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Chapter 1—Preliminary

1.01 Name

- (1) This instrument is the *Part 121 (Australian Air Transport Operations—Larger Aeroplanes) Manual of Standards 2020*.
- (2) This instrument may also be cited as:
 - (a) the Part 121 Manual of Standards; or
 - (b) the Part 121 MOS.

1.03 Authority

This instrument is made under the *Civil Aviation Safety Regulations 1998*.

Note: CASA may issue a Manual of Standards for Part 121 (Australian air transport operations—larger aeroplanes): see regulation 121.015 of CASR.

1.04 Definitions

Note: A number of expressions used in this instrument are defined in the Dictionary at the end of the *Civil Aviation Safety Regulations 1998*, or in section 3 of the *Civil Aviation Act 1988*. Some definitions in the Dictionary have been included in section 1.04, or another provision of this instrument, for ease of reference.

- (1) In this instrument:

ACAS means airborne collision avoidance system.

accelerate stop distance available means the length of the take-off run available plus the length of the stopway.

actual landing distance: see subsection 9.13(1).

additional fuel means the supplementary amount of fuel required to allow an aeroplane that suffers engine failure or loss of pressurisation at the most critical point along a route, whichever results in the greater subsequent fuel consumption, to:

- (a) proceed to an alternate aerodrome; and
- (b) fly for 15 minutes at a holding speed at 1 500 ft above the aerodrome elevation in ISA conditions; and
- (c) make an approach and landing.

adequate aerodrome: see Part 1 of the CASR Dictionary.

ADF means automatic direction finder.

aerodrome forecast means:

- (a) for an aerodrome in Australian territory—an authorised weather forecast for the aerodrome issued by the Bureau of Meteorology, that is labelled as a “TAF”; and

-
- (b) for an aerodrome outside Australian territory—an authorised weather forecast for the aerodrome that meets the requirements of standard 6.2 of Annex 3, *Meteorological Service for International Air Navigation*, to the Chicago Convention, in relation to an aerodrome.

Note: TAF is an acronym for terminal area forecast.

airborne collision avoidance system: see Part 1 of the CASR Dictionary.

airframe/engine combination means a combination of an aeroplane model and an engine model, identified on an aeroplane's type certification data sheet for the purposes of extended diversion time operations.

alternate aerodrome has the same meaning as in Annex 2 to the Chicago Convention.

Note: At the commencement of this instrument, Chapter 1 of Annex 2 to the Chicago Convention included the following definition:

“Alternate aerodrome. An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at an aerodrome of intended landing where the necessary services and facilities are available, where aircraft performance requirements can be met and which is operational at the expected time of use. Alternate aerodromes include the following:

Take-off alternate: An alternate aerodrome at which an aircraft would be able to land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure.

En-route alternate: An alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en route.

Destination alternate: An alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodrome of intended landing.”

approved ACAS: see subsection 11.21(1).

area navigation has the meaning given by subsection 1.07(6) of the Part 91 MOS.

automatic ELT has the meaning given by section 11.50.

BECMG, in relation to a weather forecast, has the same meaning as in ICAO Document 8896.

Note: At the commencement of this instrument, ICAO Document 8896 included the following:

“BECMG (abbreviation for “*becoming*”) – this change indicator describes changes where the conditions are expected to reach or pass specified values at a regular or irregular rate.”

BKN, in relation to amounts of cloud, has the same meaning as in ICAO Document 8896.

Note: At the commencement of this instrument, ICAO Document 8896 refers to BKN as 5-7 oktas of cloud.

cabin training device means a device that simulates an aeroplane or part of an aeroplane.

CAR means the *Civil Aviation Regulations 1988*.

CASR means the *Civil Aviation Safety Regulations 1998*.

Civil Aviation Order 100.7 means *Civil Aviation Order 100.7 Instrument 2015*, as in force from time to time.

clearway:

- (a) for an aerodrome in Australian territory—has the meaning given in the Part 139 (Aerodromes) Manual of Standards 2019; or
- (b) for an aerodrome in a foreign country—means the clearway for a runway at the aerodrome, declared in accordance with the relevant requirements of the national aviation authority of the country.

cloud ceiling: see the CASR Dictionary.

Note: The CASR Dictionary defines **cloud ceiling** as having “the same meaning as **ceiling** in Annex 2 to the Chicago Convention”. At the commencement of this instrument, Chapter 1 of the Annex included the following definition:

“**Ceiling.** The height above the ground or water of the base of the lowest layer of cloud below 6 000 metres (20 000 feet) covering more than half the sky.”

combination recorder: see the CASR Dictionary.

commuter type aeroplane means:

- (a) an SFAR 41 aeroplane; or
- (b) an aeroplane that is type certificated in the commuter category.

configuration maintenance and procedures standards document, or **CMP document** means a document, provided by the manufacturer of an aeroplane and as existing from time to time, that:

- (a) specifies the minimum requirements for the aeroplane’s configuration, including any special inspections, flight crew procedures, hardware life limits, MMEL constraints and maintenance practices necessary to establish the suitability of the airframe/engine combination for extended diversion time operations; and
- (b) is approved by the certification authority for the aeroplane.

contingency fuel: see section 7.03.

critical point means a point en route during a flight of an aeroplane, determined by the operator or the pilot in command for the flight before the flight commences, at which the aeroplane can:

- (a) if it arrives at the point with adequate fuel to complete the flight to the planned destination aerodrome while maintaining the fuel required by subsection 7.05(3)—continue to that aerodrome; or

-
- (b) otherwise—divert to an en-route alternate aerodrome while maintaining the fuel required by subsection 7.05(3).

CVR: see section 11.28.

DA means decision altitude.

destination alternate aerodrome means an alternate aerodrome that is a destination alternate (within the meaning of Annex 2 to the Chicago Convention).

destination alternate fuel: see section 7.02.

DH means decision height.

diversion time, in relation to an aeroplane and an EDTO, means the time it would take for the aeroplane to fly from a point on a route, occurring beyond the threshold distance for the aeroplane, to an adequate aerodrome for the aeroplane.

Note: The term **adequate aerodrome** is defined in the CASR Dictionary as follows:

“**adequate aerodrome**, in relation to a flight of an aeroplane, means an aerodrome that complies with the following:

- (a) an authorised weather forecast for the aerodrome must be available for the aeroplane’s estimated time of use of the aerodrome;
- (b) the aerodrome’s services and facilities must be operational for at least the estimated time of use;
- (c) the landing distance available for the aeroplane must be at least the landing distance required under these Regulations for the aeroplane’s landing at the aerodrome;
- (d) for an IFR flight—at least one authorised instrument approach procedure that is suitable for use by the aeroplane must be operational for at least the estimated time of use.”

(E)TSO, followed by an identifying letter and number, is a shorthand reference to both the TSO and the ETSO, each of which has the same identifying letter and number.

EDTO, or **extended diversion time operation**, means an operation in which an aeroplane is flown further from an adequate aerodrome for the aeroplane than the threshold distance for the aeroplane.

EDTO approval means an approval, mentioned in paragraph 121.035(1)(b) of CASR, to conduct extended diversion time operations using a particular aeroplane and airframe/engine combination.

Note: An approval mentioned in paragraph 121.035(1)(b) of CASR is granted under regulation 121.010 of CASR.

EDTO en-route alternate aerodrome means an adequate aerodrome that is selected as an EDTO en-route alternate aerodrome under section 4.19 for use in the event of a diversion during an EDTO.

EDTO entry point means the first point on a route at which an aeroplane exceeds the threshold distance from an adequate aerodrome.

EDTO significant system means:

- (a) an aeroplane's propulsion system; or
- (b) any other aeroplane system:
 - (i) whose failure or degradation could adversely affect the safety of an EDTO flight conducted by the aeroplane; or
 - (ii) the functioning of which is important to continued safe flight and landing during a diversion.

ELT means emergency locator transmitter.

emergency exit trainer means a standalone device comprising an emergency exit and any other feature that is necessary to enable the device to be used to assess a crew member's competence to operate the exit.

empty weight has the meaning given by subsection 2 of Civil Aviation Order 100.7.

en-route alternate aerodrome means an alternate aerodrome that is an en-route alternate (within the meaning of Annex 2 to the Chicago Convention).

estimated time of use: see section 4.05.

ETSO (short for European Technical Standard Order): see the CASR Dictionary.

FAA means the Federal Aviation Administration of the United States of America.

FDR: see section 11.28.

FEW, in relation to amounts of cloud, has the same meaning as in ICAO Document 8896.

Note: At the commencement of this instrument, ICAO Document 8896 refers to FEW as 1-2 oktas of cloud.

final reserve fuel means the amount of fuel:

- (a) that is required to fly an aeroplane mentioned in column 1 of an item in the following table, calculated as follows:
 - (i) for the period mentioned in column 2 of the item;
 - (ii) at 1 500 ft above aerodrome elevation in ISA conditions;
 - (iii) at holding speed;
 - (iv) at the aeroplane's estimated weight on arrival at the destination alternate aerodrome, or the planned destination aerodrome if no destination alternate aerodrome is required for the flight; and
- (b) which is usable fuel that is remaining on completion of the final landing at the aerodrome.

Final reserve fuel requirements		
Item	Column 1	Column 2
	Aeroplane	Final reserve fuel flight time
1	A turbine-engine aeroplane	30 minutes
2	A piston-engine aeroplane	45 minutes

FL is short for *flight level* (see the CASR Dictionary).

flight manual: see the CASR Dictionary.

flight recorder: see section 11.28.

GAF, or **graphical area forecast**, means an authorised weather forecast that:

- (a) is issued by the Bureau of Meteorology; and
- (b) is a forecast of the weather conditions within a specific geographical area published in the AIP.

Note: At the commencement of this instrument the AIP document containing these geographical areas was the *Planning Chart Australia*.

GAMET area forecast has the same meaning as in Annex 3, *Meteorological Service for International Air Navigation*, to the Chicago Convention.

Note: At the commencement of this instrument, Chapter 1 of Annex 3 included the following definition:

“**GAMET area forecast**. An area forecast in abbreviated plain language for low-level flights for a flight information region or sub-area thereof, prepared by the meteorological office designated by the meteorological authority concerned and exchanged with meteorological offices in adjacent flight information regions, as agreed between the meteorological authorities concerned.”

GBAS means ground-based augmentation system.

GBAS landing system, or **GLS**, has the same meaning as in ICAO Document 8168, Volume 1.

Note: At the commencement of this instrument, ICAO Document 8168 defined **GBAS landing system** to be:

“a system for approach and landing operations utilizing GNSS, augmented by a ground-based augmentation system (GBAS), as the primary navigational reference”.

GNSS means the global navigation satellite system.

GPWS means ground proximity warning system.

gross flight path means the flight path that an aeroplane will follow when flown in a particular configuration, in accordance with specified procedures in relevant conditions, and that is established, from the aeroplane’s performance data, as representing the average fleet performance of the aeroplane type.

holding fuel means the amount of fuel required by an aeroplane to fly for the period of time anticipated for holding (taking into account the operating

conditions), calculated at the holding fuel consumption rate established for the aeroplane for the anticipated meteorological conditions or ISA.

ICAO Document 8168 means ICAO Document 8168 (*Procedures for Air Navigation Services – Aircraft Operations Volume 1 Flight Procedures*) approved and published by decision of the Council of the International Civil Aviation Organization, as in force from time to time.

ICAO Document 8896 means ICAO Document 8896 (*Manual of Aeronautical Meteorological Practice*) approved and published by decision of the Council of the International Civil Aviation Organization, as in force from time to time.

ICAO landing forecast means an authorised weather forecast that meets the requirements of standard 6.3 of Annex 3 to the Chicago Convention.

Note: The term **authorised weather forecast** is defined in the CASR Dictionary.

ILS means instrument landing system.

in-flight shutdown means an engine of an aeroplane:

- (a) ceasing to function normally in flight for any reason; and
- (b) shutting down, whether the shutting down is:
 - (i) self-induced; or
 - (ii) initiated by a crew member; or
 - (iii) caused by some other external influence.

inoperative: see the CASR Dictionary.

ISA means International Standard Atmosphere.

isolated destination aerodrome: see section 4.03.

landing distance available means:

- (a) for landing an aeroplane at a certified aerodrome—the distance declared by the aerodrome operator as available and suitable for the ground run of the aeroplane when it lands at the aerodrome; and
- (b) for landing an aeroplane at an aerodrome other than a certified aerodrome—the distance established by the aeroplane operator as available and suitable for the ground run of the aeroplane when it lands at the aerodrome.

LNAV means lateral navigation.

LP means localiser performance.

LPV means localiser performance with vertical navigation.

maximum diversion time means the maximum time approved by CASA for an operator to conduct an EDTO using a particular aeroplane and airframe/engine combination.

maximum zero fuel weight, of an aeroplane, means the maximum weight for the aeroplane, not including disposable fuel or oil, that is set out in:

- (a) the type certificate data sheet for the aeroplane; or
- (b) the aeroplane's flight manual.

MDA means minimum descent altitude.

MDH means minimum descent height.

MLS means microwave landing system.

navigation specification has the meaning given by subsection 1.07(6) of the Part 91 MOS.

net flight path means the gross flight path reduced in elevation or extended in length by margins stated in subparagraphs 9.04(7)(e)(i) to (iii).

Note: The margins are to allow for factors such as deterioration in aeroplane performance and variations in pilot techniques in relating aeroplane performance to obstacle clearance.

NM means nautical miles.

non-precision approach procedure, or **NPA**, means an instrument approach procedure designed for 2D instrument approach operations.

operative, for anything, means the thing is not inoperative.

Note: The term **inoperative** is defined in the CASR Dictionary.

OVC, in relation to cloud, has the same meaning as in ICAO Document 8896.

Note: At the commencement of this instrument, ICAO Document 8896 refers to OVC as 8 oktas of cloud.

PBN, or **performance-based navigation**, has the meaning given by subsection 1.07(6) of the Part 91 MOS.

point of in-flight replanning means a point en route during a flight of an aeroplane, determined by the operator for the flight before the flight commences, at which the aeroplane can:

- (a) if it arrives at the point with adequate fuel to complete the flight to the planned destination aerodrome while maintaining the fuel required by subsection 7.05(2)—continue to that aerodrome; or
- (b) otherwise—divert to an en-route alternate aerodrome while maintaining the fuel required by subsection 7.05(3).

precision approach procedure means an instrument approach procedure based on an ILS, an MLS, a GLS or an SBAS CAT 1, and which is designed for 3D instrument approach operations.

presumed temperature, at an aerodrome, in relation to an aeroplane take-off, means the most limiting of the following:

- (a) the ambient temperature;
- (b) the temperature assumed to be the ambient temperature determined using the procedures, contained in an aeroplane operator's exposition, for

estimating the ambient temperature at take-off for the purpose of determining take-off performance.

quick donning mask: see section 11.39.

relevant weather conditions: see section 4.04.

removable equipment has the meaning given by subsection 2 of Civil Aviation Order 100.7.

resolution advisory, or **RA** (for an ACAS), has the meaning given by subsection 11.21(1).

RNAV specification has the meaning given by subsection 1.07(6) of the Part 91 MOS.

RNP APCH-LNAV means the conduct of an RNP APCH using LNAV minima.

RNP APCH-LNAV/VNAV means the conduct of an RNP APCH
RNP APCH-LP means the conduct of an RNP APCH using LP minima.

RNP APCH-LPV means the conduct of an RNP APCH using LPV minima.

RNP specification has the meaning given by subsection 1.07(6) of the Part 91 MOS.

runway has the meaning given by the *Part 139 (Aerodromes) Manual of Standards 2019*.

SBAS means satellite-based augmentation system.

SBAS CAT 1, in relation to an instrument approach procedure, means SBAS Category 1.

SCT, in relation to amounts of cloud, has the same meaning as in ICAO Document 8896.

Note: At the commencement of this instrument, ICAO Document 8896 refers to SCT as 3-4 oktas of cloud.

SFAR 41 means Special Federal Aviation Regulation 41 of the United States of America, as in force on 12 September 1983.

Note: At the commencement of this instrument, a copy of SFAR 41, as in force on 12 September 1983, was available at:
https://rgl.faa.gov/Regulatory_and_Guidance_Library/rgFAR.nsf/0/51D22E0C18BE4BA586256E450069078D?OpenDocument.

SFAR 41 aeroplane means an aeroplane that:

- (a) is certificated as a normal category aircraft; and
- (b) is an aeroplane in relation to which an applicant under part 4(c) of SFAR 41 would be entitled to a type certificate amendment or a supplemental type certificate that shows compliance with Annex 8 to the Chicago Convention in relation to the aeroplane, if SFAR 41 were still in force; and

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- (c) is operated in accordance with flight manual instructions that specify performance standards that are at least equivalent to the standards set out in Annex 8 to the Chicago Convention.

stopway:

- (a) for an aerodrome in Australian territory, means a defined rectangular area on the ground at the end of the take-off run available, prepared as a suitable area:
 - (i) in which an aircraft can be stopped in the case of an abandoned take-off; and
 - (ii) that meets the requirements in relation to a stopway in the Part 139 (Aerodromes) Manual of Standards 2019, as in force from time to time; or
- (b) for an aerodrome in a foreign country, means a defined area on the ground at the end of the take-off run available, prepared as a suitable area:
 - (i) in which an aircraft can be stopped in the case of an abandoned take-off; and
 - (ii) that meets the relevant requirements (however described), as in force from time to time, of the national aviation authority in relation to a stopway.

survival ELT has the meaning given by section 11.51.

TAF3 means an aerodrome forecast:

- (a) issued by the Bureau of Meteorology for an aerodrome within Australian territory; and
- (b) that contains the text “TAF3” in the remarks section of the forecast.

take-off alternate aerodrome means an alternate aerodrome that is a take-off alternate (within the meaning of Annex 2 to the Chicago Convention).

take-off distance available means the total of:

- (a) the length of the take-off run available at an aerodrome; and
- (b) if a clearway is provided at the aerodrome—the length of the clearway.

take-off distance required, for an aeroplane, means the take-off distance for the aeroplane calculated in accordance with the relevant requirements in the flight manual instructions for the aeroplane.

take-off run available, for take-off at an aerodrome, means:

- (a) if the aerodrome is a certified aerodrome—the distance declared by the aerodrome operator in the AIP as available and suitable for the ground run of an aeroplane taking off; and
- (b) if the aerodrome is not a certified aerodrome—the distance established by the operator of an aeroplane as available and suitable for the ground run of an aeroplane taking off.

take-off run required, for an aeroplane, means the take-off run for the aeroplane calculated in accordance with the relevant requirements stated in the aeroplane’s flight manual.

TAWS means terrain awareness and warning system.

taxi fuel means the amount of fuel expected to be used by an aeroplane before take-off, taking into account:

- (a) local conditions at the departure aerodrome; and
- (b) auxiliary power unit consumption, if applicable.

threshold distance, in relation to an aeroplane, means the distance mentioned in subparagraph 121.030(1)(b)(ii) of CASR for the aeroplane.

Note: The table in regulation 121.030 (1) of CASR sets out the threshold distance for an aeroplane described in an item in column 1 of the table, being a distance from an adequate aerodrome for the aeroplane measured by the time required for the aeroplane to achieve that distance if flying at the speed mentioned in the item for the aeroplane.

time-limited system means any EDTO significant system:

- (a) on whose availability the duration of a flight of an aeroplane depends; and
- (b) whose capacity has a time limit.

traffic advisory, or **TA** (for an ACAS): see subsection 11.21(1).

trip fuel means the amount of fuel required to enable an aeroplane to fly from any point along the route until landing at an aerodrome, including (as applicable):

- (a) fuel for take-off and climb from the departure aerodrome to initial cruising level or altitude, taking into account the expected departure routing; and
- (b) fuel for cruise from top of climb to top of descent, including any step climb or descent; and
- (c) fuel from top of descent to the point where the approach is initiated, taking into account the expected arrival procedure; and
- (d) fuel for executing an approach and landing.

TSO (short for Technical Standard Order of the FAA): see the CASR Dictionary.

unforeseen factors means factors that could have an influence on an aeroplane's fuel consumption to the planned destination aerodrome, including:

- (a) the aeroplane's deviation from the expected fuel consumption data for an aeroplane of that type; and
- (b) extended delays and deviations from planned routings or cruising levels.

VNAV means vertical navigation.

VOR means VHF omnidirectional radio range.

V_I means the take-off decision speed.

V_I (wet) means a reduced V_I, not below V_{MCG}, established for use on a wet or contaminated runway.

V₂ means the take-off safety speed which is the target speed to be attained at the 35 ft height following an engine failure after V_I.

Note: The 35 ft height is also known as reference zero, which is also the point at which the take-off distance ends.

V_{EF} means the take-off engine failure speed established by the certification basis for the aeroplane.

V_{MCG} has the meaning given by regulation 25.149 of the FARs, as in force from time to time.

- (2) See section 11.65 for the definitions in this instrument of words and phrases appearing in Division 13 of Chapter 11 (Transponders and surveillance equipment).
- (3) In this instrument, a reference to a class of airspace means the volumes of airspace of that class, as determined by CASA in or under the *Determination of Airspace and Controlled Aerodromes Etc. (Designated Airspace Handbook) Instrument*, as in force from time to time.

Note: The *Determination of Airspace and Controlled Aerodromes Etc. (Designated Airspace Handbook) Instrument* is a legislative instrument that is revised and reissued by CASA approximately every 6 months. Airspace details from the Determination in force at any particular time are also published by Airservices Australia in the Designated Airspace Handbook available free online at www.airservicesaustralia.com.

- (4) In this instrument, a reference to an Annex to the Chicago Convention is a reference to that Annex as in force from time to time.

1.05 References to AS/NZS standards, TSOs, ETSOs etc.

In this instrument, unless the contrary intention appears:

- (a) a reference to a particular AS/NZS standard is a reference to the particular joint Australian and New Zealand Standard, as in force or existing from time to time; and
- (b) a reference to a particular TSO is a reference to that TSO or a later version of that TSO; and
- (c) a reference to a particular ETSO is a reference to that ETSO or a later version of that ETSO.

Note 1: An example for paragraph (a) is the joint Australian and New Zealand Standard AS/NZS 1754:2004, *Child restraint systems for use in motor vehicles*.

Note 2: The first version of a TSO may have been issued with or without the notation “(0)” at the end (for example, citations of TSO-C129 and TSO-129(0) would refer to the same document. Thus, for first version TSOs, either form is an acceptable citation for the other.

Note 3: Later versions of a TSO are identified by an alphabetical letter (for example, a later version of TSO-C129 or TSO-C129(0) is TSO-C129a). Unless the contrary intention appears in a provision, a reference in this instrument to TSO-C129 or TSO-C129(0) means that version or a later version (in this case, TSO-C129a).

1.06 References in type design and certification documents—EDTO

A reference, in any of the following documents, to “ETOPS”:

- (a) a flight manual;
- (b) a type certificate data sheet or a supplement to the sheet;

(c) a CMP document;
is, for the purposes of this instrument, taken to be a reference to “extended diversion time operations” or “EDTO”.

Chapter 2—Extended diversion time operations (EDTO)

Division 1—Criteria for the grant of EDTO approval

2.01 Scope of Division 1, Chapter 2

This Division:

- (a) is made under paragraph 121.035(2)(a) of CASR; and
- (b) prescribes the criteria for an approval to fly an aeroplane in extended diversion time operations.

2.02 Turbine-engine aeroplanes

The aeroplane must be a turbine-engine aeroplane.

2.03 Type design and certification documents

- (1) This section applies if the airworthiness standards for an aeroplane require the type design of the aeroplane to be approved for the conduct of extended diversion time operations with the diversion time limit requested by the aeroplane operator in an application for EDTO approval.
- (2) The type design of the aeroplane must be approved for extended diversion time operations with at least the diversion time limit requested by the operator, as evidenced in any of the following documents for the aeroplane:
 - (a) the flight manual;
 - (b) the type certificate data sheet or a supplement to the sheet;
 - (c) the CMP document.
- (3) The following information about the aeroplane, its airframe/engine combination, and extended diversion time operations, must be contained in at least one of the documents mentioned in subsection (2):
 - (a) any special limitations, including any limitations associated with operation of the aeroplane up to the diversion time limit requested;
 - (b) the equipment and flight crew procedures required for the conduct of an EDTO with the diversion time limit requested;
 - (c) the diversion time capability of the aeroplane as limited by any time-limited system for the aeroplane.

2.04 Capability of aeroplane for EDTO—general

CASA must be satisfied of the following matters in relation to an application for EDTO approval:

- (a) the reliability of the airframe/engine combination of the aeroplane must be acceptable for extended diversion time operations, within the diversion time requested by the operator for the operations;
- (b) the aeroplane's type certificate or foreign type certificate covers an EDTO for at least the diversion time requested;

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- (c) the CMP document for the aeroplane permits an EDTO with the diversion time requested.

2.05 Capability of operator—EDTO required system serviceability

General

- (1) CASA must be satisfied that the operator has the capability to ensure that the following equipment and systems of an aeroplane, the subject of an application for EDTO approval, would be serviceable for dispatch on an EDTO flight under the approval:
 - (a) for a 2-engine aeroplane—one-engine-inoperative auto-land capability, if flight planning for an EDTO en-route alternate aerodrome is predicated on the use of auto-land;
 - (b) if operating in the polar region—an automated external defibrillator.
- (2) CASA must also be satisfied that the operator has the capability to ensure:
 - (a) the fuel quantity indicating system and the cargo fire suppression system of the aeroplane would be serviceable for dispatch for the flight; and
 - (b) operating the aeroplane with one or both of those systems unserviceable would be permitted by the MEL for the aeroplane and any conditions and limitations of the MEL relating to the unserviceability could be complied with.

Diversion time more than 180 minutes

- (3) Subsection (4) applies if an application for EDTO approval requests a diversion time of more than 180 minutes.
- (4) CASA must be satisfied that the operator has the capability to ensure that the following systems of the aeroplane would be serviceable for dispatch on an EDTO flight under the approval:
 - (a) subject to subsection (5), the auxiliary power unit, including electrical and pneumatic supply to its designated capability;
 - (b) if the aeroplane is a 2-engine aeroplane—the auto-throttle system;
 - (c) a communication system, in addition to any such equipment required for the aeroplane under section 11.08, that is capable of providing effective direct communication (for example, by voice, SATCOM/SATVOICE or ACARS) between the flight crew and air traffic services, and between the flight crew and either or both the operations control and flight dispatcher.
- (5) Paragraph (4)(a) does not apply if an auxiliary power unit:
 - (a) for a 2-engine aeroplane—is not required by the type design and certification documents for the aeroplane require it to have an auxiliary power unit for the conduct of EDTO flights; or
 - (b) for a 3- or 4-engine aeroplane—is not required:
 - (i) by the aeroplane manufacturer for one-engine-inoperative procedures or depressurisation procedures; or
 - (ii) for a time-limiting EDTO significant system (if any).

2.06 Diversion time for 2-engine aeroplanes

- (1) This section applies to an application to conduct extended diversion time operations using a 2-engine aeroplane.
- (2) The maximum diversion time that can be approved for the aeroplane must not exceed the most limiting of the following time limits:
 - (a) the diversion time capability for the airframe/engine combination, evidenced by the documents and information for the aeroplane mentioned in section 2.03;
 - (b) the time limit of the aeroplane's cargo fire suppression system reduced by an operational safety margin of 15 minutes;
 - (c) the time limit of the aeroplane's most EDTO significant time-limited system (other than the cargo fire suppression system), reduced by an operational safety margin of 15 minutes.
- (3) Paragraph (2)(b) does not apply if a time limit for the aeroplane's cargo fire suppression system has not been specified in at least one document mentioned in subsection 2.03(2) in relation to the aeroplane.
- (4) Paragraph (2)(c) does not apply in relation to an EDTO significant time-limited system of the aeroplane if a time limit for the system has not been specified in at least one document mentioned in subsection 2.03(2) in relation to the aeroplane.

2.07 Diversion time for 3- or 4-engine aeroplanes

- (1) This section applies to an application to conduct extended diversion time operations using a 3- or 4-engine aeroplane.
- (2) The maximum diversion time that can be approved for the aeroplane must not exceed the most limiting of the following time limits:
 - (a) the time limit of the aeroplane's cargo fire suppression system, reduced by an operational safety margin of 15 minutes;
 - (b) the time limit of the aeroplane's most EDTO significant time-limited system (other than the cargo fire suppression system), reduced by an operational safety margin of 15 minutes.
- (3) Paragraph (2)(a) does not apply if a time limit for the aeroplane's cargo fire suppression system has not been specified in at least one document mentioned in subsection 2.03(2) in relation to the aeroplane.
- (4) Paragraph (2)(b) does not apply in relation to an EDTO significant time-limited system of the aeroplane if a time limit for the system has not been specified in at least one document mentioned in subsection 2.03(2) in relation to the aeroplane.

2.08 Polar region

If an application for EDTO approval involves conducting the proposed operations through or within the polar region:

- (a) the aeroplane must be equipped with an automated external defibrillator;
and

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- (b) the MEL for the aeroplane must be sufficient to cover the requested EDTO flights.

2.09 Care and safety of passengers and crew

- (1) This section applies if an application for EDTO approval:
 - (a) requests a diversion time greater than 180 minutes; or
 - (b) involves the conduct of operations through or within the polar region.
- (2) CASA must be satisfied that the operator can ensure the care and safety of passengers and crew following a landing at an EDTO en-route alternate aerodrome.
- (3) In considering whether it is satisfied of the matters in subsection (2), CASA must take into account:
 - (a) details, included in the operator's exposition, of facilities at each EDTO en-route alternate aerodrome designated for the operations, for ensuring the care and safety of a full complement of passengers and crew; or
 - (b) details, included in the operator's exposition, of the operator's recovery plan that ensures, for a diversion to any EDTO en-route alternate aerodrome, the protection and well-being of a full complement of passengers and crew at the aerodrome itself, or in its immediate area, until the passengers and crew are transported to another place that will provide for their care and safety.

Division 2—Form of application for EDTO approval

2.10 Scope of Division 2, Chapter 2

This Division:

- (a) is made for paragraph 121.035(2)(b) of CASR; and
- (b) prescribes the form in which an application for EDTO approval must be made.

2.11 Form of application

- (1) An application for EDTO approval for a particular aeroplane and airframe/engine combination must be made to CASA in writing.
- (2) The application must include the following information:
 - (a) the type and model of aeroplane;
 - (b) the diversion time requested;
 - (c) details of the aeroplane's airframe/engine combination, including the latest revision number of the CMP document required for extended diversion time operations (as normally identified in the aeroplane's flight manual, type certificate data sheet or supplemental type certificate);
 - (d) details of diversion time capability of the aeroplane and airframe/engine combination as evidenced by the documents and information for the aeroplane mentioned in section 2.03;
 - (e) the time limit of the aeroplane's most time-limiting EDTO significant system (if any) identified in the aircraft flight manual instructions for the aeroplane;
 - (f) details of the requested areas of operation, including whether operations would enter the polar region;
 - (g) details of the aeroplane speed or speeds the operator will use to comply with the requirements in Division 4 of this Chapter;
 - (h) details of the operator's plans, processes, procedures or systems to ensure the pre-flight serviceability of the systems mentioned in section 2.05;
 - (i) details of the procedures required under regulation 121.160 of CASR as they relate to determining operational control for an EDTO flight of the aeroplane;
 - (j) details of the dispatch procedures for the aeroplane in relation to the proposed extended diversion time operations;
 - (k) a list of the EDTO en-route alternate aerodromes designated for the operations;
 - (l) details of the training and checking of flight crew members and flight dispatchers for EDTO flights of the aeroplane;
 - (m) details of EDTO training provided to personnel of the operator who:
 - (i) are engaged in providing continuing airworthiness management services for the aeroplane; or
 - (ii) carry out maintenance on the aeroplane on behalf of an approved maintenance organisation;

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- (n) details of the operator's procedures for complying with the fuel requirements in Chapter 7 in relation to the conduct of EDTO flights;
 - (o) a copy of any amendments to the operator's exposition that would be required for the proposed extended diversion time operations.

Passenger and crew care & safety

(3) If the application:

- (a) requests a diversion time greater than 180 minutes; or
- (b) involves flight through or within the polar region;

the application must also include details of how the operator will ensure the care and safety of a full complement of passengers and crew following a landing at an EDTO en-route alternate aerodrome.

Division 3—Factors to be considered by CASA in approving EDTO

2.12 Scope of Division 3, Chapter 2

This Division:

- (a) is made for paragraph 121.035(2)(c) of CASR; and
- (b) prescribes factors to be considered by CASA in deciding whether or not to grant an approval to an operator to conduct extended diversion time operations in relation to a particular aeroplane and airframe/engine combination.

2.13 Safety compensating factors

In considering an application by an operator to conduct extended diversion time operations using a particular aeroplane and airframe/engine combination, CASA must take into account safety compensating factors, including:

- (a) the number of aerodromes in the area of operations; and
- (b) the weather conditions normally prevailing in the area; and
- (c) the availability of communications; and
- (d) the safety and reliability of operations conducted with the airframe/engine combination and any additional MEL restrictions.

2.14 Capability and competence to conduct EDTO

- (1) In considering an application by an operator to conduct extended diversion time applications using a particular aeroplane and airframe/engine combination, CASA must consider the capability and competence of the operator to safely conduct and adequately support the intended operations.

Note: In considering the operator's capability and competence, CASA may direct the operator, under regulation 11.245 of CASR, to conduct a proving flight using the aeroplane or an approved simulator for the aeroplane.

- (2) CASA may take into consideration the operator's capability and competence to safely conduct the intended extended diversion time operations in the event of the following contingencies:
 - (a) total loss of thrust on one engine;
 - (b) total loss of normal generated electrical power, involving the demonstration of the EDTO-critical electrical conditions identified during the type certification of the aeroplane;
 - (c) total loss of pressurisation;
 - (d) any other event or condition required by CASA for reasons relating to operational challenge, safety management, crew workload or performance.

Division 4—Requirements for conduct of EDTO

2.15 Scope of Division 4, Chapter 2

This Division:

- (a) is made for paragraph 121.035(3)(a) of CASR; and
- (b) prescribes requirements in relation to conducting EDTO flights.

2.16 Flight planning limitations for all EDTO flights

- (1) A flight plan route for an aeroplane used to conduct an EDTO flight must be limited to that for which the diversion time to an EDTO en-route alternate aerodrome for the flight, measured at the speed mentioned in subsection (2), does not exceed the maximum diversion time, in ISA and still air conditions.
- (2) For subsection (1), the speed is:
 - (a) if the aeroplane is a 2-engine aeroplane—a one-engine-inoperative cruising speed specified in the operator's exposition for this section; or
 - (b) if the aeroplane is a 3- or 4-engine aeroplane—a normal cruising speed, specified in the operator's exposition for this section.

Note: An EDTO flight may also be further limited by a provision applying under section 2.17.

2.17 Additional flight planning limitations—EDTO beyond 180 minutes

- (1) The requirements in this section apply in relation to an EDTO beyond a maximum diversion time of 180 minutes.

Limits of cargo fire suppression system—all aeroplanes

- (2) The time required by an aeroplane to fly the distance to a planned EDTO en-route alternate aerodrome:
 - (a) at the normal cruising speed specified in the operator's exposition for this section; and
 - (b) correcting for forecast wind and temperature;must not exceed the time specified for the aeroplane's cargo fire suppression system in one of the documents for the aeroplane mentioned in subsection 2.03(2), minus 15 minutes.

Limits of most limiting time-limited system for 2-engine aeroplane

- (3) If the aeroplane is a 2-engine aeroplane, the time required by the aeroplane to fly the distance to a planned EDTO en-route alternate aerodrome:
 - (a) measured at the one-engine-inoperative cruising speed specified in the operator's exposition for this section; and
 - (b) correcting for forecast wind and temperature;must not exceed the time specified for the aeroplane's most limited time-limited system (other than the cargo fire suppression system), in one of the documents for the aeroplane mentioned in subsection 2.03(2), minus 15 minutes.

2.18 Flight dispatch requirements for EDTO

General flight dispatch requirements

- (1) An EDTO flight of an aeroplane must not commence unless:
 - (a) the pilot in command is provided with the flight dispatch release mentioned in subsection (3); and
 - (b) a pre-departure service check is completed; and
 - (c) if the flight is one mentioned in subsection 11.08(2)—the communications facilities required under subsection 11.08(3) are available; and
 - (d) if the aeroplane is a 2-engine aeroplane—the aeroplane meets the requirements of the CMP document for the flight; and
 - (e) any EDTO en-route alternate aerodromes for the flight are identified and listed in the operational flight plan.
- (2) An EDTO flight of an aeroplane must not commence unless:
 - (a) the following systems and equipment of the aeroplane are serviceable:
 - (i) if the aeroplane is a 2-engine aeroplane—one-engine-inoperative auto-land capability, if flight planning for an EDTO en-route alternate aerodrome is predicated on the use of auto-land;
 - (ii) if operating in the polar region—an automated external defibrillator; and
 - (b) either:
 - (i) the fuel quantity indicating system, and the cargo fire suppression system, of the aeroplane is serviceable for the flight; or
 - (ii) in the case that a system mentioned in subparagraph (b)(i) is not serviceable for the flight—the MEL for the aeroplane permits the operation of the aeroplane with the unserviceability and any conditions and limitations of the MEL relating to the unserviceability are able to be complied with for the flight.
- (3) For the purposes of paragraph (1)(a), a record of the following information for dispatch of the aeroplane (the ***flight dispatch release***) for the EDTO flight, must have been prepared (whether or not in a standalone document):
 - (a) the EDTO en-route alternate aerodromes for the flight;
 - (b) the maximum diversion time for the flight.

Performance data for EDTO flight

- (4) An EDTO flight of an aeroplane must not commence unless the performance data in the aircraft flight manual instructions for the aeroplane:
 - (a) is available to the pilot in command for the specific airframe/engine combination; and
 - (b) includes the matters mentioned in subsections (5) and (6); and
 - (c) can support all phases of the EDTO flight.

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- (5) For paragraph (4)(b), the performance data must include:
- (a) detailed one-engine-inoperative performance data, including fuel flow data, for ISA and ambient conditions as a function of airspeed and power setting, encompassing:
 - (i) drift-down flight profiles (including net performance); and
 - (ii) cruising altitude coverage; and
 - (iii) altitudes for flight with one-engine-inoperative and depressurised conditions; and
 - (iv) holding altitudes; and
 - (b) detailed all-engines-operating performance data, including fuel flow data, for ISA and ambient conditions as a function of airspeed and power setting, encompassing:
 - (i) cruising altitudes; and
 - (ii) altitudes for flight under depressurised conditions; and
 - (iii) flight at 10 000 ft above mean sea level; and
 - (iv) holding altitudes; and
 - (c) any available data related to any other conditions relevant to the EDTO flight that could result in a significant deterioration to the performance of the specific airframe/engine combination, including the following conditions:
 - (i) ice accretion on the aeroplane surfaces not encompassed by anti-ice or de-ice systems;
 - (ii) if required to be considered by the aeroplane's manufacturer as part of the EDTO airworthiness certification of the aeroplane:
 - (A) the ram air turbine deployment; and
 - (B) the thrust reverser deployment.
- (6) For paragraph (4)(b), the altitudes, airspeeds, thrust settings and fuel flow, used in establishing the EDTO area of operations for the airframe/engine combination, must be used when determining whether the requirements in sections 9.07 and 9.08 can be met for an EDTO flight of the aeroplane.

Note: Sections 9.07 and 9.08 provide for obstacle clearance performance requirements for the en route phase of a flight.

2.19 Dispatch requirements for EDTO beyond 180 minutes

- (1) This section applies in relation to an EDTO flight conducted beyond a maximum diversion time of 180 minutes.
- (2) The following systems of the aeroplane must be serviceable for dispatch:
 - (a) if the aeroplane is a 2-engine aeroplane—the auto-throttle system;
 - (b) if required:
 - (i) by the aeroplane manufacturer for one-engine-inoperative, or depressurisation, procedures; or
 - (ii) for a time-limited system (if any);the auxiliary power unit, including electrical and pneumatic supply to its designated capability;

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- (c) a communication system, in addition to any such equipment required for the aeroplane under Chapter 11, that is capable of providing effective direct communication (for example, by voice, SATCOM/SATVOICE or ACARS) between the flight crew and air traffic services, and between the flight crew and either or both the operations control and flight dispatcher.

2.20 In-flight operational procedures for EDTO

Significant changes to be evaluated

- (1) A significant change:
 - (a) in forecast weather; or
 - (b) in the aerodrome availability for the flight; or
 - (c) in the required services at any EDTO en-route alternate aerodromes designated for the flight;that occurs during an EDTO flight of an aeroplane and before the aeroplane proceeds beyond the EDTO entry point, must be evaluated by the pilot in command as soon as practicable.
- (2) If a significant change mentioned in subsection (1) would prevent a safe approach and landing at an EDTO en-route alternate aerodrome during the estimated time of use—the pilot in command must select an additional EDTO en-route alternate aerodrome where a safe approach and landing can be made.

EDTO significant event during flight

- (3) If:
 - (a) a failure or degradation of an EDTO significant system occurs during an EDTO flight before the aeroplane reaches the EDTO entry point; and
 - (b) the pilot in command believes that assistance from the flight dispatcher is necessary;then, all available means of communication must be used by the flight crew to ensure assistance by the flight dispatcher:
 - (c) to re-evaluate the aeroplane's capability to ensure that the flight can safely continue into the EDTO area of operation; and
 - (d) to update or revise the flight plan following the re-evaluation.

Requirements before proceeding beyond EDTO entry point

- (4) The pilot in command of an aeroplane conducting an EDTO flight must not proceed beyond an EDTO entry point unless:
 - (a) the aerodrome forecast, or ICAO landing forecast, for each aerodrome selected as an EDTO en-route aerodrome, indicates that the forecast cloud ceiling and visibility, at the estimated time of use mentioned in section 4.05 for the aerodrome, are above the landing minima for the approach expected to be used; and
 - (b) the aerodrome forecast, or ICAO landing forecast, for each aerodrome selected as an EDTO en-route aerodrome, indicates that the forecast wind component for the aerodrome, at the estimated time of use mentioned in

section 4.05 for the aerodrome, including gusts, for the runway expected to be used, is the lesser of:

- (i) the maximum demonstrated crosswind specified in the aircraft flight manual instructions for the aeroplane; and
 - (ii) the maximum demonstrated crosswind specified (if any) in the aircraft flight manual instructions for landing with one engine inoperative; and
- (c) no other event has occurred that makes the aerodrome unusable.
- (5) The pilot in command of a 2-engine aeroplane conducting an EDTO flight must ensure the aeroplane complies with the in-flight operational requirements of the CMP document for the EDTO flight before the aeroplane proceeds beyond the EDTO entry point.

Significant changes at EDTO en-route alternate aerodrome

- (6) Subsection (7) applies if, during an EDTO flight:
- (a) the authorised weather forecast is revised to be below the landing minima for the expected approach, during the estimated time of use mentioned in section 4.05 of an EDTO en-route alternate aerodrome; or
 - (b) any other event occurs that makes the aerodrome unusable.
- (7) After an aeroplane conducting an EDTO flight proceeds beyond the EDTO entry point, and before passing the exit point, the pilot in command must:
- (a) evaluate the significant changes in conditions, mentioned in subsection (6), at the EDTO en-route alternate aerodrome; and
 - (b) continue the planned flight only if satisfied that doing so would be no less safe than an alternative course of action.

Initiating diversion

- (8) If there is an in-flight shutdown of an engine during the flight, the pilot in command must promptly initiate a diversion to the nearest aerodrome (measured by the time it would take to fly to the aerodrome) that is determined by the pilot in command to be suitable, taking account of the safe operation of the aeroplane.
- (9) If there is a single or multiple primary system failure during the flight, the pilot in command must:
- (a) initiate a diversion to the nearest aerodrome (measured by the time it would take to fly to the aerodrome) that is determined by the pilot in command to be suitable, taking into account the safe operation of the aeroplane; or
 - (b) in the case only that the pilot in command determines no substantial degradation of safety would result—continue the planned flight.

Division 5—General conditions on EDTO approvals

2.21 Scope of Division 5, Chapter 2

For the purposes of regulation 11.068 of CASR, this Division imposes conditions on EDTO approvals.

2.22 EDTO procedures—flight dispatcher duties

- (1) It is a condition on an EDTO approval issued to an aeroplane operator that the operator must have procedures in the operator's exposition to ensure that, during flight planning for an EDTO flight of an aeroplane, the flight dispatcher meets the requirement in subsection (2).
- (2) For subsection (1), the flight dispatcher must consider the potential routes and altitudes that would be necessary for diversion to an EDTO en-route alternate aerodrome when determining whether immediate satellite-based voice communications, required by subsection 11.08(3), are available.

2.23 Training and checking—flight dispatchers

- (1) It is a condition on an EDTO approval issued to an aeroplane operator that the operator must ensure that any flight dispatcher, who has responsibilities for the dispatch of the aeroplane on an EDTO flight, has received the training required by this section for the person before carrying out the duties and responsibilities of a flight dispatcher for the flight.
- (2) The operator must ensure that the training and checking mentioned in paragraph 119.170(4)(a) of CASR, in relation to a flight dispatcher, covers the following content:
 - (a) contingency procedures for each area of operation intended to be used for EDTO flights;
 - (b) diversion procedures and diversion decision-making processes;
 - (c) the requirements of the civil aviation legislation in relation to extended diversion time operations.

2.24 Quarterly EDTO summary reports—2-engine aeroplanes

- (1) It is a condition on an EDTO approval issued to an aeroplane operator that the operator must prepare a summary report, in respect of an aeroplane used to conduct extended diversion time operations under the approval, available to CASA on request, for:
 - (a) the 3-month period beginning the day after being granted the EDTO approval; and
 - (b) each 3-month period beginning the day after the end of the previous 3-month period;that will report on the matters in subsection (2) for each aeroplane of that type, model and airframe/engine combination operated by the operator under the approval.

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- (2) For subsection (1), the matters are as follows:
- (a) the number of flights conducted and the hours flown by the aeroplane;
 - (b) for each aircraft engine of the aeroplane—the number of flights conducted and total hours flown with the engine;
 - (c) for each flight conducted by the aeroplane during the 3-month period—any interruptions, delays or cancellations occurring due to technical reasons;
 - (d) any unscheduled termination or diversion from a route caused by an actual or suspected technical malfunction;
 - (e) in-flight shutdown rates;
 - (f) any defects or events reported or recorded by a flight crew member using the exposition procedures required by regulation 121.120 of CASR or reported under section 2.20;
 - (g) systems defects that have exceeded their alerts levels;
 - (h) use of the aeroplane’s MEL;
 - (i) unscheduled component removals.
- (3) If a summary report for a 3-month period is requested by CASA, the operator must make the report available within 14 days of CASA’s request.
- (4) The requirement to prepare a summary report in relation to an aeroplane mentioned in subsection (1) is met if:
- (a) the operator has an approved reliability program (within the meaning of regulation 42.015 of CASR) in relation to the aeroplane; and
 - (b) the reliability program requires the operator to provide CASA with quarterly reports; and
 - (c) the operator reports against the matters mentioned in subsection (2) in relation to the aeroplane, in the quarterly reports prepared for the reliability program.

2.25 Navigation documents for EDTO

- (1) It is a condition on an EDTO approval issued to an aeroplane operator that the operator must ensure that the flight crew members, assigned to duty for an EDTO flight of an aeroplane used to conduct extended diversion time operations under the approval, are provided with navigation documents that include at least the following information:
- (a) the threshold distances for the aeroplane and the flight;
 - (b) the maximum diversion time for the aeroplane and the flight.
- (2) The operator must ensure that the flight crew are given the means of determining the location of each equal time point, and the critical point, for the flight.
- (3) In this section:

equal time point means a point along the route that is located at the same flight time from two aerodromes.

Note: See section 1.04 for the definition of ***critical point***.

2.26 In-flight event reporting for EDTO

- (1) It is a condition on an EDTO approval issued to an aeroplane operator that the operator report to CASA any of the following events that occur in relation to an EDTO flight of an aeroplane conducting extended diversion time operations under the approval, within 72 hours of the event occurring:
 - (a) in-flight shut down;
 - (b) diversion or turnback;
 - (c) uncommanded power change or surge;
 - (d) inability to control an engine or to obtain desired power;
 - (e) malfunction or adverse trend of an EDTO significant system;
 - (f) any other event detrimental to EDTO.
- (2) The operator must conduct an investigation into the cause of the event, and include in the report to CASA at least the following:
 - (a) the aeroplane make and serial number;
 - (b) the engine make and serial number;
 - (c) total time, cycles and time since last maintenance;
 - (d) time since overhaul or inspection of the defect item;
 - (e) phase of flight that the event occurred;
 - (f) corrective action.

Chapter 3—Carriage of documents and emergency and survival equipment information

Division 1—Flight related documents

3.01 Carriage of documents—all flights

- (1) For the purposes of paragraph 121.085(1)(a) of CASR, the following documents are prescribed for carriage on a flight:
- (a) the aircraft flight manual instructions for the aeroplane;
 - (b) either:
 - (i) the flight technical log for the aeroplane; or
 - (ii) if Part 42 of CASR does not apply to the aeroplane—the maintenance release for the aeroplane;
 - (c) the minimum equipment list for the aeroplane;
 - (d) the configuration deviation list (if any) for the aeroplane;
 - (e) the operational flight plan for the flight;
 - (f) the journey log for the flight;
 - (g) the authorised aeronautical information for the flight;
 - (h) the weight and balance documents for the flight.

Note 1: These documents are in addition to documents required to be carried on the aeroplane under subregulations 121.085(2) and (3), and regulation 121.095, of CASR.

Note 2: Other documents may also be required to be carried on the aeroplane under other legislation. For example, documentation regarding the carriage of dangerous goods under Part 92 of CASR, or documentation relating to disinsection requirements and procedures under the *Biosecurity Act 2015*.

- (2) Despite paragraph (1)(a), if:
- (a) the information and instructions that are required under the relevant airworthiness standards for the aeroplane to be included in the aeroplane's flight manual are contained in another document; and
 - (b) the other document is carried on board the aeroplane; and
 - (c) that document does not alter, or contain anything that would conflict with, the information or instructions mentioned in paragraph (a);
- then the document may be carried on board the aeroplane in place of the flight manual.

Note: An exposition that meets the requirements in subsection (2) could be carried on board instead of the flight manual.

- (3) Also, despite paragraph (1)(a), if:
- (a) a checklist of the aeroplane's normal, abnormal and emergency procedures mentioned in paragraph (b) of the definition of *aircraft flight manual instructions* in the CASR Dictionary is contained in another document; and
 - (b) the other document is carried on board the aeroplane; and
 - (c) that document does not alter, or contain anything that would conflict with, the information or instructions in the checklist;

then the document may be carried on board the aeroplane in place of the checklist.

3.02 Carriage of documents—flights that begin or end outside Australian territory

For the purposes of paragraph 121.095(2)(a) of CASR, the following documents are prescribed for carriage on a flight of an aeroplane that begins or ends at an aerodrome outside Australian territory:

- (a) the aeroplane's certificate of registration;
- (aa) for a registered aeroplane—the aeroplane's certificate of airworthiness;
- (ab) for a foreign registered aeroplane—the aeroplane's authorisation (however described) that is equivalent to a certificate of airworthiness;
- (b) if the aeroplane has a radio station licence—a copy of the licence;
- (c) if the flight is a passenger transport operation or a medical transport operation—a document containing the information required by regulation 121.110 of CASR (passenger lists);
- (d) if the aeroplane is carrying cargo (other than passenger baggage):
 - (i) a manifest and detailed declaration of the cargo; and
 - (ii) a statement about whether any of the cargo may require special or unusual handling;
- (e) a certified true copy of the operator's Australian air transport AOC;
- (f) a copy of the operations specifications issued to the operator in relation to the operator's Australian air transport AOC.

Note 1: These documents are in addition to documents that are required to be carried on the aeroplane under regulation 121.085 of CASR.

Note 2: For paragraph (b): see the definition of *radio station licence* in the CASR Dictionary.

3.03 Keeping and updating documents etc.

For the purposes of paragraph 121.100(a) of CASR, if the flight is a passenger transport operation or a medical transport operation, a copy of the passenger list for the flight is prescribed.

Division 2—Emergency and survival equipment

3.04 Information about emergency and survival equipment

For the purposes of subregulation 121.135(1) of CASR, if equipment listed in column 1 of an item of table 3.04 is required, under the civil aviation legislation, to be carried on the flight, the information mentioned in column 2 of the item is prescribed for the equipment.

Table 3.04—Information about emergency and survival equipment

Column 1		Column 2
Item	Item of equipment	Information
1	A life raft	The number, colour and type of each life raft carried on the flight
2	A signalling device	The number, colour and type of each pyrotechnic signalling device carried on the flight
3	An emergency medical kit	Details of each emergency medical kit carried on the flight
4	A survival ELT	The type and frequency of each survival ELT carried on the flight
5	Water supplies carried as an item of survival equipment	Details of the water supplies carried on the flight

Chapter 4—Flight preparation (Part 121 alternate aerodromes) requirements

Division 1—Preliminary

4.01 Scope of Chapter 4

This Chapter:

- (a) is made for subregulation 121.170(1) of CASR; and
- (b) prescribes the flight preparation (Part 121 alternate aerodromes) requirements.

4.03 Definition of *isolated destination aerodrome*

- (1) A planned destination aerodrome is an *isolated destination aerodrome* for an aeroplane if the amount of fuel, mentioned in subsection (2), for a flight:
 - (a) from the planned destination aerodrome; and
 - (b) to the nearest aerodrome that would meet the requirements for a destination alternate aerodrome (the *relevant aerodrome*) for the aeroplane under the civil aviation legislation;

is greater than the amount mentioned in subsection (3).

Note: For an aerodrome to be a destination alternate aerodrome, it must also (in addition to meeting the applicable requirements under this Chapter) meet other requirements that apply for aerodromes under this instrument, Division 121.D of CASR, Part 91 of CASR or in other provisions of the civil aviation legislation.

- (2) For subsection (1), the amount is the sum of:
 - (a) the fuel required to:
 - (i) perform a missed approach at the planned destination aerodrome; and
 - (ii) climb to the expected cruising altitude; and
 - (iii) fly the expected routing to the relevant aerodrome; and
 - (iv) descent to the point where the expected approach is initiated; and
 - (v) land at the relevant aerodrome; and
 - (b) the final reserve fuel.
- (3) For subsection (1), the amount is:
 - (a) for a piston-engine aeroplane—the lesser of:
 - (i) the fuel required to fly for 45 minutes plus the fuel to fly for 15% of the flight time spent at the planned cruising level between the departure aerodrome and the planned destination aerodrome; and
 - (ii) 2 hours; or
 - (b) for a turbine-engine aeroplane—the fuel required to fly the aeroplane for 2 hours at the planned cruising level above the planned destination aerodrome, including final reserve fuel.

4.04 Definition of *relevant weather conditions*

- (1) In this Chapter, the following weather conditions are the *relevant weather conditions*:
- (a) in relation to cloud—the cloud is more than SCT;
 - (b) visibility, including a probability indicator of at least 30% or greater of fog, mist, dust or any other phenomenon restricting visibility;
 - (c) in relation to wind—a headwind, crosswind or downwind component more than the maximum for the aeroplane, including any forecast wind gusts;
 - (d) a thunderstorm or its associated severe turbulence, or at least a probability of 30% or greater of a thunderstorm or its associated severe turbulence.

Holding fuel—operationally limiting weather conditions

- (2) Despite subsection (1), if relevant weather conditions would represent an operationally limiting condition, the weather is taken not to be present if, for the flight, the aeroplane carries the amount of holding fuel mentioned in subsection (3).
- (3) For subsection (2), and subject to subsections 4.06(4) to (7), the amount of holding fuel must be at least equal to the number of minutes of the period of the overlap of:
- (a) the estimated time of use; and
 - (b) the time at which the operationally limiting weather conditions would no longer apply to the flight.

Note: Section 4.06 includes rules relating to when intermittent, temporary or other pertinent weather conditions are taken to be present.

4.05 Estimated time of use of aerodromes for flight preparation (Part 121 alternate aerodromes) requirements

For the purpose of the flight preparation (Part 121 alternate aerodromes) requirements, the estimated time of use by an aeroplane, of an aerodrome mentioned in an item of table 4.05, is taken to be the period mentioned in column 2 of the item.

Table 4.05—Estimated time of use

Item	Column 1 Aerodrome	Column 2 The period:
1	A planned destination aerodrome (other than an isolated destination aerodrome)	commencing 30 minutes before, and ending 30 minutes after, the estimated time of arrival of an aeroplane at the aerodrome
2	A destination alternate aerodrome	commencing 30 minutes before, and ending 30 minutes after, the estimated time of arrival of an aeroplane at the aerodrome

Table 4.05—Estimated time of use

Item	Column 1 Aerodrome	Column 2 The period:
3	An isolated destination aerodrome	commencing 30 minutes before, and ending 60 minutes after, the estimated time of arrival of an aeroplane at the aerodrome
4	A take-off alternate aerodrome	commencing 30 minutes before, and ending 30 minutes after, the estimated time of arrival of an aeroplane at the aerodrome
5	An en-route alternate aerodrome (other than an EDTO en-route alternate aerodrome or an isolated destination aerodrome)	commencing 30 minutes before the earliest estimated time of arrival, and ending 30 minutes after the latest estimated time of arrival, of an aeroplane at the aerodrome
6	An EDTO en-route alternate aerodrome	commencing at the earliest estimated time of arrival, and ending at the latest estimated time of arrival, of an aeroplane at the aerodrome

Division 2—Flight preparation (Part 121 alternate aerodrome) requirements

4.06 Certain weather forecast requirements

Application

- (1) The requirements in this section apply when assessing an authorised weather forecast for an aerodrome to determine whether relevant weather conditions are forecast to exist for a flight of an aeroplane.

Cloud

- (2) When determining whether the cloud is more than SCT, the following assumptions must be made:
 - (a) forecast amounts of cloud below the cloud ceiling values relevant to a flight of an aeroplane or the landing minima (as the case may be) are cumulative;
 - (b) FEW plus FEW is equivalent to SCT;
 - (c) FEW plus SCT is equivalent to BKN;
 - (d) SCT plus SCT is equivalent to BKN or OVC.

Change indicators

- (3) The following requirements apply when the change indicator BECMG is used in an aerodrome forecast:
 - (a) if the weather conditions within the BECMG element of the forecast represent a deterioration in any of the weather elements within the preceding element of the forecast, the change indication is to be applied from the start of the forecast BECMG period;
 - (b) if the weather conditions within the BECMG element of the forecast represent an improvement in all of the weather elements within the preceding elements of the forecast, the change indication is to be applied from the end of the forecast BECMG period.
- (4) When an authorised weather forecast includes weather conditions forecast to occur on an intermittent (“INTER”) basis, those weather conditions are taken to be present for the entire time period that the forecast includes the change indicator of INTER, unless:
 - (a) 30 minutes of holding fuel is carried by the aeroplane for the flight; or
 - (b) both of the following apply:
 - (i) the period of overlap of the estimated time of use and the time period of the change indicator is less than 30 minutes;
 - (ii) holding fuel equal to the number of minutes of the overlap is carried by the aeroplane for the flight; or
 - (c) subsection (4B) applies.
- (4A) When an authorised weather forecast includes weather conditions forecast to occur on a temporary (“TEMPO”) basis, those weather conditions are taken to be

present for the entire time period that the forecast includes the change indicator of TEMPO, unless:

- (a) 60 minutes of holding fuel is carried by the aeroplane for the flight; or
- (b) both of the following apply:
 - (i) the period of overlap of the estimated time of use and the time period of the change indicator is less than 60 minutes;
 - (ii) holding fuel equal to the number of minutes of the overlap is carried by the aeroplane for the flight; or
- (c) subsection (4B) applies.

(4B) When an authorised weather forecast contains multiple change indicators of INTER or TEMPO, those weather conditions are taken to be present for a time period mentioned in subsection (4) or (4A) that is relevant to the most operationally limiting change indicator, other than in the case that holding fuel for the most operationally limiting change indicator is carried by the aeroplane for the flight.

- (4C) For the purposes of a circumstance mentioned in subsection (4), (4A) or (4B) (the **relevant provision**) regarding the carriage of holding fuel, if:
- (a) the flight of the aeroplane is to a planned destination aerodrome that is an isolated destination aerodrome; and
 - (b) the destination alternate fuel required by subsection 7.02(4) is in excess of the final reserve fuel carried and required for the flight by at least the amount of holding fuel mentioned in the relevant provision;
- then, the holding fuel is taken to be carried by the aeroplane.

Probability indicators etc.

- (5) Subject to subsection (7), if an authorised weather forecast includes a probability indicator of 30% or 40% of relevant weather conditions at any time during the estimated time of use, the weather conditions are taken to be present in the time period associated with the probability indicator.

Note: This section may also be affected by subsection 4.07(8) or 4.06(6).

- (6) Despite subsection (5):
- (a) a probability indicator of 30%; or
 - (b) a combination of a probability indicator of 30% and a change indicator of intermittent deteriorations; or
 - (c) a combination of a probability indicator of 30% and a change indicator of temporary deteriorations;

contained in an aerodrome forecast, or an ICAO landing forecast, for an EDTO en-route alternate aerodrome at the estimated time of use, does not need to be considered when determining whether relevant weather conditions in relation to cloud ceiling exist under section 4.19.

Note: The CASR Dictionary defines **cloud ceiling** as having “the same meaning as **ceiling** in Annex 2 to the Chicago Convention”. At the commencement of this instrument, Chapter 1 of the Annex included the following definition:

“**Ceiling.** The height above the ground or water of the base of the lowest layer of cloud below 6 000 metres (20 000 feet) covering more than half the sky.”

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- (7) Subsection (5) does not apply if the authorised weather forecast being used:
- (a) is a TAF3; and
 - (b) the time period associated with the probability indicator is within the first 3 hours of the period of validity of the forecast, provided that none of the estimated time of use of the aerodrome by the aeroplane is outside the end time (if any) specified for the TAF3 service.

MELs

- (8) If a flight of an aeroplane is conducted using an aeroplane with an inoperative piece of equipment permitted by a MEL for the aeroplane, any limitation of the MEL specified or consequent to flight with the item inoperative, must be taken into consideration when determining the landing minima or the relevant weather conditions for the flight.

4.07 Take-off alternate aerodromes

Requirements

- (1) A take-off alternate aerodrome must be planned for a flight, before the flight commences, if:
- (a) the authorised weather forecast for the departure aerodrome indicates that, during the period of time mentioned in subsection (2), relevant weather conditions are forecast to exist below the landing minima mentioned in subsection (3); or
 - (b) it would not be possible for the aeroplane, after taking off from the departure aerodrome, to return to that aerodrome for other reasons.
- (2) For paragraph (1)(a), the period of time commences 30 minutes before, and ceases 30 minutes after, the aeroplane's estimated time of departure at the aerodrome.
- (3) For paragraph (1)(a), the landing minima are those which:
- (a) meet the landing minima requirements; and
 - (b) are appropriately adjusted to account for an assumption that the landing at that aerodrome will be conducted with one engine inoperative.

Note 1: See the CASR Dictionary for the definition of **landing minima**. The landing minima requirements are prescribed in the Part 91 MOS under paragraph 91.307(1)(b) of CASR: see Chapter 15 of the Part 91 MOS.

Note 2: A take-off alternate aerodrome is an alternate aerodrome at which an aeroplane would be able to land should this become necessary: see the note to the definition of **alternate aerodrome** in section 1.04. Factors that could be considered in determining whether the aeroplane would be able to land at the aerodrome would include:

- (a) aerodrome runway lighting; and
- (b) the forecast aerodrome weather conditions.

Note 3: One engine inoperative missed approach climb requirements for aeroplane performance do not apply at a take-off alternate aerodrome: see subsection 9.12(1).

- (4) A take-off alternate aerodrome that is planned for a flight must:
- (a) be available for use; and

-
- (b) meet the requirements in subsections (5) to (8).

Distance of take-off alternate from departure aerodrome

- (5) A take-off alternate aerodrome must be located within the following flight time from the departure aerodrome:
 - (a) if the aeroplane has 2 engines—one hour of flight time, at a one-engine-inoperative cruising speed for the aeroplane, calculated in ISA and still air conditions, at the take-off weight for the aeroplane;
 - (b) if the aeroplane has 3- or 4 engines—2 hours of flight time, at a normal cruising speed for the aeroplane, calculated in ISA and still air conditions, at the take-off weight for the aeroplane;
 - (c) within the maximum diversion time permitted by an EDTO approval held by the operator for the aeroplane, in the case where:
 - (i) the aeroplane is conducting an EDTO flight; and
 - (ii) a take-off alternate aerodrome mentioned in paragraph (a) or (b) is not available, taking into account the matters in subsection (6).
- (6) For subparagraph (5)(c)(ii), the matters are the following:
 - (a) the safe operation of the aeroplane;
 - (b) aerodrome meteorological conditions;
 - (c) aeroplane operational limitations.

Landing minima for take-off alternate

- (7) An aerodrome can only be selected as a take-off alternate aerodrome if the authorised weather forecasts for the aerodrome, during the estimated time of use, indicate that the relevant weather conditions will not be present below the landing minima which:
 - (a) meet the landing minima requirements; and
 - (b) are appropriately adjusted to account for an assumption that the landing at that aerodrome will be conducted with one engine inoperative.
- (8) Weather conditions of an intermittent or temporary nature, that have a 30% or 40% probability indicator for deterioration, need not be taken into account when considering the weather conditions in the authorised weather forecast for the purpose of selecting a take-off alternate aerodrome under subsection (7).

4.08 Destination alternate aerodromes

Requirement

- (1) At least one destination alternate aerodrome must be planned for a flight of an aeroplane:
 - (a) before the flight commences, unless an exception in subsection (2) or (3) applies to the flight; or
 - (b) during the flight, if:
 - (i) an exception in subsection (2) or (3) ceases to apply to the flight; or
 - (ii) the exception in subsection (4) applies to the flight.

Exception—isolated destination aerodromes

- (2) It is an exception to the requirement in subsection (1) if the planned destination aerodrome is an isolated destination aerodrome.

Exception—weather and other conditions etc.

- (3) It is an exception to the requirement in subsection (1) if all of the following requirements, at the estimated time of use of the planned destination aerodrome, are met in relation to the aerodrome:
- (a) the cloud ceiling requirements in subsection (5);
 - (b) the visibility requirements in subsection (6);
 - (c) the lighting requirements in subsection (7);
 - (d) for a planned destination aerodrome that is not located in Australian territory—separate runways are usable at the aerodrome, with at least one runway having an operational authorised instrument approach procedure.

Note: Example for paragraph (3)(d): separate runways at the same aerodrome would be usable if they are configured in such a way that if one runway were closed, an operation to another runway is operationally available to the aeroplane.

Exception—ICAO landing forecasts or TAF3s

- (4) It is an exception to the requirement in subsection (1) if the aeroplane, during the flight, is within 60 minutes of flight time to the aerodrome of intended landing, and the requirements in section 4.09 (about ICAO landing forecasts or a forecast that is a TAF3) are met.

Cloud ceiling requirements

- (5) For paragraph (3)(a), the cloud ceiling requirements are that the authorised weather forecast, in relation to the planned destination aerodrome at the estimated time of use, indicates that the cloud ceiling will be greater than:
- (a) 1 000 ft above the landing minima determined by the operator under regulation 121.185 of CASR for the instrument approach procedure likely to be used on arrival at the aerodrome; or
 - (b) 500 ft above the minimum altitude for a circling manoeuvre for the instrument approach procedure likely to be used on arrival at the aerodrome, if both of the following apply:
 - (i) a straight-in approach using an authorised instrument approach procedure to the most into-wind runway cannot be performed;
 - (ii) a circling manoeuvre mentioned in the authorised instrument approach procedure must be performed instead.

Visibility

- (6) For paragraph (3)(b), the visibility requirements are that the authorised weather forecast, in relation to the aerodrome of intended landing at the estimated time of use indicates that the visibility will be the greater of:
- (a) 5 km; and

-
- (b) if:
 - (i) it is likely that an instrument approach procedure will be used on arrival at the aerodrome; and
 - (ii) the instrument approach procedure is an authorised instrument approach procedure;at least 2 km greater than the landing minima determined by the operator under regulation 121.185 of CASR for the instrument approach procedure.

Lighting requirements

- (7) For paragraph (3)(c), the lighting requirements are that, in the case where the estimated time of use of the aerodrome includes a period which is night:
 - (a) the aerodrome lighting that is necessary to ensure safe operations is available and used by the flight; and
 - (b) any other requirement that applies under section 4.13, 4.15 or 4.17 is met.

4.09 Planning destination alternate aerodrome—exception relating to ICAO landing forecasts or TAF3

- (1) For subsection 4.08(4), the requirements are as follows:
 - (a) the authorised weather forecast for the aerodrome is:
 - (i) a TAF3 mentioned in subsection (2); or
 - (ii) a forecast declared (however described) by the relevant State to be an ICAO landing forecast;
 - (b) the weather forecast indicates that the relevant weather conditions:
 - (i) from 30 minutes before the estimated time of arrival at the aerodrome; and
 - (ii) until 60 minutes after the estimated time of arrival;are not forecast to exist below the cloud ceiling and visibility values mentioned in section 4.11 for the approach facility configuration of the aerodrome intended to be used, or available for use, by the aeroplane;
 - (c) there are no Air Traffic Service delays at the aerodrome that would require carriage of holding fuel in addition to that which is already on board, for the period:
 - (i) beginning from the estimated time of arrival; and
 - (ii) ending 60 minutes after the estimated time of arrival;
 - (d) if the aerodrome is not within Australian territory—the aerodrome has at least 2 separate runways, and at least one runway with an authorised instrument approach procedure.
- (2) For subparagraph (1)(a)(i), the TAF3 may be used for the purposes of subsection (1) only if the first 3 hours of the period of validity of the forecast are:
 - (a) within the period of the TAF3 service; and
 - (b) wholly encompass the time periods mentioned in paragraphs (1)(b) and (c).

4.10 Two destination alternate aerodromes for flight

Application

- (1) The requirement in this section is in addition to the requirement in section 4.08, and applies if an exception in subsection 4.08(2), (3) or (4) does not, or ceases to, apply to a flight of an aeroplane.

Requirement

- (2) Two destination alternate aerodromes must be planned for a flight of an aeroplane if:
 - (a) the authorised weather forecast for the planned destination aerodrome indicates that, during the estimated time of use, the relevant weather conditions are forecast to be below the landing minima determined by the operator under regulation 121.185 of CASR for the flight; or
 - (b) an authorised weather forecast for the planned destination aerodrome is either not available for the estimated time of use, or does not completely encompass the estimated time of use.

Exception

- (3) It is an exception to the requirement in subsection (1) if:
 - (a) one destination alternate aerodrome is planned for the flight; and
 - (b) that aerodrome meets the requirements in subsection 4.08(3), applied as if the reference to an aerodrome in that subsection were a reference to the destination alternate aerodrome planned for the flight.

4.11 Additional requirements—certain alternate and isolated destination aerodromes

Ceiling and visibility minima—general

- (1) Subject to subsection (2), an aerodrome may be planned for use as:
 - (a) an en-route alternate aerodrome; or
 - (b) a destination alternate aerodrome; or
 - (c) an isolated destination aerodrome;in relation to an approach facility configuration mentioned in column 1 of an item of the table 4.11, only if an authorised weather forecast for the aerodrome indicates that, during the estimated time of use at the aerodrome, relevant weather conditions are not forecast to exist below the cloud ceiling and visibility values mentioned in columns 2 and 3 of the item.

Table 4.11—Ceiling and visibility minima for destination alternate aerodromes or en-route alternate aerodromes or isolated destination aerodromes

Item	Column 1 Aerodrome approach facility configuration	Column 2 Cloud ceiling	Column 3 Visibility
1	The aerodrome has at least 2 operational authorised instrument approach procedures, each of which provides a straight-in approach procedure to different suitable runways, and where at least one approach procedure has an available CAT II or CAT III minima	N/A	The greatest visibility or RVR for the published CAT I minima for the approach procedures
2	The aerodrome has at least 2 operational authorised instrument approach procedures, each of which provides a straight-in approach procedure to different suitable runways	A height of 200 ft above the height required by the instrument approach procedure with the second lowest: (a) MDA or MDH, or (b) DA or DH	Visibility of 800 m above the visibility required by the instrument approach procedure with the second lowest: (a) MDA or MDH; or (b) DA or DH
3	The aerodrome has a single runway and at least one operational authorised instrument approach procedure	A height of 400 ft above the higher of the following: (a) the height required by the instrument approach procedure with the second lowest: (i) MDA or MDH, or (ii) DA or DH; (b) the circling height	Visibility of 1 500 m above the greater of the following: (a) the visibility required by the instrument approach procedure with the second lowest: (i) MDA or MDH; or (ii) DA or DH; (b) the visibility required for a circling manoeuvre
4	The aerodrome has no operational authorised instrument approach procedure	The lowest safe altitude for the last route segment to the aerodrome, plus 500 ft	8 km

Note: A different runway is any runway at the aerodrome with a different runway number. Separate runways are runways at the same aerodrome that would be usable if they are configured in such a way that if one runway were closed, an operation to another runway is operationally available to the aeroplane. Separate runways cannot be at the opposite ends of the same runway.

Ceiling and visibility minima—certain GAF or GAMET area forecasts

- (2) If the authorised weather forecast for an aerodrome is a GAF or GAMET area forecast, then, the aerodrome may be planned for use as a destination alternate aerodrome or an en-route alternate aerodrome (other than an EDTO en-route alternate aerodrome) only if the relevant weather conditions are not, during the

estimated time of use at the aerodrome, forecast to exist below the following cloud ceiling and visibility values:

- (a) for an aerodrome with at least one authorised instrument approach procedure:
 - (i) for cloud ceiling—the circling minimum altitude specified on the instrument approach chart for the instrument approach procedure being conducted, plus 500 ft; and
 - (ii) for visibility—the circling visibility specified on the instrument approach chart for the instrument approach procedure being conducted, plus 2 km;
- (b) for an aerodrome without an authorised instrument approach procedure:
 - (i) for cloud ceiling—the lowest safe altitude for the last route segment to the aerodrome, plus 500 ft; and
 - (ii) for visibility—8 km.

4.12 Isolated destination aerodromes

- (1) The requirements in this section apply in relation to the flight of an aeroplane to a planned destination aerodrome that is an isolated destination aerodrome.
- (2) A critical point must be calculated before the commencement of the flight.

Note: Section 5.01 requires that the calculated critical point must be included on the operational flight plan before the flight commences.

- (3) The flight must not be continued beyond the critical point unless:
 - (a) an assessment of the authorised weather forecast relevant to the aerodrome; and
 - (b) the aircraft traffic and other operational conditions relevant to conducting an approach and landing at the aerodrome;

indicate that a safe landing can be made at the estimated time of use.

- (4) For subsection (3), if the authorised weather forecast assessed for flight beyond the critical point is an aerodrome forecast or an ICAO landing forecast, the cloud ceiling and visibility requirements for continuing beyond the critical point are those specified in table 4.11.
- (5) For subsection (3), if the authorised weather forecast assessed for flight beyond the critical point is a GAF or GAMET area forecast:
 - (a) the cloud ceiling requirements for the aerodrome is the lowest safe altitude for the last route segment to the aerodrome, plus 500 ft; and
 - (b) the visibility requirement is not less than 8 km.

Note: See section 1.04 for the definition of *critical point*.

4.13 Portable runway lighting—requirement to plan destination alternate aerodrome

Application

- (1) This section applies if, for a flight of an aeroplane:
 - (a) runway lighting is required for an aerodrome to meet the requirement in paragraph 121.205(2)(a) of CASR for the aerodrome to be suitable for the aeroplane to land; and
 - (b) the aerodrome is not an isolated aerodrome, take-off alternate aerodrome or en-route alternate aerodrome; and
 - (c) the runway lighting the aerodrome is equipped with is portable runway lighting only.

Requirement

- (2) At least one destination alternate aerodrome must be planned for a flight of the aeroplane, planned to use the aerodrome for landing, unless an exception in subsection (3) or (4) applies for the flight.

Exceptions

- (3) It is an exception to the requirement in subsection (2) if reliable arrangements, for the purpose of enabling a safe night landing are made for a person:
 - (a) who is qualified for, and competent in, setting out and activating the portable lighting; and
 - (b) who will set out, activate, and ensure the correct functioning of, the portable runway lighting during the period from at least 30 minutes before the expected time of arrival until the earlier of:
 - (i) the time landing and taxiing have been completed; and
 - (ii) first light plus 10 minutes.
- (4) It is an exception to the rule in subsection (2) if the aeroplane carries holding fuel sufficient to enable holding until first light plus 10 minutes, at the planned destination aerodrome.

4.14 Portable runway lighting at isolated destination aerodromes

- (1) This section applies if, for a flight of an aeroplane:
 - (a) runway lighting is required for an aerodrome to meet the requirement in paragraph 121.205(2)(a) of CASR for the aerodrome to be suitable for the aeroplane to land; and
 - (b) the aerodrome is an isolated destination aerodrome; and
 - (c) the runway lighting the aerodrome is equipped with is portable runway lighting only.
- (2) In planning to use the aerodrome for a flight of the aeroplane, reliable arrangements must be made, for the purpose of ensuring a safe night landing, for a person mentioned in subsection (3) to set out, activate, and ensure the ongoing

correct functioning of, the portable runway lighting at the aerodrome during the period:

- (a) from at least 30 minutes before the aeroplane's expected time of arrival;
 - (b) until the earlier of:
 - (i) the time landing and taxiing have been completed; and
 - (ii) first light plus 10 minutes.
- (3) The person must be qualified for, and competent in, setting out and activating the portable lighting at the runway.
- (4) The pilot in command of the aeroplane must not continue the flight to the isolated destination aerodrome, past the critical point, unless:
- (a) a reasonable certainty exists that the portable lighting and associated arrangements mentioned in subsection (2) will be in place; or
 - (b) the aeroplane carries holding fuel sufficient to enable holding until first light plus 10 minutes, at the aerodrome.

4.15 Runway lighting where no standby power

Application

- (1) This section applies if, for a flight of an aeroplane:
- (a) runway lighting is required for an aerodrome to meet the requirement in paragraph 121.205(2)(a) of CASR for the aerodrome to be suitable for the aeroplane to land; and
 - (b) the aerodrome is not an isolated aerodrome, take-off alternate aerodrome or en-route alternate aerodrome; and
 - (c) the aerodrome is equipped with electric runway lighting, whether pilot-activated or otherwise, but does not have standby power for the runway lights.

Requirement

- (2) At least one destination alternate aerodrome must be planned for a flight of the aeroplane, planned to use the aerodrome for landing, unless an exception in subsection (3) or (5) applies for the flight.

Exceptions

- (3) It is an exception to the requirement in subsection (2) if:
- (a) portable runway lights are available at the aerodrome; and
 - (b) reliable arrangements are made for a person, mentioned in subsection (4), to set out, activate, and ensure the ongoing correct functioning of, the portable runway lighting at the aerodrome during the period:
 - (i) from at least 30 minutes before the aeroplane's expected time of arrival;
 - (ii) until the earlier of:
 - (A) the time landing and taxiing have been completed; and

-
- (B) first light plus 10 minutes; and
 - (c) the arrangements require the person to display the portable runway lights in the event of a failure of the primary electric runway lighting.
- (4) The person must be qualified for, and competent in, setting out and activating the portable lighting at the runway.
 - (5) It is an exception to the requirement in subsection (2) if the aeroplane carries holding fuel sufficient to enable holding until first light plus 10 minutes, at the aerodrome.

4.16 Runway lighting without standby power at isolated destination aerodromes

Application

- (1) This section applies if, for a flight of an aeroplane:
 - (a) runway lighting is required for an aerodrome to meet the requirement in paragraph 121.205(2)(a) of CASR for the aerodrome to be suitable for the aeroplane to land; and
 - (b) the aerodrome is an isolated destination aerodrome; and
 - (c) the aerodrome is equipped with electric runway lighting, whether pilot activated or otherwise, but does not have standby power for the runway lights.

Requirements

- (2) The following requirements apply for a flight of the aeroplane, planned to use the aerodrome for landing:
 - (a) portable runway lights must be available at the aerodrome;
 - (b) reliable arrangements must be made for a person, mentioned in subsection (3), to set out, activate, and ensure the ongoing correct functioning of, the portable runway lighting at the aerodrome during the period:
 - (i) from at least 30 minutes before the aeroplane's expected time of arrival; and
 - (ii) until the earlier of:
 - (A) the time landing and taxiing have been completed; and
 - (B) first light plus 10 minutes;
 - (c) the arrangements must require the person to display the portable runway lights in the event of a failure of the primary electric runway lighting.
- (3) The person must be qualified for, and competent in, setting out and activating the portable lighting at the runway.
- (4) The pilot in command of the aeroplane must not continue the flight to the isolated destination aerodrome, past the critical point, unless:
 - (a) a reasonable certainty exists that the portable lighting and associated arrangements mentioned in subsection (2) will be in place; or

-
- (b) the aeroplane carries holding fuel sufficient to enable holding until first light plus 10 minutes, at the aerodrome.

4.17 Pilot-activated lighting

Application

- (1) This section applies if, for a flight of an aeroplane:
 - (a) runway lighting is required for an aerodrome to meet the requirements in paragraph 121.205(2)(a) of CASR for the aerodrome to be suitable for the aeroplane to land; and
 - (b) the aerodrome is not an isolated aerodrome, take-off alternate aerodrome or en-route alternate aerodrome; and
 - (c) the aerodrome is equipped with pilot-activated lighting and standby power for the runway lights.

Requirement

- (2) At least one destination alternate aerodrome must be planned for a flight of the aeroplane, planned to use the aerodrome for landing, unless an exception in subsection (3) or (4) applies for the flight.

Exceptions

- (3) It is an exception to the requirement in subsection (2) if reliable arrangements, for the purpose of enabling a safe night landing, are made for a person:
 - (a) who is qualified, and competent, to activate and ensure the correct functioning of the runway lights; and
 - (b) who will activate, and ensure the correct functioning of, the runway lighting during the period from at least 30 minutes before the expected time of arrival until the earlier of:
 - (i) the time landing and taxiing have been completed; and
 - (ii) first light plus 10 minutes.

Exception—holding fuel

- (4) It is an exception to the requirement in subsection (2) if the aeroplane carries holding fuel sufficient to enable holding until first light plus 10 minutes, at the aerodrome.

4.18 Pilot-activated lighting at isolated destination aerodromes

Application

- (1) This section applies if, for a flight of an aeroplane:
 - (a) runway lighting is required for an aerodrome to meet the requirements in paragraph 121.205(2)(a) of CASR for the aerodrome to be suitable for the aeroplane to land; and
 - (b) the aerodrome is an isolated destination aerodrome; and

-
- (c) the aerodrome is equipped with pilot-activated lighting and standby power for the runway lights.

Requirements

- (2) In planning to use the aerodrome for a flight of the aeroplane, reliable arrangements must be made, for the purpose of ensuring a safe night landing, for a person:
 - (a) who is qualified, and competent, to activate and ensure the correct functioning of the runway lighting; and
 - (b) who will activate, and ensure the correct functioning of, the runway lighting during the period from at least 30 minutes before the expected time of arrival until the earlier of:
 - (i) the time landing and taxiing have been completed; and
 - (ii) first light plus 10 minutes.
- (3) The pilot in command of the aeroplane must not continue the flight to the isolated destination aerodrome, past the critical point, unless:
 - (a) a reasonable certainty exists that the pilot-activated lighting and standby power for the runway lighting is serviceable; or
 - (b) the aeroplane carries holding fuel sufficient to enable holding until first light plus 10 minutes, at the aerodrome.

4.19 EDTO en-route alternate aerodromes

Requirements for selection as EDTO en-route alternate aerodrome

- (1) An aerodrome may be selected as an EDTO en-route alternate aerodrome for the flight of an aeroplane at a time before the flight commences, only if the following requirements are met in relation to the aerodrome:
 - (a) the aerodrome requirements in subsection (2);
 - (b) the performance and equipment requirements in subsection (3);
 - (c) the planning minima requirements in subsection (4).
- (2) For paragraph (1)(a), the aerodrome requirements are as follows:
 - (a) the aerodrome must be an adequate aerodrome;
 - (b) the aerodrome must be listed in the operator's exposition as an aerodrome that may be selected as an EDTO en-route alternate aerodrome for use in the event of a diversion during an EDTO flight;
 - (d) on and from 2 December 2025, if the EDTO flight has a maximum diversion time of 180 minutes or less:
 - (i) the aerodrome must have rescue and firefighting services to at least Manual of Standards Part 139H category 4; or
 - (ii) equivalent facilities available within 30 minutes' notice;
 - (e) if the aerodrome is in Australian territory, the aerodrome must:
 - (i) have air traffic control or air traffic services available within 30 minutes' notice; and

-
- (ii) be a controlled aerodrome, or an uncontrolled aerodrome for which radio carriage is required under regulation 91.400 of CASR;
 - (f) if the aerodrome is outside Australian territory, it must have:
 - (i) air traffic control services, with not more than 30 minutes' notice; and
 - (ii) rescue and firefighting services to at least Manual of Standards Part 139H category 4, with not more than 30 minutes' notice.

Performance and equipment requirements

- (3) For paragraph (1)(b), the performance and equipment requirements are that it must be possible for the aeroplane to reach the aerodrome, taking into account:
 - (a) the lowest safe altitude; and
 - (b) the obstacle clearance requirements in Chapter 9; and
 - (c) the oxygen requirements in Division 9 of Chapter 11.

Planning minima requirements

- (4) For paragraph (1)(c), the planning minima requirements are as follows:
 - (a) an aerodrome forecast, or ICAO landing forecast, for the aerodrome must be available at, and entirely encompass, the estimated time of use of the aerodrome by the aeroplane;
 - (b) the operator and the pilot in command must have selected an authorised instrument approach procedure that may be used on arrival at the aerodrome:
 - (i) taking account of the forecast weather conditions and the runway surface conditions at the estimated time of use; and
 - (ii) that would ensure a safe one-engine-inoperative landing can be made, in accordance with the civil aviation legislation;
 - (c) assuming the aeroplane arrives at the aerodrome with one engine inoperative, the aerodrome forecast, or ICAO landing forecast, indicate that relevant weather conditions, during any part of the estimated time of use at the aerodrome, are not forecast to exist below the cloud ceiling and visibility values determined in accordance with:
 - (i) the requirements in subsection (5); and
 - (ii) table 4.19.
- (5) The following elements of the authorised instrument approach procedure selected under paragraph (4)(b) must be increased as necessary to ensure a safe one-engine-inoperative landing can be made under the forecast weather conditions and runway surface conditions at the aerodrome:
 - (a) the DA;
 - (b) the DH;
 - (c) the MDA;
 - (d) the MDH;
 - (e) the circling altitude;
 - (f) the circling height.

- (6) For the purposes of subparagraph (4)(c)(ii), an authorised instrument approach procedure selected under paragraph (4)(b) has the cloud ceiling value and the visibility value set out in columns 2 and 3 of the item in table 4.19 that lists the instrument approach procedure in column 1.

Table 4.19—EDTO en-route alternate aerodrome planning minima

Item	Column 1 Instrument approach procedure planned to be used	Column 2 Cloud ceiling value	Column 3 Visibility value
1	An RNP APCH-LNAV/VNAV, RNP APCH-LPV or a precision approach procedure	A height of 200 ft above: (a) the published DA or DH; or (b) the value determined for those elements under subsection (5)	Visibility of 800 m above the published visibility
2	A non-precision approach procedure (other than an RNP APCH-LNAV/VNAV or RNP APCH-LPV) that does not involve the conduct of a circling manoeuvre	A height of 400 ft above: (a) the published MDA or MDH; or (b) the value determined for those elements under subsection (5)	Visibility of 1 500 m above the published visibility
3	A non-precision approach procedure (other than an RNP APCH-LNAV/VNAV or RNP APCH-LPV) that involves the conduct of a circling manoeuvre	A height of 400 ft above: (a) the published circling altitude or circling height; or (b) the value determined for those elements under subsection (5)	Visibility of 1 500 m above the published visibility

- (7) In an item of table 4.19:

published means published in the authorised aeronautical information for the purposes of the instrument approach procedure mentioned in column 1 that is planned to be used.

Alternative planning minima—low-visibility EDTO

- (8) Despite subsection (4), the alternative requirement in subsection (9) applies if:
- (a) the runway anticipated to be used at the aerodrome has a serviceable precision approach procedure for the runway that is an authorised instrument approach procedure; and
 - (b) that procedure has either a Category II or Category III minima published in the authorised aeronautical information; and
 - (c) the operator holds an approval, under regulation 91.045 of CASR for the purposes of regulation 91.315 of CASR, to conduct a low-visibility operation that is Category II or Category III; and
 - (d) the aeroplane is capable of conducting an instrument approach procedure to Category II or Category III minima with one engine inoperative; and

-
- (e) the operator holds an EDTO approval for the aeroplane that permits the operator to use cloud ceiling and visibility values lower than those specified in table 4.19.
- (9) An aerodrome forecast, or ICAO landing forecast, must indicate that relevant weather conditions, during any part of the estimated time of use at the aerodrome, are not forecast to exist below the cloud ceiling and visibility values determined in accordance with the values permitted under the EDTO approval.

Note: A GAF or a GAMET area forecast is not sufficient to meet the requirement for an *aerodrome forecast* (defined in section 4.02) or an ICAO landing forecast.

4.20 Requirements in Division 2 may be varied

A requirement imposed by a provision in this Division is subject to an approval mentioned in subsection 4.21(1).

Division 3—Operational variations of the flight preparation (Part 121 alternate aerodromes) requirements

4.21 Operational variation approvals—alternate aerodrome requirements

- (1) An operational variation to a requirement imposed by a provision of Division 2 of this Chapter applies if an operator, who meets the requirement in subsection (2), holds an approval under regulation 121.010 of CASR that specifies the operational variation.
- (2) The operator must have submitted to CASA a specific safety risk assessment:
 - (a) that demonstrates how an operational variation will maintain or improve safety; and
 - (b) that takes into account, and includes information about, at least the following matters:
 - (i) the capabilities of the operator;
 - (ii) the overall capability of the aeroplane and its systems;
 - (iii) available aerodrome technologies, capabilities and infrastructure;
 - (iv) the quality and reliability of meteorological information;
 - (v) any hazards, safety risks and specific mitigating measures, associated with a proposed variation to a requirement mentioned in Division 2 of this Chapter, that have been identified by the operator.

Chapter 5—Operational flight plans

5.01 Pre-flight content of operational flight plans

- (1) This section:
 - (a) is made for paragraph 121.175(2)(b) of CASR; and
 - (b) prescribes information that must be contained in an operational flight plan.

General information requirements

- (2) The operational flight plan must contain the following information:
 - (a) the aeroplane's registration mark;
 - (b) the flight number of the flight, if any;
 - (c) the date of the flight;
 - (d) the name or identification of the departure aerodrome and the planned destination aerodrome for the flight;
 - (e) the amount of fuel required to be carried on board the aeroplane for the flight under Chapter 7, and the actual amount of fuel carried on board the aeroplane for the flight;
 - (f) for the planned flight route for the flight:
 - (i) the route and route segments of the flight, including waypoints, distances and tracks; and
 - (ii) the published lowest safe altitude or the lowest safe altitude for the flight (whichever is applicable) for each route segment of the flight; and
 - (iii) the planned cruising speed, and flying times between waypoints, for the flight; and
 - (iv) the planned altitudes or flight levels during flight;
 - (g) if an en-route alternate aerodrome is required for extended diversion time operations conducted during the flight—the EDTO en-route alternate aerodrome;
 - (h) if the planned destination aerodrome for the flight is an isolated destination aerodrome—the critical point, required to be calculated for the flight under subsection 4.12(2).

Note 1: See the CASR Dictionary for definitions of **lowest safe altitude** and **published lowest safe altitude**.

Note 2: For an EDTO flight, paragraph 2.18(1)(e) also requires that operational flight plan lists any selected EDTO en-route alternate aerodromes.

Information about alternate aerodromes

- (3) Subject to subsection (4), if a take-off alternate aerodrome is required by subsection 4.07(1) for the flight, the operational flight plan must include the name, or other identifying information, of the take-off alternate aerodrome.
- (4) Subsection (3) does not apply if there are procedures in the aeroplane operator's exposition to ensure the pilot in command is notified of the name, or other

identifying information, of the take-off alternate aerodrome before the aeroplane takes off for the flight.

- (5) If a destination alternate aerodrome is required for the flight, the operational flight plan must include the name, or other identifying information, of the destination alternate aerodrome, and the routes or route segments required for a flight to the destination alternate aerodrome, unless:
- (a) there is a last-minute change:
 - (i) to the destination alternate aerodrome required for the flight; or
 - (ii) requiring a destination alternate aerodrome to be planned for the flight; and
 - (b) it is not reasonably practicable in the circumstances to update the flight plan to include either or both matters; and
 - (c) in the case where the information identifying the destination alternate aerodrome is not included—there are procedures in the aeroplane operator's exposition to ensure the pilot in command is notified of the name, or other identifying information, of the destination alternate aerodrome before the aeroplane takes off for the flight.

5.02 End of flight information for operational flight plans

For the purposes of subregulation 121.175(3) of CASR, the operational flight plan must contain the following information:

- (a) if waypoints in the flight plan are required, under regulation 91.630 of CASR, to be reported to Air Traffic Services—the estimated time that the aeroplane will fly over the waypoint;
- (b) the fuel calculations conducted in compliance with the fuel requirements under Chapter 7;
- (c) the aerodrome of final landing for the flight.

Chapter 6—Narrow runway width calculations

6.01 Scope of Chapter 6

This Chapter:

- (a) is made for paragraph 121.220(1)(b) of CASR; and
- (b) prescribes the manner of working out the minimum width of a runway for an aeroplane.

6.02 Minimum runway width

Definitions

- (1) In this section:

outer main gear wheel span, for an aeroplane, means the distance (measured in metres) between the outside edges of the aeroplane's main gear wheels.

reference field length, for an aeroplane, means the shortest take-off distance required for a take-off by the aeroplane at its maximum take-off weight:

- (a) on a runway that is level and dry; and
- (b) in still air; and
- (c) in ISA conditions at sea level.

Note: See the CASR Dictionary for definitions of **dry** (in relation to a runway), **maximum take-off weight**, and section 1.04 in this instrument for the definition of **take-off distance required**.

- (2) The minimum width of a runway for an aeroplane is the width, of a homogenous runway surface, shown in the cell of table 6.02(2) that is the intersection of:
- (a) the aeroplane's code letter, worked out under subsection (3); and
 - (b) the aeroplane's code number, worked out under subsection (4).

Table 6.02(2)—Minimum runway width

Code letter	A	B	C	D	E	F
Code number						
1	18 m	18 m	23 m	-	-	-
2	23 m	23 m	30 m	-	-	-
3	30 m	30 m	30 m	45 m	-	-
4	-	-	45 m	45 m	45 m	60 m

Working out the code letter

- (3) The **code letter**, for an aeroplane, is:
- (a) if the aeroplane has a wingspan and an outer main gear wheel span mentioned in the same item in table 6.02(3) (other than an aeroplane mentioned in paragraph (c))—the letter mentioned in column 3 of the item; or

- (b) if the aeroplane has a wingspan and an outer main gear wheel span mentioned in different items in table 6.02(3) (other than an aeroplane mentioned in paragraph (c))—the letter mentioned in column 3 of the item in the table with the higher number; or
- (c) if the aeroplane has a wingspan mentioned in item 1, 2, 3 or 4 of table 6.02(3) and an outer main gear wheel span that is at least 9 m but less than 14 m—D.

Table 6.02(3)—Code letters

Item	Column 1 Wingspan of aeroplane	Column 2 Outer main gear wheel span of aeroplane	Column 3 Code letter
1	less than 15 m	less than 4.5 m	A
2	at least 15 m but less than 24 m	at least 4.5 m but less than 6 m	B
3	at least 24 m but less than 36 m	at least 6 m but less than 9 m	C
4	at least 36 m but less than 52 m	at least 9 m but less than 14 m	D
5	at least 52 m but less than 65 m	at least 9 m but less than 14 m	E
6	at least 65 m but less than 80 m	at least 14 m but less than 16 m	F

Working out the code number

- (4) The **code number**, for an aeroplane with the reference field length mentioned in column 1 of an item in table 6.02(4), is the number mentioned in column 2 of the item.

Table 6.02(4)—Code numbers

Item	Column 1 Reference field length	Column 2 Code number
1	less than 800 m	1
2	at least 800 m but less than 1 200 m	2
3	at least 1 200 m but less than 1 800 m	3
4	at least 1 800 m	4

Chapter 7—Fuel requirements

Division 1—Preliminary

7.01 Scope of Chapter 7

This Chapter:

- (a) is made for subregulation 121.235(1) of CASR; and
- (b) prescribes requirements relating to fuel for aeroplanes.

7.02 Definition of *destination alternate fuel*

Destination alternate aerodrome

- (1) If a destination alternate aerodrome is required for a flight of an aeroplane, the ***destination alternate fuel*** is the amount of fuel required to:
 - (a) perform a missed approach at the destination aerodrome; and
 - (b) climb to the expected cruising altitude; and
 - (c) fly the expected routing to the destination alternate aerodrome; and
 - (d) descend to the point where the expected approach is initiated; and
 - (e) conduct the approach; and
 - (f) land at the destination alternate aerodrome.

If there are 2 destination alternate aerodromes

- (2) If 2 destination alternate aerodromes are required for a flight of the aeroplane, the ***destination alternate fuel*** is the amount of fuel required to enable the aeroplane to proceed to the destination alternate aerodrome that requires the greater amount of destination alternate fuel under subsection (1).

No destination alternate aerodrome

- (3) If the aeroplane is operated without a destination alternate aerodrome (other than because the planned destination aerodrome is an isolated destination aerodrome), the ***destination alternate fuel*** is the amount of fuel required to enable the aeroplane to fly for 15 minutes at holding speed at 1 500 ft above the destination aerodrome elevation in ISA conditions.

Planned destination aerodrome that is isolated

- (4) If the planned destination aerodrome for a flight of the aeroplane is an isolated destination aerodrome, the ***destination alternate fuel*** is the amount of fuel required to enable the aeroplane:
 - (a) for a piston-engine aeroplane—to fly for 45 minutes plus 15% of the flight time planned to be spent at cruising levels, including final reserve fuel, or 2 hours, whichever is less; and

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- (b) for a turbine-engine aeroplane—to fly for 2 hours at normal cruise consumption above the isolated destination aerodrome, including final reserve fuel.

7.03 Definition of *contingency fuel*

- (1) The ***contingency fuel*** for an aeroplane and a flight, is the amount of fuel required to compensate for unforeseen factors, which must not be less than the amount required under subsection (2) or (3).
 - (2) Subject to subsection (3), contingency fuel must include:
 - (a) either:
 - (i) 5% of the trip fuel to the planned destination aerodrome, in the case of a turbine-engine aeroplane; or
 - (ii) 10% of the trip fuel to the planned destination aerodrome, in the case of a piston-engine aeroplane; but
 - (b) not less than the amount of fuel required to fly, in ISA conditions, for 5 minutes at the holding speed at 1 500 ft above the planned destination aerodrome.
 - (3) If a point of in-flight replanning has been specified by the operator for the flight, contingency fuel must include:
 - (a) either:
 - (i) 5% of the trip fuel required for the flight from the point of in-flight replanning to the planned destination aerodrome, in the case of a turbine-engine aeroplane; or
 - (ii) 10% of the trip fuel required for the flight from the point of in-flight replanning to the planned destination aerodrome, in the case of a piston-engine aeroplane; but
 - (b) not less than the amount of fuel required to fly, in ISA conditions, for 5 minutes at the holding speed at 1 500 ft above the planned destination aerodrome.
- Note: A point of in-flight replanning for a flight is a point that is determined by the operator for the flight before its commencement: see the definition of ***point of in-flight replanning*** in section 1.04.

Division 2—Fuel requirements

7.04 General requirements

Fuel consumption data

- (1) When determining the amount of usable fuel required under this Chapter for a flight of an aeroplane, the operator and the pilot in command must each use one of the following fuel consumption data sources:
 - (a) the most recent aeroplane-specific fuel consumption data derived from a fuel consumption monitoring system used by the operator, if available; or
 - (b) the aeroplane manufacturer's data for the aeroplane.

Note: The aeroplane manufacturer's data includes electronic flight planning data. The manufacturer's data may be in the flight manual, cruise performance manuals or other publications.

Operational conditions etc.

- (2) In determining the amount of usable fuel required under this Chapter, the operator and the pilot in command must each consider the effect of the following matters:
 - (a) the operating conditions for the proposed flight, including the following:
 - (i) the actual (if known or available) or anticipated weight of the aeroplane;
 - (ii) relevant NOTAMs;
 - (iii) relevant meteorological reports and forecasts;
 - (iv) relevant Air Traffic Services procedures, restrictions and anticipated delays;
 - (v) the effects of deferred maintenance items and configuration deviations;
 - (b) the potential for deviations from the planned flight because of unforeseen factors.

7.05 Amount of fuel that must be carried for a flight

- (1) The operator and the pilot in command of an aeroplane must each ensure that, when a flight of the aeroplane commences, the aeroplane is carrying on board at least the following amounts of usable fuel:
 - (a) taxi fuel;
 - (b) trip fuel to the planned destination aerodrome;
 - (c) destination alternate fuel;
 - (d) holding fuel (if required);
 - (e) contingency fuel;
 - (f) final reserve fuel;
 - (g) additional fuel (if applicable);

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- (h) if the flight is planned as an EDTO flight—any supplementary amount of fuel required to ensure the flight can meet the requirements of subsections 7.06(1) and (2).
- (2) The operator and the pilot in command must each ensure that, at any point of in-flight replanning, the aeroplane is carrying on board at least the following amounts of usable fuel:
 - (a) trip fuel from that point to the destination aerodrome for the flight;
 - (b) destination alternate fuel;
 - (c) holding fuel (if required);
 - (d) final reserve fuel;
 - (e) contingency fuel;
 - (f) additional fuel (if applicable);
 - (g) for a flight being conducted as an EDTO flight—any supplementary amount of fuel required to ensure the flight can meet the requirements of subsections 7.06(1) and (2).
 - (3) The operator and the pilot in command must each ensure that the aeroplane is carrying on board at least the following amounts of usable fuel, required at any time to continue the flight safely:
 - (a) trip fuel from that time to the destination aerodrome for the flight;
 - (b) destination alternate fuel;
 - (c) holding fuel (if required);
 - (d) final reserve fuel;
 - (e) additional fuel (if applicable);
 - (f) for a flight being conducted as an EDTO flight—any supplementary amount of fuel required to ensure the flight can meet the requirements of subsections 7.06(1) and (2).

Note: Subsection (3) is affected by subsections (5) and (6).

- (4) If, after commencement of the flight, fuel is used for a purpose other than that originally intended during pre-flight planning, the pilot in command must reanalyse the planned use of fuel for the remainder of the flight and adjust the parameters of the flight, if that is necessary to remain in compliance with the requirements of this Division.

Diversion to planned destination alternate aerodrome

- (5) Subsection (6) applies if a flight:
 - (a) has been unable to land at the planned destination aerodrome; and
 - (b) is diverting to the planned destination alternate aerodrome.
- (6) Despite subsection (3), the operator and the pilot in command must ensure that the aeroplane is carrying at least the following amounts of usable fuel:
 - (a) trip fuel to the planned destination alternate aerodrome;
 - (b) holding fuel (if required);
 - (c) final reserve fuel.

Note: This section may be affected by section 7.09 (operational variations relating to the calculation of certain kinds of fuel).

7.06 Determining amount of fuel that must be carried for EDTO

EDTO critical fuel scenarios

- (1) The operator and the pilot in command must each ensure that, when a flight of the aeroplane for an EDTO commences, or from a point of in-flight replanning, the aeroplane is carrying at least the amount of usable fuel that is the greatest of the following, plus the fuel mentioned in subsection (2):
 - (a) sufficient fuel to fly to an EDTO en-route alternate aerodrome assuming a rapid decompression at the most critical point followed by a descent to a safe altitude, as required by:
 - (i) regulation 91.305 of CASR (about minimum heights for IFR flights); and
 - (ii) the oxygen requirements in Division 9 of Chapter 11;
 - (b) sufficient fuel to fly to an EDTO en-route alternate aerodrome assuming a rapid decompression and a simultaneous engine failure at the most critical point followed by a descent to a safe altitude, as required by:
 - (i) regulation 91.305 of CASR (about minimum heights for IFR flights); and
 - (ii) the oxygen requirements in Division 9 of Chapter 11;
 - (c) sufficient fuel to fly to an EDTO en-route alternate aerodrome assuming an engine failure at the most critical point.
- (2) For the purposes of subsection (1), the fuel is the amount of usable fuel that is sufficient for the aeroplane to:
 - (a) hold for 15 minutes at 1 500 ft above the aerodrome elevation; and
 - (b) conduct an instrument approach and land.

Effect of certain meteorological conditions

- (3) If the operator is using an authorised weather forecast or an accepted forecast, the operator and the pilot in command must each, in order to allow for errors in wind forecasting, add a 5% wind speed factor (as an increment to a headwind or as a decrement to a tailwind) on the actual or forecast wind used for calculating the fuel requirements of paragraphs (1)(a), (b) and (c).
- (4) If the operator is using a weather forecast that is not an authorised weather forecast or an accepted forecast, the operator and the pilot in command must each, in order to allow for errors in the model's wind data, ensure the aeroplane carries an additional 5% of the fuel calculated in paragraphs (1)(a), (b) and (c).
- (5) When calculating the fuel required under subsection (1), the operator and the pilot in command must each compensate for whichever is the greater of:
 - (a) the effect of airframe icing for 10% of the time during which icing is forecast, including taking into account the fuel that would be used by the use of engine and wing anti-ice during the same period; or

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- (b) the fuel that would be used by use of engine anti-ice, for the entire time during which icing is forecast.

Other factors to be compensated for

- (6) When calculating the fuel required under paragraphs (1)(a), (b) and (c), the operator and the pilot in command must each increase the fuel supply by 5% as a performance deterioration allowance, unless the operator:
 - (a) uses the most recent aeroplane-specific fuel consumption data derived from a fuel consumption monitoring system; and
 - (b) includes in fuel supply calculations fuel sufficient to compensate for any such deterioration.
- (7) If an auxiliary power unit is a required power source under the aircraft flight manual instructions, the operator and the pilot in command must each account for the fuel consumption of the auxiliary power unit during all phases of flight where it might be used.
- (8) The operator and the pilot in command must each account for any additional fuel consumption due to the minimum equipment list or the configuration deviation list.
- (9) In this section:

accepted forecast means a weather forecast made by a person or body that holds an authorisation (however described) granted by an authority of the Contracting State, to provide weather forecasts for aviation purposes.

performance deterioration allowance means the difference in fuel consumption determined using the fuel consumption data source mentioned in paragraph 7.04(1)(b) (the aeroplane manufacturer's data) and that mentioned in paragraph 7.04(1)(a) (the aeroplane-specific fuel consumption data).

7.07 Requirements for determining fuel before, and monitoring fuel during, flight

- (1) The operator and the pilot in command of an aeroplane for a flight must each ensure that:
 - (a) the amount of usable fuel on board the aeroplane is determined before the flight commences (the ***relevant fuel***); and
 - (b) for an aeroplane that has a maximum take-off weight greater than 5 700 kg—the relevant fuel is recorded; and
 - (c) regular in-flight fuel amount checks are conducted.

Note: Procedures to ensure that a flight of the aeroplane is conducted in accordance with the fuel requirements in this Chapter, including procedures for how regular in-flight fuel amount checks will be conducted for a flight, must be included in the operator's exposition: see regulation 121.225 and paragraphs 119.205(1)(h) and (o) of CASR.

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- (2) The pilot in command must do the following at each in-flight fuel amount check:
 - (a) determine the amount of usable fuel remaining;
 - (b) compare planned fuel consumption with actual fuel consumption;
 - (c) determine whether the remaining usable fuel is sufficient to satisfy:
 - (i) if a point of in-flight replanning has been specified by the operator for the flight and the flight has not proceeded past the point—the requirements of subsection 7.05(2); and
 - (ii) otherwise—the requirements of subsection 7.05(3);
 - (d) determine the amount of usable fuel expected to be remaining when the aeroplane lands at the destination aerodrome for the flight.

7.08 Procedures if fuel reaches specified amounts

- (1) If the pilot in command of an aeroplane for a flight becomes aware that the amount of usable fuel in the aeroplane on landing at the destination aerodrome would be less than the fuel required under subsection 7.05(3), the pilot in command must:
 - (a) take into account the likely air traffic and operational conditions on arrival at:
 - (i) the destination aerodrome; and
 - (ii) if a destination alternate aerodrome is required for the flight—the destination alternate aerodrome; and
 - (iii) any en-route alternate aerodrome; and
 - (b) proceed to an aerodrome mentioned in paragraph (a) that enables the pilot in command to continue to meet the requirements in section 7.05.
- (2) The pilot in command must request from Air Traffic Services the duration of any likely delay in landing if unforeseen factors could result in the aeroplane landing at the destination aerodrome with less than the following amounts of fuel remaining:
 - (a) the final reserve fuel;
 - (b) the destination alternate fuel required by subsection 7.02(1), (2) or (3).
- (3) The pilot in command must declare to Air Traffic Services a “minimum fuel” state if:
 - (a) the pilot in command is committed to land the aeroplane at an aerodrome in accordance with this section; and
 - (b) it is calculated that if there is any change to the existing air traffic control clearance issued to the aeroplane in relation to that aerodrome, the aeroplane will land with less than the final reserve fuel remaining.

Note 1: The declaration of “minimum fuel” informs Air Traffic Services that all planned aerodrome options have been reduced to a specific aerodrome of intended landing, and any change to the existing clearance may result in landing with less than final reserve fuel. This is not an emergency situation, but an indication that an emergency situation is possible should any additional delay occur.

Note 2: A pilot in command should not expect any form of priority handling because of a “minimum fuel” declaration. Air Traffic Services will, however, advise the flight crew of any additional expected delays, and coordinate when transferring control of the aeroplane to ensure other air traffic control units are aware of the aeroplane’s fuel state.

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- (4) If the pilot in command of an aeroplane for a flight becomes aware that the amount of usable fuel remaining on landing at the nearest aerodrome where a safe landing can be made would be less than the final reserve fuel, then the pilot in command must declare a situation of “emergency fuel” by broadcasting “MAYDAY, MAYDAY, MAYDAY FUEL”.

Note: The emergency fuel declaration is a distress message.

7.09 Operational variations—fuel calculations

- (1) Despite sections 7.04 and 7.05, an operator may use an operational variation, specified in the operator’s exposition for the purpose of this section, that relates to the calculation of any of the following, if the requirements in subsections (3) and (5) are met:
- (a) taxi fuel;
 - (b) trip fuel;
 - (c) contingency fuel;
 - (d) destination alternate fuel;
 - (e) additional fuel.
- (2) To avoid doubt, an operational variation mentioned in subsection (1) cannot relate to the calculation of holding fuel or final reserve fuel.
- (3) The operator must have submitted to CASA, at least 28 days before using an operational variation:
- (a) evidence of at least one of the following, that demonstrates how the operational variation will maintain or improve aviation safety:
 - (i) documented in-service experience;
 - (ii) the results of a specific safety risk assessment conducted by the operator that meets the requirements of subsection (4); and
 - (b) a copy of the operator’s procedures, proposed for inclusion in the operator’s exposition, in relation to using the operational variation.

Note: Under regulation 119.105 of CASR, CASA may direct the operator to remove or revise the operational variation, if CASA were to find there was insufficient evidence that it would maintain or improve aviation safety.

- (4) For the purposes of subparagraph (3)(a)(ii), the specific safety risk assessment must include at least the following:
- (a) flight fuel calculations;
 - (b) the capabilities of the operator, including:
 - (i) a data-driven method that includes a fuel consumption monitoring program; and
 - (ii) the use of sophisticated techniques for determining the suitability of alternate aerodromes; and
 - (iii) specific risk mitigating measures.
- (5) For the purposes of subsection (1), the operator’s exposition must include procedures in relation to the use of the operational variation.

Chapter 8—Safety briefings and instructions

Division 1—Safety briefing cards

8.01 Safety briefing cards

- (1A) This section:
- (a) is made for paragraph 121.280(3)(a) of CASR; and
 - (b) prescribes information that must be included in the safety briefing card for an aeroplane and a flight.
- (1) A safety briefing card for an aeroplane and a flight must include the following information:
- (a) how to use and adjust seatbelts (other than extension belts);
 - (b) if the aeroplane's seats (or berths) are adjustable—when to adjust the back of the seat (or berth) to an upright position or other position permitted by the aircraft flight manual instructions for the aeroplane;
 - (c) if the aeroplane's seats have attachments (for example, tray tables or footrests)—when the attachment must be in its stowed position;
 - (d) if the aeroplane has an attachment, permanently fixed on an interior cabin structure, that is intended to be manipulated or used by passengers during flight (for example, a tray table or bassinet)—when the attachment must be in its stowed position;
 - (e) where to stow, or otherwise secure, carry-on baggage and personal effects, and the periods during flight when these items must be stowed or secured;
 - (f) where the emergency exits are located, and how to use them;
 - (g) if the aeroplane is equipped with an escape path lighting system—the form, function, colour and location of the system;
 - (h) how to assume the brace position, including the position for passengers with infants;
 - (i) the information mentioned in subsection (2) in relation to equipment mentioned in the provision that is required to be carried on the aeroplane for the flight under Chapter 11;
 - (j) that smoking is not permitted during the flight.
- (2) For the purposes of paragraph (1)(i), the information is:
- (a) if passenger operated equipment to dispense oxygen is required to be carried under Division 9 of Chapter 11—the location of the equipment and how to use it; and
 - (b) if life jackets are required to be carried on the aeroplane under section 11.59:
 - (i) where life jackets (other than infant life jackets) are located; and
 - (ii) how to use life jackets (including infant life jackets); and
 - (c) if life rafts are required to be carried on the aeroplane under section 11.62—where they are located and how to use them during the initial evacuation of the aeroplane.

Division 2—Requirements for safety briefing, instructions and demonstrations

8.02 Scope of Division 2, Chapter 8

This Division:

- (a) is made for subregulation 121.285(1) of CASR; and
- (b) prescribes requirements for safety briefings, instructions or demonstrations given to a passenger for a flight of an aeroplane.

8.03 Safety briefing, instructions and demonstrations before take-off

- (1) A safety briefing, instruction or demonstration mentioned in this section must be given to a passenger before the aeroplane takes off for a flight.
- (2) The safety briefing, instruction or demonstration must be given in a form that facilitates the application of the procedures applicable in the event of an emergency.
- (3) A specific safety briefing must be provided directly to any passenger with reduced mobility on the flight, and any person accompanying or assisting the passenger (the *accompanying person*), and the safety briefing must:
 - (a) include what to do if an emergency evacuation of the aeroplane is necessary; and
 - (b) be given in a form appropriate to the passenger and an accompanying person.
- (4) A specific safety briefing must be provided directly to any passenger responsible for an infant on the flight that outlines:
 - (a) when and how the infant must be restrained; and
 - (b) the location of infant life jackets (if required to be carried under section 11.59).
- (5) Subject to subsection (6), a specific safety briefing must be provided directly to any passenger on the flight who is seated in an emergency exit row, that outlines what to do if it becomes necessary to use the exit.
- (6) Subsection (5) does not apply if:
 - (a) a cabin crew member who has been assigned to the flight is seated in a cabin crew seat adjacent to the exit; and
 - (b) the cabin crew member has been assigned emergency evacuation responsibilities for the exit in accordance with the operator's exposition.
- (7) If life jackets are required to be carried on the aeroplane under section 11.59, there must be a demonstration of the method of donning and inflating a life jacket.
- (8) A safety briefing that addresses the following matters must be given:
 - (a) when seatbelts must be worn during the flight, and how to use them;

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- (b) if the aeroplane's seats (or berths) are adjustable—when to adjust the back of the seat (or berth) to an upright position or other position permitted by the aircraft flight manual instructions for the aeroplane;
 - (c) if the aeroplane's seats have attachments (for example, tray tables or footrests)—when the attachment must be in its stowed position;
 - (d) if the aeroplane has an attachment, permanently fixed on an interior cabin structure, that is intended to be used or manipulated by passengers during flight (for example, a tray table or bassinet)—when the attachment must be in its stowed position;
 - (e) where to stow, or otherwise secure, carry-on baggage and personal effects, and the periods during flight when these items must be stowed or secured;
 - (f) where the emergency exits are located;
 - (g) if the aeroplane is equipped with an escape-path lighting system—where it is;
 - (h) if equipment to dispense supplemental oxygen is required to be carried on the aeroplane for the flight under Division 9 of Chapter 11—the location of the equipment and how to use it;
 - (i) if life jackets are required to be carried on the aeroplane for the flight under section 11.59:
 - (i) where they are located and how to use them; and
 - (ii) the giving of a warning that life jackets must not be inflated inside the aeroplane;
 - (j) if life rafts are required to be carried on the aeroplane for the flight under section 11.62—where they are located;
 - (k) that smoking is prohibited on board the aeroplane under legislation;
 - (l) that carry-on baggage must be left behind in the event of an emergency evacuation;
 - (m) the requirement to comply with any safety directions and instructions given by a crew member;
 - (n) in relation to the safety briefing card required to be available to each passenger under regulation 121.280 of CASR:
 - (i) where to find it; and
 - (ii) if the safety briefing card sets out different seating configurations for the aeroplane—which configuration is in use for the flight;
 - (o) if special survival equipment relevant to a specific environment is intended to be used by a passenger without instructions at the time of use—the location of the equipment and how to use it.

Note 1: Smoking on the aeroplane during a Part 121 operation is prohibited under section 37 of the *Air Navigation Regulations 2016*.

Note 2: Certain directions to passengers, in relation to seats, are required to be given under regulation 91.570 of CASR.

8.04 Safety instructions during flight

- (1) The safety instructions to a passenger, mentioned in this section, must be given at a time, before the landing of the aeroplane, at which the passenger could be reasonably expected to remember the instruction before the flight ends.

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- (2) A safety instruction that addresses the following must be given:
- (a) that seatbelts and restraint systems must be securely fastened for landing;
 - (b) that seat backs must be in the upright position or, for a person who is ill or incapacitated, another position approved by the pilot in command;
 - (c) that any attachments to a seat (or berth), including a tray table or footrest, must be stowed;
 - (d) that any attachment on an interior cabin structure that is intended to be used or manipulated by passengers, for example, a tray table or bassinet, must be stowed.

Note 1: Regulation 121.255 of CASR requires an operator to have procedures for giving instructions to passengers about securely stowing carry-on baggage, including before the landing of the aeroplane.

Note 2: Regulation 121.350 of CASR requires an operator to have procedures in their exposition about the operation of portable electronic devices. Regulation 91.170 of CASR makes provision in relation to the operation of such devices during flight.

Chapter 9—Performance

Division 1—Take-off performance requirements: jet-driven aeroplanes and certain propeller-driven aeroplanes

9.01 Scope of Division 1, Chapter 9

This Division:

- (a) is made for subregulation 121.395(1) of CASR; and
- (b) prescribes requirements relating to take-off performance for a flight of an aeroplane mentioned in section 9.01A.

Note 1: Regulation 121.390 of CASR requires a calculation that relates to an aeroplane's performance to be made using performance data set out in the aircraft flight manual instructions for the aeroplane or approved by CASA. See the CASR Dictionary for the definition of *aircraft flight manual instructions*.

Note 2: Regulation 91.055 of CASR makes it an offence if an aircraft is operated in a manner that creates a hazard to another aircraft, a person or property.

9.01A Application of this Division

This Division applies to an aeroplane that:

- (a) is a jet-driven aeroplane; or
- (b) is a propeller-driven aeroplane with a maximum take-off weight of more than 5 700 kg.

9.02 Maximum permitted take-off weight

An aeroplane operator and the pilot in command of an aeroplane for a flight must each ensure that, at take-off, the weight of the aeroplane does not exceed each of the following:

- (a) a weight that would enable the aeroplane to meet the requirements mentioned in sections 9.03, 9.04, 9.05, 9.06, 9.07 and 9.08;
- (b) a weight that, taking account of the expected consumption of fuel and oil for the flight, will ensure a landing weight that does not exceed the maximum landing weight;
- (c) a weight that will ensure a landing weight that complies with Division 2 of this Chapter.

Note: The weight at take-off for an aeroplane is also limited by the *maximum take-off weight* for the aeroplane, which, for a type-certificated aeroplane, means the maximum take-off weight for the aeroplane permitted by its flight manual. It is an offence under regulations 91.055 and 121.095 of CASR if an aeroplane is not operated in accordance with the aeroplane's flight manual.

9.03 Take-off distance requirements

- (1) For the purposes of paragraph 9.02(a), it is a requirement that, assuming that the critical engine fails at V_{EF} and using a single V_1 :
 - (a) the accelerate stop distance required for a take-off from a runway does not exceed the accelerate stop distance available for the runway; and
 - (b) the take-off distance required for a take-off from the runway does not exceed the take-off distance available for the runway; and
 - (c) any clearway forming part of the take-off distance available does not exceed half the length of the take-off run available; and
 - (d) in the case of a wet or contaminated runway, the take-off distance is calculated to the point at which the aeroplane reaches a height of 15 ft above the take-off surface using a reduced V_1 not below V_1 (wet); and
 - (e) the take-off run required does not exceed the take-off run available using V_1 for the rejected and continued take-off; and
 - (f) on a wet or contaminated runway, the weight at which the aeroplane can take-off from the runway does not exceed that permitted for a take-off on a dry runway.
- (2) For the purposes of paragraphs (1)(a) to (f), the operator and the pilot in command must take into account:
 - (a) the take-off configuration of the aeroplane;
 - (b) the pressure altitude and presumed temperature at the aerodrome;
 - (c) the type of runway surface and the runway surface condition;
 - (d) the runway slope in the direction of take-off;
 - (e) unless otherwise accounted for in the performance data stated in the aircraft flight manual instructions for the aeroplane, not more than 50% of the headwind component or not less than 150% of the tailwind component for the runway planned to be used;
 - (f) the loss of any runway length due to the aligning of the aeroplane for take-off;
 - (g) any credit for the stopway, and the clearway, at the aerodrome as follows:
 - (i) stopway that is appropriate for the aeroplane type that can be included in the accelerate stop distance available;
 - (ii) clearway that is appropriate for the aeroplane type that can be included within take-off distance available.

Note 1: See section 1.04 for definitions of *accelerate stop distance available*, *clearway*, *presumed temperature*, *take-off distance available*, *take-off distance required* and *take-off run available*.

Note 2: See the CASR Dictionary for definitions of *dry* and *wet* in relation to a runway.

9.04 Net take-off flight path requirements

Obstacle clearance

- (1) For the purposes of paragraph 9.02(a), it is a requirement that, assuming a failure of an aeroplane engine that is recognised at V_1 appropriate to a dry runway at the

aerodrome, the aeroplane vertically clears all obstacles within the net take-off flight path by at least:

- (a) 35 ft, if the aeroplane for the take-off will use a bank angle not exceeding 15°; or
 - (b) 15 ft, if the aeroplane:
 - (i) is intending to use a bank angle not exceeding 15° for the take-off; and
 - (ii) the take-off will be conducted in compliance with paragraph 9.03(1)(d); or
 - (c) 50 ft, if the aeroplane for the take-off will use a bank angle exceeding 15°; or
 - (d) 30 ft, if the aeroplane:
 - (i) is intending to use a bank angle exceeding 15° for the take-off; and
 - (ii) the take-off will be conducted in compliance with paragraph 9.03(1)(d).
- (2) For the purposes of subsection (1), an obstacle is deemed to be within the net take-off flight path if the lateral distance from the obstacle to the aeroplane's intended flight path is within a distance calculated in accordance with subsection (2A) or (5).
- (2A) For the purposes of subsection (2), the distance is that which does not exceed the following, subject to the limitations mentioned in subsection (3) or (4) (whichever is applicable):
- (a) 90 m plus $(0.125 \times D)$;
 - (b) if the aeroplane has a wingspan less than 60 m—the distance worked out using the formula:

$$(\text{half the wingspan of the aeroplane}) + 60 \text{ m} + (0.125 \times D).$$

(2B) In subsection (2A):

D means the horizontal distance the aeroplane will travel from:

- (a) the end of the take-off distance available at the aerodrome; or
- (b) if a turn is scheduled before the end of the take-off distance available—the end of the take-off distance required for the take-off.

Maximum distance limitations

- (3) If the intended flight path does not require a track change exceeding 15°, the distance mentioned in paragraph (2A)(a) or (b) is limited to:
 - (a) a maximum of 600 m; or
 - (b) if the portion of the flight from the departure end of the runway to the lowest safe altitude for the route can be conducted with a navigation specification of RNP 0.2 or better—a maximum of 300 m.
- (4) If the intended flight path requires a track change exceeding 15°—the distance mentioned in paragraph (2A)(a) or (b) is limited to:
 - (a) a maximum of 900 m; or

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- (b) if the portion of the flight from the departure end of the runway to the lowest safe altitude for the route can be conducted with a navigation specification of RNP 0.2 or better—a maximum of 600 m.
- (5) Until the end of 1 December 2025, for the purposes of subsection (2), the distance is that which does not exceed a distance calculated in accordance with subsection 12A of Civil Aviation Order 20.7.1B, as in force immediately before 2 December 2021.

Calculating net take-off flight path

- (6) For the purposes of subsection (1), in calculating the net take-off flight path for the flight, the operator and the pilot in command must:
- (a) take into account the following factors:
 - (i) the weight of the aeroplane at the commencement of the take-off run;
 - (ii) pressure altitude at the aerodrome;
 - (iii) presumed temperature at the aerodrome;
 - (iv) either not more than 50% of the headwind component or not less than 150% of the tailwind component; and
 - (b) ensure the requirements in subsection (7) are complied with.
- (7) For paragraph (6)(b), the requirements are:
- (a) a track change must not be made before the aeroplane's net take-off flight path has achieved a height equal to the greater of the following:
 - (i) 50 ft above the take-off surface;
 - (ii) one half of the aeroplane's wingspan; and
 - (b) the bank angle may only exceed 15° if the performance data used in accordance with regulation 121.390 of CASR provides for a higher angle of bank; and
 - (c) the bank angle must not exceed 25°; and
 - (d) it must be assumed that the point on the net take-off flight path where a level flight segment commences is the same horizontal distance from the end of the runway as the point where the gross take-off flight path intersects the height selected for the level flight acceleration manoeuvre; and
 - (e) the gross gradient of climb achieved under subsection 9.05(3) and section 9.07 is reduced by:
 - (i) if the aeroplane is twin-engines—0.8%; or
 - (ii) if the aeroplane has 3 engines—0.9%; or
 - (iii) if the aeroplane has 4 engines—1.0%; and
 - (f) allowance must be 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) distance increments resulting from the acceleration reduction equivalent to the climb gradient reductions mentioned in paragraph (f); and
 - (iv) retention of stall margin and loss of climb gradient.

Note 1: Paragraph (7)(d) requires the height selected by the operator for the level flight acceleration manoeuvre to be more than 35 ft higher than the highest obstacles within the new take-off flight path.

Note 2: The net take-off flight path and the gross take-off flight path may be considered identical when the aeroplane is in the take-off configuration described in subsection 9.05(2).

(8) In this section:

Civil Aviation Order 20.7.1B means *Civil Aviation Order 20.7.1B – Aeroplane weight and performance limitations – specified aeroplanes above 5 700 kg, or 2 722 kg if driven by 2 or more jet engines – all operations.*

9.05 Gross gradient requirements—take-off configuration

- (1) Subsections (2) and (3) set out, for the purposes of paragraph 9.02(a), the requirements relating to gross gradients in the take-off configuration.
- (2) In the take-off configuration assuming failure of the critical engine recognised at V_1 , the aeroplane must be able to climb, without ground effect and without landing gear retraction, at the speed established as the speed at which the aeroplane becomes airborne, and, in doing so, achieve a gross gradient of climb of at least:
 - (a) if the aeroplane has 2 engines—positive; or
 - (b) if the aeroplane has 3 engines—0.3%; or
 - (c) if the aeroplane has 4 engines—0.5%.
- (3) In the take-off configuration that exists with the critical engine inoperative and the landing gear fully retracted, the aeroplane at speed V_2 is able to achieve a gross gradient of climb of at least:
 - (a) if the aeroplane is a commuter type aeroplane—2%; or
 - (b) otherwise:
 - (i) if the aeroplane has 2 engines—2.4%; or
 - (ii) if the aeroplane has 3 engines—2.7%; or
 - (iii) if the aeroplane has 4 engines—3.0%.

9.06 Level flight acceleration manoeuvre requirements

- (1) Subsections (2) and (3) set out, for the purposes of paragraph 9.02(a), the requirements relating to level flight acceleration manoeuvres.
- (2) The aeroplane may be accelerated in level flight from V_2 speed to final take-off climb speed at a height above the take-off surface that is the greater of:
 - (a) 400 ft; and
 - (b) the height necessary to achieve obstacle clearance in accordance with subsection 9.04(1).
- (3) During the level flight acceleration manoeuvre, the aeroplane, with the critical engine inoperative, must have an available gross gradient of climb of at least:
 - (a) if the aeroplane has 2 engines—1.2%; and

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- (b) if the aeroplane has 3 engines—1.4%; and
 - (c) if the aeroplane has 4 engines—1.5%.

9.07 Gross gradient requirements—en route configuration

- (1) This section sets out, for the purposes of paragraph 9.02(a), the requirements relating to gross gradients in the en route configuration.
- (2) In the en route configuration existing at the end of the level flight acceleration manoeuvre, the aeroplane must be able to achieve a gross gradient of climb of at least:
 - (a) if the aeroplane has 2 engines—1.2%; and
 - (b) if the aeroplane has 3 engines—1.4%; and
 - (c) if the aeroplane has 4 engines—1.5%.
- (3) For the purposes of subsection (2), the gradient of climb must be achievable at final take-off climb speed with the critical engine inoperative and the remaining engines at maximum continuous power or thrust.

9.08 En route requirements

General requirements

- (1) It is a requirement, for the purposes of paragraph 9.02(a), that the aeroplane:
 - (a) following the critical engine failing at the most critical point along the route; and
 - (b) in accordance with the one-engine-inoperative net flight path data contained within the performance data, used in accordance with regulation 121.390 of CASR;is able to comply with the requirements in subsection (2).
- (2) For subsection (1), the requirements are that, subject to subsection (4), the net flight path:
 - (a) during flight from the cruising altitude to an aerodrome where a landing can be made in accordance with Division 2 of this Chapter, must:
 - (i) have a positive slope at 1 000 ft above all terrain and obstructions within 5 NM of the intended track to be flown; or
 - (ii) clear all terrain and obstructions by at least 2 000 ft vertically, within 5 NM of the intended track to be flown; and
 - (b) must have a positive slope at 1 500 ft above the aerodrome where the landing is assumed to be made after the engine failure.
- (3) For the purposes of subsection (2), the operator and the pilot in command must take into account:
 - (a) the effects of forecast wind on the flight path; and
 - (b) the effect of the icing protection systems if the meteorological conditions require their operation; and
 - (c) fuel jettisoning to an extent consistent with reaching the aerodrome with the required fuel reserves.

Note: Chapter 4 contains requirements relating to the selection of en-route alternate aerodromes.

- (4) Despite subsection (2), the route width margins mentioned in subparagraph (2)(a)(i) or (ii) must be increased to 10 NM if the aeroplane cannot maintain a track using a navigation specification of RNP 2 or better.

En-route 90-minute limitation for 3- or 4-engine aeroplanes

- (5) Also, for the purposes of paragraph 9.02(a), if the aeroplane is a 3- or 4-engine aeroplane, it is a requirement that the route to be flown by the aeroplane is not more than 90 minutes away from an aerodrome where a landing can be made in accordance with Division 2 of this Chapter.
- (6) The aeroplane may be operated more than 90 minutes away from such an aerodrome if:
- (a) it is assumed that 2 engines fail simultaneously at the most critical point of that portion of the route where the aeroplane is more than 90 minutes (at normal cruising speed) away from an aerodrome where a landing can be made in accordance with Division 2 of this Chapter; and
 - (b) the 2-engine inoperative en route flight path data permits the aeroplane to continue the flight, in the expected meteorological conditions, from the point where the 2 engines are assumed to have failed, to an aerodrome at which it is possible to land with 2 engines inoperative; and
 - (c) the net flight path, taking into account the effect of icing protection systems if the meteorological conditions require their operation, clears all terrain and obstructions by at least 2 000 ft within (subject to subsection (7)) 5 NM of the intended track to be flown; and
 - (d) the net flight path has a positive slope at an altitude of 1 500 ft above the aerodrome where the landing is assumed to be made after the failure of 2 engines; and
 - (e) the expected weight of the aeroplane at the point where the 2 engines are assumed to fail must be not less than that which would include sufficient fuel to proceed to an aerodrome where the landing is assumed to be made, and to arrive there at an altitude of at least 1 500 ft directly over the aerodrome and thereafter to fly level for at least 15 minutes.
- (7) Despite paragraph (6)(c), the route width margins must be increased to 10 NM if the aeroplane cannot maintain a track using a navigation specification of RNP 2 or better.

Division 1A—Take-off performance requirements: propeller-driven aeroplanes with maximum take-off weight not more than 5 700 kg

9.08A Scope of Division 1A, Chapter 9

This Division:

- (a) is made for subregulation 121.395(1) of CASR; and
- (b) prescribes requirements relating to take-off performance for a flight of an aeroplane mentioned in section 9.08B.

Note 1: Regulation 121.390 of CASR requires a calculation that relates to an aeroplane's performance to be made using performance data set out in the aircraft flight manual instructions for the aeroplane or approved by CASA. See the CASR Dictionary for the definition of *aircraft flight manual instructions*.

Note 2: Regulation 91.055 of CASR makes it an offence if an aircraft is operated in a manner that creates a hazard to another aircraft, a person or property.

9.08B Application of this Division

This Division applies to an aeroplane that:

- (a) is a propeller-driven aeroplane; and
- (b) has a maximum take-off weight of not more than 5 700 kg.

9.08C Definitions for this Division

In this Division:

approved take-off factor, for an aeroplane, means the take-off factor for which the aeroplane operator holds an approval under regulation 121.010 of CASR.

factored take-off run: see section 9.08D.

standard take-off factor means:

- (a) for an aeroplane with a maximum take-off weight of not more than 2 000 kg—1.15; and
- (b) for an aeroplane with an maximum take-off weight of more than 2 000 kg, but less than 3 500 kg—a factor derived by linear interpolation between 1.15 and 1.25, according to the aeroplane's maximum take-off weight; and
- (c) for an aeroplane with a maximum take-off weight of 3 500 kg or more—1.25.

9.08D Meaning of *factored take-off run*

The ***factored take-off run***, for an aeroplane that is of the kind mentioned in column 1 of an item in table 9.08D, is the take-off run required, for the aeroplane, multiplied by the factor mentioned in column 2 of the item.

Table 9.08D—Factored take-off run

Item	Column 1 Aeroplane	Column 2 Factor
1	An aeroplane for which: (a) there is a flight manual; and (b) there is no approved take-off factor	The standard take-off factor for the aeroplane
2	An aeroplane for which there is an approved take-off factor	The approved take-off factor for the aeroplane

Note: The term *take-off run required* is defined in subsection 1.04(1).

9.08E Approval of take-off factor for aeroplanes

CASA may, under regulation 121.010 of CASR, approve a take-off factor for an aeroplane, for operations at a particular aerodrome, which is less than the standard take-off factor for the aeroplane, only if the proposed take-off factor has been risk-assessed by the aeroplane's operator for operations at the aerodrome.

9.08F Maximum permitted take-off weight

The operator, and pilot in command, must each ensure that, at take-off, the aeroplane's weight does not exceed each of the following:

- (a) a weight that would enable the aeroplane to meet the requirements stated in sections 9.08G to 9.08K;
- (b) a weight that, taking account of the expected consumption of fuel and oil for the flight, will ensure a landing weight that does not exceed the maximum landing weight;
- (c) a weight that will ensure a landing weight that, taking account of the expected consumption of fuel and oil for the flight, complies with Division 2.

Note: The weight at take-off for an aeroplane is also limited by the *maximum take-off weight* for the aeroplane, which in the Dictionary, for a type certificated aeroplane, is defined to mean the maximum take-off weight for the aeroplane permitted by its flight manual. It is an offence under regulation 91.095, or 121.055, of CASR if an aeroplane is not operated in accordance with the aeroplane's aircraft flight manual instructions.

9.08G Take-off requirements

- (1) The operator, and pilot in command, must each ensure:
 - (a) the factored take-off run, for a take-off of the aeroplane from a runway at an aerodrome, does not exceed the take-off run available for the runway; and
 - (b) the take-off distance required for a take-off of the aeroplane from the runway does not exceed the take-off distance available for the runway; and
 - (c) any clearway forming part of the take-off distance available for the runway does not exceed half the length of the take-off run available for the runway.

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- (2) For the purposes of subsection (1), the following matters must be taken into account:
- (a) the take-off configuration of the aeroplane;
 - (b) the pressure altitude, and presumed temperature, at the aerodrome;
 - (c) the type of runway surface, and runway surface condition;
 - (d) the runway slope in the direction of take-off;
 - (e) unless otherwise accounted for in the performance data set out in the aeroplane's aircraft flight manual instructions, not more than 50% of the headwind component, or not less than 150% of the tailwind component, for the runway.

- (3) In this section:

take-off distance required, for the aeroplane, means the take-off distance to 50 ft AGL, for the aeroplane, calculated in accordance with the relevant requirements stated in the aeroplane's flight manual.

take-off run available, for a runway at an aerodrome, means the length of the runway available and suitable for the ground run of the aeroplane taking off at the aerodrome.

9.08H Initial climb performance and obstacle clearance

- (1) The operator, and pilot in command, must each ensure that until the aeroplane reaches the minimum height (the ***relevant height***) for the flight in accordance with regulation 91.265, 91.267 or 91.305, of CASR, as applicable:
- (a) for all flights—the aeroplane has the performance to clear all obstacles by a safe margin, as determined by the operator's exposition; and
 - (b) for flights not conducted in VMC by day—the aeroplane has the performance to reach, and maintain, the relevant height.
- (2) For the purposes of subsection (1), the following matters must be taken into account:
- (a) the take-off configuration of the aeroplane;
 - (b) the pressure altitude, and presumed temperature, at the aerodrome;
 - (c) the obstacles, if any, in the vicinity of the take-off path and en route;
 - (d) the forecast weather en route.

9.08J Take-off requirements—additional requirements for aeroplanes with maximum take-off weight more than 3 500 kg

- (1) This section applies if an aeroplane has a maximum take-off weight of more than 3 500 kg.
- (2) The operator, and the pilot in command, must each ensure that, at take-off, the weight of the aeroplane does not exceed a weight such that the gross gradient of climb with the critical engine inoperative is equal to, or greater than, the obstacle-free gradient specified in the authorised aeronautical information for the take-off distance available.

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- (3) Despite subsection (2), if the obstacle-free gradient specified in the authorised aeronautical information for the take-off distance available is less than 1.9%, the operator and the pilot in command must ensure the weight of the aeroplane does not exceed a weight that enables the aeroplane to achieve a gross gradient of climb of at least 1.9%.
 - (4) For the purposes of subsection (2):
 - (a) the gradient must be established for a distance of 3 000 m from the end of the take-off distance available; and
 - (b) the following matters must be taken into account:
 - (i) the pressure altitude at the aerodrome;
 - (ii) the presumed temperature at the aerodrome.

9.08K En route obstacle clearance for multi-engine aeroplane

- (1) The operator and pilot in command of an aeroplane must each ensure that the aeroplane has the performance to conduct the flight in accordance with regulation 91.265, 91.267 or 91.305, of CASR, as applicable, if:
 - (a) an engine of the aeroplane becomes inoperative, during a flight, before the aeroplane reaches the planned cruising altitude, or cruising level, for the flight; and
 - (b) each remaining engine of the aeroplane is operating within the maximum continuous power limitations stated in the aeroplane's flight manual.
- (2) Subsection (1) does not apply if the operator's exposition states procedures requiring the pilot in command to have a plan, in the circumstances mentioned in subsection (1), that enables the aeroplane to return to the departure aerodrome, or divert to a take-off alternate aerodrome, clear of all ground, water and obstacles.
- (3) The procedures mentioned in subsection (2) may include drift-down procedures, provided that the procedures enable the aeroplane to descend, and land, at an aerodrome with at least 2 000 ft vertical separation from all ground, water and obstacles within 5 nautical miles on either side, or ahead, of the aeroplane's track until established within the aerodrome's circuit area.

Division 2—Landing performance

9.09 Scope of Division 2, Chapter 9

This Division:

- (a) is made for subregulation 121.420(1) of CASR; and
- (b) prescribes requirements relating to landing performance for a flight of an aeroplane.

Note 1: Regulation 121.390 of CASR requires a calculation that relates to an aeroplane's performance to be made using performance data set out in the aircraft flight manual instructions for the aeroplane or approved by CASA. See the CASR Dictionary for the definition of *aircraft flight manual instructions*.

Note 2: Regulation 91.055 of CASR makes it an offence if an aircraft is operated in a manner that creates a hazard to another aircraft, a person or property.

9.10 Pre-flight landing requirements—dry runway

- (1) The operator and the pilot in command of an aeroplane for a flight must each ensure that, when the flight begins, if an authorised weather forecast indicates that the runway at:
 - (a) the planned destination aerodrome; and
 - (b) in the case that a destination alternate aerodrome is required for the flight—the destination alternate aerodrome;at the aeroplane's estimated time of arrival will be dry, the distance required to bring the aeroplane to a stop on the runway will meet the requirements of subsection (2).
- (2) For subsection (1), the requirements are that the distance required to bring the aeroplane to a stop on a runway at the planned destination aerodrome, and the destination alternate aerodrome (if any), for the flight, is not greater than:
 - (a) for a jet engine aeroplane—60% of the landing distance available for the runway; and
 - (b) for a turbo-propeller or piston-engine aeroplane—70% of the landing distance available for the runway.
- (3) For the purposes of subsection (2), the operator and the pilot in command must take into account the following factors:
 - (a) that the runway will be dry;
 - (b) that the aeroplane crosses the runway threshold at a height of 50 ft;
 - (c) the runway expected to be used, taking into account the wind speed and direction, instrument approach procedure to be used (if any) and terrain;
 - (d) the anticipated landing configuration for the aeroplane;
 - (e) subject to paragraph (j)—the wind direction and speed;
 - (f) the expected consumption of fuel and oil in flight to the planned destination aerodrome;

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- (g) the expected consumption of fuel and oil in flight to the destination alternate aerodrome (if any):
 - (i) assuming that the flight is routed via the planned destination aerodrome; and
 - (ii) including the conduct of a missed approach at the planned destination aerodrome;
 - (h) the aerodrome elevation;
 - (i) the runway slope, if greater than +/- 1%;
 - (j) unless otherwise accounted for in the performance data stated in the aircraft flight manual instructions for the aeroplane, not more than 50% of headwind and not less than 150% of tailwind.

9.11 Pre-flight landing requirements—wet or contaminated runway

- (1) Subject to subsection (2), the operator and the pilot in command of an aeroplane for a flight must each ensure that, when the flight begins, if an authorised weather forecast indicates that the runway at:
 - (a) the planned destination aerodrome; and
 - (b) in the case that a destination alternate aerodrome is required for the flight—the destination alternate aerodrome;at the aeroplane's estimated time of arrival, may be wet, the landing distance available at the aerodrome is at least 115% of the landing distance required under subsection 9.10(1).
- (2) A landing distance on a wet runway, that is shorter than that required under subsection (1) but not less than that required under subsection 9.10(1), may be used if the performance data used in accordance with regulation 121.390 of CASR provides landing distance information for wet runways and the landing distance is calculated in accordance with the information.
- (3) If an authorised weather forecast indicates that the runway at the planned destination aerodrome or destination alternate aerodrome (if any) at the aeroplane's estimated time of arrival may be contaminated, the operator and the pilot in command must each ensure that, when the flight begins, the landing distance available at the aerodrome is at least the greater of the following:
 - (a) the landing distance available, mentioned in subsection (1);
 - (b) 115% of the required landing distance calculated in accordance with the performance data used in accordance with regulation 121.390 of CASR, where the data is specific to operations on contaminated runways.

9.12 Certain aerodromes—planned missed approach climb requirements

- (1) The operator and the pilot in command of an aeroplane for a flight must each ensure that, when the flight begins, the aeroplane is able to comply with the requirement in subsection (2) at the aeroplane's estimated time of arrival at:
 - (a) the planned destination aerodrome; and
 - (b) if a destination alternate aerodrome is required for the flight—the destination alternate aerodrome.

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- (2) For subsection (1), the aeroplane must be able to comply with at least one of the following:
- (a) the aeroplane must be able to conduct a missed approach with a climb gradient that is the greater of:
 - (i) the published missed approach climb gradient for the authorised missed approach procedure; and
 - (ii) a missed approach climb gradient of at least 2.5%;
 - (b) the aeroplane must be able to conduct a missed approach with a climb gradient of at least the gradient required to clear any obstacles in the missed approach flight path, in accordance with section 9.04 or 9.08J;
 - (c) the aeroplane must be able to avoid obstacles by an acceptable margin using procedures specified in the operator's exposition for the specific runway, aerodrome and the aeroplane type.
- (3) For the purposes of meeting the requirement in subsection (2), the operator and the pilot in command must take into account:
- (a) the aerodrome elevation and the temperature expected for the estimated time of arrival at the planned destination aerodrome, and the destination alternate aerodrome (if any); and
 - (b) the expected consumption of fuel and oil in flight to the planned destination aerodrome; and
 - (c) the expected consumption of fuel and oil in flight to the destination alternate aerodrome (if any):
 - (i) assuming that the flight is routed via the planned destination aerodrome; and
 - (ii) including the conduct of a missed approach at the destination aerodrome; and
 - (d) the landing configuration of the aeroplane.

9.13 Landing distance—in-flight requirements

- (1) In this instrument:

actual landing distance means the landing distance required for the actual conditions at an aerodrome using the deceleration devices required to be used for the landing of an aeroplane.

Note: The ICAO *Aeroplane Performance Manual* (Doc 10064), Chapter 5 – Landing Performance, explains the requirements for aeroplane manufacturer provision of actual landing distance data.

Actual landing distance data—if used

- (2) Subsection (3) applies if, during a flight of an aeroplane:
- (a) performance data used in accordance with regulation 121.390 of CASR contains actual landing distance data; and
 - (b) that data is used when calculating the landing distance required at the aerodrome of intended landing.

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- (3) The pilot in command of the aeroplane must ensure, during the flight and before landing, that the landing distance available at the aerodrome is greater than, or equal to, 115% of the landing distance required to bring the aeroplane to a stop on the runway.

Actual landing distance data not used—general

- (4) Subsection (5) applies if, during a flight of an aeroplane, actual landing distance data is not used when calculating the landing distance required at the aerodrome of intended landing.
- (5) The pilot in command of the aeroplane must ensure, during the flight and before landing, that if a weather report or forecast, or a combination of weather reports and forecasts, indicate that the runway should, at the aeroplane's estimated time of arrival, be:
- (a) dry—then the requirements in subsections (6) and (7) must be met; or
 - (b) wet—then the requirements in subsection (8) must be met; or
 - (c) contaminated—then the requirements in subsection (10) must be met.

Actual landing distance data not used—dry runway

- (6) For paragraph (5)(a), the landing distance required to bring the aeroplane to a stop on the runway planned to be used at the aerodrome of intended landing must not be greater than:
- (a) for a jet engine aeroplane—60% of the landing distance available for the runway; and
 - (b) for a turbo-propeller or piston-engine aeroplane—70% of the landing distance available for the runway.
- (7) For the purposes of subsection (6), the following factors must be taken into account:
- (a) the landing configuration for the aeroplane;
 - (b) the anticipated landing weight for the aeroplane at the aerodrome;
 - (c) the aerodrome elevation;
 - (d) the runway slope, if greater than +/- 1%;
 - (e) unless otherwise accounted for in the performance data stated in the aircraft flight manual instructions for the aeroplane, not more than 50% of headwind and not less than 150% of tailwind.

Actual landing distance data not used—wet runway

- (8) Subject to subsection (9), the landing distance available at the aerodrome must be at least 115% of the landing distance required under subsection (6).
- (9) The landing distance available may be shorter than that required under subsection (8), but must be no less than the landing distance required under subsection (6), if:
- (a) the performance data used in accordance with regulation 121.390 of CASR provides landing distance information for wet runways; and

-
- (b) the landing distance required is calculated in accordance with the information.

Actual landing distance data not used—contaminated runway

- (10) For paragraph (5)(c), the landing distance available must be the greater of the following:
 - (a) the landing distance available, mentioned in subsection (8);
 - (b) 115% of the landing distance required, calculated in accordance with the performance data used in accordance with regulation 121.390 of CASR, if the data is specific to operations on contaminated runways.

Chapter 10—Weight and balance

10.01 Standard weights

- (1) This section prescribes standard weights for the purposes of paragraph 121.440(2)(c) of CASR.
- (2) The standard weight for each person's carry-on baggage (in total) is 7 kg.
- Note: Subsection (2) sets out the standard weight for carry-on baggage, whereas subsection (3) and table 10.01 set out the standard weight for a person (which does not include baggage).
- (3) If an aeroplane for a flight has a seating capacity mentioned in an item of column 1 of table 10.01, being:
- (a) the number of passenger seats permitted by the aeroplane's maximum operational passenger seat configuration; plus
 - (b) the dedicated crew seats;
- the standard weight for a passenger or crew member described in column 2, 3, 4, 5, 6 or 7 is the amount set out for the person in the item, measured in kilograms.

Table 10.01—Standard weights for passengers and crew

Item	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
	Maximum operational seating capacity	Adult male or a person mentioned in ss 10.01(5)	Adult female	Infant	Child	Adolescent male	Adolescent female
1	7-9	86	71	17	44	65	58
2	10-14	86	70	16	43	64	58
3	15-19	85	69	16	43	63	57
4	20-39	84	69	16	42	63	57
5	40-59	83	68	16	42	62	56
6	60-79	82.5	67.3	16	41	61.4	55.4
7	80-99	82.2	67.1	16	41	61.2	55.3
8	100-149	82	66.9	16	41	61.1	55.2
9	150-299	81.8	66.7	16	41	60.9	55
10	300-499	81.4	66.3	16	41	60.6	54.8
11	500 or more	81.2	66.1	16	41	60.5	54.7

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- (4) Despite subsection (3):
- (a) the standard weight for an infant is taken to be the weight set out in column 5 of table 10.01, if the operator chooses to substitute standard weights for infants with that of children, for the purposes of loading the aeroplane; and
 - (b) the standard weight for an adolescent female is taken to be the weight set out in column 3 of the table, if the operator chooses to substitute standard weights for adolescents with that of adults, for the purposes of loading the aeroplane; and
 - (c) the standard weight for an adolescent male is taken to be the weight set out in column 2 of the table, if the operator chooses to substitute standard weights for adolescents with that of adults, for the purposes of loading the aeroplane.
- (5) A weight set out in column 2 of table 10.01 is taken to apply to a person whose gender is indeterminate, intersex or unspecified.

- (6) In this section:

adolescent means a person who has turned 13 but has not turned 16.

adult means a person who has turned 16.

Note: An infant is defined to be a person who has not turned 2, and a child is a person who has turned 2 but has not turned 13: see the definitions of **child** and **infant** in the CASR Dictionary.

10.02 Weight and balance documents

- (1) For the purposes of subregulation 121.455(1) of CASR, weight and balance documents for a flight must include the following:
- (a) the registration mark of the aeroplane;
 - (b) the name of the pilot in command;
 - (c) the name of the person who prepared the weight and balance documents;
 - (d) the date of the flight;
 - (e) the flight identification number or estimated time of departure;
 - (f) the name or identification of the departure aerodrome and the destination aerodrome;
 - (g) the total of the aeroplane's empty weight, the weight of any removable equipment, the weight of consumables and the weight of all the crew members;
 - (h) the weights in the following subparagraphs, separately itemised:
 - (i) the total weight of passengers and carry-on baggage;
 - (ii) the total weight of cargo not otherwise included in subparagraph (i);
 - (iii) the total weight of usable fuel;
 - (i) the aeroplane's zero fuel weight, take-off weight and planned landing weight;
 - (j) the aeroplane's maximum zero fuel weight, maximum take-off weight and maximum landing weight;

-
- (k) the weight of all changes specified in the exposition as constituting a last-minute change;
 - (l) evidence that the aeroplane is not loaded in a way that contravenes the balance limits for the aeroplane, specified in the aeroplane's flight manual, unless such evidence is specified in the operator's exposition;
 - (m) certification, by the person responsible for planning the loading of the aeroplane, that the load and its distribution are in accordance with the weight and balance documents given to the pilot in command;
 - (n) if the person certifying under paragraph (m) is neither the pilot in command nor the co-pilot—certification by either the pilot in command or the co-pilot (the *relevant pilot*) that the relevant pilot accepts the aeroplane has been loaded as specified in the weight and balance documents.
- (2) Despite paragraph (1)(m) or (n), a certification mentioned in the paragraph does not need to take into account a change to the load that is specified in the operator's exposition as a last-minute change.

Chapter 11—Equipment

Division 1—General

11.01 Purpose of Chapter 11

- (1) For the purposes of subregulation 121.460(1) of CASR, this Chapter prescribes requirements relating to:

- (a) the fitment and non-fitment of equipment to an aeroplane; and
- (b) the carrying of equipment on an aeroplane; and
- (c) equipment that is fitted to, or carried on, an aeroplane.

Note: Requirements in relation to equipment may also be in relation to the inoperability of the equipment.

- (2) In this Chapter, unless the contrary intention appears in or for a particular provision:

- (a) a reference to a pilot seeing or viewing anything from a pilot's seat is taken to mean that the thing is seen or viewed from the pilot's normal sitting position in the seat; and
- (b) any mention of feet (or ft) in the context of an altitude is taken to mean feet above mean sea level (AMSL), unless otherwise stated.

11.02 Standards etc.

In this Chapter, a reference in a provision to a document that is applied, adopted or incorporated for the purposes of the provision is a reference to the document as it exists or is in force from time to time, unless the contrary intention is expressly stated by the reference being to a specifically dated version of the document.

11.03 Aeroplane operator—Chapter 11 requirements

- (1) The operator of an aeroplane must ensure that each requirement set out in this Chapter that applies in relation to the aeroplane is met.
- (2) The pilot in command of an aeroplane for a flight must ensure that each of the requirements mentioned in the following provisions is met for the aeroplane and the flight:
- (a) subsections 11.16(1) to (6);
 - (b) subsection 11.18(2);
 - (c) section 11.22;
 - (d) subsections 11.42(2) and (3);
 - (f) subsections 11.67(1) to (7);
 - (g) subsections 11.68(1) and (2).
- (3) A person other than the aeroplane operator, or, for the provisions mentioned in subsection (2), the pilot in command of an aeroplane for a flight, may also be

subject to a requirement mentioned in a provision of this Chapter, as specified in the provision setting out the requirement.

Division 2—Approvals, visibility and inoperative equipment

11.04 Approval of aeroplane equipment

- (1) Before a registered aeroplane begins a flight, any equipment that is required to be fitted to, or carried on, the aeroplane under this Chapter must be compliant with the requirements of, or approved under, Part 21 of CASR.
- (2) Subsection (1) does not apply to any of the following:
 - (a) an item of equipment used to display the time;
 - (b) an independent portable light, for example, a flashlight or torch;
 - (c) a headset;
 - (d) a portable megaphone;
 - (e) a sea anchor and other equipment for mooring;
 - (f) a first-aid kit, an emergency medical kit or a universal precaution kit;
 - (g) survival equipment, including signalling equipment.
- (3) Before a foreign-registered aeroplane begins a flight, the equipment fitted to, or carried on, the aeroplane must have been approved by the national aviation authority of the aeroplane's State of registry.
- (4) If equipment is carried on an aeroplane although not required by this Chapter to be fitted or carried, then:
 - (a) the equipment need not be compliant with the requirements of, or approved under, Part 21 of CASR; and
 - (b) for a foreign-registered aeroplane—the equipment need not have been approved by the national aviation authority of the aeroplane's State of registry; and
 - (c) no information provided by the equipment may be used by a flight crew member to comply with any requirement of this Chapter in relation to equipment that is required to be fitted or carried for communications or navigation; and
 - (d) the equipment, whether functional or otherwise, must not at any time affect the airworthiness of the aeroplane; and
 - (e) if the equipment is surveillance equipment—the equipment, whether functional or otherwise, must not at any time affect the safety of other aircraft or interfere with the proper functioning of an air traffic service.

Note: An example of surveillance equipment that could affect the safety of other aircraft is equipment that transmits a signal on a frequency used by ADS-B but does not provide the proper information. Similarly, equipment could transmit improper information to an air traffic service surveillance system.

11.05 Visibility and accessibility of equipment

- (1) This section applies in relation to equipment that is required, under this Chapter, to be fitted to, or carried on, an aeroplane for a flight.
- (2) Any equipment that is for a pilot's manual or visual use in, or from, the cockpit must be visible to, and usable by, the pilot from the pilot's seat in the aeroplane.

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- (3) Emergency equipment that is required to be fitted to, or carried on, an aeroplane for a flight under this Chapter must be easily accessible for immediate use in the event of an emergency.

11.06 Serviceability of equipment

Any equipment required by this Chapter to be fitted to, or carried on, an aeroplane for a flight must be operative unless:

- (a) another section of this Chapter provides otherwise; or
- (b) the equipment:
 - (i) is inoperative because of a defect that has been approved as a permissible unserviceability for the aeroplane for the flight; and
 - (ii) is fitted or carried in accordance with the permissible unserviceability.

Note: For paragraph (a), a minimum equipment list (a MEL) can only permit equipment that is required to be fitted to, or carried on, an aircraft by this Chapter, to be unserviceable within the limits of the requirements contained in this Chapter. For example, section 11.20 contains an allowable time period of 72 hours related to flights with inoperative altitude alerting equipment. A MEL would not be approved if it contained a maximum time period for altitude alerting equipment to be inoperative, that was greater than the time period specified by either a master minimum equipment list (MMEL) or the legislation.

MELs are approved under regulation 91.935 of CASR.

Division 3—Flight instruments

11.07 Flight instrument requirements

- (1) An aeroplane in an operation under the IFR must be fitted with equipment for measuring and displaying the following flight information:
 - (a) indicated airspeed;
 - (b) pressure altitude;
 - (c) magnetic heading;
 - (d) time;
 - (e) Mach number—but only for an aeroplane with operating limitations expressed in terms of Mach number;
 - (f) turn and slip;
 - (g) attitude;
 - (h) vertical speed;
 - (i) stabilised heading;
 - (j) outside air temperature;
 - (k) whether the supply of power to gyroscopic instruments (if any) is adequate.
- (2) An aeroplane in an operation under the IFR must be fitted with equipment, separate from, and independent of, the corresponding equipment mentioned in subsection (1), for measuring and displaying the following flight information:
 - (a) indicated airspeed;
 - (b) pressure altitude;
 - (c) Mach number—but only for an aeroplane with operating limitations expressed in terms of Mach number;
 - (d) turn and slip;
 - (e) attitude;
 - (f) vertical speed;
 - (g) stabilised heading.
- (3) Despite subsections (1) and (2), for an aeroplane in an operation under the IFR, the equipment for measuring and displaying the flight information mentioned in column 1 of an item in table 11.07 must meet the requirements mentioned in column 2 of the item.

Table 11.07—Requirements for flight instruments

Item	Column 1 Flight information	Column 2 Requirements
1	Indicated airspeed	<ol style="list-style-type: none">1. The equipment must be capable of being connected to:<ol style="list-style-type: none">(a) an alternate source of static pressure that is selectable by a pilot; or(b) a balanced pair of flush static ports.2. The equipment for indicated airspeed must include a means of preventing malfunction due to condensation or icing.
2	Pressure altitude	<ol style="list-style-type: none">1. The equipment must:<ol style="list-style-type: none">(a) have an adjustable datum scale calibrated in millibars or hPa; and(b) be calibrated in feet, except that, if a flight is conducted in a foreign country which measures flight levels or altitudes in metres, the equipment must be calibrated in metres or fitted with a conversion placard or device.2. The equipment must be capable of being connected to:<ol style="list-style-type: none">(a) an alternate source of static pressure that is selectable by a pilot; or(b) a balanced pair of flush static ports.
3	Time	<ol style="list-style-type: none">1. The equipment must display accurate time in hours, minutes, and seconds.2. The equipment must be:<ol style="list-style-type: none">(a) fitted to the aeroplane; or(b) worn by, or immediately accessible to, a pilot for the duration of the flight.
4	Turn and slip	<ol style="list-style-type: none">1. The equipment must display turn and slip information, except where a second independent source of attitude information is available, in which case only the display of slip information is required.2. The equipment must have an alternate power supply in addition to its primary power supply unless:<ol style="list-style-type: none">(a) the equipment has a source of power independent of the power operating other gyroscopic instruments; or(b) a second independent source of attitude information is available.
5	Attitude	<p>The equipment must have an alternate power supply in addition to its primary power supply:</p> <ol style="list-style-type: none">(a) unless the equipment has a source of power independent of the source of turn and slip information; or(b) a second independent source of attitude information is available.

Table 11.07—Requirements for flight instruments

Item	Column 1 Flight information	Column 2 Requirements
6	Vertical speed	The equipment must be capable of being connected to: (a) an alternate source of static pressure that is selectable by a pilot; or (b) a balanced pair of flush static ports.
7	Stabilised heading	The equipment must have an alternate power supply in addition to its primary power supply unless: (a) the equipment has a source of power independent of the power operating the source of turn and slip information; or (b) a second independent source of attitude information is available. Note: A gyro-magnetic type of remote indicating compass meets this requirement if it has a primary power supply and an alternate power supply.

Division 4—Operational equipment

11.08 Radiocommunication systems

- (1) An aeroplane for a flight, in any class of airspace, must be fitted with at least 2 independent radiocommunication systems:
 - (a) collectively capable of communication on all frequencies necessary to meet the reporting, broadcast and listening watch requirements under regulations 91.630, 91.635, 91.640 and 91.675 of CASR, from any point on the route of the flight, including in the event of any diversions; and
 - (b) each capable of receiving meteorological information at any time during the flight; and
 - (c) at least one of which must have 2-way voice communication capability; and
 - (d) at least one of which must provide for communication on the aeronautical emergency frequency 121.5 MHz.
- (2) Subsection (3) applies if the aeroplane is a 2-engine aeroplane and has an EDTO approval with a maximum diversion time that is more than 180 minutes.
- (3) At least one radiocommunication system fitted to the aeroplane must, for an EDTO flight under the approval:
 - (a) be capable of providing immediate satellite-based voice communication (SATCOM/SATVOICE); and
 - (b) provide communication capability:
 - (i) between the flight crew and air traffic services; and
 - (ii) between the flight crew and the operational control centre.

11.09 Navigation equipment

- (1) In this section:

approved GNSS means:

- (a) a GNSS system that is authorised in accordance with one of the following:
 - (i) (E)TSO-C129;
 - (ii) (E)TSO-C145;
 - (iii) (E)TSO-C146;
 - (iv) (E)TSO-C196a; or
- (b) a multi-sensor navigation system that:
 - (i) includes GNSS and inertial integration; and
 - (ii) is approved under Part 21 of CASR as providing a level of performance equivalent to a GNSS system mentioned in subparagraph (a)(ii), (iii) or (iv).

Note: For paragraph (a), GNSS equipment authorised in accordance with (E)TSO-C129 is unlikely to support ADS-B position source equipment requirements.

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- (2) Without affecting the requirements under subsections (5) and (6), an aeroplane must be fitted with at least:
- (a) two approved GNSS (not including an approved GNSS authorised under (E)TSO-C129); or
 - (b) subject to subsection (4), one approved GNSS and either:
 - (i) one ADF; or
 - (ii) one VOR.
- (3) If an approved GNSS unit is provided with the automatic barometric aiding options stated in any of the following (the **relevant options**):
- (a) (E)TSO-129a;
 - (b) (E)TSO-C145a;
 - (c) (E)TSO-C146a;
 - (d) (E)TSO-C196a;
- then the relevant options must be connected.
- (4) For paragraph (2)(b), an approved GNSS must not be one authorised in accordance with (E)TSO-C129 unless:
- (a) the aeroplane is manufactured before 6 February 2014; and
 - (b) the approved GNSS fitted to the aeroplane is installed before 6 February 2014.
- (5) The navigation equipment fitted to an aeroplane must be such that, in the event of the failure of any navigation equipment at any stage of a flight, sufficient navigation equipment remains to enable the aeroplane to navigate in accordance with:
- (a) the operational flight plan; and
 - (b) the requirements of:
 - (i) relevant air traffic services; and
 - (ii) the airspace in which the aeroplane is planned to be flown.
- (6) For any aerodrome at which it is planned or intended that an aeroplane may land in IMC, the aeroplane's equipment must be capable of providing guidance to a point from which a safe visual or instrument landing may be conducted.

Note: Section 11.03 of the Part 91 Manual of Standards prescribes, under regulation 91.255 (which is applicable generally) requirements relating to oceanic airspace. When entering oceanic airspace that requires the use of RNP 2, RNP 4 or RNP 10 navigation specification, the crew must check whether at least 2 long range navigation systems (LRNS) are operable. If less than 2 LRNSs are operable, then air traffic control must be informed of the situation.

11.10 Automatic pilot

- (1) Subject to subsection (3), an aeroplane must be fitted with an automatic pilot.
- (2) The automatic pilot must have at least the following modes:
 - (a) an altitude holding mode;
 - (b) a heading mode.

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- (3) Subsection (1) does not apply if the aeroplane is fitted with fully functioning dual controls.

11.11 Equipment to ensure clear view through the windshield

- (1) An aeroplane with a maximum take-off weight of more than 5 700 kg must be fitted with equipment to remove precipitation from the area of windshield directly in front of a pilot's seat.
- (2) An aeroplane with a maximum take-off weight of 5 700 kg or less must:
- (a) meet the requirement under subsection (1) as if it applied to the aeroplane; or
 - (b) have a windshield whose design is such that moderate rain will not impair the pilot's view for take-off, landing or normal flight.

Note: Subsection 11.07(2) of the Part 91 Manual of Standards requires RVSM operations to be conducted in accordance with the requirements of the authorised aeronautical information. For an aeroplane that does not have an automatic pilot with the altitude hold function serviceable, operations in RVSM airspace may be restricted as a result of these requirements.

11.12 Internal doors and curtains

- (1) If an aeroplane has any of the following:
- (a) an internal door;
 - (b) a curtain;
- through which a passenger in a passenger seat must pass to reach a passenger emergency exit, the door or curtain must be fitted in accordance with this section.
- (2) An internal door, or curtain, must have a means of being secured open.
- (3) There must be:
- (a) a placard placed on an internal door indicating that the door must be secured open during take-off and landing; and
 - (b) a means for a crew member to open a door that is normally accessible to, and lockable by, a passenger.
- (4) There must be a placard adjacent to a curtain indicating that the curtain must be secured open during take-off and landing.

11.13 Survival equipment—remote areas and over water

- (1) A flight of an aeroplane that will be conducted in or through a remote area (within the meaning given by section 26.63 of the Part 91 MOS) must carry survival equipment that is appropriate for sustaining life in the area in or through which the flight will be conducted.

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- (2) A flight of an aeroplane that will be conducted over water where the aeroplane is required to carry a life raft under Division 12 of this Chapter must carry the following:
- (a) survival equipment that is appropriate for sustaining life in the area in, or through which, the flight will be conducted;
 - (b) signalling equipment such that the distress signals set out in Appendix 1 to ICAO Annex 2, *Rules of the Air*, can be made if required.

11.14 Equipment to measure and record cosmic radiation

- (1) An aeroplane for a flight above FL 490 must be fitted with equipment to measure and display, in a unit that is readily visible to a flight crew member piloting the aeroplane, the total cosmic radiation received in the aeroplane's cabin.
- (2) For the purposes of subsection (1), the equipment must continuously measure and display:
 - (a) the dose rate of total cosmic radiation being received during the flight; and
 - (b) the cumulative dose of total cosmic radiation received on each flight.
- (3) In this section:

total cosmic radiation means the sum total of ionizing and neutron radiation of galactic and solar origin.

Division 5—Lighting systems

11.15 Cockpit and cabin lighting requirements

- (1) An aeroplane operating by night must be fitted with (or carry, as applicable) the following lighting equipment:
 - (a) cockpit lighting that meets the requirements mentioned in subsection (2);
 - (b) cabin lighting that enables each occupant of the aeroplane to see and use:
 - (i) the occupant's seatbelt and oxygen facilities, if any; and
 - (ii) the normal and emergency exits;
 - (c) for each flight crew member—an independent portable light accessible to the flight crew member from the flight crew member's normal seat in the aeroplane;
 - (d) for each other crew member (if any)—an independent portable light accessible to the crew member at the crew member's crew station.
- (2) Cockpit lighting equipment of an aeroplane operating by night must:
 - (a) illuminate each item of equipment that may be used by the flight crew; and
 - (b) illuminate the documents that may be used by the flight crew, including checklists and flight documents; and
 - (c) be compatible with each item of equipment that may be used by a pilot; and
 - (d) be arranged in a way that:
 - (i) enables all placards and instrument markings to be read from each pilot's normal sitting position in a pilot's seat in the aeroplane; and
 - (ii) each pilot's eyes are shielded from direct and reflected light; and
 - (e) be adjustable so that the intensity of the lighting can be varied for the light conditions.
- (3) Cockpit lighting equipment of an aeroplane operating by day must meet the requirements in paragraphs (2)(a) to (c) if natural light does not adequately illuminate the items of equipment and documents mentioned in paragraphs (2)(a) and (b).

11.16 Anti-collision lights

- (1) An aeroplane operating by day or by night must be fitted with anti-collision lights.
- (2) The anti-collision light equipment fitted to an aeroplane must comprise:
 - (a) at least one red beacon light; or
 - (b) at least 2 white strobe lights; or
 - (c) a combination of all of the lights mentioned in paragraphs (a) and (b).
- (3) For anti-collision light equipment comprising one or more red beacon lights only, the lights must be displayed as follows:
 - (a) for a turbine-engine aeroplane—from immediately before the engines are started until the time the engines are shut down at the end of the flight;

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- (b) for any other aeroplane—from immediately after the engines are started until the time the engines are shut down at the end of the flight.
 - (4) For anti-collision light equipment comprising white strobe lights only, the lights must be displayed as follows:
 - (a) for a turbine-engine aeroplane—from immediately before the engines are started until the time the engines are shut down at the end of the flight;
 - (b) for any other aeroplane—from immediately after the engines are started until the time the engines are shut down at the end of the flight.
 - (5) For anti-collision light equipment comprising a combination of red beacon lights and white strobe lights, the lights must be displayed as follows:
 - (a) for the red beacon lights—in accordance with the requirements in subsection (3);
 - (b) for the white strobe lights, in accordance with the following:
 - (i) if the aeroplane, on its way to the runway from which it will take off, or on its way from the runway on which it has landed, crosses any other runway that is in use for take-offs or landings (an **active runway**)—while the aeroplane is crossing the active runway;
 - (ii) from the time the aeroplane first enters the runway from which the aeroplane will take off until the time the aeroplane leaves the runway on which it has landed.
 - (6) Subsections (3), (4) and (5) do not apply if the pilot in command reasonably believes that, in the circumstances, reflection or glare from the anti-collision light system may cause a hazard to an aircraft.

11.17 Landing lights

An aeroplane operating by night must be fitted with at least:

- (a) 2 landing lights; or
- (b) a single landing light having 2 independent and separately energised illumination sources.

11.18 Navigation lights

- (1) An aeroplane operating by night must be fitted with navigation lights.
- (2) If required to be fitted under subsection (1), the navigation lights must be displayed during a flight and when operating on the movement area of an aerodrome.

Division 6—Alerting and warning system requirements

11.19 Altitude alerting system and assigned altitude indicator

- (1) The following aeroplanes must be fitted with altitude alerting equipment in accordance with subsection (2):
 - (a) a piston-engine aeroplane operating in controlled airspace above FL 150;
 - (b) a turbine-engine aeroplane.
- (2) For subsection (1), the altitude alerting equipment must:
 - (a) include an assigned altitude indicator; and
 - (b) alert the flight crew if the aeroplane approaches a preselected altitude; and
 - (c) alert the flight crew, including by an aural or visual warning, if the aeroplane deviates from a preselected altitude.
- (3) An aeroplane that is not required to be fitted with altitude alerting equipment under subsection (1) must be fitted with altitude alerting equipment at least in the form of an assigned altitude indicator.

11.20 Aeroplane flown with inoperative altitude alerting equipment or assigned altitude indicator

Despite section 11.19, altitude alerting equipment may be inoperative at the beginning of a flight only if:

- (a) the flight:
 - (i) begins within 72 hours of the time the equipment was found to be inoperative; and
 - (ii) is from an aerodrome at which there is no facility for the equipment to be repaired or replaced; and
- (b) for an aeroplane that is required to be fitted with an ACAS—the ACAS is not also inoperative.

Note: For a flight of an aeroplane fitted with inoperative altitude alerting equipment, section 11.07 of the Part 91 Manual of Standards states requirements in relation to air traffic control clearances.

11.21 Airborne collision avoidance system (ACAS)

- (1) In this instrument:

approved ACAS means an ACAS that is authorised in writing by CASA or the national aviation authority of a recognised country in accordance with one of the following:

- (a) (E)TSO-C119c;
- (b) (E)TSO-C219.

resolution advisory, or **RA**, for an ACAS, means an indication given to the flight crew recommending:

- (a) a manoeuvre intended to provide separation from all threats; or
- (b) a manoeuvre restriction intended to maintain existing separation.

traffic advisory, or **TA**, for an ACAS, means an indication given to the flight crew that a certain intruder aircraft is a potential threat.

- (2) An aeroplane mentioned in subsection (3) must be fitted with an approved ACAS.
- (3) For subsection (2), the aeroplane must be a turbine-engine aeroplane that:
 - (a) either:
 - (i) has a maximum take-off weight of more than 15 000 kg; or
 - (ii) has a maximum certificated passenger seating capacity of more than 30; or
 - (b) is first registered, in Australia or elsewhere, on or after 1 January 2014, and:
 - (i) has a maximum take-off weight of more than 5 700 kg but not more than 15 000 kg; or
 - (ii) has a maximum certificated passenger seating capacity of more than 19 but not more than 30.

11.22 ACAS—requirements for use

- (1) During the period mentioned in subsection (2), an approved ACAS fitted to an aeroplane under section 11.21, or a TCAS fitted to an aeroplane as mentioned in section 11.21A, must be activated in a mode that enables a resolution advisory to be produced.
- (2) For subsection (1), the period begins when the aeroplane commences the take-off for the flight and ends when the aeroplane lands for the flight.
- (3) Despite subsection (1), if the aeroplane's flight manual requires the ACAS to be operated in another mode in specified circumstances, the ACAS may be operated in that mode in those circumstances.

Note: For example, the RA indication mode (using traffic advisory (TA) indication only or equivalent) may be inhibited if this is called for by an abnormal procedure specified in the aeroplane's flight manual.

11.23 Flight with inoperative ACAS or TCAS

- (1) An approved ACAS, or a TCAS mentioned in section 11.21A, may be inoperative at the beginning of a flight only if:
 - (a) the flight:
 - (i) begins from an aerodrome at which there is no facility for the ACAS or TCAS to be replaced, within 72 hours of the time the ACAS or TCAS was found to be inoperative; or
 - (ii) is to an aerodrome at which there is a facility for the ACAS or TCAS to be repaired or replaced; and
 - (b) if the aeroplane is required to be fitted with an altitude alerting system—that system is not also inoperative.

11.24 Terrain awareness and warning system (TAWS)

(1) In this section:

TAWS-Class A means a terrain awareness and warning system that:

- (a) meets the performance requirements for Class A equipment in (E)TSO-C151b; and
- (b) is authorised in writing by CASA or the national aviation authority of a recognised country.

TAWS-Class B means a terrain awareness and warning system that:

- (a) meets the performance requirements for Class B equipment in (E)TSO-C151b; and
- (b) is authorised in writing by CASA or the national aviation authority of a recognised country.

(2) A turbine-engine aeroplane must be fitted with a TAWS-Class A.

(3) A piston-engine aeroplane must be fitted with a TAWS-Class A or a TAWS-Class B.

11.25 Flight with inoperative TAWS equipment

A TAWS fitted in accordance with section 11.24 may be inoperative at the beginning of a flight but only if the flight begins:

- (a) from an aerodrome at which there is no facility for the TAWS to be repaired or replaced; and
- (b) within 24 hours of the time the TAWS was found to be inoperative.

11.26 Airborne weather radar equipment

(1) An aeroplane must be fitted with airborne weather radar equipment.

11.27 Flight with inoperative airborne weather radar equipment

(1) Despite section 11.26, airborne weather radar equipment may be inoperative at the beginning of a flight only if none of the relevant forecasts or reports indicate that potentially hazardous weather conditions exist:

- (a) in the flight path along which the aeroplane will be flown; or
- (b) if the operational flight plan for the flight includes an alternate aerodrome—in the flight path to the alternate aerodrome.

(2) In this section:

potentially hazardous weather conditions means such potential weather conditions as can be detected by airborne weather radar equipment.

relevant forecasts or reports means any of the following:

- (a) an authorised weather forecast in relation to the flight;
- (b) an authorised weather report in relation to the flight.

Division 7—Flight recorders

11.28 Definitions—flight recorders

In this instrument:

CVR means cockpit voice recorder.

FDR means flight data recorder.

flight recorder means a combination recorder, FDR or CVR.

Note: A combination recorder is an item of equipment that combines the functions of a flight data recorder and a cockpit voice recorder: see the definition of the term in the CASR Dictionary.

11.29 Flight data recorder

One FDR must be fitted to an aeroplane that has a maximum take-off weight of more than 5 700 kg and is:

- (a) turbine-powered; or
- (b) of a type first certificated in its country of manufacture on, or after, 1 July 1965.

11.30 Cockpit voice recorder

One CVR must be fitted to:

- (a) an aeroplane that has a maximum take-off weight of more than 5 700 kg and which:
 - (i) is turbine-powered; or
 - (ii) is of a type first certificated in its country of manufacture on, or after, 1 July 1965.
- (b) a multi-engine turbine-powered aeroplane that:
 - (i) has a maximum take-off weight of 5 700 kg or less; and
 - (ii) is pressurised; and
 - (iii) is type certificated in its country of manufacture for operation with more than 11 seats (including seats specifically designed for the use of crew members); and
 - (iv) was first issued with a certificate of airworthiness after 1 January 1988.

11.31 Combination recorders

If the combined effect of sections 11.29 and 11.30 is that the aeroplane must be fitted with both one FDR and one CVR, the requirements may be met by the fitment of:

- (a) 2 combination recorders; or
- (b) one FDR and one combination recorder; or
- (c) one CVR and one combination recorder.

11.32 FDR, CVR and combination recorder technical requirements

- (1) An FDR or a combination recorder must comply with one of the following:
 - (a) the requirements of *Civil Aviation Order 103.19 Instrument 2007*, as in force from time to time;
 - (b) (E)TSO-C124a.

Note: These standards include the minimum recording time requirements.

- (2) A CVR or a combination recorder must comply with one of the following:
 - (a) the requirements of *Civil Aviation Order 103.20 Instrument 2007*, as in force from time to time;
 - (b) (E)TSO-C123a.

Note: These standards include the minimum recording time requirements.

- (3) The operator of an aeroplane that is required to be fitted with any of the following must ensure that, at any time:
 - (a) for an FDR or a combination recorder—the recorder retains its last 25 hours of flight data recording; and
 - (b) for a CVR or a combination recorder—the recorder retains its last 30 minutes of cockpit voice recording; and
 - (c) for an FDR or a combination recorder—data are preserved from the last 2 occasions on which flight data recording was calibrated.

Note: The purpose of paragraph (c) is to enable determination of the accuracy of recorded data.

11.33 Use of FDR, CVR and combination recorders

- (1) Subject to subsection (4), an FDR fitted to an aeroplane under this Division must record continuously from the time the aeroplane begins moving under its own power, until the time the flight is terminated and the aeroplane can no longer move under its own power.
- (2) Subject to subsection (4), a CVR fitted to an aeroplane under this Division must:
 - (a) start to record before the aeroplane first begins moving under its own power for a flight; and
 - (b) as far as practicable, if electrical power is available, start to record as early as possible during the cockpit checks before the engines are started at the beginning of the flight; and
 - (c) record continuously until the termination of the flight when the aeroplane is no longer capable of moving under its own power and the engines have been shut down; and
 - (d) as far as practicable, if electrical power is available, continue recording until as close as possible to the conclusion of the cockpit checks immediately following engine shutdown at the end of the flight.
- (3) The FDR and the CVR within a combination recorder fitted to an aeroplane under this Division must record continuously during the same periods as an FDR and a CVR are required to operate under subsections (1) and (2).

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- (4) If:
- (a) there is no auxiliary power unit or other alternative power source for the aeroplane; and
 - (b) it is reasonably necessary to preserve the aeroplane's primary power source in order to start the aeroplane's engines; and
 - (c) the flight data recorder is operated continuously during the period beginning just before the engines are started for take-off and ending when the final pilot checklist is completed at the end of the flight;
- then, a CVR fitted to an aeroplane under this Division must record continuously during the period:
- (d) beginning after the engines are started for the flight; and
 - (e) ending when the final pilot checklist is completed at the end of the flight.
- (5) An FDR or combination recorder fitted to an aeroplane under this Division must not be operated during maintenance of the aeroplane or of an aeronautical product fitted to the aeroplane, except if the maintenance is to the recorder or an aeroplane engine.
- (6) For subsection (5), an auxiliary power unit fitted to the aeroplane is not an aeroplane engine unless it is capable of propelling the aeroplane.

11.34 Flight with an inoperative FDR, CVR or combination recorder

- (1) An FDR, CVR or combination recorder fitted onto an aeroplane may be inoperative at the beginning of a flight, only if:
- (a) the flight begins from a departure aerodrome with no facility for the flight recorder to be repaired or replaced; and
 - (b) any requirements that apply under paragraphs (2)(a) to (d) are met.
- (2) For paragraph (1)(b), the requirements are:
- (a) if the aeroplane is only required to be fitted with one CVR or FDR—the inoperative CVR or FDR has not been inoperative for more than 21 days; and
 - (b) if the aeroplane is required to be fitted with both one CVR and one FDR:
 - (i) the inoperative CVR or FDR has not been inoperative for more than 21 days; and
 - (ii) the other recorder is operative; and
 - (c) if the aeroplane is fitted with one combination recorder—the inoperative combination recorder has not been inoperative for more than 3 days; and
 - (d) if the aeroplane is fitted with more than one combination recorder:
 - (i) the inoperative combination recorder has not been inoperative for more than 21 days; and
 - (ii) at least one combination recorder is operative.

11.35 Data link recorder

- (1) With effect from the beginning of 2 December 2023, this section applies to an aeroplane that:
 - (a) is:
 - (i) first issued with a certificate of airworthiness, or an authorisation (however described) equivalent to a certificate of airworthiness issued by the NAA of a Contracting State, on or after 1 January 2016; or
 - (ii) modified on or after 1 January 2016 to install and utilise any of the data link communications application types listed in column 1 of table 11.35(4); and
 - (b) is required under section 11.30 to be fitted with a CVR; and
 - (c) has the capability to operate data link communications.
- (2) The following requirements apply to the aeroplane:
 - (a) data link communications messages must be recorded;
 - (b) the recording must be on a flight recorder capable of preserving the recordings in the event of any accident to the aeroplane;
 - (c) the recording must be capable of correlation to the relevant contents of the CVR.
- (3) The flight recorder mentioned in subsection (2) must be capable of recording for at least the same duration as the CVR fitted under section 11.30.
- (4) For the purposes of subsection (2), the recording of data link communications messages for an application type mentioned in column 1 of an item in table 11.35(4), as described in column 2 of the item, must meet the recording content requirement of each symbol mentioned in column 3 of the item, in accordance with subsection (5) and as described in table 11.35(5).

Table 11.35(4)—Requirements for recording of data link communications messages for applications

Item	Column 1 Application type	Column 2 Application description	Column 3 Recording content
1	Data link initiation	This includes any application used to log on to, or initiate, a data link service. In Future Air Navigation System (FANS)-1/A and air traffic navigation (ATN), these are ATS facilities notification (AFN) and context management (CM) respectively	C

Table 11.35(4)—Requirements for recording of data link communications messages for applications

Item	Column 1 Application type	Column 2 Application description	Column 3 Recording content
2	Controller/pilot communication	This includes any application used to exchange requests, clearances, instructions and reports between the flight crew and air traffic controllers. In FANS-1/A and ATN, this includes the controller pilot data link communications (CPDLC) application. It also includes applications used for the exchange of oceanic clearances (OCL) and departure clearances (DCL) as well as data link delivery of taxi clearances	C
3	Addressed surveillance	This includes any surveillance application in which the ground sets up contracts for delivery of surveillance data. In FANS-1/A and ATN, this includes the automatic dependent surveillance-contract (ADS-C) application. Where parametric data are reported within the message, they must be recorded unless data from the same source are recorded on the FDR	C
4	Flight information	This includes any service used for delivery of flight information to specific aircraft. This includes, for example, data link aviation weather report service (D-METAR), data link-automatic terminal service (D-ATIS), digital Notice to Airmen (D-NOTAM) and other textual data link services	C
5	Aircraft broadcast surveillance	This includes elementary and enhanced surveillance systems, as well as automatic dependent surveillance-broadcast (ADS-B) output data. Where the parametric data sent by the aeroplane are reported within the message, they must be recorded unless data from the same source are recorded on the FDR	M*
6	Aeronautical operational control data	This includes any application transmitting or receiving data used for AOC operations, including data in relation to the initiation, continuation, diversion or termination of a flight in the interests of the safety of the aircraft and the regularity and efficiency of the flight	M*

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- (5) For subsection (4), the recording content requirement for a symbol mentioned in column 1 of an item in table 11.35(5) is that described in column 2 of the item.

Table 11.35(5)—Requirements for recording content

Item	Column 1 Recording content symbol	Column 2 Recording content symbol's requirements
1	C	Complete contents recorded
2	M	Information that enables correlation with any associated records stored separately from the aeroplane
3	*	Applications that are to be recorded only as far as practicable given the architecture of the system

Division 8—Aeroplane interior communication systems

11.36 Flight crew intercommunication system

- (1) An aeroplane must be fitted with a flight crew intercommunication system that consists of one headset, and one microphone that is not of the hand-held type, for each flight crew member for the flight.
- (2) The aeroplane must also be fitted with, or carry, either:
 - (a) another headset, and another microphone not of the hand-held type, in addition to those carried under subsection (1); or
 - (b) a hand-held microphone and cockpit speaker that can enable any flight crew member to conduct all required communications within the crew or external to the aeroplane.

11.37 Crew interphone system

- (1) This section applies if:
 - (a) a cabin crew member is required to be carried on an aeroplane for a flight; or
 - (b) a crew member occupies a crew station remote from the flight deck.
- (2) An aeroplane must be fitted with a crew interphone system (the *interphone system*) in accordance with this section.
- (3) The interphone system, other than its handsets, headsets, microphones, selector switches and signalling devices, must operate independently of:
 - (a) the flight crew intercommunication system; and
 - (b) the public-address system.
- (4) The interphone system must be readily accessible for use by:
 - (a) each flight crew member from the flight crew member's seat in the flight crew compartment (cockpit); and
 - (b) each cabin crew member at the cabin crew member's crew station.
- (5) The interphone system must enable any crew member to activate an incoming call alert that:
 - (a) uses aural or visual signals; and
 - (b) distinguishes between normal and emergency calls.
- (6) The interphone system must provide 2-way communication between the following:
 - (a) the flight crew compartment (cockpit) and each crew station in a passenger compartment;
 - (b) the flight crew compartment (cockpit) and each galley located other than on the same level as a passenger compartment;
 - (c) the flight crew compartment (cockpit) and each crew rest area located other than on the same level as a passenger compartment;

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- (d) the flight crew compartment (cockpit) and each crew station that is:
 - (i) located other than on the same level as a passenger compartment; and
 - (ii) not accessible from a passenger compartment;
 - (e) the flight crew compartment (cockpit) and ground personnel who, when using the system, are not in full view from the cockpit.

11.38 Public-address system

- (1) An aeroplane must be fitted with a public-address system, in accordance with this section, to enable crew members to address the passengers whether the aeroplane is in flight or on the ground.
- (2) The public-address system, other than handsets, headsets, microphones, selector switches and signalling devices, must operate independently of:
 - (a) the flight crew intercommunication system; and
 - (b) the crew interphone system (if any).
- (3) The public-address system must be readily accessible for use by each flight crew member from the flight crew member's seat in the flight crew compartment.
- (4) At each emergency exit with an adjacent cabin crew seat on the same level as a passenger compartment (a **relevant location**), there must be a handset or microphone operable by the cabin crew member while seated.
- (5) Despite subsection (4), a single handset or microphone may serve more than one relevant location, but only if the 2 relevant locations are so close as to allow unassisted verbal communication between the seated cabin crew members.
- (6) The public-address system must be operable within 10 seconds of activation by a cabin crew member at each relevant location.
- (7) Announcements made using the public-address system must be audible at all of the following:
 - (a) passenger seats;
 - (b) toilets;
 - (c) galleys;
 - (d) cabin crew stations;
 - (e) crew rest areas.

Division 9—Oxygen equipment and oxygen supplies

11.39 Definitions for Division 9, Chapter 11

In this Division:

assisting crew member means a crew member assisting a flight crew member with the flight crew member's duties.

quick-donning mask means an oxygen mask that:

- (a) is for a flight crew member's personal use; and
- (b) within 5 seconds of it being deployed and ready for use, the flight crew member can, with 1 hand, place over the face, secure and seal.

required cabin crew member means a cabin crew member required for the flight of an aeroplane under regulation 121.635 of CASR.

standard temperature and pressure means 0 degrees Celsius at a pressure of 760 mm Hg.

STPD means standard temperature and pressure dry.

11.40 Supplemental oxygen—pressurised aeroplanes

- (1) A pressurised aeroplane operated at a pressure altitude above 10 000 ft (a ***relevant aeroplane***) must be fitted with, or carry, supplemental oxygen equipment capable of storing and dispensing supplemental oxygen to crew members and passengers.
 - (2) Subject to subsection (2A), a relevant aeroplane must carry sufficient supplemental oxygen to meet the requirements set out in table 11.40.
- (2A) If:
- (a) the relevant aeroplane is certified to fly with a pressure altitude of only 25 000 ft or below; and
 - (b) the aeroplane is able to safely descend within 4 minutes to a cabin pressure altitude of 13 000 ft;
- then the supplemental oxygen supply requirements in table 11.40 may be reduced as mentioned in subsection (2B).
- (2B) For subsection (2A):
- (a) for a person mentioned in column 1 of item 2 of the table (required cabin crew members)—to a supply for each required cabin crew member for the entire period when the cabin pressure altitude is between 10 000 ft and 13 000 ft; and
 - (b) for a person mentioned in column 1 of item 3 of the table (passengers and crew not covered by item 1 or 2 of the table)—to a supply for 10% of the passengers and those crew, for the entire period when the cabin pressure altitude is between 10 000 ft and 13 000 ft.

- (3) For a person mentioned column 1 of an item in the table, supplemental oxygen must be made available through an oxygen dispensing unit in accordance with the supply requirements mentioned for the item in column 2.
- (4) Each flight crew member and assisting crew member must use the supplemental oxygen that is made available to each of them in accordance with the supply requirements mentioned in column 2 of item 1 of the table.

Table 11.40—Supplemental oxygen: requirements for pressurised aeroplanes

Item	Column 1 Person	Column 2 Supplemental oxygen supply requirements
1	Flight crew members or assisting crew members	<ol style="list-style-type: none"> 1. There must be supply for each flight crew member and for each assisting crew member for the entire period when the cabin pressure altitude is above 13 000 ft. 2.(a) For an aeroplane that is not flown at any time during a flight above a pressure altitude of 25 000 ft—for any period exceeding 30 minutes, when the cabin pressure altitude is above 10 000 ft but not above 13 000 ft, there must be supply for each flight crew member and for each assisting crew member for <i>the entire period</i>; (b) Without otherwise affecting paragraph (a): <ol style="list-style-type: none"> (i) there must be a minimum of at least 30 minutes supply for each flight crew member and for each assisting crew member even if <i>the entire period</i> may be less than 30 minutes; and (ii) the supply mentioned in subparagraph (i) must encompass the quantity of oxygen necessary for the aeroplane descending at a constant rate: <ol style="list-style-type: none"> (A) from the lesser of the aeroplane's maximum certified operating altitude and a pressure altitude of 25 000 ft; and (B) to a pressure altitude of 10 000 ft in 10 minutes; followed by 20 minutes at a pressure altitude of 10 000 ft. 3.(a) For an aeroplane that is flown at any time during the flight above a pressure altitude of 25 000 ft—for any period exceeding 30 minutes when the cabin pressure altitude is above 10 000 ft but not above 13 000 ft, there must be supply for each flight crew member and for each assisting crew member for <i>the entire period</i>. (b) Without otherwise affecting paragraph (a): <ol style="list-style-type: none"> (i) there must be at least 2 hours supply for each flight crew member and for each assisting crew member even if <i>the entire period</i> may be less than 2 hours; and (ii) the supply mentioned in subparagraph (i) must encompass the quantity of oxygen necessary for the aeroplane descending at a constant rate:

Table 11.40—Supplemental oxygen: requirements for pressurised aeroplanes

Item	Column 1 Person	Column 2 Supplemental oxygen supply requirements
		<p>(A) from the aeroplane's maximum certified operating altitude; and</p> <p>(B) to a pressure altitude of 10 000 ft in 10 minutes; followed by a time period of 110 minutes at a pressure altitude of 10 000 ft.</p>
2	Required crew members	<ol style="list-style-type: none"> 1. For any period when the cabin pressure altitude is above 13 000 ft there must be: <ol style="list-style-type: none"> (a) supply for the entire period; and (b) at least 30 minutes supply for each required cabin crew member, even if the entire period may be less than 30 minutes; and (c) the supply mentioned in paragraph (b) must encompass the quantity of oxygen necessary for the aeroplane descending at a constant rate: <ol style="list-style-type: none"> (i) from the aeroplane's maximum certified operating altitude; and (ii) to a pressure altitude of 10 000 ft in 10 minutes; followed by a time period of 20 minutes at a pressure altitude of 10 000 ft. 2. For any period exceeding 30 minutes when the cabin pressure altitude is above 10 000 ft, but not above 13 000 ft, there must be supply for each required cabin crew member for the entire period.
3	Passengers, and crew members not covered by item 1 or 2 of this table	<ol style="list-style-type: none"> 1.(a) For any period when the cabin pressure altitude is above 15 000 ft, there must be supply for each of the persons for <i>the entire period</i>. (b) Without otherwise affecting paragraph (a): <ol style="list-style-type: none"> (i) there must be at least 10 minutes supply for each of the persons even if the entire period is less than 10 minutes; and (ii) the supply mentioned in subparagraph (i) must encompass the quantity of oxygen necessary for the aeroplane descending at a constant rate: <ol style="list-style-type: none"> (A) from the aeroplane's maximum certified operating altitude; and (B) to a pressure altitude of 15 000 ft in 10 minutes. 2. For any period when the cabin pressure altitude is above 14 000 ft but not above 15 000 ft, there must be supply for the entire period for at least 30% of the passengers. 3. For any period exceeding 30 minutes when the cabin pressure altitude is above 10 000 ft but not above 14 000 ft, there must be supply for the entire period for at least 10% of the persons mentioned in column 1.

11.41 Supplemental oxygen—unpressurised aeroplanes

- (1) An unpressurised aeroplane operated at a pressure altitude above 10 000 ft (a **relevant aeroplane**) must carry sufficient supplemental oxygen to meet the requirements set out in table 11.41.
- (2) A relevant aeroplane to which subsection (1) applies must be fitted with, or carry, supplemental oxygen equipment capable of storing and dispensing supplemental oxygen to crew members and passengers.
- (3) For a person mentioned in column 1 of an item of the table, supplemental oxygen must be made available in accordance with the supply requirements mentioned for the item in column 2.
- (4) Each flight crew member and assisting crew member must use the supplemental oxygen that is made available to each of them in accordance with the supply requirements mentioned in column 2 of item 1 of the table.

Table 11.41—Supplemental oxygen: requirements for unpressurised aeroplanes

Item	Column 1 Person	Column 2 Supplemental oxygen supply requirements
2	Flight crew members, assisting crew members and required cabin crew members	<ol style="list-style-type: none">1. There must be supply for each of the persons for the entire period when the cabin pressure altitude is above 13 000 ft.2. For any period exceeding 30 minutes when the cabin pressure altitude is above 10 000 ft but not above 13 000 ft, there must be supply for each of the persons for the entire period.
3	Passengers and crew members not covered by item 2 of this table	<ol style="list-style-type: none">1. For any period when the cabin pressure altitude is above 13 000 ft, there must be supply for each of the persons for the entire period.2. For any period exceeding 30 minutes when the cabin pressure altitude is above 10 000 ft but not above 13 000 ft, there must be supply for the entire period for at least 10% of the the persons mentioned in column 1.

11.42 Oxygen masks usage requirements—pressurised aeroplane above FL 250

- (1) This section applies for a flight of a pressurised aeroplane that is flown above FL 250 at any time during the flight.
- (2) At least one pilot occupying a pilot seat:
 - (a) must be wearing a sealed oxygen mask (securely worn) that:
 - (i) is being supplied with supplemental oxygen; or
 - (ii) automatically supplies supplemental oxygen when the cabin pressure altitude is at or above 14 000 ft; or

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- (b) must have access to a quick-donning mask that is supplied with supplemental oxygen when the mask is donned.
 - (3) During the period when the aeroplane is flown above FL 450 during the flight, at least one pilot occupying a pilot seat must be wearing one of the following that is being supplied with supplemental oxygen:
 - (a) a sealed oxygen mask (securely worn);
 - (b) a quick-donning mask.

11.43 Oxygen dispensing units for passengers in a pressurised aeroplane

- (1) Subsection (2) applies for a pressurised aeroplane that:
 - (a) is of a type that was first issued with either of the following, on or after 9 November 1998:
 - (i) a certificate of airworthiness; or
 - (ii) an authorisation (however described) equivalent to a certificate of airworthiness issued by the national aviation authority of a Contracting State; and
 - (b) either:
 - (i) is flown at or above FL 250 at any time during the flight; or
 - (ii) if flown below FL 250—cannot safely descend from its flight level to a cabin pressure altitude of less than 13 000 ft within a period of 4 minutes in the event of a cabin depressurisation.
- (2) For the passengers mentioned in item 3 of table 11.40:
 - (a) the oxygen dispensing units must be automatically deployable; and
 - (aa) the units must be immediately available to each passenger on the flight, wherever seated; and
 - (b) the number of dispensing units must exceed the number of passenger seats by 10% (**additional units**); and
 - (c) the additional units must be evenly distributed throughout the passenger compartment.

11.44 Protective breathing equipment—flight crew members

- (1) When an aeroplane begins a flight, it must be carrying protective breathing equipment (**PBE**) for each flight crew member in accordance with this section.
- (2) The PBE:
 - (a) must protect the wearer's eyes, nose and mouth; and
 - (b) in relation to the part protecting the wearer's eyes:
 - (i) must not adversely affect vision in any noticeable way; and
 - (ii) must allow corrective glasses to be worn in a normal position; and
 - (c) must be able to supply oxygen continuously for at least 15 minutes.

Note: The oxygen supply for the PBE for each flight crew member can be provided by the supplemental oxygen required under section 11.40 or 11.41 (as applicable to the flight).

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- (3) The protective breathing equipment for a flight crew member must be accessible for immediate use at the flight crew member's crew station.
 - (4) The PBE must not prevent, or be likely to prevent, a flight crew member from effectively using any crew intercommunications or radiocommunications equipment fitted to, or carried on, the aeroplane.

11.45 Portable protective breathing equipment

- (1) When a pressurised aeroplane begins a flight, it must be carrying portable protective breathing equipment (**portable PBE units**) in accordance with this section.
- (2) Each portable PBE unit:
 - (a) must protect the wearer's eyes, nose and mouth; and
 - (b) in relation to the part of the unit protecting the wearer's eyes:
 - (i) must not adversely affect vision in any noticeable way; and
 - (ii) must allow corrective glasses to be worn in a normal position; and
 - (c) must be able to supply oxygen, or a mixture of oxygen and another suitable gas, continuously for at least 15 minutes.
- (3) Portable PBE units must be located as follows:
 - (a) for a flight where no crew members other than the minimum flight crew members are carried—1 portable PBE unit must be located in, or as close as practicable to, the flight crew compartment;
 - (b) as far as practicable—1 portable PBE unit must be located adjacent to each of the hand-held fire extinguishers required to be carried on the flight under Division 11 of this Chapter;
 - (c) if compliance with paragraph (b) is not practicable—1 portable PBE unit must be located adjacent to each individual cabin crew member crew station that is being used by a cabin crew member for the flight.
- (4) Portable PBE units must not prevent, or be likely to prevent, a crew member from effectively using any crew intercommunications or radiocommunications equipment fitted to, or carried on, the aeroplane.

11.46 First-aid oxygen equipment—pressurised aeroplane

- (1) In this section:

First-aid oxygen means a supply of undiluted oxygen for any passengers who, for physiological reasons, may still require oxygen when:

 - (a) there has been a cabin depressurisation; and
 - (b) the amounts of supplemental oxygen supply otherwise required under this Division have been exhausted.
- (2) Until immediately before 2 December 2023, an aeroplane must comply with the requirements related to first-aid oxygen (however described) in accordance with:
 - (a) Civil Aviation Order 20.4, and Civil Aviation Order 108.26, as in force immediately before the commencement of this instrument; or

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- (b) this section.
 - (3) With effect from the beginning of 2 December 2023, an aeroplane must be fitted with or carry first-aid oxygen in accordance with this section.
 - (4) This section applies to a pressurised aeroplane that:
 - (a) is flown above FL 250 at any stage during the flight; and
 - (b) carries a passenger on the flight.
 - (5) When the aeroplane begins the flight, it must carry, for use in first aid, such a volume of first-aid oxygen as will provide an average oxygen gas flow rate, calculated assuming dry oxygen gas at standard temperature and pressure, of 3 litres per minute per person:
 - (a) for whichever of the following is the greater number of persons:
 - (i) 2% of the number of passengers carried on the flight;
 - (ii) 1 person; and
 - (b) for the flight period after a cabin depressurisation event during which the aeroplane's cabin pressure altitude is above 8 000 ft but is not above 15 000 ft.
 - (6) When the aeroplane begins the flight, it must carry, for use in dispensing first-aid oxygen, a sufficient number of specific first-aid oxygen dispensing units relative to the number of passengers on board, but in no case less than 2 such units.
 - (7) An oxygen dispensing unit:
 - (a) must be capable of generating a flow rate, calculated assuming dry oxygen gas at standard temperature and pressure, of at least 4 litres per minute per person STPD; and
 - (b) may have a means of reducing the flow to not less than 2 litres per minute per person STPD at any altitude.

Division 10—Emergency locator transmitters

11.47 Carriage of ELTs

- (1) Until immediately before 2 December 2023, an aeroplane for a flight must be fitted with or carry emergency locator transmitters (**ELTs**) in accordance with:
 - (a) regulation 252A of CAR, and subsection 6 of Civil Aviation Order 20.11 (as it applies to ELTs), as each of those provisions is in force immediately before the commencement of this instrument; or
 - (b) this Division.
- (2) For the purposes of paragraph (1)(a), if immediately before 2 December 2021 the aeroplane flight would have been:
 - (a) classed as a charter flight—then the ELT requirements are those that would have applied to such a charter flight; and
 - (b) classed as an RPT flight—then the ELT requirements are those that would have applied to such an RPT flight.
- (3) With effect from the beginning of 2 December 2023, an aeroplane must be fitted with or carry ELTs in accordance with sections 11.48 to 11.51.

11.48 ELT must be fitted or carried

An aeroplane that has the characteristics mentioned in columns 1 and 2 of an item in table 11.48, must be fitted with, or carry, at least the number and kind of ELTs mentioned in column 3 of the item.

Table 11.48—Emergency locator transmitters

Item	Column 1 Maximum certificated passenger seating capacity of the aeroplane	Column 2 Date certificate of airworthiness was first issued, or date an authorisation (however described) equivalent to a certificate of airworthiness issued by the NAA of a Contracting State, was first issued	Column 3 ELT requirements—at least:
1	Greater than 19	After 1 July 2008	2 ELTs, at least one of which must be an automatic ELT
2	Greater than 19	On or before 1 July 2008	Either: 1 automatic ELT; or 2 ELTs
3	19 or less	After 1 July 2008	1 automatic ELT
4	19 or less	On or before 1 July 2008	1 ELT

11.49 ELT—basic technical requirements

In this Division, an **ELT** is a transmitter that meets the following requirements:

- (a) if the transmitter is activated—the transmitter must transmit simultaneously on 121.5 MHz and 406 MHz;
- (b) if the transmitter is fitted to, or carried on, an Australian aeroplane—the transmitter must be registered with the Australian Maritime Safety Authority (**AMSA**) and with no other authority;
- (c) if the transmitter is fitted to, or carried on, a foreign-registered aeroplane—the transmitter must be registered with the authority of the aeroplane's State of registry that is responsible for SAR services, and not with AMSA;
- (d) the transmitter must, for identification purposes, be coded in accordance with the requirements for the transmitter in Appendix 1 to Chapter 5 of Part II, Voice Communications, in Volume III of ICAO Annex 10, Aeronautical Telecommunications;
- (e) if the transmitter is fitted with a lithium-sulphur dioxide battery—the battery must be authorised by the FAA or EASA in accordance with (E)TSO-C142a.

11.50 Automatic ELT

- (1) An **automatic ELT** is an ELT in accordance with section 11.49 that meets the requirements mentioned in subsection (2).
- (2) For the purposes of subsection (1), the ELT:
 - (a) must be automatically activated on impact; and
 - (b) must be one of the following types:
 - (i) a type authorised by the FAA or EASA in accordance with (E)TSO-C126;
 - (ii) a type authorised by EASA in accordance with:
 - (A) for operation on 121.5 MHz—ETSO-2C91a; and
 - (B) for operation on 406 MHz—ETSO-2C126;
 - (iii) a type approved under Part 21 of CASR as having a level of performance equivalent to a type of transmitter mentioned in subparagraph (i) or (ii).

11.51 Survival ELT

- (1) A **survival ELT** is an ELT in accordance with section 11.49 that meets the requirements mentioned in subsection (2).
- (2) For the purposes of subsection (1), the ELT must be:
 - (a) removable from the aeroplane; and
 - (b) one of the following types:
 - (i) an emergency position-indicating radio beacon of a type that meets the requirements of AS/NZS 4280.1:2003;
 - (ii) a personal locator beacon of a type that meets the requirements of AS/NZS 4280.2:2003;

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- (iii) a type authorised by the FAA or EASA in accordance with (E)TSO-C126;
 - (iv) a type authorised by EASA in accordance with:
 - (A) for operation on 121.5 MHz—ETSO-2C91a; and
 - (B) for operation on 406 MHz—ETSO-2C126;
 - (v) a type approved under Part 21 of CASR as having a level of performance equivalent to a type mentioned in subparagraph (i), (ii), (iii) or (iv).

Division 11—Portable emergency equipment

11.52 Hand-held fire extinguishers

- (1) In this section:

Class A cargo or baggage compartment has the meaning given within FAR 25.857, as in force from time to time.

Class B cargo or baggage compartment has the meaning given within FAR 25.857, as in force from time to time.

Class E cargo compartment has the meaning given within FAR 25.857, as in force from time to time.

- (2) An aeroplane must carry at least the following number of hand-held fire extinguishers:
- (a) one in the flight crew compartment;
 - (b) one in each galley, or (in the case that a galley is not in a passenger, crew or cargo compartment) readily accessible for use in the galley;
 - (c) one that is accessible to the crew members, and that is conveniently located for use, in relation to each of the following:
 - (i) a Class A cargo or baggage compartment;
 - (ii) a Class B cargo or baggage compartment;
 - (iii) a Class E cargo compartment;
 - (d) for an aeroplane with the maximum operational passenger seat configuration mentioned in an item of column 1 of table 11.52—the number of extinguishers mentioned in column 2 of the item, conveniently located to provide adequate availability for use in each passenger compartment;

Table 11.52—Requirements for number of hand-held fire extinguishers

Item	Column 1 Maximum operational passenger seat configuration	Column 2 Number of extinguishers
1	7-30	1
2	31-60	2
3	61-200	3
4	201-300	4
5	301-400	5
6	401-500	6
7	501-600	7
8	601 or more	8

- (e) despite paragraphs (a) and (d), for an aeroplane with a maximum operational passenger seat configuration of not more than 9, in which the

flight crew and the passengers occupy the same compartment—one fire extinguisher, readily available to the pilot in command;

- (f) despite paragraphs (a) and (d)—for an aeroplane with a maximum operational passenger seat configuration of more than 9, in which the flight crew and the passengers occupy the same compartment:
 - (i) one fire extinguisher, readily available to the pilot in command; and
 - (ii) one fire extinguisher, readily available to the passengers.

- (3) The type and quantity of extinguishing agent for the required fire extinguishers must:
 - (a) be suitable for the type of fire likely to occur in the compartment where the extinguisher is intended to be used; and
 - (b) be such as to minimise the hazard of toxic gas concentration in compartments occupied by persons.

11.53 First-aid kits

- (1) This section applies on and after 2 December 2023.
- (2) Subject to subsection (3), an aeroplane for a flight must carry the number of first-aid kits mentioned in column 2 of the item in table 11.53 that states, in column 1 of the item, the maximum operational passenger seat configuration of the aeroplane.

Table 11.53—First-aid kits

Item	Column 1 Maximum operational passenger seat configuration of:	Column 2 Number of first-aid kits:
1	0-100	1
2	101-200	2
3	201-300	3
4	301-400	4
5	401-500	5
6	501 or more	6

- (3) Subsection (2) does not apply if an aeroplane takes off from an aerodrome at which no facility exists for first-aid kits to be replenished or replaced, provided that the aeroplane carries a sufficient number of first-aid kits, taking into consideration the number of passengers on board for, and the duration of, the flight.
- (4) For the purposes of subsection (2), a first-aid kit must:
 - (a) contain sufficient supplies for the number of persons to be carried on a flight of the aeroplane; and
 - (b) be readily recognisable as a first-aid kit; and
 - (c) be readily accessible by each crew member for a flight when the aeroplane is on the ground or water and not in operation.

11.54 Emergency medical kit

- (1) This section applies to an aeroplane that:
 - (a) has a maximum operational passenger seat configuration of more than 30; and
 - (b) is engaged in a passenger transport operation or medical transport operation; and
 - (c) during the flight, will be flown further from an aerodrome mentioned in subsection (2) than the distance the aeroplane can fly in 60 minutes, in still air and ISA conditions, at its normal cruising speed.
- (2) For the purposes of paragraph (1)(c), the aerodrome is an aerodrome:
 - (a) at which qualified medical assistance is ordinarily available; or
 - (b) from which medical assistance is readily accessible.
- (3) The aeroplane must carry an emergency medical kit.

11.55 Universal precaution kits

- (1) This section applies to an aeroplane that is engaged in a passenger transport operation or a medical transport operation.
- (2) The aeroplane must carry the number of universal precaution kits mentioned in column 2 of the item in table 11.55 that states, in column 1 of the item, the maximum operational passenger seat configuration of the aeroplane.

Table 11.55—Universal precaution kits

Item	Column 1 Maximum operational passenger seat configuration of:	Column 2 Number of universal precaution kits:
1	250 or less	1
2	More than 250	2

- (3) Subsection (2) does not apply if an aeroplane takes off from an aerodrome at which no facility exists for universal precaution kits to be replenished or replaced, provided that the aeroplane carries a sufficient number of universal precaution kits, taking into consideration the number of passengers on board for, and the duration of, the flight.

11.56 Crash axe or crowbar

An aeroplane must carry a crash axe or a crowbar safely but accessibly stowed in its flight crew compartment (cockpit).

11.57 Megaphones

- (1) This section applies to an aeroplane that:
 - (a) has a maximum operational passenger seat configuration of more than 60;
and
 - (b) is engaged in a passenger transport operation or a medical transport operation.
- (2) The aeroplane must carry at least the number of portable, battery-powered, megaphones (***megaphones***) mentioned in column 2 of the item in table 11.57 that states, in column 1 of the item, the maximum operational passenger seat configuration of the aeroplane.

Table 11.57—Megaphones

Item	Column 1 Maximum operational passenger seat configuration of:	Column 2 Number of megaphones—at least:
1	100 or less	1
2	More than 100	2

- (3) If 1 megaphone is carried in an aeroplane under this section, it must be kept in a place where it is readily accessible from a crew member's seat.
- (4) If 2 megaphones are carried in an aeroplane under this subsection, they must be distributed through the passenger cabin or cabins so as to be readily accessible to crew members.
- (5) Each megaphone must:
 - (a) be able to perform its function throughout any flight on which it is carried;
and
 - (b) be designed for ease of handling and use with one hand; and
 - (c) have a volume control or adequate acoustic feedback suppression.

Division 12—Equipment for flights over water

11.58 Sea anchors etc. and sound signals—seaplanes and amphibians

- (1) This section applies to a flight of an aeroplane if:
 - (a) the aeroplane is a seaplane or an amphibian; and
 - (b) the flight involves take-off from, or landing on, water.
- (2) When the aeroplane begins the flight, it must carry the following:
 - (a) a sea anchor;
 - (b) other equipment for mooring.
- (3) If the flight is conducted on or over water to which the International Regulations apply, the aeroplane must carry equipment for making the sound signals required by the International Regulations for the flight.

Note: The expression *International Regulations* is defined in the CASR Dictionary.

11.59 Life jacket carriage requirements

- (1) This section applies to a flight of an aeroplane:
 - (a) if the aeroplane is a seaplane or an amphibian; or
 - (b) for an aeroplane that is not a seaplane or an amphibian—if during the flight the aeroplane is flown more than 50 NM from an area of land that is suitable for a forced landing.
- (2) When the aeroplane begins the flight, it must carry the following:
 - (a) for each infant on board—a life jacket, or another equally effective flotation device, that may have a whistle;
 - (b) for each other person on board—a life jacket that must have a whistle.
- (3) This section does not apply if:
 - (a) the aeroplane is flown over water for the purpose of climbing after take-off from, or descending to land at, an aerodrome; and
 - (b) the aeroplane is flown in accordance with a navigational procedure that is normal for the climb or descent at the aerodrome.

11.60 Stowage of life jackets

- (1) This section applies to an aeroplane that is required to carry an approved life jacket or a flotation device under section 11.59.
- (2) Subject to subsection (3), when the aeroplane begins the flight, unless the life jacket or flotation device is being worn:
 - (a) each infant's life jacket or flotation device must be stowed where it is readily accessible by an adult responsible for the infant, in the event of an emergency evacuation; and
 - (b) each other person's life jacket must be stowed where it is readily accessible from the person's seat in the event of an emergency evacuation.

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- (3) Subsection (2) does not apply if:
 - (a) the operator's emergency procedures provide for the following to occur when preparing the cabin for ditching:
 - (i) the distribution of infant life jackets or flotation devices;
 - (ii) the distribution of a life jacket to a second child occupying a single seat; and
 - (b) each crew member on the flight who has duties to conduct these emergency procedures has successfully completed training in the procedures.

11.62 Life raft carriage requirements

- (1) When an aeroplane begins a flight to which this section applies, it must carry sufficient life rafts to provide a place on a life raft for each person on the aeroplane.
- (2) This section applies to a flight of an aeroplane if, during the flight, the aeroplane is flown further over water than the following distances from a suitable forced landing area situated on land:
 - (a) for a jet-driven multi-engine aeroplane with a maximum take-off weight of more than 2 722 kg—whichever is the shorter of the following:
 - (i) the distance the aeroplane would fly in 2 hours at its normal cruising speed in still air;
 - (ii) 400 NM;
 - (b) for a turbine-engine propeller-driven aeroplane with a maximum take-off weight of more than 5 700 kg—whichever is the shorter of the following:
 - (i) the distance the aeroplane would fly in 2 hours at its normal cruising speed in still air;
 - (ii) 400 NM;
 - (c) for any other aeroplane—whichever is the shorter of the following:
 - (i) the distance the aeroplane would fly in 30 minutes at its normal cruising speed in still air;
 - (ii) 100 NM.
- (3) For the purposes of subsection (1), when working out the number of life rafts to be carried on an aeroplane:
 - (a) the capacity of a life raft is the rated capacity specified by the manufacturer for the life raft; and
 - (b) the number of infants on board the aeroplane need not be taken into account.
- (4) Any overload capacity of a life raft is not to be taken into account in determining its capacity for the purposes of paragraph (3)(a).

11.63 Stowage of life rafts

- (1) This section applies to an aeroplane that is required to carry a life raft under section 11.62.

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- (2) The life raft must be stowed and secured so that it can be readily deployed if the aeroplane has to ditch.
 - (3) If a life raft is stowed in a compartment or container, the compartment or container must be conspicuously marked as containing the life raft.

11.64 Underwater locating device (ULD)

- (1) In this section:

approved ULD means an underwater locating device that is authorised by CASA or the national aviation authority of a recognised country in accordance with one of the following:

- (a) TSO-C200;
- (b) ETSO-C200.

tail section means the tail assembly of an aeroplane consisting of its vertical and horizontal stabilizers, and including its fin, rudder, and elevators.

- (2) With effect from the beginning of 2 December 2023, this section applies to a flight of an aeroplane if:
 - (a) the aeroplane has a maximum take-off weight of more than 27 000 kg; and
 - (b) under this Division, the aeroplane is required to carry a life raft for the flight.
- (3) For the flight, the aeroplane must be fitted with an approved ULD that meets the requirements in subsection (4).
- (4) For subsection (3), the approved ULD must:
 - (a) not be installed in or on the aeroplane's wings or any part of its tail section; and
 - (b) be automatically activated as soon as the aeroplane's fuselage enters any body of water; and
 - (c) when activated—continuously, and for at least 30 days' duration, emit a sound signal on the 8.8 kHz frequency.

Division 13—Surveillance equipment

11.65 Definitions

In this instrument:

ADS-B means automatic dependent surveillance – broadcast.

ADS-B OUT means the functional capability of an aircraft or vehicle to periodically broadcast its state vector (position and velocity) and other information derived from on-board systems in a format suitable for ADS-B IN capable receivers.

aircraft address means a unique combination of 24 bits available for assignment to an aircraft for the purpose of air-ground communications, navigation, and surveillance.

alternate ADS-B OUT equipment configuration: see paragraph (b) of the definition of **approved ADS-B OUT equipment configuration**.

approved ADS-B OUT equipment configuration means an equipment configuration capable of ADS-B OUT operation on the ground and in flight, and that is one of the following:

- (a) an approved Mode S transponder with ADS-B capability connected to an approved GNSS position source;
- (b) an alternate ADS-B OUT equipment configuration meeting the requirements mentioned in section 11.70;
- (c) another system approved under Part 21 of CASR as having a level of performance equivalent to a system mentioned in paragraph (a) or (b).

approved GNSS position source means a GNSS position source that is:

- (a) authorised by the FAA or EASA in accordance with one of the following:
 - (i) (E)TSO-C145a;
 - (ii) (E)TSO-C146a;
 - (iii) (E)TSO-C196a; or
- (b) an alternate GNSS position source meeting the requirements mentioned in section 11.69; or
- (c) another system approved under Part 21 of CASR as having a level of performance equivalent to performance in accordance with paragraph (a) or (b).

approved Mode A/C transponder means a Mode A transponder or a Mode C transponder that is authorised:

- (a) by CASA or the national aviation authority of a recognised country in accordance with TSO-C74c or ETSO-C74d; or
- (b) by CASA in accordance with ATSO-1C74c.

approved Mode S transponder means a Mode S transponder that is:

- (a) authorised by CASA or the national aviation authority of a recognised country in accordance with TSO-C112 or ETSO-2C112a; or

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- (b) another system approved under Part 21 of CASR as having a level of performance equivalent to a system mentioned in paragraph (a).

approved Mode S transponder with ADS-B capability means an approved Mode S transponder that is:

- (a) authorised by CASA or the national aviation authority of a recognised country in accordance with (E)TSO-C166; or
- (b) another system approved under Part 21 of CASR as having a level of performance equivalent to a system mentioned in paragraph (a).

approved transponder means an approved Mode A/C transponder or an approved Mode S transponder.

assigned aircraft address means an aircraft address that is assigned to an aircraft by:

- (a) when the aircraft is registered on the Australian Civil Aircraft Register—CASA; or
- (b) when the aircraft is a foreign-registered aircraft—the relevant national aviation authority.

DAPs means Mode S EHS downlink aircraft parameters.

EASA AMC 20-24 means Annex II to ED Decision 2008/004/R titled *Certification Considerations for the Enhanced ATS in Non-Radar Areas using ADS-B Surveillance (ADS-B-NRA) Application via 1090 MHz Extended Squitter*, dated 2 May 2008, of EASA.

EASA CS-ACNS means Annex I to ED Decision 2013/031/R titled *Certification Specifications and Acceptable Means of Compliance for Airborne Communications, Navigation and Surveillance CS-ACNS*, dated 17 December 2013, of EASA, or any later version.

FDE means fault detection and exclusion, a feature of a GNSS receiver that excludes faulty satellites from position computation.

HPL means the horizontal protection level of the GNSS position of an aircraft as an output of the GNSS receiver or system.

Mode A is a transponder function that transmits a 4-digit octal identification code for an aircraft's identity when interrogated by an SSR.

Mode A code is the 4-digit octal identification code transmitted by a Mode A transponder function.

Mode C is a transponder function that transmits a 4-digit octal identification code for an aircraft's pressure altitude when interrogated by an SSR.

Mode S is a transponder function that uses a unique aircraft address to selectively call individual aircraft. It supports advanced surveillance using Mode S EHS, Mode S ELS, or Mode S ES capabilities.

Mode S EHS means Mode S enhanced surveillance, which is a data transmission capability of a Mode S transponder.

Mode S ELS means Mode S elementary surveillance, which is a data transmission capability of a Mode S transponder.

Mode S ES means Mode S extended squitter, which is a data transmission capability of a Mode S transponder used to transmit ADS-B OUT information.

NACp means Navigation Accuracy Category – Position as specified in paragraph 2.4.3.2.7.2.7 of RTCA/DO-260B.

NIC means Navigation Integrity Category as specified in paragraph 2.2.8.1.16 of RTCA/DO-260B.

NUCp means Navigation Uncertainty Category – Position as specified in paragraph 2.2.8.1.5 of RTCA/DO-260.

RTCA/DO-229D means document RTCA/DO-229D titled *Minimum Operational Performance Standards for Global Positioning System/Wide Area Augmentation System Airborne Equipment*, dated 13 December 2006, of the RTCA Inc. of Washington D.C. USA (**RTCA Inc.**).

RTCA/DO-260 means RTCA Inc. document RTCA/DO-260 titled *Minimum Operational Performance Standards for 1090 MHz Automatic Dependent Surveillance – Broadcast (ADS-B)*, dated 13 September 2000.

RTCA/DO-260B means RTCA Inc. document RTCA/DO-260B titled *Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance – Broadcast (ADS-B) and Traffic Information Services – Broadcast (TIS-B)*, dated 2 December 2009.

secondary surveillance radar (SSR) means a surveillance radar system which uses transmitters/receivers (interrogators) and transponders.

SIL means Source Integrity Level as specified in paragraph 2.2.3.2.7.2.9 of RTCA/DO-260B.

surveillance radar means radar equipment used to determine the position of an aircraft in range and azimuth.

transponder means an aircraft's SSR transponder.

11.66 Carriage of surveillance equipment

An aeroplane in an operation mentioned in column 1 of an item in table 11.66, in the class of airspace mentioned in column 2 of the item, must be fitted with surveillance equipment that meets the requirements mentioned in column 3 of the item.

Table 11.66—Surveillance equipment requirements

Column 1		Column 2
Item	Class of airspace	Requirements
1	Any (Classes A, B, C, D, E, and G)	At least 1 approved ADS-B OUT equipment configuration.
2	Class B or C – at certain aerodromes	For an aeroplane operating at one of the following aerodromes: (a) Brisbane (YBBN); (b) Sydney (YSSY); (c) Melbourne (YMML); (d) Perth (YPPH); at least 1 approved Mode S transponder.

11.67 Operation of surveillance equipment—general requirements

- (1) The requirements of this section are subject to section 11.71.
- (2) Surveillance equipment required to be fitted to, or carried on, an aircraft by section 11.66 must be continuously operated during the circumstances mentioned in section 11.66.

Note: Continuous operation for a transponder means that the equipment must be operated in a mode that enables an SSR response to be transmitted.
- (3) Subsection (2) does not apply if air traffic control has issued an instruction that the surveillance equipment is not to be operated.
- (4) If an aircraft is fitted with more than 1 approved transponder, only 1 transponder is to be operated at any time.
- (5) For each transponder, the Mode A code must be set:
 - (a) to the transponder code assigned by air traffic control for the flight; or
 - (b) if no transponder code is so assigned—to the relevant standard code in table 11.67(5).

Table 11.67(5)—Transponders: Mode A standard codes

Item	Column 1 Situation	Column 2 Mode A code
1	(a) Flights in Class A, B, C or D airspace; (b) IFR flights in Class E airspace	3000
2	IFR flights in Class G airspace	2000
3	VFR flights in Class E or Class G airspace	1200
4	Flights in Class G over water at a distance greater than 15 NM from shore	4000
5	Flights engaged in coastal surveillance	7615

Table 11.67(5)—Transponders: Mode A standard codes

Item	Column 1 Situation	Column 2 Mode A code
6	Ground testing by aircraft maintenance staff	2100

- (6) For paragraph (5)(b), for a situation mentioned in column 1 of an item in the table, the Mode A code is the number mentioned in column 2 for the item.
- (6A) Subject to subsection (6B), if an emergency situation described in an item of column 1 of table 11.67(6A) occurs during a flight, a pilot of the aircraft for the flight must set the Mode A code mentioned in column 2 for the item.

Table 11.67(6A)—Transponders: Mode A emergency codes

Item	Column 1 Situation	Column 2 Mode A code
1	Unlawful interference	7500
2	Loss of radiocommunication	7600
3	In flight emergency (unless otherwise instructed by air traffic control)	7700

- (6B) Despite subsection (6A), a pilot of an aircraft for a flight does not have to set a Mode A code mentioned in column 2 of table 11.67(6A) if the pilot reasonably believes that maintaining an existing Mode A code would result in a safer outcome.
- (7) If an approved transponder capable of reporting pressure altitude is fitted to an aeroplane for a flight, it must be operated with altitude reporting enabled.
- (8) Pressure altitude information reported by an approved transponder or an approved ADS-B OUT equipment configuration must be determined by:
- (a) a barometric encoder of a type authorised by CASA or the NAA of a recognised country, in accordance with (E)TSO-C88a; or
 - (b) another system approved under Part 21 of CASR as having a level of performance equivalent to a system mentioned in paragraph (a).

11.68 Mode S transponders and ADS-B OUT—specific requirements

- (1) An approved ADS-B OUT equipment configuration fitted to an aeroplane for a flight must be configured in accordance with the following:
- (a) the assigned aircraft address must be entered into the equipment;
 - (b) with one of the following forms of aircraft flight identification entered into the equipment:
 - (i) if a flight notification is filed with air traffic control for the flight—the aircraft identification mentioned on the flight notification;
 - (ii) if no flight notification is filed with air traffic control for the flight—the aircraft registration mark.

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- (2) An approved Mode S transponder must transmit each of the following when interrogated on the manoeuvring area of an aerodrome or in flight:
- (a) the assigned aircraft address;
 - (b) the Mode A code;
 - (c) the Mode C code;
 - (d) subject to subsection (3)—the aircraft flight identification.
- (3) Transmission of the aircraft flight identification by an approved Mode S transponder is optional for an aeroplane that was first certificated in its country of manufacture before 9 February 2012 (an **older aeroplane**). However, an older aeroplane that is equipped to transmit, may transmit its aircraft flight identification.
- (4) If an approved Mode S transponder transmits any Mode S EHS DAPs, the transmitted DAPs must comply with the standards set out in paragraph 3.1.2.10.5.2.3 and Table 3-10 of Volume IV, Surveillance and Collision Avoidance Systems, of ICAO Annex 10.
- Note 1: Paragraph 3.1.2.10.5.2.3 includes paragraphs 3.1.2.10.5.2.3.1, 3.1.2.10.5.2.3.2 and 3.1.2.10.5.2.3.3.
- Note 2: Australian Mode S SSR supports EHS DAPs. Transmission of Mode S EHS DAPs that are not in accordance with the ICAO standards may provide misleading information to air traffic control. Operators need to ensure that EHS DAPs are being transmitted.
- (5) If an approved Mode S transponder is fitted to an aeroplane first certificated in its country of manufacture on or after 9 February 2012:
- (a) having a certificated maximum take-off weight above 5 700 kg; or
 - (b) that is capable of normal operation at a maximum cruising true airspeed above 250 kts;
- the transponder's receiving and transmitting antennae must:
- (c) be located in the upper and lower fuselage; and
 - (d) operate in diversity, as specified in paragraphs 3.1.2.10.4 to 3.1.2.10.4.5 (inclusive) of Volume IV, Surveillance and Collision Avoidance Systems, of ICAO Annex 10.
- Note: Paragraph 3.1.2.10.4.2.1 is recommendatory only.
- (6) An aeroplane must not fly in Australian territory if it is fitted with Mode S transponder equipment other than an approved ADS-B OUT equipment configuration, unless the equipment is:
- (a) deactivated; or
 - (b) set to transmit only a value of zero for the NUCp, NACp, NIC or SIL.
- Note: It is considered equivalent to deactivation if NUCp, NACp, NIC or SIL is set to continually transmit only a value of zero.
- (7) The pilot in command of an aeroplane for a flight must ensure the requirements in subsections (1) and (2) are met for the aeroplane and the flight.
- Note: The aeroplane operator is also subject to the requirements in subsections (1) and (2), and each other requirement in this section and this Chapter that applies in relation to the aeroplane and a flight: see subsection 11.03(2).
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11.69 Alternate GNSS position source for ADS-B OUT—requirements

- (1) For an aeroplane first certificated in its country of manufacture on or after 8 December 2016, an alternate GNSS position source is acceptable if the source:
 - (a) is certified by CASA or the national aviation authority of a recognised country for use in IFR flight; and
 - (b) has included in its specification and operation the following:
 - (i) FDE, computed in accordance with the definition at paragraph 1.7.3 of RTCA/DO-229D;
 - (ii) the output function HPL, computed in accordance with the definition at paragraph 1.7.2 of RTCA/DO-229D;
 - (iii) functionality that, for the purpose of HPL computation, accounts for the absence of the SA of the GPS in accordance with paragraph 1.8.1.1 of RTCA/DO-229D.
- (2) For an aeroplane first certificated in its country of manufacture before 8 December 2016, an alternate GNSS position source is acceptable if it meets the requirements of subsection (1), other than subparagraph (1)(b)(iii) which is optional.

Note: The following GNSS receivers meet the requirements of this section, namely, those certified to (E)TSO-C145a or (E)TSO-C146a, or later versions; or those manufactured to comply with (E)TSO-C196a. Some later versions of GNSS receivers certified to (E)TSO-C129 may also meet the requirements, i.e. those having FDE and HPL features incorporated.

11.70 Alternate ADS-B OUT equipment configuration—requirements

- (1) An alternate ADS-B OUT equipment configuration is acceptable if:
 - (a) it has been certified by CASA or the national aviation authority of a recognised country, during type certification, as meeting the standards of EASA AMC 20-24 or EASA CS-ACNS; and
 - (b) the aircraft flight manual or flight manual supplement attests to the certification; and
 - (c) the GNSS system meets the performance requirements mentioned in subsection 11.69(1).
- (2) An alternate ADS-B OUT equipment configuration is acceptable if:
 - (a) it has been certified by EASA, during type certification, as meeting the standards of EASA AMC 20-24; and
 - (b) the aircraft flight manual attests to the certification; and
 - (c) the GNSS system meets the performance requirements mentioned in subsection 11.69(1).
- (3) For an aeroplane first certificated in its country of manufacture on or after 8 December 2016, an equipment configuration is acceptable if:
 - (a) it has been certified by the FAA, during type certification, as meeting the standards of 14 CFR 91.227; and
 - (b) the aircraft flight manual attests to the certification; and

-
- (c) the GNSS system meets the performance requirements mentioned in subsection 11.69(1).
 - (4) For an aeroplane first certificated in its country of manufacture before 8 December 2016, an equipment configuration is acceptable if:
 - (a) it has been certified by the FAA, during type certification, as meeting the standards of 14 CFR 91.227; and
 - (b) the aircraft flight manual attests to the certification; and
 - (c) the GNSS system meets the performance requirements mentioned in subsection 11.69(2).

11.71 Aeroplane flown with no operative surveillance equipment

Where this Chapter requires surveillance equipment to be fitted to an aeroplane, the equipment may be inoperative at the beginning of a flight if the flight:

- (a) begins from an aerodrome at which there is no facility for the surveillance equipment to be repaired or replaced; and
- (b) ends not more than 72 hours after the time the surveillance equipment was found to be inoperative.

Note: See also section 11.06 for additional requirements related to a flight with inoperative equipment. For a flight with no operative surveillance equipment, within controlled airspace or at a controlled aerodrome, Division 11.2 of the Part 91 Manual of Standards has requirements related to air traffic control clearances. Whether a clearance is issued, or when a clearance may be issued, could be affected by the flight not being conducted with operative surveillance equipment.

Chapter 12—Flight crew training and checking

Note: Division 91.D.11 of CASR contains requirements that may be relevant to the use of an aeroplane for conducting a training or checking event mentioned in this Chapter.

Division 1—Flight simulator use: specific aeroplane types

RESERVED

Note: This Division is reserved for the purposes of paragraph 121.510(1)(b) of CASR.

12.01 Requirement to use flight simulators for certain kinds of aeroplanes

For the purposes of paragraph 121.510(1)(b) of CASR, an aeroplane of a kind listed in an item of table 12.01 is prescribed.

Table 12.01—Requirement to use flight simulators for certain kinds of aeroplanes		
Item	Column 1	Column 2
	Type certificate holder or manufacturer	Aircraft type rating or model or variant
1	RESERVED	RESERVED
2		

Division 2—Initial training for flight crew

- Note 1: Provisions in Part 119 of CASR relating to human factors and non-technical skills also affect the training that an operator is required to provide to flight crew members. A flight crew member must meet the requirements in the operator's exposition about training in human factors principles and non-technical skills before carrying out a duty of the person's position: see regulation 119.180 of CASR. Regulation 119.175 of CASR requires the operator to have a program for training and assessing its operational safety-critical personnel in human factors principles and non-technical skills.
- Note 2: Other CASR provisions may affect the training that an operator is required to provide to flight crew members. For example, Australian aircraft operators must ensure that certain of its employees undertake dangerous goods training in accordance with regulation 92.110 of CASR before the employee first performs certain duties for the operator.
- Note 3: Other Commonwealth legislation such as the *Navigation Act 2012*, the *Aviation Transport Security Act 2004*, and the *Transport Safety Investigation Act 2003* may also affect the training that an operator is required to provide to flight crew members.

12.02 Scope of Division 2, Chapter 12

This Division:

- (a) is made for paragraph 121.555(1)(b) of CASR; and
- (b) prescribes requirements for an aeroplane operator's initial training for a flight crew member.

12.03 Flight crew—training facilities and devices: initial training

A training facility or device used to conduct the operator's initial training must meet the requirements of Division 3 of Chapter 13 that apply in relation to the training.

12.04 Flight crew—position description and responsibilities training

Initial training for a flight crew member must include training on the following matters:

- (a) the flight crew member's duties and responsibilities during operations, including the need to respond promptly and effectively to emergency situations;
- (b) responsibilities in ensuring that relevant documents and manuals are kept up-to-date;
- (c) responsibilities in ensuring that the flight crew member performs his or her duties in accordance with the operator's exposition;
- (d) identifying when crew members other than flight crew members have the authority and responsibility to initiate an evacuation and any other emergency procedure.

12.05 Flight crew—effective communication and coordination

- (1) Initial training for a flight crew member must include training on the importance of effective communication and coordination:
 - (a) between crew members; and

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- (b) between flight crew members and other parties (such as passengers, dispatchers and other external agencies);
in normal, abnormal and emergency situations.

(2) The training must cover:

- (a) the importance of pre-flight briefings and communicating necessary safety information during the briefing (between the crew, or the operator and the crew); and
- (b) communication techniques and the use of common language and terminology; and
- (c) the necessary information regarding ground-based emergency response procedures that would enable crew members to effectively communicate with external agencies during abnormal and emergency situations; and
- (d) the importance of coordination between flight crew and cabin crew for operational safety when applying procedures, particularly in abnormal and emergency situations.

12.06 Flight crew—fire and smoke: initial training

(1) Initial training for a flight crew member must include training in fire and smoke detection and suppression, including training in:

- (a) the importance of:
 - (i) dealing promptly with flight deck and cabin emergencies involving fire and smoke; and
 - (ii) correctly identifying the source of the fire; and
 - (iii) taking specific actions necessary for coordination and assistance when fire or smoke is discovered; and
- (b) the classification of fires and the appropriate type of extinguishing agents for each classified type of fire; and
- (c) firefighting techniques for particular fire situations, including techniques for the application of extinguishing agents; and
- (d) the consequences of misapplication of extinguishing agents and of using extinguishing agents in a confined space; and
- (e) the effects of smoke in an enclosed area; and
- (f) the visual restrictions associated with using smoke protection equipment relevant to aviation.

(2) On and after 2 December 2023, the training must also include practical training in firefighting that covers:

- (a) extinguishing a fire; and
- (b) using the firefighting equipment, specified for the purpose in the operator's exposition, in a smoke-filled (or simulated smoke-filled) environment.

Note 1: The practical training mentioned in paragraph (2)(a) is a live firefighting exercise and therefore must meet the requirements in subsections 13.09(2) and (3).

Note 2: The practical training mentioned in paragraph (2)(b) must meet the requirements in subsection 13.09(1).

Note 3: Subsection (2) does not require the firefighting equipment to be specific to a particular aeroplane type, since the requirement to use aeroplane-specific type equipment is covered by conversion training and the 3-yearly training requirements.

12.07 Flight crew—fatigue and fitness for duty

Initial training for a flight crew member must include training on the following matters:

- (a) the requirements for continuing competence and fitness to operate as a flight crew member, including flight and duty time limitations and rest requirements;
- (b) alertness management, the physiological effects of fatigue, sleep physiology, circadian rhythm and time zone changes.

12.08 Flight crew—general-survival training

- (1) Initial training for a flight crew member must include training in survival methods on land and water appropriate to the operator's areas of operation.
- (2) The training must include practical training using survival equipment determined by the operator, under the procedures mentioned in regulation 121.340 of CASR, for an aeroplane in respect of which the flight crew member has been assigned duties.

12.09 Flight crew—water-survival training

Life jackets

- (1) The requirements in subsection (2) apply if:
 - (a) life jackets are, under section 11.59, required to be carried for a flight of an aeroplane operated by the operator; and
 - (b) the flight crew member is assigned to duty for a flight of the aeroplane.
- (2) Initial training for a flight crew member must include a comprehensive drill requiring the flight crew member to:
 - (a) don a life jacket; and
 - (b) practice, in water, the techniques that maximise survival time in the water.

Life rafts, slide rafts and associated equipment

- (3) The requirements in subsection (4) apply if:
 - (a) life rafts are, under section 11.62, required to be carried for a flight of an aeroplane operated by the operator; and
 - (b) the flight crew member is assigned to duty on the aeroplane for a flight.
- (4) The following requirements must be met:
 - (a) initial training of the flight crew member must include a demonstration of:
 - (i) the inflation of life rafts and slide rafts carried on the aeroplane; and
 - (ii) any life-saving equipment or survival equipment for the rafts mentioned in regulation 121.335 or 121.340 of CASR;

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- (b) the training must include a comprehensive drill requiring the flight crew member to:
 - (i) practice boarding the life raft in water; and
 - (ii) practice using the life-raft equipment in water.

12.10 Flight crew—first-aid training

- (1) This section applies if:
 - (a) a flight crew member is assigned to duty on an aeroplane for a flight; and
 - (b) regulation 121.630 of CASR does not require a cabin crew member to be carried on the aeroplane for the flight; and
 - (c) a cabin crew member is not assigned to duty on the aeroplane for the flight.

Note: The requirements of Division 121.P.7 of CASR apply in relation to cabin crew members who are carried on a flight, but are not required to be carried under regulation 121.630. The requirements cover competency, minimum age, and annual emergency and safety equipment checks.

- (1A) Despite subsection (1), this section does not apply to a flight of an aeroplane that is:
 - (a) a medical transport operation transporting medical patients—provided that:
 - (i) a person, other than a flight crew member, is on board the aeroplane for the flight; and
 - (ii) the person could reasonably provide medical aid to the patients at least equivalent to the medical aid that a first-aid trained flight crew member could provide; or
 - (b) a cargo transport operation—provided that the only persons on board the aeroplane for the flight are crew members.

First-aid training

- (2) Initial training for the flight crew member must include basic first-aid training that includes instruction about treating the following:
 - (a) airsickness;
 - (b) gastro-intestinal disturbances;
 - (c) wounds;
 - (d) an unconscious person;
 - (e) fractures and soft tissue injuries;
 - (f) if the operator's exposition requires the conduct of a procedure to treat either of the following during a flight:
 - (i) hyperventilation;
 - (ii) burns.

First-aid equipment

- (3) The training must include instruction and practical training on the use of appropriate equipment including first-aid oxygen, first-aid kits, universal precaution kits and emergency medical kits and their contents.

12.11 Flight crew—training for passenger handling

- (1) This section applies if:
- (a) a flight crew member is assigned to duty on an aeroplane for a flight; and
 - (b) regulation 121.630 of CASR does not require a cabin crew member to be carried on the aeroplane for the flight; and
 - (c) a cabin crew member is not assigned to duty on the aeroplane for the flight.

Note: The requirements of Division 121.P.7 of CASR apply in relation to cabin crew members who are carried on a flight, but are not required to be carried under regulation 121.630. The requirements cover competency, minimum age, and annual emergency and safety equipment checks.

- (2) Initial training for the flight crew member must include training on passenger handling, including:
- (a) the importance of correct passenger seat allocation, as follows:
 - (i) correct seat allocation with reference to weight and balance;
 - (ii) correct seat allocation of special categories of passenger (for example, passengers who are ill or incapacitated, with reduced mobility, or restricted passengers);
 - (iii) any requirements relating to the seating of suitable passengers in emergency exit row seats; and
 - (b) regulatory requirements concerning the safe stowage of cabin baggage and cabin service items and the associated risks to safety, for example, that baggage (including a portable electronic device) or service items can:
 - (i) become a hazard to occupants; and
 - (ii) obstruct or damage the emergency equipment or exits; and
 - (c) precautions for when live animals are carried in the passenger compartment; and
 - (d) the handling of a death on board; and
 - (e) the identification of passengers affected by psychoactive substances; and
 - (f) the conduct of passenger briefings and passenger-safety demonstrations before flight; and
 - (g) motivation of passengers and crowd control during an evacuation of the aeroplane.

12.12 Flight crew—training in the physiological effects of flying

Initial training for a flight crew member must include training about the physiological effects of flying, including instruction on the following:

- (a) hypoxia;
- (b) oxygen requirements;
- (c) the atmosphere and atmospheric pressure;
- (d) pressurised and non-pressurised aircraft cabins;

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- (e) the physiological effects of pressure changes in the body, dealing with, for example, gases, cavities, sinuses, eustachian tubal function and barotrauma;
 - (f) time of useful consciousness.

Division 3—Conversion training requirements for flight crew

12.13 Scope of Division 3, Chapter 12

This Division:

- (a) is made for paragraph 121.560(1)(a) of CASR; and
- (b) prescribes requirements for conversion training for a flight crew member in relation to an operator and an aeroplane of a particular kind.

Note: Provisions in Part 119 of CASR relating to human factors and non-technical skills also affect the training that an operator is required to provide to flight crew members:

- (a) a flight crew member must meet the requirements in the operator's exposition about training in human factors principles and non-technical skills before carrying out a duty of the person's position: see regulation 119.180 of CASR; and
- (b) regulation 119.175 of CASR requires the operator to have a program for training and assessing its operational safety-critical personnel in human factors principles and non-technical skills.

12.14 Flight crew—training facilities and devices: conversion training

- (1) This section applies to conversion training that is not required to be carried out in a flight simulator under regulation 121.510 of CASR.
- (2) A training facility or device used to conduct conversion training in relation to an aeroplane of a particular kind, must meet the requirements of Division 3 of Chapter 13 that apply to the training and an aeroplane of that kind.

12.15 Flight crew—normal, abnormal and emergency procedures: conversion training

- (1) Conversion training for a flight crew member and an aeroplane of a particular kind must include training on the limitations and normal, abnormal and emergency procedures for an aeroplane of that kind.

Normal procedures

- (2) The training must cover standard operating procedures that relate to the flight crew member's safety-related duties and responsibilities during normal day-to-day operations, including the following:
 - (a) safety procedures for normal operations;
 - (b) procedures for turbulence;
 - (c) the operation of equipment and aircraft systems;
 - (d) management of, and assistance to, the passengers;
 - (e) communication and coordination with crew members and other personnel who have safety-related duties (for example, ground crew);
 - (f) security requirements and procedures.

Abnormal and emergency procedures

- (3) The training must cover the procedures for abnormal and emergency situations in flight and on the ground, including the following:
- (a) engine and airframe fires, and fires in the cargo compartment in the event the cargo compartment is inaccessible in flight to the crew;
 - (b) engine failures;
 - (c) fire, smoke or fumes in the flight deck;
 - (d) if cabin crew are not required to be carried on an aeroplane of that kind—fire, smoke or fumes in the passenger cabin;
 - (e) cabin pressurisation problems and decompression;
 - (f) unlawful interference;
 - (g) anticipated and unanticipated landing or ditching;
 - (h) rapid disembarkation;
 - (i) evacuation on land and water;
 - (j) crew communication and coordination (within the meaning of subsection 12.05(1)).

Specific flight-procedures training

- (4) The training must also cover the following:
- (a) any flight procedures or manoeuvres, conducted in an aeroplane of that kind, for which the operator holds an approval issued under regulation 91.045 or 121.010 of CASR;
 - (b) the procedures for any other operations conducted by the operator in an aeroplane of that kind that the flight crew member has not previously experienced (for example, precision runway monitor operations, LAHSO).

Note: Examples of approvals issued under regulation 91.045 or 121.010 of CASR include approvals to conduct EDTO, low-visibility operations, operations in RVSM airspace, and flights using a PBN navigation specification such as RNP AR, DP or APCH.

Specific flight-procedures training—EDTO

- (5) For the purposes of paragraph (4)(a), if the approval is an EDTO approval, the training must cover at least the following:
- (a) in the case that standby sources of electrical power significantly degrade cockpit instrumentation to the pilots—simulation of aerodrome approaches using standby power as the sole power source;
 - (b) contingency procedures for each area of operation intended to be used for EDTO flights;
 - (c) diversion procedures and diversion decision-making processes;
 - (d) the requirements of the civil aviation legislation in relation to extended diversion time operations.

Upset prevention and recovery—certain aeroplanes

- (6) On and after 31 March 2022, if an aeroplane of that kind has a maximum certificated passenger seating capacity of 30 seats or more, the training must

include a program of upset prevention and recovery training (UPRT) that covers the following areas:

- (a) upset awareness;
 - (b) upset prevention;
 - (c) upset recovery.
- (7) The training must include a practical component in which the flight crew member participates in simulated realistic scenarios that allow the crew member to practice what is covered by the training.

12.16 Flight crew—crew incapacitation procedures: conversion training

- (1) Conversion training for a flight crew member and an aeroplane of a particular kind must include training on:
 - (a) how flight crew are to respond in the event of crew incapacitation during normal, abnormal and emergency situations; and
 - (b) the elements specific to an aeroplane of that kind and the conditions relevant to the response.
- (2) The training must include instruction on how to operate any equipment fitted to, or carried on, an aeroplane of that kind that relates to treating an incapacitated crew member (for example, crew seats, first-aid oxygen).
- (3) The training must include a practical component which the flight crew member participates in simulated realistic scenarios that allow practice in what has been covered by the training.

12.17 Flight crew—doors and exits: conversion training

Conversion training for a flight crew member and an aeroplane of a particular kind must include practical training on the operation of each door and exit (including any flight deck window or hatch):

- (a) fitted to each model or variant of an aeroplane of the aeroplane kind to which the crew member has been assigned duties; and
- (b) in normal and emergency mode.

12.18 Flight crew—evacuation slides etc.

- (1) Conversion training for a flight crew member and an aeroplane (the *first-mentioned aeroplane*) of a particular kind must include:
 - (a) training on the use of each evacuation slide that is fitted to, or carried on, the aeroplane; and
 - (b) training on any other means of assisting evacuation on the aeroplane (for example, an escape rope).
- (2) If:
 - (a) the crew member is assigned to duty on another aeroplane of that kind; and

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- (b) an evacuation slide fitted to, or carried on, that aeroplane is different to an evacuation slide fitted to, or carried on, the first-mentioned aeroplane; then conversion training must include training on the use of the different slide.
 - (3) The training must include a practical component requiring the flight crew member to safely complete a descent using an evacuation slide representative of one fitted to an aeroplane of that kind.
 - (4) For the purposes of subsection (3), if the aeroplanes of that kind have more than one passenger deck, the descent using an evacuation slide is required to be conducted from the height of the lower passenger deck only.
 - (5) Despite subsection (3), a descent in relation to an aeroplane of that kind (the **relevant aeroplane**) need not be conducted if:
 - (a) the crew member has completed a descent when undertaking conversion training for an aeroplane of a different kind with the same operator; and
 - (b) any difference in the characteristics of the evacuation slide used for that descent (such as height or width of the slide, or angle of the slide with respect to the ground) are not significant enough to affect the outcomes of the training regarding the crew member's competency to perform a descent using an evacuation slide for the relevant aeroplane.

Division 4—Recurrent flight training for flight crew

12.19 Scope of Division 4, Chapter 12

This Division:

- (a) is made for paragraph 121.570(1)(b) of CASR; and
- (b) prescribes requirements for recurrent flight training for a flight crew member in relation to an operator and an aeroplane of a particular kind.

12.20 Flight crew—recurrent flight training requirements

- (1) Recurrent flight training in relation to an aeroplane of a particular kind must be carried out using an aeroplane of that kind or an approved flight simulator for an aeroplane of that kind.

Note: Regulation 121.510 of CASR requires recurrent flight training to be conducted in an approved flight simulator in certain circumstances.

- (2) Recurrent flight training for a flight crew member must include training that encompasses the units of competency prescribed in the Part 61 Manual of Standards for the grant of:
 - (a) if the flight crew member holds a type rating for an aeroplane of that kind—the type rating; and
 - (b) if the flight crew member holds a class rating for an aeroplane of that kind—the class rating.
- (3) Recurrent flight training must include:
 - (a) training or education that the operator's safety management system has identified for flight crew members in relation to an aeroplane of that kind; and
 - (b) training in normal, abnormal and emergency procedures; and
 - (c) any other training required for the flight crew member, in relation to an aeroplane of that kind, by the operator's training and checking system.
- (4) On and after 31 March 2022, if an aeroplane of that kind has a maximum certificated passenger seating capacity of 30 seats or more, recurrent flight training must include a program of upset prevention and recovery training (UPRT) that covers the following areas:
 - (a) upset awareness;
 - (b) upset prevention;
 - (c) upset recovery.
- (5) Recurrent training must include a course of training:
 - (a) in the failures of any system of an aeroplane of that kind that has checklist procedures in the aircraft flight manual instructions; and
 - (b) covering each major system failure, for an aeroplane of that kind:
 - (i) at least once every 4 years; or
 - (ii) more frequently in accordance with subsection (6).

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- (6) For paragraph 5(b), the operator must use feedback from the operator's safety management system, and flight data analysis program (if any), to determine whether a major system failure for an aeroplane of that kind should be covered by the course more frequently than once every 4 years.
- (7) In this section:
- major system failure***, in relation to an aeroplane, means a failure associated with the aeroplane's electrical, hydraulic, fuel or pressurisation system.
- (8) The flight crew member completes the recurrent training for a year if the flight crew member completes the portion of the course that the operator, in accordance with subsection (5), provides for that year.

Division 5—Part 121 proficiency check

Subdivision A—Part 121 proficiency check for pilots

12.21 Scope of Subdivision A, Division 5 of Chapter 12

This Subdivision:

- (a) is made for subregulation 121.580(1) of CASR; and
- (b) sets out requirements for a Part 121 proficiency check for a pilot in relation to an aeroplane of a particular kind.

12.22 Proficiency check requirements

Use of aeroplane or simulator

- (1) A Part 121 proficiency check for an aeroplane of a particular kind must be carried out in an aeroplane of that kind or an approved flight simulator for an aeroplane of that kind.

Note: Regulation 121.510 of CASR requires recurrent flight training to be conducted in an approved flight simulator in certain circumstances.

Application to cruise-relief co-pilots

- (2) If the pilot does not hold a type rating covering an aeroplane of that kind other than a cruise-relief co-pilot rating, the requirements of this section are subject to subsection 12.23(4).

Limitations on flight manoeuvres

- (3) During the proficiency check, the flight manoeuvres performed by the pilot under check must not involve sustained deviations outside the flight tolerances specified in table 2 in section 1 of Schedule 8 to the Part 61 Manual of Standards.
- (4) If the proficiency check involves the conduct of an instrument approach operation, the flight manoeuvres performed by the pilot under check must also not involve sustained deviations outside the flight tolerances specified in table 5 of section 1 of Schedule 8 to the Part 61 Manual of Standards.

When check to be performed in IMC etc.

- (5) The pilot must perform the proficiency check in IMC or simulated IMC during the period:
 - (a) beginning at the end of take-off; and
 - (b) reaching the landing minima for the operator and the aerodrome (the **minima**).

Note: The landing minima for the operator and the aerodrome are those determined in accordance with procedures in the operator's exposition and the prescribed landing minima requirements: see regulation 121.185 of CASR.

Manoeuvres generally

- (6) The pilot must perform the following manoeuvres for the proficiency check:
- (a) if the pilot is qualified as a pilot in command under regulation 121.495 of CASR—a rejected take-off;
 - (b) take-off with engine failure between V_1 and V_2 ;
 - (c) a 3D instrument approach operation to minima with one engine inoperative;
 - (d) a 2D instrument approach operation to minima;
 - (e) a missed approach from minima with one engine inoperative;
 - (f) a landing with one engine inoperative.

Pilots who may conduct operations from both pilot seats

- (7) If the pilot will be required to operate an aeroplane of that kind from both the left-hand and the right-hand pilot seats, the pilot must perform the following manoeuvres during the proficiency check in the seat that is not the pilot's normal pilot seat:
- (a) take-off with engine failure between V_1 and V_2 ;
 - (b) either a 3D or 2D instrument approach to minima with one engine inoperative;
 - (c) a missed approach from minima with one engine inoperative;
 - (d) a landing with one engine inoperative.

Manoeuvres not conducted in flight simulator

- (8) If the proficiency check is conducted in an aeroplane, then, despite subsection (6) or (7):
- (a) the rejected take-off manoeuvre is to be performed using touch drills only; and
 - (b) the take-off with engine failure manoeuvre is only to be initiated at a safe speed above V_2 ; and
 - (c) the 3D instrument approach operation to minima with one engine inoperative is only to be conducted with a simulated engine inoperative; and
 - (d) the landing with one engine inoperative is only to be performed with a simulated engine inoperative.

Delegation of conduct of flight

- (9) If the pilot can be delegated the conduct of a flight of an aeroplane of that kind under subregulation 121.535(3) of CASR (relief of the pilot in command), the proficiency check must include an assessment of the pilot's competence in conducting procedures applicable at or above FL 200 that:
- (a) are stated in:
 - (i) the operator's exposition for the aeroplane; or
 - (ii) the aircraft flight manual instructions for the aeroplane; and

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- (b) are solely the responsibility of the pilot in command for a flight of the aeroplane.

Manoeuvre for ACAS resolution advisory

- (10) If the pilot has not, for a valid Part 121 proficiency check, been assessed as competent in performing the correct manoeuvre in response to a resolution advisory from an approved ACAS within the previous 2 years, the pilot must perform the manoeuvre, for the proficiency check, in accordance with subsection (11).
- (11) Despite subsection (1), if the proficiency check is not required to be conducted in an approved flight simulator by regulation 121.510 of CASR, the performance of the manoeuvre mentioned in subsection (10) must be carried out using a training device which meets the requirements prescribed by section 13.08.

Knowledge

- (12) The pilot must demonstrate his or her knowledge of the following topics, as they relate to an aeroplane of that kind and the operator's operations, to the standard specified in the operator's exposition:
 - (a) navigation and operating systems;
 - (b) normal, abnormal and emergency procedures;
 - (c) operating limitations;
 - (d) the instrument flight rules.

Note: See subsection 11.19(1) for the definition of *approved ACAS*.

12.23 Cruise-relief co-pilots—proficiency check requirements

- (1) This section applies to a pilot who:
 - (a) holds a cruise-relief co-pilot rating for an aeroplane of that kind; and
 - (b) is assigned by the operator to carry out duties only within the scope of the privileges of the pilot's cruise-relief co-pilot rating.
- (2) Subject to subsections (3) and (4), a Part 121 proficiency check for the pilot must check the competency of the pilot in accordance with the cruise-relief co-pilot type rating flight test in Appendix L.10, section L of Schedule 5 to the Part 61 Manual of Standards.
- (3) The flight tolerances for the proficiency check must be those specified in Table 2 in section 1 of Schedule 8 to the Part 61 Manual of Standards.
- (4) The knowledge requirements and practical flight standards required by Part 61 are, for the purposes of the proficiency check, limited to the requirements and standards relevant to the conduct of normal, abnormal and emergency flight procedures in the climb, cruise and descent phases of flight above FL 200.
- (5) The proficiency check must be conducted by reference only to flight deck instruments.

Subdivision B—Part 121 proficiency check for flight engineers

12.24 Flight engineers—Part 121 proficiency check requirements

For the purposes of subregulation 121.580(4) of CASR, a Part 121 proficiency check for a flight engineer and an aeroplane of a particular kind must check the competency of the flight engineer in accordance with the flight engineer type rating flight test in Appendix V.2, section W of Schedule 5 to the Part 61 Manual of Standards.

Division 6—Annual emergency and safety equipment training for flight crew

12.25 Scope of Division 6, Chapter 12

This Division:

- (a) is made for paragraph 121.610(1)(c) of CASR; and
- (b) prescribes requirements for annual emergency and safety equipment training for a flight crew member in relation to an operator and an aeroplane of a particular kind.

Note: Provisions in Part 119 of CASR relating to human factors and non-technical skills also affect the training that an operator is required to provide to flight crew members:

- (a) a flight crew member must meet the requirements in the operator's exposition about training in human factors principles and non-technical skills before carrying out a duty of the person's position: see regulation 119.180 of CASR; and
- (b) regulation 119.175 of CASR requires the operator to have a program for training and assessing its operational safety-critical personnel in human factors principles and non-technical skills.

12.26 Flight crew—training facilities and devices: annual training

A training facility or device used to conduct annual emergency and safety equipment training in relation to an aeroplane of a particular kind, must meet the requirements of Division 3 of Chapter 13 that apply to the training and an aeroplane of that kind.

12.27 Flight crew—general requirements: annual emergency and equipment training

Annual emergency and safety equipment training mentioned in this Division must, in relation to the equipment that is the subject of the training:

- (a) give a general description of the equipment;
- (b) instruct about pre-flight serviceability of the equipment;
- (c) instruct about the operation of the equipment;
- (d) instruct about the conditions required for the operation of the equipment;
- (e) instruct on the operational limitations of the equipment and duration of use;
- (f) instruct on precautions for use of the equipment;
- (g) instruct about the failure modes of the equipment;
- (h) instruct about the location of the equipment;
- (i) instruct on the relevant communication and coordination activities with crew members and other personnel;
- (j) instruct about the operator's emergency and safety-related procedures associated with the operation of the equipment.

12.28 Flight crew—items of emergency and safety equipment

- (1) Annual emergency and safety equipment training for a flight crew member, in relation to an aeroplane of a particular kind, must cover each of the following

items of emergency or safety equipment that is fitted to, or carried on, the aeroplanes of that kind in respect of which the flight crew member has been assigned duties (the **relevant aeroplanes**):

- (a) survival equipment required under section 11.13;
 - (b) signalling equipment required under section 11.13;
 - (c) oxygen equipment required under Division 9 of Chapter 11;
 - (d) a survival ELT required under Division 10 of Chapter 11;
 - (e) each item of portable equipment required under Division 11 of Chapter 11;
 - (f) life jackets required under section 11.59;
 - (g) life rafts required under section 11.62.
- (2) If life jackets are carried on a relevant aeroplane, the training must include donning of life jackets.
- (3) If a relevant aeroplane carries portable supplemental oxygen, first-aid oxygen, or protective breathing equipment—the training must include donning of the equipment.
- (4) The training must include a practical component in which the flight crew member practices handling the equipment mentioned in this section (other than the equipment mentioned in subsection (5)).
- (5) The requirement in subsection (4) does not apply in relation to:
- (a) first-aid kits, emergency medical kits, universal precaution kits, crash axes, crowbars, life rafts, slide rafts, survival ELTs or signalling equipment; or
 - (b) if other survival equipment has been determined by the operator, using the procedures mentioned in regulation 121.340 of CASR, for a relevant aeroplane—that equipment.

Note: An annual emergency and safety equipment check covering the training, that is not carried out in a relevant aeroplane, must be carried out using a training facility or device that meets the requirements in Division 3 of Chapter 13: see paragraph 121.610(2)(c) of CASR.

12.29 Flight crew—doors and other exits for passenger evacuation: annual training

Application

- (1) This section applies to a normal and emergency exit:
- (a) fitted to an aeroplane of a particular kind in relation to which a flight crew member has been assigned duties (the **first-mentioned aeroplane**); and
 - (b) that enables passenger evacuation (a **passenger evacuation exit**).
- (2) If:
- (a) the flight crew member is assigned to duty on another aeroplane of that kind; and
 - (b) a passenger evacuation exit on the aeroplane is different to any of the passenger evacuation exits on the first-mentioned aeroplane;
- then this section also applies to that exit.

Training on operating the exits and evacuation procedures

- (3) Annual emergency and safety equipment training for the flight crew member must cover:
- (a) the operation of each of the exits to which this section applies in normal and emergency mode; and
 - (b) the evacuation procedures that relate to using the exits for passenger evacuation.

Means for assisting evacuation

- (4) The training must include instruction on use of the means for assisting evacuation on the aeroplane to which the exit is fitted (for example, escape ropes or evacuation slides).

Practical component

- (5) The training must include a practical component in which the flight crew member:
- (a) operates and opens, in normal and emergency mode, the exits:
 - (i) for which the flight crew member is assigned responsibility as required by the operator's evacuation procedures; or
 - (ii) for which there is a possibility that, in the event of cabin crew member incapacitation during an emergency, the flight crew member could be required to operate the exit; and
 - (b) demonstrates the evacuation procedures that relate to using the exits for passenger evacuation.

Flight crew compartment security door

- (6) The training must also include:
- (a) instruction on the operation of the flight crew compartment security door fitted to the first-mentioned aeroplane; and
 - (b) if:
 - (i) the flight crew member is assigned to duty on another aeroplane of that kind (the ***second-mentioned aeroplane***); and
 - (ii) the flight crew compartment security door on the second-mentioned aeroplane is different to the one fitted on the first-mentioned aeroplane;instruction on the operation of the door fitted to the second-mentioned aeroplane.

Division 7—The 3-yearly emergency and safety equipment training and checking requirements for flight crew

12.30 Scope of Division 7, Chapter 12

This Division:

- (a) is made for paragraph 121.620(1)(c) of CASR; and
- (b) prescribes requirements for 3-yearly emergency and safety equipment training for a flight crew member in relation to the operator and an aeroplane of a particular kind.

Note 1: The 3-yearly emergency and safety equipment training for a pilot, or a flight engineer, must relate to the duties the person has for an aeroplane in relation to emergency and safety equipment carried on the aeroplane: see paragraphs 121.620(1)(a) and (b).

Note 2: Provisions in Part 119 of CASR relating to human factors and non-technical skills also affect the training that an operator is required to provide to flight crew members:

- (a) a flight crew member must meet the requirements in the operator's exposition about training in human factors principles and non-technical skills before carrying out a duty of the person's position: see regulation 119.180 of CASR; and
- (b) regulation 119.175 of CASR requires the operator to have a program for training and assessing its operational safety-critical personnel in human factors principles and non-technical skills.

12.31 Flight crew—training facilities and devices: 3-yearly training

A training facility or device used to conduct 3-yearly emergency and safety equipment training in relation to an aeroplane of a particular kind, must meet the requirements of Division 3 of Chapter 13 that apply to the training and an aeroplane of that kind.

12.32 Flight crew—3-yearly emergency and safety equipment training

Content of training

- (1) The 3-yearly emergency and safety equipment training for a flight crew member, in relation to an aeroplane of a particular kind, must include the following training, in relation to the aeroplanes of that kind in respect of which the flight crew member has been assigned duties (the **relevant aeroplanes**):
 - (a) safely operating each kind of evacuation slide that is carried on, or fitted to, a relevant aeroplane;
 - (b) if life rafts are, under section 11.62, required to be carried on a relevant aeroplane—training in the use of a life raft and its associated equipment;
 - (c) training in the use of a survival ELT and any other signalling equipment fitted to, or carried on, a relevant aeroplane;

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- (d) training on firefighting that requires the flight crew member to complete a firefighting simulated exercise in a smoke-filled (or simulated smoke-filled) environment, using all of the firefighting equipment relevant to the flight crew member's duties on a relevant aeroplane, including the donning and use of protective clothing and protective breathing equipment;
 - (e) training in the operation of any exit on a relevant aeroplane that enables passenger evacuation and is not covered by the training mentioned in paragraph 12.29(5)(a);
 - (f) training in the method of opening the flight crew compartment security door (if any) in emergency mode.

Training to be practical in nature

- (2) The training mentioned in paragraphs (1)(b), (c) and (e) must be practical in nature and not solely theoretical.
- (3) On and after 2 December 2023, the training mentioned in paragraph (1)(d) must be practical in nature and not solely theoretical.

Note 1: A 3-yearly emergency and safety equipment check for the flight crew member must be carried out using the relevant aeroplane or a training facility or device that meets the requirements of Division 3 of Chapter 13, as they relate to the aeroplane: see paragraph 121.620(2)(b).

Note 2: Practical training that uses a firefighting simulated exercise must meet the requirements in subsection 13.09(1).

Chapter 13—Cabin crew training and checking

Division 1—English Language proficiency

13.01 Prescribed requirements for English language proficiency

Requirements

- (1) For the purposes of paragraph 121.655(1)(b) of CASR, the requirements for English language proficiency that must be met by a person assigned to duty as a cabin crew member are that:
 - (a) either subsection 13.02(1) (English as a foreign language tests) or subsection 13.02(2) (education or English language work experience) applies to the person; and
 - (b) the person:
 - (i) has been assessed as meeting the English language performance standard mentioned in subsection (2) by a member of the operator's personnel (the **assessor**) who is authorised by the operator to carry out the assessment; and
 - (ii) holds an assessment report issued by the assessor that states the person has met the standard.

English language performance standard

- (2) The English language performance standard is the ability of a person to demonstrate the person can:
 - (a) pronounce words clearly, using an accent that does not cause difficulties in understanding; and
 - (b) convey information in clearly structured sentences without confusion or ambiguity; and
 - (c) use an extensive vocabulary to accurately communicate on general and technical topics, without excessive use of jargon, slang or colloquial language; and
 - (d) speak fluently without long pauses, repetition or false starts; and
 - (e) respond to communications with actions that demonstrate that the information has been received and understood; and
 - (f) exchange information clearly in a variety of situations with both expert and non-expert English speakers while giving and receiving timely and appropriate responses; and
 - (g) use appropriate techniques such as questioning, non-verbal communication and paraphrasing to validate communications.
- (3) The performance standard applies to oral and written communications and in face-to-face situations relevant to the duties and obligations of a cabin crew member in an aviation technical learning environment.

13.02 English language tests, education or work experience

English as a foreign language tests

- (1) For the purposes of paragraph 13.01(1)(a), this section applies to a person who has documentary evidence that the person has completed:
 - (a) the International English Language Testing System (IELTS) general or academic training module, with an overall grade of 5.5, and no individual grade in a paper lower than 5; or
 - (b) the Test of English for International Communication (TOEIC-Secure Program Public Testing Centre), with grades not less than:
 - (i) 350 for listening; and
 - (ii) 300 for reading; and
 - (iii) 160 for speaking; and
 - (iv) 140 for writing; or
 - (c) the Test of English as a Foreign Language internet-based test (TOEFL IBT) with a grade not less than 71; or
 - (d) the Test of English as a Foreign Language computer-based test (TOEFL CBT) with a grade not less than 197; or
 - (e) the Test of English as a Foreign Language paper-based test (TOEFL PB) with a grade not less than 530.

Education or English language work experience

- (2) For the purposes of paragraph 13.01(1)(a), this section applies to a person who:
 - (a) has completed a minimum of 3 years of secondary education in an Australian or New Zealand education institution in which the principle language of instruction is English; or
 - (b) has completed a minimum of 3 years in a course that is at least the equivalent of an Australian secondary education in an educational institution in a country where one of the principal languages of instruction was English; or
 - (c) has worked in Australia or New Zealand for at least 3 of the 5 years immediately before commencing employment as a cabin crew member with the operator; or
 - (d) has worked in one of the following countries for at least 3 of the 5 years immediately before commencing employment as a cabin crew member with the operator:
 - (i) United Kingdom;
 - (ii) Republic of Ireland;
 - (iii) United States of America; or
 - (e) has worked in Canada for at least 3 of the 5 years immediately before commencing employment with the operator as a cabin crew member and has documentary evidence showing the use of English in the workplace.

Division 2—Senior cabin crew members: training and checking

13.03 Scope of Division 2, Chapter 13

This Division:

- (a) is made for the purposes of paragraph 121.665(1)(b) of CASR; and
- (b) prescribes training and checking that must be successfully completed by a senior cabin crew member in relation to an aeroplane and a flight.

13.04 Senior cabin crew training

Training for a senior cabin crew member must cover the duties and responsibilities of the senior cabin crew member, and include at least the following:

- (a) how to deliver briefings regarding normal, abnormal and emergency situations;
- (b) communication, cooperation and coordination with the crew and other personnel;
- (c) the operator's procedures and the requirements of the civil aviation legislation;
- (d) the administrative tasks required by the operator;
- (e) reporting systems and requirements;
- (f) fatigue management.

Note: Provisions in Part 119 relating to human factors and non-technical skills also affect the training that an operator is required to provide to senior cabin crew members:

- (a) regulation 119.180 of CASR makes it a requirement that a cabin crew member must not carry out a duty of the person's position unless the person meets the requirements in the operator's exposition about training in human factors principles and non-technical skills; and
- (b) regulation 119.175 of CASR requires the operator to have a program for training and assessing its operational safety-critical personnel in human factors principles and non-technical skills.

13.05 Senior cabin crew competency checks

- (1) A competency check for a senior cabin crew member must check the competency of the person in carrying out the duties and responsibilities of the senior cabin crew member.
- (2) The senior cabin crew member must meet the competency level specified in the operator's exposition for a competency check of a senior cabin crew member.

Note: A senior cabin crew member must also meet the training and checking requirements applicable to a cabin crew member under Division 121.P.2 of Part 121 of CASR (including Divisions 4 to 7 in this Chapter).

Division 3—Training facilities and devices

13.06 Scope of Division 3, Chapter 13

- (1) For the purposes of subregulation 121.680(2) of CASR, this Division prescribes requirements for a training facility or device that is used to carry out training and checking of crew members.
- (2) This Division has requirements for training facilities and the following training devices:
 - (a) cabin training devices;
 - (b) emergency exit trainers;
 - (c) emergency or safety equipment;
 - (d) any other device used for:
 - (i) training or checking on emergency or safety equipment; or
 - (ii) training or checking on emergency or safety or procedures; or
 - (iii) any other training or checking.

Note 1: Under regulation 121.680 of CASR, training and checking of a cabin crew member that is carried out using a training facility or device must be carried out using a facility or device that is specified in the operator's exposition and meets the requirements prescribed by this instrument.

Note 2: A training facility or device that is used (instead of an aeroplane) to conduct an annual or 3-yearly emergency and safety equipment check of flight crew must meet the requirements prescribed under this Division for the purposes of regulation 121.680 of CASR: see paragraphs 121.610(2)(c) and 121.620(2)(b) of CASR.

Note 3: Some elements of flight crew training prescribed under Chapter 12 also require compliance with the training facility or device standards in this Division: see sections 12.03, 12.14, 12.26 and 12.31.

13.07 Training facilities—general requirements

A training facility that is used for training or checking must be equipped with the emergency and safety equipment and other devices that would enable that training or checking to be conducted in accordance with the training and checking requirements in Part 121 of CASR, this Manual of Standards, and the operator's training and checking system.

13.08 Training devices—general requirements

- (1) A device used, instead of an aeroplane, for training or checking a crew member must be capable of re-creating realistic situations for providing effective training or checking to a crew member.
- (2) A device used for training a crew member must be adequate and appropriate to ensure that the objectives of the training can be achieved.
- (3) A device used to conduct a check of a crew member must be capable of being used by the crew member to demonstrate the competencies being checked.

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- (4) A device used to carry out training or checking must include the components necessary for the training or checking, including all the equipment required for the completion of practical exercises relevant to the training.

Example: A cabin training device used for firefighting training must be equipped to enable the crew member to complete practical exercises in firefighting.

Multiple cabin crew environment

- (5) If a cabin training device, or other device, is used to train crew members in operations conducted using multiple cabin crew, the device must be capable of assessing the competency of a member of the crew in a multiple cabin crew environment.

Simulated scenarios generally

- (6) A cabin training device or other device that will use a particular scenario to carry out training of a crew member in relation to an aeroplane must include any equipment, exits, aircraft systems, and other feature or component that is relevant for the scenario.

Simulations for emergency procedures

- (7) If the device is used to carry out training of a crew member in emergency procedures, it must be capable of simulating a realistic environment applicable to the relevant emergency scenario (for example, a smoke-filled cabin).

13.09 Firefighting training facilities and devices

- (1) Practical training using a firefighting simulated exercise must be conducted in an area that adequately simulates the confined space and obstacles of an aircraft cabin.
- (2) Fire extinguishers used for live firefighting exercises must be charged with an agent that adequately simulates the flow rate and dispersal pattern of the agent used in fire extinguishers fitted to, or carried on, aeroplanes operated by the operator.
- (3) If a training facility or device is used to simulate a fire for live firefighting exercises, it must adequately simulate the characteristics of a fire relevant to the training (for example, flame, heat, smoke or a fire's reaction to the application of an extinguishing agent).

13.10 Water-survival training facilities

If wet drills are to be, or are required by this Manual of Standards to be, conducted in a practical exercise at a training facility, the facility must have a body of water or pool of sufficient depth to enable the exercise to be realistically performed.

13.11 Devices used for training on emergency or safety equipment

- (1) If training and checking for a crew member involves training or checking a crew member on emergency and safety equipment (the ***relevant equipment***) fitted to, or carried on, an aeroplane, the equipment or other device used for the training or checking must be representative of the relevant equipment in accordance with this section.
- (2) Emergency or safety equipment used for the training or checking must:
 - (a) be the same, or substantially the same, equipment fitted to, or carried on, the aeroplane; and
 - (b) be capable of being used by the crew member to demonstrate a competency:
 - (i) relating to the functionality, purpose or use of the equipment that is fitted to, or carried on, the aeroplane; and
 - (ii) that is the subject of the training.
- (3) A device used for the training or checking, that incorporates emergency or safety equipment, must:
 - (a) have incorporated into the device equipment that is the same, or substantially the same, emergency or safety equipment fitted to, or carried on, the aeroplane; and
 - (b) be capable of being used by the crew member to demonstrate a competency:
 - (i) relating to the functionality, purpose or use of the emergency or safety equipment that is fitted to, or carried on, the aeroplane; and
 - (ii) that is the subject of the training.

13.12 Cabin training devices etc. must be representative

- (1) This section applies to a cabin training device, exit trainer and any other device that is used for training or checking a crew member in relation to an aeroplane type.
- (2) Any dials, handles, switches, restraint brackets and mounting devices that are included in the device must be representative of those fitted to, or carried on, an aeroplane of that type, in respect of:
 - (a) their operation; and
 - (b) any force required for their operation.
- (3) The direction of movement, associated forces and travel of all controls on equipment in the device must be representative of the equipment fitted to, or carried on, an aeroplane of that type, including the weight of an emergency exit operated without power assist.
- (4) The weight of any emergency exit hatch included in the device, must be representative of the emergency hatch fitted to the aeroplane.

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- (5) Emergency and safety equipment included in the device must be:
 - (a) secured in brackets or mounting devices that are representative of those found on an aeroplane of that type; and
 - (b) located and stowed in a way representative of the location and stowage of the equipment on an aeroplane of that type.

13.13 Devices for emergency evacuation and emergency exit training

- (1) A cabin training device used to carry out training of a crew member in emergency evacuations of an aeroplane using a particular scenario, must also include the features that are relevant in the scenario, including:
 - (a) the capability to operate exits in both normal and emergency modes, particularly in relation to the method of operation and the ways of operating the exits;
 - (b) the width, height and angle of inflated evacuation slides that are representative of those used for an aeroplane of that type;
 - (c) operational exits sufficient to carry out practical training of a crew member in relation to the aeroplane;
 - (d) a simulation of an unserviceable exit or exits;
 - (e) a simulation of hazards at emergency exits, for example, an obstacle, or fire or water.
- (2) An emergency exit trainer, cabin training device or other device used for training or checking of a crew member in the operation of an emergency exit for an aeroplane type, must also meet the following requirements:
 - (a) it must replicate the size and weight of an emergency exit of an aeroplane of that type;
 - (b) it must replicate the operating characteristics of the exit;
 - (c) it must permit the exit to be operated in both normal and emergency modes, particularly in relation to the method of operation and the forces required to operate them.

Division 4—Initial training for cabin crew

- Note 1: Provisions in Part 119 of CASR relating to human factors and non-technical skills also affect the training that an operator is required to provide to cabin crew members. A cabin crew member must meet the requirements in the operator's exposition about training in human factors principles and non-technical skills before carrying out a duty of the person's position: see regulation 119.180 of CASR. Regulation 119.175 of CASR requires the operator to have a program for training and assessing its operational safety-critical personnel in human factors principles and non-technical skills.
- Note 2: Other CASR provisions may affect the training that an operator is required to provide to cabin crew members. For example, Australian aircraft operators must ensure that certain of its employees undertake dangerous goods training in accordance with regulation 92.110 of CASR before the employee first performs certain duties for the operator.
- Note 3: Other Commonwealth legislation such as the *Navigation Act 2012*, the *Aviation Transport Security Act 2004*, and the *Transport Safety Investigation Act 2003* may also affect the training that an operator is required to provide to cabin crew members.

13.14 Scope of Division 4, Chapter 13

This Division is:

- (a) made for paragraph 121.710(b) of CASR; and
- (b) prescribes requirements for initial training for a cabin crew member in relation to an operator and an aeroplane.

13.15 Cabin crew—knowledge of aviation, regulations, duties and responsibilities

- (1) Initial training for a cabin crew member must include the training necessary to familiarise the cabin crew member with:
 - (a) the aviation environment, including aviation terminology, the theory of flight and aircraft operations; and
 - (b) the civil aviation legislation applicable to the cabin crew member's duties and responsibilities; and
 - (c) the authority and responsibilities, under the civil aviation legislation, of the pilot in command; and
 - (d) the knowledge, skills and competencies required to perform the duties and responsibilities of the position occupied by the cabin crew member, including on the matters set out in subsection (2).
- (2) For paragraph (1)(d), initial training must include training on the following matters:
 - (a) the cabin crew member's duties and responsibilities during operations, including the need to respond promptly and effectively to emergency situations;
 - (b) the requirements for continuing competence and fitness to operate as a cabin crew member, including the management of fatigue;
 - (c) responsibilities in ensuring that relevant documents and manuals are kept up-to-date;
 - (d) responsibilities in ensuring that the cabin crew member performs his or her duties in accordance with the operator's exposition;

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- (e) identifying when cabin crew members have the authority and responsibility to initiate an evacuation and any other emergency procedure.

13.16 Cabin crew—effective communication and coordination

- (1) Initial training for a cabin crew member must include training on the importance of effective communication and coordination:
 - (a) between crew members; and
 - (b) between cabin crew members and other parties (such as passengers, dispatchers and other external agencies)in normal, abnormal and emergency situations.
- (2) The training must cover:
 - (a) communication techniques and the use of common language and terminology; and
 - (b) the importance of pre-flight briefings and communicating necessary safety information during the briefing (between the crew, or the operator and the crew); and
 - (c) the importance of coordination between cabin crew and flight crew for operational safety when applying procedures, particularly in abnormal and emergency situations.

13.17 Cabin crew—fire and smoke: initial training

- (1) Initial training for a cabin crew member must include training in fire and smoke detection and suppression, including training in:
 - (a) the importance of:
 - (i) frequently checking potential fire-risk areas including the toilets and any associated smoke detectors; and
 - (ii) dealing promptly with emergencies involving fire and smoke; and
 - (iii) correctly identifying the source of the fire; and
 - (iv) informing the flight crew as soon as practicable; and
 - (v) taking specific actions necessary for coordination and assistance when fire or smoke is discovered;
 - (b) the classification of fires and the appropriate type of extinguishing agents for each classified type of fire;
 - (c) firefighting techniques for particular fire situations, including techniques for the application of extinguishing agents;
 - (d) the consequences of misapplication of extinguishing agents and of using extinguishing agents in a confined space;
 - (e) the effects of smoke in an enclosed area;
 - (f) the visual restrictions associated with using smoke protection equipment relevant to aviation;
 - (g) the procedures of ground-based emergency services relevant to general fire and smoke emergency procedures for cabin crew.

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- (2) On and after 2 December 2023, the training must also include practical training in firefighting that covers:
- (a) extinguishing a fire; and
 - (b) using the firefighting equipment, specified for the purpose in the operator's exposition, in a smoke-filled (or simulated smoke-filled) environment.

Note 1: The practical training mentioned in paragraph (2)(a) is a live firefighting exercise and therefore must meet the requirements in subsections 13.09(2) and (3).

Note 2: The practical training mentioned in paragraph (2)(b) must meet the requirements in subsection 13.09(1).

Note 3: Subsection (2) does not require the firefighting equipment to be specific to a particular aeroplane type, since the requirement to use aeroplane-specific type equipment is covered by conversion training and the 3-yearly training requirements.

13.18 Cabin crew—general-survival training

- (1) Initial training for a cabin crew member must include training in survival methods on land and water appropriate to the operator's areas of operation.
- (2) The training must include practical training using survival equipment determined by the operator, under the procedures mentioned in regulation 121.340 of CASR, for an aeroplane in respect of which the cabin crew member has been assigned duties.

13.19 Cabin crew—water-survival training

Life jackets

- (1) The requirements in subsection (2) apply if:
 - (a) life jackets are, under section 11.59, required to be carried for a flight of an aeroplane operated by the operator; and
 - (b) the cabin crew member is assigned to duty for a flight of the aeroplane.
- (2) The training must include a comprehensive drill requiring the cabin crew member to:
 - (a) don a life jacket; and
 - (b) practice, in water, the techniques that maximise survival time in the water.

Life rafts, slide rafts and associated equipment

- (3) The requirements in subsection (4) apply if:
 - (a) life rafts are, under section 11.62, required to be carried for a flight of an aeroplane operated by the operator; and
 - (b) the cabin crew member is assigned to duty for a flight on the aeroplane.
- (4) The following requirements must be met:
 - (a) training of the cabin crew member must include a demonstration of:
 - (i) the inflation of life rafts and slide rafts carried on the aeroplane; and
 - (ii) any life-saving equipment or survival equipment for the rafts mentioned in regulation 121.335 or 121.340 of CASR;

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- (b) the training must include a comprehensive drill requiring the cabin crew member to:
 - (i) practice boarding the life raft in water; and
 - (ii) practice using the life-raft equipment in water.

13.20 Cabin crew—first-aid training

Basic first-aid training

- (1) Initial training for a cabin crew member must include basic first-aid training that includes instruction about treating the following:
 - (a) airsickness;
 - (b) gastro-intestinal disturbances;
 - (c) hyperventilation;
 - (d) burns;
 - (e) wounds;
 - (f) an unconscious person;
 - (g) fractures and soft tissue injuries.

In-flight emergencies and associated first aid

- (2) Initial training must include instruction on in-flight medical emergencies and associated first aid on treating the following:
 - (a) asthma;
 - (b) stress and allergic reactions;
 - (c) shock;
 - (d) burns;
 - (e) choking;
 - (f) epilepsy;
 - (g) childbirth;
 - (h) stroke;
 - (i) heart attack.

First-aid equipment and CPR

- (3) The training must include instruction and practical training on:
 - (a) the use of appropriate equipment, including first-aid oxygen, first-aid kits, universal precaution kits and emergency medical kits and their contents; and
 - (b) practical cardio-pulmonary resuscitation that takes account of an aircraft environment.

13.21 Cabin crew—training for passenger handling

Initial training for a cabin crew member must include training on passenger handling, including:

- (a) the importance of correct passenger seat allocation, as follows:
 - (i) correct seat allocation with reference to weight and balance;
 - (ii) correct seat allocation of special categories of passenger (for example, passengers who are ill or incapacitated, with reduced mobility, or restricted passengers);
 - (iii) the necessity of seating suitable persons in emergency exit row seats; and
- (b) regulatory requirements concerning the safe stowage of cabin baggage and cabin service items and the associated risks to safety, for example, that baggage (including a portable electronic device) or service items can:
 - (i) become a hazard to occupants; and
 - (ii) obstruct or damage the emergency equipment or exits; and
- (c) precautions for when live animals are carried in the passenger compartment; and
- (d) the handling of a death on board; and
- (e) the identification of passengers affected by psychoactive substances.

13.22 Cabin crew—training in the physiological effects of flying

Initial training for a cabin crew member must include training about the physiological effects of flying, including instruction on the following:

- (a) hypoxia;
- (b) oxygen requirements;
- (c) the atmosphere and atmospheric pressure;
- (d) pressurised and non-pressurised aircraft cabins;
- (e) the physiological effects of pressure changes in the body, dealing with, for example, gases, cavities, sinuses, eustachian tubal function and barotrauma;
- (f) time of useful consciousness.

Division 5—Conversion training for cabin crew

13.23 Scope of Division 5, Chapter 13

This Division:

- (a) is made for paragraph 121.715(2)(a) of CASR; and
- (b) prescribes requirements for conversion training for a cabin crew member in relation to an operator and an aeroplane type.

Note: Provisions in Part 119 of CASR relating to human factors and non-technical skills also affect the training that an operator is required to provide to cabin crew members:

- (a) a cabin crew member must meet the requirements in the operator's exposition about training in human factors principles and non-technical skills before carrying out a duty of the person's position: see regulation 119.180 of CASR; and
- (b) regulation 119.175 of CASR requires the operator to have a program for training and assessing its operational safety-critical personnel in human factors principles and non-technical skills.

13.24 Cabin crew—fire and smoke: conversion training

- (1) Conversion training for a cabin crew member for an aeroplane type must include training on:
 - (a) the use of firefighting and any related equipment (for example, protective clothing, smoke protection) fitted to, or carried on, an aeroplane of the aeroplane type;
 - (b) drills for firefighting.
- (2) The training must include a practical component in which the cabin crew member participates in a firefighting simulated exercise for the practice of what has been covered by the training.

Note 1: Training that requires the use of emergency and safety equipment in relation to an aeroplane type must use equipment that is representative of equipment fitted to, or carried on, an aeroplane of the type: see section 13.11.

Note 2: Practical training that uses a firefighting simulated exercise must meet the requirements in subsection 13.09(1).

13.25 Cabin crew—doors and exits: conversion training

- (1) Conversion training for a cabin crew member for an aeroplane type must include training on the operation of each door and exit (including any flight deck window or hatch):
 - (a) fitted to each model or variant of an aeroplane of the aeroplane type to which the crew member has been assigned duties; and
 - (b) in normal and emergency mode.
- (2) Training must include use of the means (not including evacuation slides) for assisting evacuation on the aeroplane, for example, escape ropes.

Note: Requirements for training on evacuation slides are provided for in section 13.26.

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- (3) The training must include a demonstration, given to the cabin crew member, of the operation of the flight deck exits (other than a flight crew compartment security door), in normal and emergency modes.
 - (4) The training must include a practical component in which the cabin crew member:
 - (a) operates and opens each of the exits covered by the training (other than a flight deck exit whose operation is demonstrated under subsection (3)), in normal and emergency modes; and
 - (b) if escape ropes are carried on the aeroplane—prepares the escape ropes (other than flight deck escape ropes) for use in an evacuation, up to the point of (but not including) evacuating using the ropes.

13.26 Cabin crew—evacuation slides

- (1) Conversion training for a cabin crew member for an aeroplane type must include training on the use of each evacuation slide that is fitted to, or carried on, an aeroplane of the type (the *first-mentioned aeroplane*).
- (2) If:
 - (a) the crew member is assigned to duty on another aeroplane of the aeroplane type; and
 - (b) an evacuation slide fitted to, or carried on, the aeroplane is different to an evacuation slide fitted to, or carried, on the first-mentioned aeroplane;then conversion training must include training on the use of the different slide.
- (3) The training must include a practical component requiring the cabin crew member to safely complete a descent using an evacuation slide representative of one fitted to an aeroplane of the aeroplane type.
- (4) For the purposes of subsection (3), if the aeroplanes of the aeroplane type have more than one passenger deck, the descent using an evacuation slide is required to be conducted from the height of the lower passenger deck only.
- (5) Despite subsection (3), a descent in relation to an aeroplane of the aeroplane type (the *relevant aeroplane*) need not be conducted if:
 - (a) the crew member has completed a descent when undertaking conversion training for an aeroplane of a different aeroplane type with the same operator; and
 - (b) any difference in the characteristics of the evacuation slide used for that descent (such as height or width of the slide, or angle of the slide with respect to the ground) are not significant enough to affect the outcomes of the training regarding the crew member's competency to perform a descent using an evacuation slide for the relevant aeroplane.

13.27 Cabin crew—crew incapacitation procedures

- (1) Conversion training for a cabin crew member and an aeroplane of the aeroplane type must include training on:
 - (a) how cabin crew are to respond in the event of crew incapacitation during normal, abnormal and emergency situations; and
 - (b) the aeroplane type specific elements and conditions relevant to the response.
- (2) The training must include instruction on how to operate any equipment fitted to, or carried on, the aeroplane that relates to treating an incapacitated crew member (for example, flight crew seats, flight deck oxygen).
- (3) The training must include a practical component in which the cabin crew member participates in simulated realistic scenarios that allow practice in what has been covered by the training.

13.28 Cabin crew—aircraft systems: conversion training

- (1) Conversion training for a cabin crew member for an aeroplane type must include training on the location and use of the aircraft systems of an aeroplane of the aeroplane type, that are relevant to the duties of a cabin crew member.
- (2) The training must include a practical component in which the cabin crew member participates in simulated realistic scenarios that allow practice in what has been covered by the training.

13.29 Cabin crew—normal, abnormal and emergency procedures: conversion training

- (1) Conversion training for a cabin crew member for an aeroplane type must include training on the operator's normal, abnormal and emergency procedures for an aeroplane of the aeroplane type.
- (2) The training must cover standard operating procedures that relate to the cabin crew member's safety-related duties and responsibilities during normal day-to-day operations, including the following:
 - (a) safety procedures for normal operations;
 - (b) management of the cabin environment;
 - (c) procedures for turbulence;
 - (d) the operation of equipment and aircraft systems;
 - (e) management of, and assistance to, the passengers;
 - (f) communication and coordination with crew members and other personnel who have safety-related duties (for example, ground crew);
 - (g) security requirements and procedures.
- (3) The training must cover emergency procedures for abnormal and emergency situations in flight and on the ground, including the following:
 - (a) firefighting;

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- (b) smoke or fumes in the cabin;
 - (c) cabin pressurisation problems and decompression;
 - (d) unlawful interference;
 - (e) anticipated and unanticipated landing or ditching;
 - (f) rapid disembarkation;
 - (g) evacuation on land and water;
 - (h) crew communication and coordination (within the meaning of subsection 13.16(1));
 - (i) passenger handling and crowd control.
- (4) The training must include a practical component in which the cabin crew member participates in simulated realistic scenarios that allow the crew member to practice what is covered by the training.

Division 6—Annual training for cabin crew

13.30 Scope of Division 6, Chapter 13

This Division:

- (a) is made for subregulation 121.725(1) of CASR; and
- (b) prescribes requirements for annual training for a cabin crew member in relation to an operator and an aeroplane type.

Note: Provisions in Part 119 of CASR relating to human factors and non-technical skills also affect the training that an operator is required to provide to cabin crew members:

- (a) a cabin crew member must meet the requirements in the operator's exposition about training in human factors principles and non-technical skills before carrying out a duty of the person's position: see regulation 119.180 of CASR; and
- (b) regulation 119.175 of CASR requires the operator to have a program for training and assessing its operational safety-critical personnel in human factors principles and non-technical skills.

13.31 Cabin crew—general requirements: annual training

Annual training mentioned in this Division must, in relation to any emergency or safety equipment covered by the training:

- (a) give a general description of the equipment;
- (b) instruct about pre-flight serviceability of the equipment;
- (c) instruct about the operation of the equipment;
- (d) instruct about the conditions required for the operation of the equipment;
- (e) instruct on the operational limitations of the equipment and duration of use;
- (f) instruct on precautions for use of the equipment;
- (g) instruct about the failure modes of the equipment;
- (h) instruct about the location of the equipment;
- (i) instruct on the relevant communication and coordination activities with crew members and other personnel.

13.32 Cabin crew—emergency and safety equipment: annual training

- (1) Annual training for a cabin crew member must include training on emergency or safety equipment to which this section applies.
- (2) This section applies to each of the following items of emergency or safety equipment fitted to, or carried on, an aeroplane of the aeroplane type in relation to which the cabin crew member has been assigned duties (the *first-mentioned aeroplane*):
 - (a) survival equipment required under section 11.13;
 - (b) signalling equipment required under section 11.13;
 - (c) oxygen equipment required under Division 9 of Chapter 11;
 - (d) a survival ELT required under Division 10 of Chapter 11;
 - (e) each item of portable equipment required under Division 11 of Chapter 11;
 - (f) life jackets required under section 11.59;
 - (g) life rafts required under section 11.62.

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- (3) If:
- (a) the crew member is assigned to duty on another aeroplane of the aeroplane type; and
 - (b) an item of emergency or safety equipment fitted to, or carried on, the other aeroplane is different to any of the items fitted to, or carried on, the first-mentioned aeroplane;
- then subsection (1) applies to that item of equipment.
- (4) If life jackets are carried on an aeroplane of the aeroplane type in relation to which the crew member has duties, the training must include donning of life jackets.
- (5) If an aeroplane of the aeroplane type in relation to which the crew member has duties carries portable supplemental oxygen, first-aid oxygen or protective breathing equipment—the training must include donning of the equipment.
- (6) The training must include a practical component in which the cabin crew member:
- (a) practices handling the equipment to which this section applies (other than the equipment mentioned in subsection (7)); and
 - (b) participates in simulated realistic scenarios that allow practice in what has been covered by the training as it relates to the equipment.
- (7) The requirements in subsection (6) do not apply in relation to:
- (a) life rafts, slide rafts, survival ELTs or signalling equipment; or
 - (b) if other survival equipment has been determined by the operator, using the procedures mentioned in regulation 121.340 of CASR, for an aeroplane of the aeroplane type in relation to which the cabin crew member has been assigned duties—that equipment.

Note: Training that requires the use of emergency and safety equipment must use equipment that is representative: see section 13.11.

13.33 Cabin crew—doors and other exits for passenger evacuation: annual training

Application

- (1) This section applies to a normal and emergency exit:
- (a) fitted to an aeroplane of the aeroplane type in relation to which the cabin crew member has been assigned duties (the ***first-mentioned aeroplane***); and
 - (b) that enables passenger evacuation (a ***passenger evacuation exit***).
- (2) If:
- (a) the crew member is assigned to duty on another aeroplane of the aeroplane type; and
 - (b) a passenger evacuation exit on the aeroplane is different to any of the passenger evacuation exits on the first-mentioned aeroplane;
- then this section also applies to that exit.

Training on operating the exits and evacuation procedures

- (3) Annual training for the crew member must cover:
 - (a) the operation of each of the exits to which this section applies in normal and emergency mode; and
 - (b) the evacuation procedures that relate to using the exits for passenger evacuation.

Means for assisting evacuation

- (4) The training must include instruction on use of the means for assisting evacuation on the aeroplane to which the exit is fitted (for example, escape ropes or evacuation slides).

Practical component

- (5) The training must include a practical component in which the cabin crew member:
 - (a) operates and opens, in normal and emergency mode, the exits for which the cabin crew member has been assigned responsibility, as required by the operator's evacuation procedures; and
 - (b) participates in simulated realistic scenarios that allow practice in what has been covered by the training.

Flight crew compartment security door

- (6) The training must also include:
 - (a) instruction on the operation of the flight crew compartment security door fitted to the first-mentioned aeroplane; and
 - (b) if:
 - (i) the cabin crew member is assigned to duty on another aeroplane of the aeroplane type (the *second-mentioned aeroplane*); and
 - (ii) the flight crew compartment security door on the second-mentioned aeroplane is different to the one fitted on the first-mentioned aeroplane;instruction on the operation of the door fitted to the second-mentioned aeroplane.

13.34 Cabin crew—abnormal, emergency and safety procedures: annual training

- (1) Annual training for a cabin crew member for an aeroplane type must include training on the operator's abnormal, emergency and safety-related procedures for an aeroplane of the aeroplane type.
- (2) The training must cover safety-related procedures for the following:
 - (a) stowage of articles in the cabin;
 - (b) turbulence;

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- (c) the operation of equipment and aircraft systems that are relevant to the duties of a cabin crew member;
 - (d) the physiological effects of flying, including hypoxia, oxygen requirements, pressurisation in the atmosphere and the cabin, effects of pressure changes on the body and time of useful consciousness;
 - (e) the provision of first aid on an aeroplane and treatment of the physiological effects of flying, including the use of equipment for the purpose;
 - (f) communication and coordination with crew members and other personnel who have safety-related duties (for example, ground crew);
 - (g) security requirements and procedures.
- (3) The training must cover emergency procedures for abnormal and emergency situations in flight and on the ground, including the following:
- (a) firefighting;
 - (b) smoke or fumes in the cabin;
 - (c) cabin pressurisation problems and decompression;
 - (d) unlawful interference;
 - (e) anticipated and unanticipated landing or ditching;
 - (f) rapid disembarkation;
 - (g) evacuation on land and water;
 - (h) crew communication and coordination (within the meaning of subsection 13.16(1));
 - (i) crew incapacitation;
 - (j) passenger handling and crowd control.
- (4) The training must also cover:
- (a) post-accident survival techniques on land and water and the use of related survival equipment; and
 - (b) reviewing incidents and accidents that are relevant to the operator and a flight of the aeroplane.
- (5) The training must include a practical component in which the cabin crew member participates in simulated realistic scenarios that collectively allow practice in at least the following matters covered by the training:
- (a) crew communication and coordination;
 - (b) firefighting;
 - (c) cabin pressurisation problems and decompression;
 - (d) crew incapacitation;
 - (e) evacuation on land and on water.

Division 7—Three-yearly training and checking for cabin crew

13.35 Three-yearly training requirements

(1) This section:

- (a) is made for subregulation 121.735(1) of CASR; and
- (b) prescribes requirements for 3-yearly training for a cabin crew member in relation to the operator of an aeroplane and the aeroplane type.

Note: Provisions in Part 119 of CASR relating to human factors and non-technical skills also affect the training that an operator is required to provide to cabin crew members:

- (a) a cabin crew member must meet the requirements in the operator's exposition about training in human factors principles and non-technical skills before carrying out a duty of the person's position: see regulation 119.180 of CASR; and
- (b) regulation 119.175 of CASR requires the operator to have a program for training and assessing its operational safety-critical personnel in human factors principles and non-technical skills.

(2) Three-yearly training must include the following:

- (a) training in the method of opening the flight crew compartment security door (if any) in emergency mode;
- (b) practical training in the operation of any other exit on the aeroplane that enables passenger evacuation and is not covered by the training in section 13.33;
- (c) training in the use of the means for assisting evacuation in relation to an exit mentioned in paragraph (b) (for example, escape ropes or evacuation slides);
- (d) if life rafts are, under section 11.62, required to be carried on the aeroplane—practical training in the use of a life raft and its associated equipment;
- (e) practical training in the use of a survival ELT, and any other signalling equipment, fitted to, or carried on, the aeroplane;
- (f) practical training in the use of the flight crew seats, restraint system and oxygen system fitted to, or carried on, the aeroplane, for the purpose of responding to pilot incapacitation;
- (g) training on firefighting that requires the cabin crew member to complete a simulated firefighting exercise:
 - (i) using all of the firefighting equipment for the cabin crew member's duties on the aeroplane, including the donning and use of protective clothing and protective breathing equipment; and
 - (ii) which, on and after 2 December 2023, must be conducted in a smoke-filled or simulated smoke-filled environment.

Note: Practical training that uses a firefighting simulated exercise must meet the requirements in subsection 13.09(1).

Chapter 14—Emergency evacuation demonstrations and procedural requirements

Division 1—General emergency evacuation procedure requirements

14.01 Scope of Chapter 14

This Chapter:

- (a) is made for subregulation 121.755(1) of CASR; and
- (b) prescribes requirements for emergency evacuation procedures in relation to an aeroplane and a flight.

14.02 General requirements

The emergency evacuation procedures must:

- (a) account for the aeroplane carrying the number of passengers that corresponds to the aeroplane's maximum operational passenger seat configuration; and
- (b) provide for evacuations on ground and in water (ditching); and
- (c) be realistic, capable of being practically accomplished and such as to ensure that any reasonably anticipated emergency can be adequately handled; and
- (d) take into consideration the possible incapacitation of individual crew members.

14.03 Crew members, emergency exits and cabin configuration etc.

The emergency evacuation procedures must be appropriate having regard to the following matters:

- (a) the number of crew members;
- (b) the locations on the aeroplane at which a crew member is assigned;
- (c) the emergency evacuation duties and procedures assigned to each crew member;
- (d) the number, location, type of emergency exit or type of opening mechanism on an emergency exit available for evacuation in the aeroplane;
- (e) if the aeroplane is required by section 11.62 to carry one or more life rafts—the location of life rafts;
- (f) the way the passenger cabin interior configuration affects the emergency evacuation of passengers.

Division 2—Aeroplanes carrying more than 44 passengers

14.04 Application etc.

- (1) This Division applies in relation to an aeroplane that has a maximum operational seating configuration of more than 44 passengers.
- (2) The requirements of this Division are in addition to the requirements in Division 1 of this Chapter.

14.05 Emergency evacuation procedures

- (1) An operator's emergency evacuation procedures for an aeroplane must ensure the crew members can achieve an evacuation capability at least equivalent to that achieved in an emergency evacuation demonstration that:
 - (a) was conducted by the aeroplane's manufacturer for the purpose of the type certification of the aeroplane; and
 - (b) meets the requirements of regulation 25.803 of the FARs, CS-25.803, or other requirements that CASA approves, in writing, as being of an equivalent standard.
- (2) If the aeroplane is required under section 11.62 to carry one or more life rafts, the emergency evacuation procedures related to the ditching of the aeroplane must ensure the removal of rafts and the evacuation of the occupants of the aeroplane will be conducted in an orderly and expeditious manner.
- (3) The emergency exits identified as being the primary responsibility of cabin crew members for the purposes of the emergency evacuation demonstration mentioned in subsection (1) must continue to be required, by the emergency evacuation procedures for the aeroplane, to be the primary responsibility of cabin crew members.
- (4) To avoid doubt, the requirement in subsection (3) does not prevent additional emergency exits becoming the primary responsibility of cabin crew members under the emergency evacuation procedures.

14.06 Requirement to conduct demonstrations

- (1) An operator must demonstrate to CASA the emergency evacuation procedures for an aeroplane to the extent required by this Division.

Note: The demonstration of emergency evacuation procedures required by this Division is a demonstration commonly understood to be a "partial" emergency evacuation demonstration. This is because it is not the full emergency evacuation demonstration that is required as part of an aircraft's initial type certification.
- (2) A demonstration of the emergency evacuation procedures in relation to an aeroplane must be conducted:
 - (a) before the type and model of aeroplane is operated in an Australian air transport operation by an operator; and

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- (b) before the aeroplane is operated under an Australian air transport AOC following a change listed below that has not previously been demonstrated to CASA for the aeroplane:
 - (i) a reduction in the number of cabin crew members assigned to duty for the aeroplane;
 - (ii) a change to the locations on the aeroplane at which a cabin crew member is assigned, or to the crew's emergency evacuation duties and procedures;
 - (iii) a change to the number, location, type of emergency exit or type of opening mechanism on an emergency exit that is available for evacuation of the aeroplane.

Ditching procedures

- (3) If the aeroplane is required under section 11.62 to carry one or more life rafts, CASA may require the operator, by notice in writing, to conduct a demonstration of the procedures related to the ditching of the aeroplane (the ***ditching procedures***).
- (4) In considering whether to require a demonstration of the ditching procedures, CASA may take into account:
 - (a) the availability and realism of facilities, cabin training devices and equipment used by the operator for training crew members on emergency and safety equipment and emergency procedures; and
 - (b) any ditching demonstrations the operator has carried out on an aeroplane of a similar type; and
 - (c) any other factor CASA considers relevant.
- (5) A demonstration of ditching procedures may be conducted:
 - (a) during the emergency evacuation demonstration required under subsection (2); or
 - (b) at another time, as directed by CASA.

Note: As a matter of normal practice, CASA will work with an operator to identify a mutually agreeable time and place for the demonstration of ditching procedures. Ultimately, CASA can provide a direction as to the time and place even where no such agreement can be reached.

14.07 Demonstration requirements

- (1) A demonstration to CASA of the emergency evacuation procedures of the aeroplane, including the ditching procedures if required under subsection 14.06(3), must be conducted in simulated emergency conditions.
- (2) Each crew member who participates in the demonstration must:
 - (a) have assigned duties for the type and model of aeroplane; and

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- (b) have been selected at random by CASA from a list of crew for the aeroplane compiled by the operator:
 - (i) for the purpose of testing the procedures with members of the crew who do not have an above average level of experience or exposure to emergency evacuation requirements; and
 - (ii) given to CASA; and
 - (c) have been assessed by the operator as competent to perform duties relevant to carrying out the emergency evacuation procedures and associated safety briefings for the type and model of aeroplane.
- (3) The operator must not cause the demonstration to have been practiced, rehearsed with, or described to, a participant, except as mentioned in subsection (4).
 - (4) For the purposes of subsection (3), a participant may be advised only that he or she will be participating in an evaluation of safety procedures.

14.08 Standards for demonstrations

- (1) CASA must be satisfied that the emergency evacuation procedures for an aeroplane would enable the crew members to achieve the requirement in subsection 14.05(1).
- (2) A demonstration of the emergency evacuation procedures for the aeroplane must also meet the following standards:
 - (a) the cabin crew members, using the operator's emergency evacuation procedures, must:
 - (i) open 50% of the required floor level emergency exits; and
 - (ii) open 50% of the required non-floor level emergency exits;
 - (b) the emergency exits opened for the purposes of paragraph (a) must not include an exit if CASA has (for the purposes of the demonstration) identified that an unsafe condition exists outside the exit;
 - (c) the emergency exits must be ready for use within 15 seconds from the prearranged signal notified to the operator.
- (3) For the purposes of subsection (2), an emergency exit is a **required** emergency exit if:
 - (a) it was present at the time of the emergency demonstration evacuation mentioned in subsection 14.05(1) for the aeroplane; and
 - (b) the operator's procedures provide that the opening of the exit is a primary responsibility of a cabin crew member.

Note: The emergency demonstration evacuation mentioned in subsection 14.05(1) is a full evacuation demonstration conducted for the purposes of the certification of the aeroplane.
- (4) An emergency exit is **ready for use within 15 seconds** if:
 - (a) the emergency exit has been fully opened; and
 - (b) any other means required for a passenger to reach the ground using the exit (for example, an evacuation slide) would be ready within that time; and

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- (c) where those means are not physically deployed—the time it would take to deploy them for the use of the emergency exit is taken into account in the 15 seconds.

Note: For example, if it was determined that the slide deployment time for a type of aeroplane is 4 seconds, the measured time to open the relevant emergency exit would be 11 seconds.

- (5) If the operator is required to conduct a demonstration of ditching procedures for the aeroplane, the standard that must be met is that CASA is satisfied the ditching procedures meet the requirement in subsection 14.05(2).

14.09 Manner of conducting demonstration

Emergency evacuation procedures

- (1) A demonstration of the emergency evacuation procedures for an aeroplane must be conducted as follows:
 - (a) either during the dark of the night or during daylight with the dark of the night simulated;
 - (b) the aeroplane is in a normal ground attitude with landing gear extended;
 - (c) the following methods be used to prevent disclosure of the available emergency exits to participants in the demonstrations:
 - (i) stands or ramps be positioned at all of the aeroplane's emergency exits;
 - (ii) if the crew would be able to see the means being used to indicate unusable exits before the signal to evacuation is given—the relevant passenger and cockpit windows are blacked out;
 - (d) the aeroplane's normal electrical power sources are de-energised at the commencement of the evacuation;
 - (e) each item of equipment:
 - (i) required to be carried on the aeroplane for the flight by Chapter 11; and
 - (ii) relevant to the conduct of an emergency evacuation demonstration under this Division;must be fitted to, or carried on, the aeroplane;
 - (f) each external door or other exit, and each internal door or curtain, must be in a position to simulate a normal take-off;
 - (g) a member of the cabin crew or the flight crew, or any other crew member or member of the operator's personnel who maintains or operates the aeroplane in the normal course of their duties, must not be used as a passenger in the demonstration;
 - (h) a passenger is not to be assigned a specific seat except under the direction of CASA;
 - (i) if the opening of an emergency exit is not the primary responsibility of a cabin crew member under the emergency evacuation procedures—an employee of the operator is not to be seated next to that exit;
 - (j) seatbelts and shoulder harnesses for the participants in the demonstration are fastened;

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- (k) the seating density and arrangement of the aeroplane is representative of the maximum operational passenger seat configuration of the aeroplane;
 - (l) the crew complement on board is not to exceed the number normally carried, with each crew member to be a member of a regularly scheduled line crew;
 - (m) each crew member is seated in the seat that is normally assigned to the person for take-off and is to remain seated until the signal to evacuate is given;
 - (n) a crew member or a passenger participating in a demonstration is not given prior knowledge of the emergency exits available for the demonstration;
 - (o) the demonstration must not include as a participant a person who has taken part in an evacuation demonstration within the preceding 6 months;
 - (p) the pre-take-off procedures included in the operator's exposition are demonstrated, including instructions to follow the directions of crew members, except no instruction can be given on the procedures to be followed in the demonstration;
 - (q) no more than 50% of the emergency exits on the sides of the fuselage of an aeroplane are used for the evacuation demonstration;
 - (r) at least one exit used for the demonstration is a floor level exit;
 - (s) any exit not used for the demonstration must be indicated by red lights, red tape, or other appropriate means, placed outside the exit to indicate fire or other reason for the exit to be unusable;
 - (t) the emergency evacuation procedures are to be demonstrated, except that the flight crew must not take an active role in assisting any person inside the cabin during the demonstration.

Demonstration of ditching procedures—other requirements and standards

- (2) If the demonstration includes ditching procedures, the following requirements apply:
 - (a) the demonstration must include:
 - (i) removal of life rafts, and any other equipment required by regulation 121.335 of CASR, from stowage locations; and
 - (ii) taking life rafts and equipment to the appropriate exit; and
 - (iii) any other actions necessary for readying the raft for launching and inflation;
 - (b) if the operator's emergency evacuation procedures require the use of passengers to assist with ditching—the demonstration must include passengers as participants to assist with the ditching in accordance with the procedures;
 - (c) after the ditching signal is given, each crew member and passenger who is participating in the demonstration must, in accordance with the ditching procedures, don a life jacket.

14.10 Demonstrations of ditching procedures only

- (1) This section applies if:
 - (a) CASA requires the operator of the aeroplane to conduct a demonstration of ditching procedures under subsection 14.06(3); and
 - (b) the demonstration of the ditching procedures will be conducted separately to other evacuation procedures.
- (2) The demonstration:
 - (a) despite paragraph 14.09(1)(a), may be conducted under daylight conditions; and
 - (b) is subject to each other applicable requirement mentioned in subsection 14.09(1); and
 - (c) is subject to the requirements in subsection 14.09(2); and
 - (d) may be conducted either using an aeroplane or a cabin training device.
- (3) If a cabin training device is used, it must:
 - (a) be a life-size mock-up of the interior of the aeroplane; and
 - (b) include adequate seats for the use of participants in the demonstration; and
 - (c) include emergency exits that replicate the emergency exits on the aeroplane.

Notes to Part 121 (Australian Air Transport Operations—Larger Aeroplanes) Manual of Standards 2020

The Part 121 Manual of Standards 2020 (in force under the *Civil Aviation Safety Regulations 1998*) as shown in this compilation comprises the *Part 121 (Australian Air Transport Operations—Larger Aeroplanes) Manual of Standards 2020* amended as indicated in the Tables below.

Table of Manuals of Standards

Year and number	Date of registration on FRL	Date of commencement	Application, saving or transitional provisions
Part 121 (Australian Air Transport Operations—Larger Aeroplanes) Manual of Standards 2020	10 Dec 2020 (F2020L01561)	2 December 2021 (see s. 1.02)	—
Part 121 (Australian Air Transport—Larger Aeroplanes) Amendment Manual of Standards 2021	1 December 2021 (F2021L01681)	1 December 2021 (see s. 2)	—
Part 121 Manual of Standards Amendment Instrument 2023 (No. 1)	29 November 2023 (F2023L01569)	2 December 2023 (see s. 2)	—
Part 121 Manual of Standards Amendment Instrument 2024	22 November 2024 (F2024L01484)	23 November 2024 (see s. 2)	—

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 1.02	rep. <i>Legislation Act 2003</i> , s. 48D
s. 1.04	am. F2021L01681, F2023L01569
s. 2.16	am. F2021L01681
s. 2.17, section heading	am. F2021L01681
s. 2.18	am. F2021L01681, F2023L01569
s. 2.20	am. F2021L01681, F2023L01569
s. 2.24	am. F2021L01681
s. 3.02	am. F2023L01569
s. 3.03	am. F2023L01569

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 3.04, Table 3.04	am. F2021L01681
s. 4.02	rep. F2021L01681
s. 4.04	am. F2021L01681
s. 4.06	am. F2021L01681, F2023L01569
s. 4.07	am. F2021L01681
s. 4.09	am. F2021L01681, F2023L01569
s. 4.11, Table 4.11	am. F2021L01681
s. 4.13	am. F2021L01681
s. 4.14	am. F2021L01681
s. 4.15	am. F2021L01681
s. 4.16	am. F2021L01681
s. 4.17	am. F2021L01681
s. 4.18	am. F2021L01681
s. 4.19	am. F2021L01681, F2023L01569, F2024L01484
s. 7.03	am. F2021L01681
s. 7.05	am. F2021L01681
s. 7.06	am. F2021L01681
s. 8.01	am. F2021L01681 (3), (4) rep. end of 1 Dec. 2022 (s. 8.01(4))
Chapter 9, Division 1 heading	am. F2021L01681
s. 9.01	am. F2021L01681
s. 9.01A	ad. F2021L01681
s. 9.02	am. F2021L01681
s. 9.04	am. F2021L01681, F2023L01569, F2024L01484
s. 9.08	am. F2021L01681
Chapter 9, Division 1A	ad. F2021L01681
s. 9.08A	ad. F2021L01681
s. 9.08B	ad. F2021L01681
s. 9.08C	ad. F2021L01681
s. 9.08D	ad. F2021L01681
s. 9.08E	ad. F2021L01681
s. 9.08F	ad. F2021L01681
s. 9.08G	ad. F2021L01681
s. 9.08H	ad. F2021L01681
s. 9.08J	ad. F2021L01681
s. 9.08K	ad. F2021L01681
s. 9.12	am. F2021L01681
s. 9.13	am. F2021L01681, F2023L01569

Table of Amendments

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Provision affected	How affected
s. 11.01	am. F2023L01569
s. 11.03	am. F2021L01681
s. 11.04	am. F2021L01681
s. 11.06	rs. F2021L01681
s. 11.09	am. F2021L01681
s. 11.10	am. F2021L01681
s. 11.18	am. F2021L01681
s. 11.19	am. F2023L01569
s. 11.20	am. F2021L01681
s. 11.21A	ad. F2021L01681 rep. end of 1 Dec. 2023 (s. 11.21A(5))
s. 11.22	am. F2021L01681
s. 11.23	rs. F2021L01681
s. 11.24	am. F2021L01681 rs. F2023L01569
s. 11.24A	ad. F2021L01681 rep. F2023L01569
s. 11.25	am. F2021L01681 rs. F2023L01569
s. 11.26	am. F2021L01681 (2), (3) rep. end of 1 Dec. 2023 (s. 11.26(3))
s. 11.29	rs. F2021L01681
s. 11.30	am. F2021L01681
s. 11.35	am. F2023L01569
s. 11.39	am. F2021L01681
s. 11.40	am. F2021L01681, F2023L01569
s. 11.40, Table 11.40	am. F2021L01681
s. 11.41	am. F2023L01569
s. 11.41, Table 11.41	am. F2021L01681
s. 11.43	am. F2021L01681, F2023L01569
s. 11.44	am. F2021L01681
s. 11.45	am. F2021L01681
s. 11.48, Table 11.48	am. F2023L01569
s. 11.52	am. F2021L01681, F2023L01569
s. 11.52, Table 11.52	am. F2021L01681
s. 11.53	am. F2021L01681
s. 11.55	am. F2021L01681
s. 11.59	am. F2021L01681
s. 11.61	rep. F2021L01681

Table of Amendments

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Provision affected	How affected
s. 11.62	am. F2023L01569
s. 11.64	am. F2023L01569
Chapter 11, Division 13 heading	rs. F2023L01569
s. 11.65	am. F2021L01681
s. 11.66, section heading	rs. F2023L01569
s. 11.66	rs. F2021L01681
s. 11.66, Table 11.66	am. F2023L01569
s. 11.67, section heading	rs. F2023L01569
s. 11.67	am. F2021L01681, F2023L01569
s. 11.67, Table 11.67 (renumbered 11.67(5))	am. F2021L01681
s. 11.68, section heading	rs. F2023L01569
s. 11.68	am. F2021L01681, F2023L01569
s. 11.69	am. F2021L01681, F2023L01569
s. 11.70	am. F2023L01569
s. 11.71, section heading	rs. F2023L01569
s. 11.71	am. F2021L01681, F2023L01569
s. 12.06	am. F2021L01681
s. 12.10	am. F2021L01681, F2023L01569
s. 12.11	am. F2021L01681
s. 12.23	am. F2021L01681, F2023L01569
s. 12.28	am. F2021L01681
s. 12.32	am. F2021L01681
s. 13.06	am. F2021L01681
s. 13.09	am. F2021L01681
s. 13.17	am. F2021L01681
s. 13.24	am. F2021L01681
s. 13.29	am. F2021L01681
s. 13.34	am. F2021L01681
s. 13.35	am. F2021L01681
