 minute limitation

A certificate holder shall ensure that each aeroplane it operates with two engines is not more than 90 minutes away from an aerodrome at which the performance requirements specified in the aeroplane flight manual applicable at the expected landing weight are met.

125.219 Landing-climb – destination and alternate aerodromes

A certificate holder shall ensure that, for each aeroplane it operates—

- (1) the landing weight of the aeroplane does not exceed the maximum approach and landing-climb weight, taking into account the altitude and the ambient temperature expected for the estimated time of landing at a destination and alternate aerodrome; and
- (2) for instrument approaches with decision heights below 200 feet, the approach weight of the aeroplane, taking into account the take-off weight and the fuel expected to be consumed in flight, allows a missed approach net-climb-gradient, assuming that the critical engine is inoperative in the approach configuration, of—
 - (i) at least 2.5%; or
 - (ii) at least the net-climb gradient required to clear any obstacles in the missed approach flight path in accordance with rule 125.211.

125.221 Landing distance – dry runway

- (a) A certificate holder shall ensure that, for each aeroplane it operates, the landing weight for the estimated time of landing will not exceed the landing weight specified in the aeroplane flight manual.
- (b) A certificate holder shall ensure that, for each aeroplane it operates, the landing weight of the aeroplane for the estimated time of landing at the destination aerodrome and at any alternate aerodrome allows a full-stop landing from 50 feet above the threshold within 70% of the landing distance available assuming that the aeroplane is landed.
- (c) When calculating the landing weight in accordance with paragraph (b), the holder of an air operator certificate shall take account of—
 - (1) aerodrome elevation; and
 - (2) ambient temperature at the aerodrome; and
 - (3) the type of runway surface and the runway surface condition; and
 - (4) the runway slope in the direction of landing; and
 - (5) not more than 50% of the reported headwind component or not less than 150% of the reported tailwind component.
- (d) For dispatch of an aeroplane to land in accordance with paragraphs (b) and (c), it shall be assumed that the aeroplane will land on the most favourable runway taking into account—
 - (1) the forecast meteorological conditions; and
 - (2) surrounding terrain; and
 - (3) approach and landing aids; and
 - (4) obstacles within the missed approach flight path.
- (e) If the holder of an air operator certificate is unable to comply with paragraph (d) for the destination aerodrome, the aeroplane may be dispatched if an alternate aerodrome is designated and available that permits compliance with paragraphs (a), (b), and (c).

125.223 Landing distance – wet and contaminated runways

A certificate holder shall ensure that, for each aeroplane it operates, when the appropriate weather reports or forecasts, or a combination of them, indicate that the runway at the estimated time of arrival of its aeroplane may be wet or contaminated, the landing distance available is at least 115% of the landing distance required by 125.221.

125.225 Steep approach and short landing techniques

A certificate holder may perform steep approach procedures using approach slope angles of 4.5°, or more, and with screen heights of less than 50 feet but not less than 35 feet, providing—

- (1) the aeroplane flight manual states the maximum approved approach slope angle, any other limitations, procedures, including emergency procedures, for the steep approach, as well as amendments for the field length data when using steep approach criteria; and
- (2) for IFR operations, an approach slope indicator system comprising of at least a visual approach slope indicating system is available at each aerodrome at which steep approach procedures are to be conducted; and
- (3) for IFR operations, weather minima are specified and approved for each runway to be used with a steep approach; and
- (4) for IFR operations, consideration is given to—
 - (i) obstacles; and
 - (ii) the type of approach slope indicator reference and runway guidance such as visual aids, MLS, GPS, ILS, LLZ, VOR, or NDB; and
 - (iii) the minimum visual reference to be required at DH and MDA; and
 - (iv) usable airborne equipment; and
 - (v) pilot qualification and special aerodrome familiarisation requirements; and
 - (vi) aeroplane flight manual limitation and procedures; and
 - (vii) missed approach criteria.

Subpart E — Weight and Balance

125.301 Purpose

This Subpart prescribes the rules governing the control of loading and weight and balance on an aeroplane.

125.303 Goods, passenger, and baggage weights

- (a) Subject to paragraphs (b), (c) and (d), a holder of an air operator certificate must ensure that for every air operation conducted under the authority of the certificate the weights of the following items that are carried on the aeroplane are established:
- (1) the total actual weight of goods, excluding baggage:
 - (2) the total weight of passengers and their carry-on baggage:
 - (3) the total weight of crew members and their carry-on baggage:
 - (4) the total weight of checked baggage.
- (b) The total weight of passengers and their carry-on baggage must be established by using only 1 of the following:
- (1) the actual weight of every passenger and their carry-on baggage:
 - (2) a standard weight for every passenger and their carry-on baggage that is established by the certificate holder and detailed in the certificate holder's exposition:
 - (3) the following applicable standard weight for every passenger and their carry-on baggage:
 - (i) 15 kg for a child under 2 years of age:
 - (ii) 46 kg for a child of that age of 2 years and under the age of 13 years:
 - (iii) 86 kg for a person of or over the age of 13 years.
- (c) The total weight of crew members and their carry-on baggage must be established by using only 1 of the following:
- (1) the actual weight of every crew member and their carry-on baggage:
 - (2) a standard weight for every crew member and their carry-on baggage that is established by the certificate holder and detailed in the certificate holder's exposition:
 - (3) a standard weight of 86 kg for every crew member and their carry-on baggage.
 - (4) The weight of checked baggage must be established by using the actual weight of the baggage.
 - (5) A certificate holder who intends to establish a standard weight to be detailed in the certificate holder's exposition for use under paragraphs (b)(2) or (c)(2) must establish the respective standard weight in accordance with a survey programme that is acceptable to the Director.
 - (6) A certificate holder who intends to use a standard weight for passengers under paragraphs (b)(2) or (b)(3), or for crew members under paragraphs (c)(2) or (c)(3) must establish procedures that are acceptable to the Director to ensure that, if the weight of a passenger or crew member with their carry-on baggage is clearly greater than the applicable standard weight being used, a weight that is more representative of the actual weight of the person and their carry-on baggage is used.

125.305 Aeroplane load limitations

The certificate holder shall ensure that—

- (1) the limitations contained in the aeroplane flight manual, or other approved document, relating to the weight and balance of an aeroplane are complied with; and
- (2) maximum allowable weights are not exceeded for zero fuel, manoeuvre, take-off, and landing; and
- (3) the aeroplane's centre of gravity is within the limits referred to in subparagraph (1) at departure, and will remain within those limits throughout the air operation.

125.307 Load manifest

A holder of an air operator certificate must ensure that—

- (1) a load manifest is completed before every air operation; and
- (2) the load manifest is certified by the pilot-in-command; and
- (3) the following details are accurately recorded on the load manifest—
 - (i) the name of pilot-in-command, except where this is recorded by the holder of an air operator certificate in another document:
 - (ii) date of the operation:
 - (iii) aeroplane type and registration:
 - (iv) aerodromes of departure and destination:
 - (v) flight number or estimated time of departure:
 - (vi) the surname and initial of every crew member and passengers, except where these details are recorded by the holder of an air operator certificate in another document:
 - (vii) the total of, the aeroplane's empty weight, the weight of any removable equipment, the weight of consumables, and the weight of crew members:
 - (viii) the total weights of passengers and their carry-on baggage, the total weight of goods, the total weight of checked baggage, and the total weight of usable fuel:
 - (ix) the take-off weight of the aeroplane:
 - (x) evidence that the centre of gravity of the aeroplane is within the limits specified in the flight manual:
 - (xi) the maximum allowable weights for the operation, including zero fuel weight, take-off weight, and landing weight.
 - (xii) the total of any weight adjustments made under rule 125.303(f)

Subpart F — Instruments and Equipment

125.351 Purpose

This Subpart prescribes the instruments and equipment required for aeroplanes.

125.353 General

A certificate holder shall ensure that an aeroplane is not used to conduct an air operation under the authority of the certificate unless—

- (1) the aeroplane is equipped—
 - (i) with the type of instruments and equipment required by Part 91 and this Subpart; and
 - (ii) with the number of instruments and equipment to ensure that the failure of any independent system required for either communication or navigation purposes, or both, will not result in the inability to communicate and navigate safely as required for the route being flown; and
- (2) the instruments and equipment installed in the aeroplane comply with the specifications and airworthiness design standards listed in—
 - (i) Appendix A to this Part; or
 - (ii) Appendix B to Part 21; or
 - (iii) Part 26; or
 - (iv) alternative specifications or standards acceptable to the Director; and
- (3) the instruments and equipment have been installed in accordance with the aeroplane manufacturer's instructions or other instructions acceptable to the Director; and
- (4) except as may be provided by a MEL approved under rule 91.539 for use for that aeroplane, the instruments and equipment installed in the aeroplane are in operable condition.

125.355 Additional equipment

A certificate holder shall ensure that each of its aeroplanes is equipped with—

- (1) a power supply and distribution system that is able to produce and distribute the load for the required instruments and equipment if any one power source or component of the power supply system fails. The use of common elements in the system may be approved by the Director if it can be shown that they are reasonably protected against malfunctioning. Engine driven sources of energy, when used must be on separate engines.
- (2) a means of indicating the adequacy of the power being supplied to required flight instruments.

125.357 Night flight

A certificate holder shall ensure that each of its aeroplanes operated at night is equipped with—

- (1) a landing light; and
- (2) a light in each passenger compartment.

125.359 Instrument flight rules

- (a) Except as provided in paragraph (b), a holder of an air operator certificate must ensure that every aeroplane that is operated under IFR under the authority of the certificate is equipped with—
- (1) the following that must be in addition to, and independent of, the instruments and equipment required under Subpart F of Part 91:
 - (i) a means of indicating airspeed, calibrated in knots, with a means of preventing malfunctioning due to either condensation or icing; or
 - (ii) a means of indicating sensitive pressure attitude, calibrated in feet; and
 - (2) spare bulbs for flight compartment instrument illumination if these bulbs can be changed in flight; and
 - (3) spare fuses where the aeroplane is fitted with fuses which can be changed in flight.

125.361 Terrain awareness and warning system (TAWS)

- (a) A holder of an air operator certificate must ensure that each turbine powered aeroplane with a MCTOW greater than 5700 kg and being operated under that certificate under IFR does not conduct a GNSS approach, unless the aircraft is equipped with a TAWS Class A.
- (b) Except as provided in paragraph (e), a holder of an air operator certificate must ensure that each turbine powered aeroplane with a MCTOW of 5700 kg or less and with a certificated passenger seating configuration of more than 5 seats does not conduct a GNSS approach, unless the aircraft is equipped with a TAWS Class B.
- (c) A holder of an air operator certificate must ensure that each turbine powered aeroplane with a MCTOW greater than 5700 kg and being operated under that certificate under IFR is equipped with a TAWS Class A.
- (d) Except as provided in paragraphs (e) a holder of an air operator certificate must ensure that each turbine powered aeroplane with a MCTOW of 5700 kg or less and with a certificated passenger seating configuration of more than 5 seats being operated under that certificate is equipped with a TAWS Class B.
- (e) An aircraft certified for an un-factored landing distance of 500m or less when configured with a maximum landing flap, and at maximum landing weight, may be equipped with a TAWS display which provides an equivalent level of visual terrain awareness as TAWS Class B, without the audio output.

125.362 Ground Proximity Warning System

- (a) Except as provided for in paragraph (b) a holder of an air operator certificate holder must ensure that each turbine powered aeroplane operated under that certificate is equipped with GPWS.
- (b) The holder of an air operator certificate is not required to comply with paragraph (a) if the aeroplane is fitted with a TAWS Class A.
- (c) The operator must implement database management procedures that ensure the timely distribution and update of current terrain and obstacle data to the ground proximity warning system

125.363 Airborne Collision Avoidance System (ACAS II)

A holder of an air operator certificate must ensure that each turbine powered aeroplane that has a MCTOW greater than 5700 kg that is being operated under that certificate is equipped with ACAS II.

125.365 Public address and crew-member intercom systems

A holder of an air operator certificate must ensure that each of the certificate holder's aeroplane is equipped with a public address system, and crew-member intercom system.

125.367 Cockpit-voice recorder

A holder of an air operator certificate must ensure that each of the certificate holder's aeroplanes that:

- (a) is type certified for more than 9 passenger seats; or
- (b) has a maximum certificated take-off mass of over 5700 kg,

is equipped with a cockpit voice recorder in accordance with A.3 of Appendix A.

125.369 Flight data recorder

A holder of an air operator certificate must ensure that each of the certificate holder's aeroplanes that:

- (a) is type certified for more than 9 passenger seats: or
- (b) has a maximum take-off mass of over 5700 kg,

is equipped with a flight data recorder in accordance with A.4 of Appendix A.

125.371 Additional attitude indicator

A certificate holder shall ensure that each of its turbojet or turbofan powered aeroplanes is equipped with a third presentation of attitude.

125.373 Weather radar

A certificate holder shall ensure that each of its turbine-powered aeroplanes in excess of 5700 kg MCTOW operating under IFR is equipped with weather radar.

Subpart G — Maintenance**125.401 Purpose**

This Subpart prescribes rules for maintenance of aeroplanes operated under this Part.

125.403 Responsibility for airworthiness

- (a) A holder of an air operator certificate is responsible for the airworthiness of—

- (1) every aeroplane that is operated under the authority of the certificate; and
 - (2) any equipment installed or attached to the aeroplane.
- (b) A holder of an air operator certificate must ensure that—
- (1) every aeroplane that is operated under the authority of the certificate is maintained in accordance with the maintenance programme required under rule 119.63; and
 - (2) the maintenance is performed by-
 - (i) a maintenance organisation certificated in accordance with Part 145;
or
 - (ii) for maintenance that is performed in another State that is party to a technical arrangement, a maintenance organisation that is certificated or appropriately authorised by the State to perform maintenance on the aircraft type in accordance with the conditions specified in the technical arrangement.

125.405 Condition monitoring maintenance programmes

A holder of an air operator certificate who utilises condition monitoring as part of a maintenance programme for an aeroplane must provide the Director, each month, with a maintenance reliability report that contains details of—

- (1) aeroplane utilisation; and
- (2) a pilot report regarding aeroplane airworthiness; and
- (3) aeroplane mechanical delay and flight cancellation; and
- (4) unscheduled engine shutdown; and
- (5) unscheduled engine removal; and
- (6) unscheduled component removal; and
- (7) confirmed component failure; and
- (8) an incident regarding aeroplane airworthiness; and
- (9) MEL usage.

125.407 Aircraft airworthiness review

- (a) A holder of an air operator certificate may certify completion of an aircraft airworthiness review required by rule 91.615 on the basis of a continuing compliance assurance programme if—
- (1) the programme samples every requirement of rule 43.153(a) during the review period of 365 consecutive days; and
 - (2) the operator's exposition required under rule 119.75 contains procedures acceptable to the Director for conducting the continuing assurance programme; and
 - (3) the operator maintains records of every sample taken; and
 - (4) the airworthiness review is individually certified for each of the certificate holder's aeroplanes.

- (b) The holder of the air operator certificate must ensure that the person certifying completion of an aircraft airworthiness review carried out under paragraph (a)—
- (1) confirms that the records required by paragraph (a)(3) provide evidence of compliance with paragraph (a)(1); and
 - (1) identifies in the statement of certification the sampling period over which the review is deemed to have been completed; and
 - (2) enters the following statement in the appropriate maintenance aircraft logbook or other approved technical record:

“I hereby certify that an airworthiness review has been completed out on this aircraft for the period..... in accordance with the continuing compliance assurance programme requirements of the Papua New Guinea Civil Aviation Rules 125.407” and
 - (3) adjacent to the statement required by paragraph (b)(3), enters:
 - (i) the person’s name; and
 - (ii) the person’s signature, except if the maintenance logbook is in electronic format; and
 - (iii) the person’s inspection authorisation number, and
 - (iv) the date that the review was completed; and
 - (4) is independent of any direct involvement in the control of airworthiness of the aircraft under review.
- (c) The procedures required by paragraph (a)(2) must include the means whereby the continuing compliance assurance programme sampling is recommended following certification of a completed review in accordance with paragraph (b).
- (d) Notwithstanding rule 43.151, a person certifying completion of an aircraft airworthiness review under paragraph (b) may be a person authorised for the purpose by the holder of the air operator certificate if-
- (1) the person has qualifications that are at least equivalent to those of the holder of an inspection authorisation issued under Part 66 in respect to aircraft conformity and type design; and
 - (2) the person has experience in the control of airworthiness and the conduct of maintenance on that type of aircraft.

Subpart H — Crew Member Requirements

125.501 Purpose

This Subpart prescribes the rules governing the use of flight crew.

125.503 Flight crew qualifications and assignment of duties

- (a) The certificate holder shall not assign a person to act as a flight crew member, nor shall a person act as a flight crew member, on an air operation, unless that person—
- (1) holds a current licence and rating that are appropriate to the task assigned; and
 - (2) holds a current medical certificate appropriate to the licence held; and

- (3) meets all requirements for the assigned flight-crew duty; and
 - (4) meets all route and aerodrome qualification requirements for the operation intended.
- (b) The certificate holder shall designate, for each period of an air operation—
- (1) a pilot-in-command; and
 - (2) a second-in-command when more than two pilots are required; and
 - (3) any other flight crew member that may be required by the type of operation to be performed to augment the minimum crew specified in the aeroplane flight manual.
- (c) The certificate holder shall not require any flight crew member to perform any duties during taxiing, take-off, approach, and landing except those duties required for the safe operation of the aeroplane.
- (d) The certificate holder shall, for each aeroplane type operated, assign in writing, to all operating crew members, the operational and safety functions they are to perform.
- (e) A person acting as a flight crew member on an air operation outside Papua New Guinea shall have in their possession the licence required by paragraph (a) and their current medical certificate.

125.505 Pilot-in-command type experience requirements

- (a) The certificate holder shall ensure that any person acting as a pilot-in-command of an aeroplane on an air operation has completed, prior to designation as pilot-in-command, on that make and basic model aeroplane, the following operating experience—
- (1) for single engine aeroplanes, 5 hours and 5 take-offs and landings;
 - (2) for multiengine aeroplanes, reciprocating or turbine engine powered, 10 hours and 8 take-offs and landings;
 - (3) for turbojet or turboprop aeroplanes, 15 hours and 10 take-offs and landings.
- (b) The experience required by paragraph (a) shall be acquired as follows—
- (1) after satisfactory completion of the appropriate ground and flight training for the aeroplane; and
 - (2) in flight during air operations, except that flight time and take-off and landing experience may be accrued in a flight simulator approved for this purpose; and
 - (3) in the case of an aeroplane not previously used by the holder of an air operator certificate in air operations performed, operating experience acquired in the aeroplane type during proving flights or ferry flights may be used to meet this requirement; and
 - (4) while performing the duties of a pilot-in-command under the supervision of a designated pilot-in-command.

125.507 Pilot-in-command VFR experience requirements

The certificate holder shall not use a person as pilot-in-command of an aeroplane in an air operation performed under VFR unless that person has at least 500 hours of flight time as a pilot, including at least 150 hours of cross-country flight time.

125.509 Pilot-in-command IFR experience requirements

The certificate holder shall not use a person as pilot-in-command of an aeroplane in an air operation performed under IFR unless that person has at least—

- (1) 1200 hours of flight time as a pilot, including 500 hours of cross-country flight time; and
- (2) 75 hours of actual or simulated instrument time of which 25 hours can be in a flight simulator approved for this purpose; and
- (3) for night operations, 50 hours of night flight time.

125.511 Minimum flight crew – IFR

- (a) Except as provided in paragraph (b), the certificate holder shall ensure that an aeroplane operated under IFR is operated with two pilots.
- (b) The certificate holder may operate an aeroplane with a seating configuration, excluding pilot seats, of 14 seats or less under IFR with one pilot if—
 - (1) the aeroplane flight manual permits the aeroplane to be operated by one pilot; and
 - (2) the aeroplane is equipped with an operative autopilot capable of operating the aeroplane controls to maintain flight and manoeuvre the aeroplane about the roll and pitch axes with an automatic heading and altitude hold; and
 - (3) the aeroplane is fitted with a headset that includes a boom microphone and facility for control column transmit-receive switching at the pilot-in-command station; and
 - (4) the pilot-in-command has met the other applicable requirements of this Part; and

125.513 Flight Crew member age limitations

- (a) For international air operations crewed by more than one pilot, where the pilot-in-command is not over the age of 64 years, the holder of the air operator certificate must ensure that one other flight crew member is below the age of 60 years.
- (b) For domestic air operations crewed by more than one pilot, where the pilot-in-command is over the age of 60 years, the holder of the air operator certificate must ensure that one other flight crew member is below the age of 60 years.

125.515 Crew Member health and safety

A holder of an air operator certificate must establish procedures to ensure that meals consumed by a crew member during a period of duty or during an overnight or transit stop do not result in the impairment of the crew member to perform assigned duties.

Subpart I — Training**125.551 Purpose**

This Subpart prescribes rules governing the establishment and operation of a training programme for crew members.

125.553 Training programme

- (a) A holder of an air operator certificate must:
- (1) establish a training programme to ensure that each of the certificate holder's crew members are trained and competent to perform their assigned duties; and
 - (2) ensure that each crew member is trained in accordance with the training programme; and
 - (3) ensure that the training programme is conducted safely and without unacceptable risk to the equipment, personnel or third parties.
- (b) A holder of an air operator certificate must ensure the training programme required under paragraph (a)(1) contains segments for –
- (1) introduction training; and
 - (2) transition training; and
 - (3) recurrent training.
- (c) A holder of an air operator certificate must ensure a syllabus acceptable to the Director is contained in the air operator's exposition for each segment required under paragraph (b).
- (d) A holder of an air operator certificate must ensure that—
- (1) the person responsible for the air operator's training programme meets the requirements of rule 125.5657; and
 - (2) it maintains control of the training programme; and
 - (3) the training programme is approved by the Director.
- (e) A holder of an air operator certificate may—
- (3) conduct the training programme; or
 - (4) contract with the holder of an aviation training organisation certificate issued under Part 141, to conduct the training programme where the Part 141 certificate authorises the holder to conduct that training; or
 - (5) for a training programme conducted outside Papua New Guinea, contract with an organisation that meets an equivalent standard specified by Part 141.

125.555 Training records

The certificate holder shall maintain accurate records of all required training undertaken by its crew members.

125.557 Initial training for crew members

- (a) The certificate holder shall ensure that each of its crew members, who has not qualified and served as a crew member on an aeroplane type, complete initial training conducted—
- (1) in a structured manner; and
 - (2) in accordance with a syllabus that includes training applicable to—
 - i. the aeroplane type to be used, including special equipment fitted for the intended operation; and
 - ii. the routes and aerodromes appropriate to the intended operation; and
 - iii. crew member assignments, functions, and responsibilities; and

- iv. location and operation of emergency equipment available for use by crew members; and
 - v. location and use of oxygen equipment; and
 - vi. location and use of all normal and emergency exits, including evacuation slides and escape ropes; and
 - vii. the certificate holder's policies and procedures appropriate to its air operations.
- (b) The certificate holder may vary the syllabus for individual crew members if—
- (1) the variation is recorded in the crew member's record of training; and
 - (2) the certificate holder certifies the variation made and the reasons for such variation in the crew member's record of training.

125.559 Transition training for crew members

- (a) The certificate holder shall ensure that each of its crew members already qualified and serving as a crew member on an air operation authorised by the certificate holder's certificate, completes an appropriate transition training course if—
- (1) the crew member is changing from one aeroplane type or variant to another type or variant; or
 - (2) new procedures or equipment are introduced on an existing aeroplane type or variant.
- (b) The transition training course shall address—
- (1) the use of all safety and emergency equipment and procedures applicable to the aeroplane type or variant; and
 - (2) new procedures or equipment introduced on the existing aeroplane type or variant.

125.561 [Reserved]

125.563 Flight crew training requirements

- (a) A holder of an air operator certificate must ensure that each segment of the flight crew training programme required under rule 125.533 includes training applicable to the following—
- (1) the aeroplane type to be used, including special equipment fitted for the intended operation;
 - (2) the routes and aerodromes appropriate to the intended operation;
 - (3) crew member assignments, functions, and responsibilities, including crew resource management;
 - (4) location and operation of emergency equipment available for use by crew members;
 - (5) location and use of oxygen equipment;
 - (6) location and use of all normal and emergency exits, including evacuation slides and escape ropes;

- (7) the certificate holder's policies and procedures appropriate to its operations;
 - (8) instructions and training on the avoidance of controlled flight into terrain (CFIT);
 - (9) training on policy and use of ground proximity warning system (GPWS);
 - (10) training on continuous descent final approach (CDFA) including stabilised approach criteria;
 - (11) training on performance based navigation (PBN)
- (b) The training programme must include, where appropriate, both ground and flight instruction utilising aeroplanes or an approved flight simulator.

125.565 Flight crew member instructor qualifications

The certificate holder shall ensure that any person carrying out functions as an instructor in its flight crew member training programme established under this Part—

- (1) has satisfactorily completed the training required by this Subpart to serve as pilot-in-command in operations; and
- (2) is—
 - (i) the holder of an appropriate and current flight instructor rating; or
 - (ii) a person approved for that purpose; and
- (3) completes initial and recurrent training requirements applicable to the instruction carried out.

125.567 Flight examiner qualifications

- (a) Except as provided in paragraph (b), the certificate holder shall ensure that each person performing the functions of a flight examiner in its operational competency assessment programme established under this Part—
- (1) has satisfactorily completed the appropriate competency checks required by 125.605 to serve as pilot-in-command in air operations performed; and
 - (2) is—
 - (i) the holder of an appropriate and current flight examiner rating; or
 - (ii) a person approved for that purpose; and
 - (3) completes initial and recurrent training requirements applicable to the testing carried out.
- (b) Where the operational competency assessment referred to in paragraph (a) is carried out in a flight simulator, the person who is performing the functions of a flight examiner shall—
- (1) have satisfactorily completed a competency check as pilot-in-command in a type of operation to which this Part applies; and
 - (2) be—
 - (i) the holder an appropriate flight examiner rating; or
 - (ii) approved for that purpose; and
 - (3) complete initial and recurrent training requirements applicable to the testing carried out.

125.569 Training records

A holder of an air operator certificate must maintain accurate records of all required training undertaken by the air operator's crew members.

Subpart J — Crew Member Competency and Recurrent Training Requirements

125.601 Purpose

This Subpart prescribes the rules governing the operational competency assessment and recurrent training of flight crew members.

125.603 Operational competency assessment and recurrent training programme

- (a) The certificate holder shall establish an operational competency assessment and recurrent training programme in accordance with this Subpart that is controlled by the certificate holder.
- (b) The certificate holder may—
 - (1) conduct the operational competency assessment and recurrent training programme; or
 - (2) contract with an organisation that holds a certificate issued under Part 141, to provide the operational competency assessment and recurrent training programme where the certificate authorises the holder to conduct that programme; or
 - (3) for an operational competency assessment and recurrent training programme conducted outside Papua New Guinea, contract with an organisation that meets an equivalent standard specified by Part 141 to provide the operational competency assessment and recurrent training programme.

125.605 Flight crew competency checks and recurrent training

- (a) The certificate holder shall ensure—
 - (1) for each pilot acting as pilot-in-command, within the immediately preceding 12 months, the pilot has passed a check of route and aerodrome proficiency that—
 - (i) consists of at least one flight over one route segment and one or more landings at aerodromes representative of the operations to be flown; and
 - (ii) establishes that the pilot can satisfactorily perform the duties and responsibilities of a pilot-in-command in operations appropriate to this Part; and
 - (2) for each pilot conducting VFR operations, within the immediately preceding 12 months, the pilot has successfully completed a competency check that covers procedures, including emergency procedures, in an aeroplane type normally used by the pilot in the operation; and
 - (3) for each pilot crew member of an aeroplane conducting IFR operations, within the immediately preceding 6 months, the pilot has passed a check that covers procedures, including emergency procedures, appropriate to the equipment fitted

- to the aeroplane and to the type of operations to which the pilot is assigned by the holder of an air operator certificate.
- (4) for each pilot, within the immediately preceding 12 months, the pilot has successfully completed a written or oral test of the pilot's knowledge in—
 - (i) the provisions of the appropriate Civil Aviation Rules and the certificate holder's operations specifications and exposition; and
 - (ii) for each aeroplane type normally flown by the flight crew member, the aeroplane systems, performance, and operating procedures, and the content of the approved flight manual; and
 - (iii) navigation, ATC, and meteorology; and
 - (iv) special flight operations as appropriate to the type of operation; and
 - (v) new equipment, procedures, and techniques; and
 - (vi) location and operation of items of emergency equipment; and
 - (5) an entry is made, and certified, by the person that conducted the test in the pilot training record for each check carried out, whether satisfactorily or otherwise; and
 - (6) flight crew competency checks are carried out in an aeroplane or flight simulator approved for this purpose.
- (b) The certificate holder shall ensure that, within the immediately preceding 12 months, each of its crew members are adequately trained, current, and proficient for each aircraft and type of operation, in which the crew member serves.
- (c) Notwithstanding paragraphs (a) and (b), the certificate holder may—
- (1) alternate or combine the competency checks required under paragraphs (a)(2) and (3); and
 - (2) conduct the currency training required under paragraph (b) in the most complex aircraft type in which the crew member serves; and
 - (3) combine the checks required under paragraphs (a)(1), (2) and (3) and the currency training required under paragraph (b).

125.607 Crew member grace provisions

If a crew member who is required by Subparts H, I, or J, to take a test, a flight check, or be assessed completes the test, flight check or assessment within three calendar months before the date on which the test, flight check or assessment is required, the crew member is deemed to have completed the test, flight check or assessment on the date that it is required to be completed.

125.609 Competency and testing records

The certificate holder shall maintain accurate records of all competency assessments and testing of its crew members.

Subpart K — Fatigue of Flight Crew

125.801 Flight and duty time limitations

The certificate holder shall not assign a person for duty as a crew member, nor shall a person undertake duties as a crew member, unless that person can do so in compliance with the fatigue risk management system or flight and duty time limitations prescribed under Part 122.

Subpart L — Manuals, Logs, and Records

125.851 Purpose

This Subpart prescribes the rules governing the use and retention of the manuals, logs, and records required for air operations performed.

125.853 Operating information

The certificate holder shall ensure that the parts of the certificate holder's exposition relevant to the duties of each crew member are current and are accessible to the crew member.

125.855 Documents to be carried

- (a) The certificate holder shall ensure that the following documents are carried on each individual flight—
- (1) details of the operational flight plan; and
 - (2) if available NOTAM and aeronautical information service briefing documentation appropriate to the operation; and
 - (3) meteorological information appropriate to the operation; and
 - (4) a copy of the load manifest; and
 - (5) notification of dangerous goods; and
 - (6) copies of the relevant flight guide charts and plates; and
 - (7) in the case of regular air transport service, a route guide covering each route flown and alternate aerodromes that may be used.
- (b) Each holder of an air operator certificate shall ensure that separate copies of the documents referred to in paragraph (a)(6) are available for each pilot performing flight crew duties on the flight.

125.857 Operation record

- (a) The certificate holder shall, for each air operation that it conducts, maintain an operational record to accurately record—
- (1) the planned aspects of the operation; and
 - (2) the actual accomplishment of the operation.
- (b) The operational record shall be of a permanent nature.

125.859 Retention period

- (a) The certificate holder shall ensure that the following information is retained for 12 months

from the date it was completed:

- (1) operation record;
 - (2) load manifest;
 - (3) notification of dangerous goods.
- (b) The certificate holder shall ensure that its records of training, checking, and qualifications of each crew member is retained until 12 months after the crew member has left the certificate holder's employment.

125.861 HUMS records

A certificate holder who uses a HUMS shall—

- (1) control and coordinate the information output from its HUMS; and
- (2) keep an accurate record of all information collected from its HUMS as part of the appropriate aeroplane maintenance record; and
- (3) ensure that the information is incorporated into its aeroplane maintenance programme.

Subpart M — SEIFR Passenger Operations

125.901 Purpose

This Subpart prescribes additional rules governing SEIFR passenger operations.

125.903 Aeroplane airworthiness

The certificate holder shall ensure that each aeroplane it uses in performing SEIFR passenger operations—

- (1) is certificated by an ICAO contracting State—
 - (i) as a turbine-powered aeroplane; and
 - (ii) for instrument flight; and
 - (iii) as complying with airworthiness standards; and
- (2) that the airworthiness standards referred to in paragraph (1)(iii) are equivalent to at least FAR 23, Amendment 28; and
- (3) the propeller model, engine model, and those accessories necessary for the continued operation of the propeller and engine have a minimum of 100,000 hours time-in-service in the same type and with the same combination of propeller, engine, and accessories as that aeroplane and demonstrated a mechanical IFSD rate of 1 per 100,000 hours.

125.905 Instruments and equipment

- (a) The certificate holder shall ensure that each single engine aeroplane it uses for SEIFR passenger operation is equipped with an emergency electrical supply system with sufficient capacity for, following the failure of all engine-powered electrical generating

- systems—
- (1) the extension of landing gear, where appropriate; and
 - (2) the extension of flaps; and
 - (3) those aeroplane systems essential for continued safe IFR flight and landing, including those required by paragraph (b)(3), paragraph (b)(4), and paragraph (b)(5); and
 - (4) either—
 - i. descent from maximum operating altitude to sea level, assuming the aeroplane is configured in the optimum gliding configuration and operated at the optimum still air range gliding speed for the descent, plus one attempt at engine restart; or
 - ii. continuation of flight for a minimum of one hour— whichever requires the higher electrical load.
- (b) The certificate holder shall ensure that each single engine aeroplane it uses for SEIFR passenger operations is equipped with—
- (1) an additional independent engine-powered electrical generating system capable of supplying adequate power for all components; and
 - (2) an additional attitude indicator, powered by an independent source; and
 - (3) an area navigation system capable of being programmed with the positions of aerodromes and emergency landing sites en-route that is—
 - (i) certified for IFR by the navigation system manufacturer; and
 - (ii) permanently installed in the aeroplane; and
 - (iii) powered by the aeroplane's emergency electrical supply system; and
 - (4) a radar altimeter or radio altimeter that is powered by the aeroplane's emergency electrical supply system; and
 - (5) a landing light that is powered by the aeroplane's emergency electrical supply system; and
 - (6) for a pressurised aeroplane, sufficient additional oxygen for all occupants that will enable the aeroplane to descend safely from its cruising level to a cabin altitude of 14,000 feet following engine failure assuming—
 - (i) the maximum cabin leak rate; and
 - (ii) the best range gliding speed for the aeroplane; and
 - (iii) the best gliding configuration for the aeroplane; and
 - (7) a powerplant installation that has been certificated by an ICAO contracting State to FAR 33, Amendment 28, or equivalent airworthiness standards, and is equipped with—
 - (i) an ignition system that activates automatically, or is capable of being operated

manually for take-off and landing and during flight in visible moisture and is designed to be capable of operation for the full duration of any flight; and

- (ii) a magnetic particle detector system that monitors the engine and reduction gearbox lubrication systems, and includes a flight deck caution indicator; and
 - (iii) an engine control system that permits continued operation of the engine through a power range sufficient to allow diversion to a suitable aerodrome and landing in the event the fuel control unit fails or malfunctions; and
 - (iv) an engine fire warning system.
- (c) The holder of an air operator certificate shall, when the magnetic particle detector system required by paragraph (b)(7)(ii) incorporates a method to remove detected particles without the removal of the particle detector from the engine or without examining the particles, record each detection occurrence as soon as practicable in the technical log for that aeroplane.
- (d) The certificate holder shall ensure that each single engine aeroplane it uses for SEIFR passenger operations is equipped with seats for each passenger that—
- (1) are fitted with an approved shoulder harness or a safety belt with a diagonal shoulder strap; and
 - (2) have been dynamically tested for that aeroplane by the manufacturer; and
 - (3) are certificated by an ICAO contracting State; and
 - (4) comply with the standards equivalent to at least FAR 23, Amendment 36.

125.907 Single engine aeroplane – area navigation system requirements

The certificate holder shall ensure that for each aeroplane it uses in performing an SEIFR passenger operation, the area navigation system required by rule 125.905(b)(3)—

- (1) is programmed with the position of all aerodromes available for use on routes authorised in the certificate holder's route guide; and
- (2) uses the current navigation database, recommended by the navigation system manufacturer.

125.909 HUMS requirements

- (a) The certificate holder shall ensure that each aeroplane it uses in performing SEIFR passenger operation is equipped with a HUMS that meets the requirements of Appendix A8.
- (b) The certificate holder shall ensure that for each aeroplane it uses in performing SEIFR passenger operation shall ensure that the HUMS required by paragraph (a)—
 - (1) is serviceable for each flight; and
 - (2) is operated continuously from the time the propulsive engine start cycle commences until the propulsive engine is shut down; and
 - (3) is accessed, correlated, and entered into the engine manufacturer's trend monitoring

programme—

- (i) at least once every ten hours of flight time; and
 - (ii) before further flight, when the HUMS indicates that an engine parameter has been exceeded or there has been a HUMS failure; and
- (4) has a base line data established by the HUMS for each engine by operating the aeroplane on flights under VFR or flights under IFR carrying cargo only for—
- (i) one complete maintenance cycle for that engine; or
 - (ii) 100 hours time-in-service for that engine.
- (c) A pilot-in-command of an aeroplane equipped with a HUMS shall, as soon as practicable, record in the aeroplane technical log the time and date of each HUMS failure when the failure is indicated in the cockpit.

125.911 SEIFR passenger operation proving flights

- (a) A certificate holder who intends to perform SEIFR passenger operation, shall, upon applying for an amendment to the certificate to enable the certificate holder to conduct such an operation, ensure proving flights and tests are performed to satisfy the Director that it can meet any relevant requirement prescribed in this or any other Part.
- (b) The flights and tests required by paragraph (a) shall be performed in a manner acceptable to the Director.

125.913 Single pilot operations

The certificate holder shall ensure that, if the aeroplane is conducting a SEIFR passenger operation, the autopilot or stabilisation system is capable of remaining fully functional after an engine failure.

125.915 SEIFR passenger operations

- (a) A certificate holder conducting an SEIFR passenger operation shall—
 - (1) for each aerodrome to be used for the operation, provide a route guide to the pilot-in-command with details of contingency options available to assist with obstacle clearance in the event of an engine power loss occurring during the instrument departure or approach, including—
 - (i) any alternative routes available to the intended runway; and
 - (ii) the minimum height and glide profile necessary to enable the aeroplane to reach the runway; and
 - (2) ensure that no single engine aeroplane it uses for SEIFR passenger operations does not operate further than a maximum of 45 minutes flying time, in still air at normal cruising speed, from a suitable aerodrome; and
 - (3) ensure that a programme is established to ensure the early identification and prevention of SEIFR related problems that includes—
 - (i) the recording of any event that is a potential risk to the safety of SEIFR passenger operations; and
 - (ii) the recording of occasions when an aeroplane was not dispatched on an

- SEIFR passenger operation due to weather below planning minima at the available alternate aerodromes; and
- (iii) for each aeroplane, the maintenance of a database designed to assess the reliability of the aeroplane and its systems; and
 - (iv) compliance with the engine manufacturer's extended maintenance programme; and
- (4) ensure that the database required in paragraph (3)(iii) includes—
- (i) the recording of the number of SEIFR passenger flights operated each month; and
 - (ii) details of any diversion from a planned SEIFR passenger operation; and
 - (iii) the number of occasions when an aeroplane was not dispatched on an SEIFR passenger operation due to aeroplane unserviceability; and
- (5) ensure that the information required by paragraphs (3) and (4) is reviewed each calendar month in accordance with its quality assurance programme and that any corrective or preventive actions are recorded; and
- (6) ensure that the information required by paragraphs (3) and (4), and the records required by paragraph (5), are provided to the Director each calendar month except that after six months the provision of that information may be extended to once every three calendar months if the extension is approved by the Director under paragraph (b); and
- (b) The Director may approve an extension to the provision of information and records under paragraph (a)(6) if the Director is satisfied that such an extension will not compromise aviation safety.
- (c) For the purpose of paragraph (a)(2), a suitable aerodrome means an aerodrome that will, at the possible time of use, be at or above the approved weather minima specified for that aerodrome when used as an alternate.

125.917 SEIFR passenger operation training

A certificate holder conducting an SEIFR passenger operation shall ensure that each training syllabus required by Subpart I incorporates additional training—

- (1) to integrate any IFR experience gained by a flight crew member in a multi-engine aeroplane and any VFR experience gained by a flight crew member in a single-engine aeroplane into the SEIFR passenger operation; and
- (2) necessary to conduct or avoid, as appropriate, SEIFR passenger operations in icing conditions; and
- (3) if operations are to be conducted at night, necessary to conduct SEIFR passenger operations at night; and
- (4) necessary to enable flight crew members to take appropriate action in the event of any non-normal warning or indication.

125.919 SEIFR passenger operations immediate actions for non-normal engine indications

The pilot-in-command of an aeroplane on a SEIFR passenger operation shall, in the event of a non-normal engine indication—

- (1) if it occurs prior to take-off, not commence that operation; and
- (2) if it occurs during flight—
 - (i) report the situation as soon as practicable to the appropriate ATS; and
 - (ii) proceed to the nearest suitable aerodrome at which a safe landing can be made.

Subpart M — Transition Provisions**125.1001 Reserved**

Appendix A — Instruments and Equipment Airworthiness Design Standards

Instruments and equipment required by Subpart F shall meet the following specifications and requirements:

A.1. Public address system

- (a) A public address system shall—
 - (1) except for handsets, headsets, microphones, selector switches, and signalling devices, be capable of operation independent of the crew member intercom system; and
 - (2) be accessible for immediate use from each of two flight crew member stations in the cockpit; and
 - (3) for each required floor-level passenger emergency exit that has an adjacent flight attendant seat, have a microphone which is readily accessible to the seated flight attendant; and
 - (4) be capable of operation within 10 seconds by a flight attendant at each of those stations in the passenger compartment from which its use is accessible; and
 - (5) be understandably audible at all times at all passenger seats, lavatories, flight attendant seats, and work stations.
- (b) Notwithstanding paragraph (a)(3) one microphone may serve more than one exit, provided the proximity of the exits allows unassisted verbal communication between seated flight attendants.

A.2. Crew member intercom system

A crew-member intercom system shall—

- (1) except for handsets, headsets, microphones, selector switches, and signalling devices, be capable of operation independent of the public address system; and
- (2) provide a means of two-way communication between all members of the flight crew; and
- (3) provide a means of two-way communication between the cockpit and each passenger compartment; and
- (4) be accessible for immediate use from each of two flight crew member stations in the cockpit; and
- (5) be accessible for use from at least one normal flight-attendant station in each passenger compartment; and
- (6) be capable of operation within 10 seconds by a flight attendant at each of those stations in each passenger compartment from which its use is accessible; and
- (7) be accessible for use at enough flight attendant stations so that all floor-level emergency exits in each passenger compartment are observable from a station so equipped; and
- (8) have an alerting system that—
 - (i) incorporates aural or visual signals for use by any crew member; and
 - (ii) has a means for the recipient of a call to determine whether it is a normal call or an emergency call; and

- (9) provide a means of two-way communication between ground personnel and any two flight crew members in the cockpit—
 - (i) when the aeroplane is on the ground; and
 - (ii) from a location that avoids visible detection from within the aeroplane during the operation of the ground personnel interphone system station.

A.3. Cockpit voice recorder

Cockpit voice recorders shall—

- (1) meet the requirements of the TSO C84 series or the TSO C123 series; and
- (2) be fitted with an underwater locating device that meets the requirements of the TSO C121 series; and
- (3) have a minimum capacity of 2 hours continuous recording time before any erasure.

A.4. Flight data recorder

Flight data recorders shall—

- (1) meet the requirements of the TSO C124 series; or
- (2) be one that meets a standard equivalent to TSO C 124 that has been approved by an ICAO Contracting State and acceptable to the Director; and
- (3) be fitted with an underwater locating device that meets the requirements of the TSO C121 series; and
- (4) an audio /video recorder that has been determined by the Director as acceptable means of compliance; and
- (5) has in place a flight tracking system that permits the operator to accurately track the aircraft's location at all times;
- (6) be of a non-ejectable type and capable of recording and storing 25 hours of data in a digital form; and
- (7) except as provided in an MEL, record the parameters as acceptable to the Director.

A.5. Additional attitude indicator

The third presentation of attitude shall be—

- (1) operated independently of any other attitude indicating system; and
- (2) powered from a source independent of the main electrical generating system; and
- (3) capable of continuous reliable operation for at least 30 minutes after total failure of the main electrical generating system; and
- (4) automatically operative after total failure of the main electrical generating system and clear indication shall be given on the instrument panel that the attitude indicator is being operated by emergency power; and
- (5) appropriately lighted during all phases of operation.

A.6. Weather radar

Weather radar shall meet the requirements of the TSO C63 series.

A.7. Ground Proximity Warning System

GPWS shall meet the requirements of the TSO C92 series.

A.8. HUMS

- (a) A HUMS shall electronically record—
- (1) the period of time that each engine is running at operating RPM; and
 - (2) the following parameters by time, duration, and value:
 - (i) engine torque;
 - (ii) engine temperatures;
 - (iii) engine pressures;
 - (iv) engine RPM; and
 - (3) the engine running time during device failure; and
 - (4) each exceedance of the operating limit associated with each of the parameters recorded in paragraph (a)(2); and
 - (5) tampering with any component of the HUMS.
- (b) A HUMS shall—
- (1) have sufficient electronic memory to record all parameters between maintenance checks; and
 - (2) store data in such a manner as to enable trends over time to be electronically established for each of the parameters specified in paragraph (a)(2); and
 - (3) include an immediate cockpit warning of—
 - (i) any exceedance of the parameters specified in paragraph (a)(2); and
 - (ii) a HUMS failure including tampering; and
 - (4) comply with the environmental conditions specified in RTCA Inc. document number RTCA/DO-160C; and
 - (5) comply with the software conditions specified in RTCA Inc. document number RTCA/DO-178B; and
 - (6) be capable of downloading its data to a separate ground based data storage unit.

A.9. Terrain awareness and warning system (TAWS)

TAWS Class A must meet the requirements of TSO C151a or TSO C151b for Class A equipment.

TAWS Class B must meet the requirements of TSO C151a or TSO C151b for Class B equipment.

A.10. Airborne collision avoidance system (ACAS II)

ACAS II must meet the requirements of TSO C119b.

Table 2. Part 125 - Flight Data Recorder Parameter Specifications.*This table refers to the FDR requirements of 125.369*

Parameters	Range	Sensor input accuracy ¹	Seconds per sampling interval	Resolution	Remarks
Time or Relative time counts	8 hours' minimum 24 hours 0 to 4095	±0.125% per hour	1 4	1s	UTC time preferred when available. Counter increments each four seconds of system operation
Pressure Altitude	-1000' to maximum certificated altitude -1000' to maximum certificated altitude +5000'	±100' to ±700' (refer TSO C124a, C51a)	1	25' to 150' 5' to 35'	Data should be obtained from the air data computer when practicable
Indicated airspeed or Calibrated airspeed	V _{so} to V _D (KIAS) 50 KIAS or minimum value to Max V _{so} , and V _{so} to 1.2V _D	±5% or ±10kts whichever is the greater. Resolution 2kts below 175KIAS ±5% and ±3%	1	1% 1kt	Data should be obtained from the air data computer when practicable
Heading (primary flight crew reference)	0 - 360° 0 - 360° and discrete 'true' or 'mag'	±5° ±2°	1	1° 0.5°	When true or magnetic heading can be selected as the primary heading reference, a discrete indicating selection must be recorded
Normal acceleration (vertical)	-3g to +6g	±0.2g in addition to ±0.3g maximum datum ±1% maximum range excluding datum error of ±5%	0.25 0.125	0.03g 0.01g	
Pitch attitude	100% of usable ±75°	±2°	1 or 0.5 for aeroplanes manufactured after 2002	0.8° 0.5°	A sampling rate of 0.25 is recommended
Roll attitude	±60° or 100% of usable range, whichever is the greater ±180°	±2°	1 or 0.5 for aeroplanes manufactured after 2002	08° 0.5°	A sampling rate of 0.5 is recommended
Manual radio transmitter keying or CVR/DFDR synchronisation reference	Discrete - 'on' or 'off'		1		Preferably each crew member but one discrete acceptable for all transmission provided the CVR/DFDR system complies with TSO C124a CVR synchronisation requirements
Fan N ₁ speed or EPR or cockpit indications used for aircraft certification or Propeller speed and torque (sample once/sec as close together as practicable) Thrust/power on each engine (primary flight crew reference)	Maximum range Full range forward	±5% ±2%	1 per engine	1% 0.2% of full range	Sufficient parameters (e.g. EPR, N ₁ or Torque, N _P) as appropriate to the particular engine be recorded to determine power in forward and reverse thrust, including potential over speed conditions
Autopilot engagement	Discrete - 'on' or 'off'		1		
Longitudinal acceleration	±1g	±1.5% maximum range excluding datum error of ±5%	0.25	0.01g	

Table 2. Part 125 - Flight Data Recorder Parameter Specifications.*This table refers to the FDR requirements of 125.369*

Parameters	Range	Sensor input accuracy ¹	Seconds per sampling interval	Resolution	Remarks
Stabiliser trim position or Pitch control(s) position (non fly-by-wire systems) ²	Full range	±3% unless higher uniquely required	1	1%	For aeroplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling interval of 0.5 or 0.25, as applicable
		±2°	1 0.5 or 0.25 for aeroplanes manufactured after 2002	0.2% of full range	
Pitch control(s) position (fly-by-wire systems)	Full range	±2°	1 0.5 or 0.25 for aeroplanes manufactured after 2002	0.2% of full range	
Lateral control(s) position (non fly-by-wire systems) ²	Full range	±2°	1 0.5 or 0.25 for aeroplanes manufactured after 2002	0.2% of full range	For aeroplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling interval of 0.5 or 0.25, as applicable
Lateral control(s) position (fly-by-wire systems)	Full range	±2°	1 0.5 or 0.25 for aeroplanes manufactured after 2002	0.2% of full range	
Yaw control(s) position (non fly-by-wire systems) ²	Full range	±2°	1 0.5	0.2% of full range	For aeroplanes that have a flight control break away capability that allows either pilot to operate the controls independently, record both control inputs. The control inputs may be sampled alternately once per second to produce the sampling interval of 0.5
Yaw control(s) position (fly-by-wire systems)	Full range	±2°	1 0.5	0.2% of full range	

Table 2. Part 125 - Flight Data Recorder Parameter Specifications.*This table refers to the FDR requirements of 125.369*

Parameters	Range	Sensor input accuracy ¹	Seconds per sampling interval	Resolution	Remarks
Pitch control surface(s) position ²	Full range	±2°	1 0.5 or 0.25 for aeroplanes manufactured after 2002	0.2% of full range	For aeroplanes fitted with multiple or split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sampling interval of 0.5 or 0.25
Lateral control surface(s) position ²	Full range	±2°	1 0.5 or 0.25 for aeroplanes manufactured after 2002	0.2% of full range	A suitable combination of surface position sensors is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sampling interval of 0.5 or 0.25
Yaw control surface(s) position ²	Full range	±2°	1 0.5	0.2% of full range	A suitable combination of surface position sensors is acceptable in lieu of recording each surface separately. The control surfaces may be sampled alternately to produce the sampling interval of 0.5
Lateral acceleration	±1g	±1.5% maximum range excluding datum error of ±5%	0.25	0.01g	Twin engine aircraft only
Pitch trim surface position	Full range	±3%	1	0.3% of full range	
Trailing edge flap or cockpit control position	Full range or discrete each position	±3° ±3° or pilot's indicator	1 2	1% 0.5% of full range	Flap position and cockpit control may each be sampled alternately at four second intervals, to give a data point every two seconds
Leading edge flap or cockpit control position	Full range or discrete each position	±3° ±3° or pilot's indicator	1 2	1% 0.5% of full range	Left and right sides, or flap position and cockpit control may each be sampled at four second intervals, so as to give a data point each two seconds
Each thrust reverser position or equivalent for propeller aeroplane	Discrete - 'stowed' or 'full reverse' Discrete - 'stowed', 'in transit', 'reverse'		1 per engine		Turbo-jet - two discretess enable the three states to be determined Turbo-prop - one discrete
Ground spoiler position or speed brake position	Full range or discrete each position	±2°	1 or 0.5 for aeroplanes manufactured after 2002	0.2% of full range	

Table 2. Part 125 - Flight Data Recorder Parameter Specifications.*This table refers to the FDR requirements of 125.369*

Parameters	Range	Sensor input accuracy ¹	Seconds per sampling interval	Resolution	Remarks
Outside air temperature or total air temperature	-50°C to +90°C	±2° C	2	0.3° C	
Autopilot/autothrottle/AFCS mode and engagement status	Discretes - suitable combination		1		Discretes should show which systems are engaged and which primary modes are controlling the flight path and speed of the aircraft
Altitude rate	±800o fpm	±10%. Resolution 250fom below 12,000ft indicated	1	250fpm below 12,000ft	For auto land/category III operations, each radio altimeter should be recorded, but arranged so that at least one is recorded each second.
Radio altitude	-20' to +2 500'	±2' or ±3% whichever is the greater below 500' and ±5% above 500'		1' ±5% above 500'	
Localiser deviation or MLS azimuth	±400 micro amps or available sensor range as installed ±62°	As installed - ±3% recommended	1	0.3+ of full range	For auto land/category III operations, each radio altimeter should be recorded, but arranged so that at least one is recorded each second. It is not necessary to record ILS and MLS at the same time, only the approach aid in use need be recorded
Glideslope deviation or MLS elevation	±400 micro amps or available sensor range as installed +0.9° to +30°	As installed - ±3% recommended	1	0.3% of full range	For auto land/category III operations, each radio altimeter should be recorded, but arranged so that at least one is recorded each second. It is not necessary to record ILS and MLS at the same time, only the approach aid in use need be recorded
Marker beacon passage	Discrete - 'on' or 'off'		1		A single discrete is acceptable for all markers
Master warning	Discrete		1		Record the master warning and record each 'red' warning that cannot be determined from other parameters or from the cockpit voice recorder
Air/ground sensor (primary aeroplane sensor, nose or main gear)	Discrete - 'air' or 'ground'		1 (0.25 recommended)		
Angle of attack (need depends on altitude resolution) ³ Angle of attack (if measure directly) ³	-20° to 40° or of usable range As installed	±2° As installed	1 2 or 0.5 for aeroplanes manufactured after 2002	0.8% 0.3% of full range	If left and right sensors are available, each may be recorded at four second intervals so as to give a data point each 0.5 second
Hydraulic pressure low, each system	Discrete - 'low' or 'normal' or available sensor range	±5%	2	0.5% of full range	
Groundspeed	As installed	Most accurate system installed	1	0.2% of full range	

Table 2. Part 125 - Flight Data Recorder Parameter Specifications.*This table refers to the FDR requirements of 125.369.*

Parameters	Range	Sensor input accuracy ¹	Seconds per sampling interval	Resolution	Remarks
GPWS	Discrete - 'warning' or 'off'		1		A suitable combination of discrete unless recorder capacity is limited in which case a single discrete for all modes is acceptable
Landing gear position or landing gear cockpit control selection	Discrete		4		A suitable combination of discrete should be recorded
Drift angle	As installed	As installed	4	0.1°	
Wind speed and direction	As installed	As installed	4	1kt and 1°	
Latitude and longitude	As installed	As installed	4	0.002°	Provided by the Primary Navigation System Reference. Where capacity permits latitude/longitude resolution should be 0.0002°
Stick shaker and pusher activation	Discrete - 'on' or 'off'		1		A suitable combination of discrete to determine activation
Windshear detection	Discrete - 'warning' or 'off'		1		
Throttle/power lever position	Full range	±2%	1 per lever	2% of full range	For aeroplanes with non-mechanically linked cockpit engine controls
Additional engine parameters	As installed	As installed	Each engine each second	2% of full range	Where capacity permits, the preferred priority is - indicated vibration level, N ₂ , EGT, Fuel Flow, Fuel Cut-off lever position, and N ₃ , unless the engine manufacturer recommends otherwise
TCAS	Discretets	As installed	1		A suitable combination of discrete should be recorded to determine the status of - Combined Control, Vertical Control, Up Advisory, and Down Advisory. (refer ARINC Characteristic 735 - Attachment 6E, TCAS VERTICAL RA DATA OUTPUT WORD)
DME 1 and 2 distances	0 - 200nm	As installed	4	1nm	1 mile
Nav 1 and 2 selected frequency	Full range	As installed	4		Sufficient to determine selected frequency
Selected barometric setting	Full range	±5%	1 per 64 seconds	0.2% of full range	
Selected altitude	Full range	±5%	1	100'	
Selected speed	Full range	±5%	1	1kt	

Table 2. Part 125 - Flight Data Recorder Parameter Specifications.*This table refers to the FDR requirements of 125.369.*

Parameters	Range	Sensor input accuracy ¹	Seconds per sampling interval	Resolution	Remarks
Selected Mach	Full range	±5%	1	0.01	
Selected vertical speed	Full range	±5%	1	100ft/min	
Selected heading	Full range	±5%	1	1°	
Selected flight path	Full range	±5%	1	1°	
Selected decision height	Full range	±5%	64	1'	
EFIS display format	Discrettes		4		Discrettes should show the display system status (off, normal, fail, composite, sector, plan, navigation aids, weather radar, range, copy)
Multi-function/engine alerts display format	Discrettes		4		Discrettes should show the display system status (off, normal, fail) and the identity of display pages for emergency procedures need not be recorded
Thrust command	Full range	±2%	2	2% of full range	
Thrust target	Full range	±2%	4	2% of full range	
Fuel quantity in CG trim tank	Full range	±5%	1 per 64 seconds	1% of full range	
Primary navigation system reference	Discrettes - 'GPS', 'INS', 'VOR/DME', 'MLS', 'Loran C', 'Omega', 'Localiser Glideslope'		4		A suitable combination of discrete to determine the Primary Navigation System reference
Ice detection	Discrete - 'ice' or 'no ice'		4		
Engine warning each engine - vibration	Discrete		1		
Engine warning each engine - over temp	Discrete		1		
Engine warning each engine - oil pressure low	Discrete		1		
Engine warning each engine - over speed	Discrete		1		
Yaw trim surface position	Full range	±3%	2	0.3% of full range	
Roll trim surface position	Full range	±3%	2	0.3% of full range	
Brake pressure - left and right	As installed	±5%	1		To determine braking effort applied by pilots or by autobrakes
Brake pedal application - left and right	Discrete or analogue - 'applied' or 'off'	±5%	1		To determine braking applied by pilots

Table 2. Part 125 - Flight Data Recorder Parameter Specifications.*This table refers to the FDR requirements of 125.369.*

Parameters	Range	Sensor input accuracy ¹	Seconds per sampling interval	Resolution	Remarks
Yaw and side-slip angle	Full range	±5%	1	0.5°	
Engine bleed valve position	Discrete - 'open' or 'closed'		4		
De-icing or anti-icing system selection	Discrete - 'on' or 'off'		4		
Computed centre of gravity	Full range	±5%	1 per 64 seconds	1% of full range	
AC electrical bus status	Discrete - 'power' or 'off'		4		Each bus
DC electrical bus status	Discrete - 'power' or 'off'		4		Each bus
APU bleed valve position	Discrete - 'open' or 'closed'		4		
Hydraulic pressure each system	Full range	±5%	2	100psi	
Loss of cabin pressure	Discrete - 'loss' or 'normal'		1		
Computer failure - critical flight and engine control systems	Discrete - 'fail' or 'normal'		4		
HUD	Discrete - 'on' or 'off'		4		
Para-visual display	Discrete - 'on' or 'off'		1		
Cockpit trim control input position - pitch	Full range	±5%	1	0.2% of full range	
Cockpit trim control input position - roll	Full range	±5%	1	0.2% of full range	
Cockpit trim control input position - yaw	Full range	±5%	1	0.2% of full range	
Trailing edge flap and cockpit flap control position	Full range or discrete each position	±5%	2	0.5% of full range	Trailing edge flaps and cockpit flap control position may each be sampled alternately at four second intervals to provide a sample each 0.5 second
Leading edge flap and cockpit flap control position	Full range or discrete each position	±5%	1	0.5% of full range	
Ground spoiler position and speed brake selection	Full range or discrete each position	±5%	0.5	0.2% of full range	
All cockpit flight control input forces - control wheel, control column, rudder pedal	Full range - wheel, column, pedals	±5% - ±70lbs, ±85lbs, ±165lbs respectively	1	0.2% of full range	For fly-by-wire flight control systems, where flight control surface position is a function of the displacement of the control input device only, it is not necessary to record this parameter

Notes:

- (1) When data sources are aircraft instruments (except altimeters) of acceptable quality to fly the aircraft the recording system excluding these sensors (but including all other characteristics of the recording system) shall contribute no more than half of the values in this column.
- (2) For aeroplanes that can demonstrate the capability of deriving either the control input or control movement (one from the other) for all modes of operation and flight regimes only the surface position OR the control position need be sensed. For aeroplanes with non- mechanical control systems (fly-by-wire) both surface and control position must be recorded.
- (3) If data from the altitude encoding altimeter (100' resolution) is used, then either of these parameters should also be recorded. If, however, altitude is recorded at a minimum of 25' resolution then these two parameters may be omitted.

Appendix B — Runways

B.1 Minimum runway widths

To determine the minimum runway width, it is necessary to ascertain the aerodrome reference code (ARC) appropriate to the aeroplane type by using Table 1. The code is composed of two elements which are related to the aeroplane performance, characteristics, and dimensions. Element 1 is a number based on the aeroplane reference field length (ARFL) and element 2 is a letter based on the aeroplane wing span and outer main gear wheel span.

B.1.1 Determining the ARC using Table 1

- (a) **Firstly** — Determine the ARFL of the aeroplane to be operated. The ARFL is the minimum field length for take-off at maximum certificated take-off weight, at sea level, in standard atmospheric conditions, in still air, and with zero runway slope, as derived from the aircraft flight manual;
- (b) **Secondly:** — Determine the code number for element 1 applying the aeroplane's aerodrome reference field length; and
- (b) **Thirdly:** — Determine the code letter of element 2 corresponding to the dimensions of the aeroplane's wing and outer main gear span. The code letter for element 2 is the code letter which corresponds to the wing span, or the outer main gear span, whichever gives the most demanding code letter. For instance, if code letter C corresponds to the aeroplane's wing span and code letter D corresponds to the aeroplane's outer main gear span, the code letter selected would be D for that aeroplane type.

Code Element 1		Code Element 2		
Code Number	Aeroplane Reference Field Length	Code Letter	Wing Span	Outer Main Gear Wheel Span
1	Less than 800 m	A	Up to but not including 15 m	Up to but not including 4.5 m
2	800 m up to but not including 1200 m	B	15 m up to but not including 24 m	4.5 m up to but not including 6 m
3	1200 m up to but not including 1800 m	C	24 m up to but not including 36 m	6 m up to but not including 9 m
4	1800 m and over	D	36 m up to but not including 52 m	9 m up to but not including 14 m
		E	52 m up to but not including 65 m	9 m up to but not including 14 m

Table 1. Aerodrome Reference Code (ARC)

B.1.2 Determining the minimum runway width using Table 2

Having determined the aeroplane's ARC, the minimum runway widths are determined by entering at the applicable code number and then moving across to the value under the applicable code letter. For instance, if the aeroplane ARC is 2C, the required minimum runway width is 30 m.

Table 2. Runway widths

Code Number	Code Letter				
	A	B	C	D	E
1	18 m	18 m	23 m	-	-
2	23 m	23 m	30 ¹ m	-	-
3 ¹	30 m	30 m	30 m	45 m	-
4 ^{1*}	-	-	45 m	45 m	45 m

Note 1. Aeroplanes not in excess of 18 500 kg MCTOW may be operated on a runway with a width not less than 23 m regardless of that aeroplanes ARC.