Part 135 (Australian Air Transport Operations—Smaller Aeroplanes) Manual of Standards 2020

I, Shane Patrick Carmody, Director of Aviation Safety, on behalf of CASA, make the following Manual of Standards.

Dated 11 December 2020

[Signed S. Carmody]
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Director of Aviation Safety

Contents

Chapter 1 — Preliminary

1.01 Name

(1) This instrument is the *Part 135 (Australian Air Transport Operations—Smaller Aeroplanes) Manual of Standards 2020*.

(2) This instrument may be cited as the *Part 135 Manual of Standards*.

(3) Unless the contrary intention appears, references in this instrument to "this manual of standards", "this MOS" or "this instrument" are references to the *Part 135 Manual of Standards*.

1.02 Commencement

This instrument commences immediately after the commencement of Part 135 of CASR.

1.03 Authority

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

Note: Regulation 135.025 of CASR includes a general power for CASA to issue a Manual of Standards for the purposes of Part 135 of CASR (Australian air transport operations—smaller aeroplanes).

1.04 Definitions and abbreviations

Note: Some expressions used in this instrument are defined in section 1.03 of the *Civil Aviation Act 1988*, the Dictionary of the *Civil Aviation Safety Regulations 1998* or subregulation 2(1) of the *Civil Aviation Regulations 1988*.

In this instrument:

AGL means above ground level.

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."

APU means auxiliary power unit.

ATS means Air Traffic Services.

Note: The term ***Air Traffic Services*** is defined in the Dictionary.

automatic ELT: see section 11.49.

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

ELT: see section 11.48.

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

(E)TSO means ETSO or TSO.

GNSS means global navigation satellite system.

headset includes a flying helmet that incorporates a headset.

ISA means International Standard Atmosphere.

landing performance requirements, for an aeroplane, means the landing performance requirements for the aeroplane stated in its flight manual.

LSALT means lowest safe altitude.

MTOW means maximum take-off weight.

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

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

passenger list, for a flight, means a passenger list for the flight, or other document, containing the information stated in subregulation 135.090(2) of CASR.

survival ELT: see section 11.50.

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

1.05 References to ICAO documents

(1) In this instrument, unless the contrary intention appears, a reference to an ICAO document, however described, is a reference to the document as in force or existing from time to time.

(2) In this instrument, a reference to a numbered ICAO Annex is a reference to the Annex of that number, as in force or existing from time to time, and as included in the Chicago Convention.

(3) In this instrument, a reference to a numbered ICAO Manual is a reference to the Manual of that number, or later version, as in force or existing from time to time and issued by ICAO.

(4) In this instrument, a reference to a numbered ICAO Circular is a reference to the Circular of that number, or later version, as in force or existing from time to time and issued by ICAO.

(5) If a provision of this instrument refers to an ICAO document, then, unless the contrary intention appears, the document, as in force or existing from time to time, is taken to be applied, adopted or incorporated by, into or for this instrument, as the case requires.

Note 1: Relevant ICAO documents for this MOS may be accessed by navigating from the following link: http://www.icao.int/publications/Pages/default.aspx.

Note 2: A reference to an ICAO document, including an ICAO Annex, which only occurs in a Note to a provision does not have the effect that the document is taken to be applied, adopted or incorporated for this instrument, unless the contrary intention appears. Such references in Notes are to documents that may be used as guidance or background information.

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

(1) In this instrument, unless a contrary intention appears, 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.

Note: For example, the joint Australian and New Zealand Standard AS/NZS 1754:2004, *Child restraint systems for use in motor vehicles*.

(2) In this instrument, unless a contrary intention appears, a reference to a particular TSO is a reference to that TSO or a later version of that TSO.

(3) In this instrument, unless a contrary intention appears, a reference to a particular ETSO is a reference to that ETSO or a later version of that ETSO.

Note 1: The first version of a TSO may have been issued with, or without, the notation "(0)" at the end (for example only, the citations of TSO-C129 and TSO-129(0) would refer to the same document). Therefore, for first version TSOs, either form is an acceptable citation.

Note 2: TSO later versions are identified by an alphabetical letter (for example only, TSO-C129 (or TSO-C129(0) versus TSO-C129a). Unless the contrary intention appears, a reference to (for example only) TSO-C129 (or TSO-C129(0)) means that version or a later version. A reference to TSO-C129a means that version or a later version, but not the earlier version, unless a contrary intention appears.

1.07 Applied, adopted or incorporated documents

In this instrument, 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.

Chapter 2 — Flight distance limitations

2.01 Flight distance requirements

(1) In this section:

relevant cruising speed means the one-engine-inoperative cruising speed, in ISA conditions and still air, stated in the operator's exposition.

(2) This section prescribes requirements for subregulation 135.035(1) of CASR.

(3) A piston-engine, multi-engine aeroplane with an MTOW of more than 5 700 kg must not be flown further than the distance from an adequate aerodrome, for the flight, which the aeroplane can fly if flying at the relevant cruising speed for 60 minutes.

(4) Subject to subsection (5), a turbine-engine, multi-engine aeroplane with an MTOW of more than 5 700 kg must not be flown further than the distance from an adequate aerodrome, for the flight, which the aeroplane can fly if flying at the relevant cruising speed for 180 minutes.

(5) Subsection (4) does not apply if the aeroplane's operator holds an approval, under regulation 135.020 of CASR, to conduct the flight with the aeroplane.

Chapter 3 — Carriage of documents and information

Division 1—Flight-related documents

3.01 Carriage of documents

(1) For paragraph 135.065(1)(a) of CASR, the following documents are prescribed:

(a) the aeroplane's aircraft flight manual instructions;

(b) either:

(i) the aeroplane's flight technical log; or

(ii) if Part 42 of CASR does not apply to the aeroplane — the maintenance release for the aeroplane;

(c) if there is required to be a minimum equipment list for the aeroplane under regulation 135.045 of CASR—the aeroplane's minimum equipment list;

(d) if an operational flight plan for the flight is required under regulation 135.145 of CASR—the operational flight plan for the flight;

(e) the journey log for the flight;

(f) the authorised aeronautical information for the flight;

(g) the weight and balance documents for the flight.

Note 1: These documents are in addition to documents that are required to be carried on the aeroplane, as stated in subregulations 135.065(2) and (3), and regulation 135.075, of CASR.

Note 2: Other documents may also be required to be carried on the aeroplane under other legislation. For example, documentation relating to the carriage of dangerous goods under Part 92 of CASR, or documentation relating to disinfection 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);

the document may be carried on board the aeroplane in place of the flight manual.

Note: An exposition that meets the requirements stated 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 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 paragraph 135.075(2)(a) of CASR, the following documents are prescribed:

(a) the aeroplane's certificate of airworthiness and certificate of registration;

(b) if the aeroplane has a radio station licence — a copy of the licence;

(c) if the flight is a passenger transport operation or medical transport operation — a document containing the information required by regulation 135.090 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, as stated in regulation 135.065 of CASR.

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

3.03 Keeping and updating documents etc.

For paragraph 135.080(a) of CASR, if the flight is a passenger 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 subregulation 135.115(1) of CASR, if equipment listed in column 1 of an item of Table 3.04 is required to be carried for the flight under the civil aviation legislation, the information mentioned in column 2 of the item is prescribed for the equipment.

Table 3.04—Information about emergency and survival equipment

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

Chapter 4 — Operational flight plans

4.01 Pre-flight content of operational flight plan

(1) This section prescribes the information for paragraph 135.145(2)(b) of CASR.

General information requirements

(2) The operational flight plan must include 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 planned destination aerodrome, for the flight;
- (e) whether the flight is planned, whether in whole or part, to be a VFR flight at night, an IFR flight or both;
- (f) the amount of fuel required to be carried on board the aeroplane for the flight under regulation 135.215 of CASR, and the actual amount of fuel carried on board the aeroplane for the flight;
- (g) for the planned flight route for the flight:
  - (i) the route and route segments of the flight, including waypoints, distances and tracks; and
  - (ii) for a VFR flight at night or IFR flight —the published LSALT, or LSALT (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 the flight.

Information about alternate aerodromes

(3) If a destination alternate aerodrome is required for the flight, the operational flight plan must include details of the destination alternate aerodrome, and the routes, or route segments, required for the 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 details of the destination alternate aerodrome before the aeroplane takes-off for the flight.

Note: Regulation 135.180 of CASR requires the inclusion of details of a take-off alternate aerodrome in the operational flight plan in certain circumstances.

4.02 End of flight information for operational flight plan

For paragraph 135.145(3)(a) of CASR, the following information is prescribed:

(a) if waypoints detailed in the flight plan are required, under regulation 91.630 of CASR, to be reported to ATS — the estimated time the aeroplane flew over each waypoint;

(b) the fuel calculations made in compliance with the fuel requirements under Chapter 7;

(c) the aerodrome of final landing for the flight.

Chapter 5 — Alternate aerodrome requirements

5.01 Operations to remote islands

(1) In this section:

remote island means:

(a) Christmas Island; or

(b) the Cocos (Keeling) Islands; or

(c) Lord Howe Island; or

(d) Norfolk Island.

(2) This section prescribes circumstances and requirements for subregulation 135.185(1) of CASR.

(3) This section applies to an aeroplane that:

(a) has more than 1 engine; and

(b) is conducting a passenger transport operation or medical transport operation, which involves flying to a remote island.

(4) The requirements are the following:

(a) before the flight commences, the pilot in command of the aeroplane must nominate a destination alternate aerodrome for the flight;

(b) the nominated destination alternate aerodrome, for the flight, must not be located on a remote island.

(5) However, the requirement stated in paragraph (4)(b) does not apply if the aeroplane's operator holds an approval, under regulation 135.020 of CASR, for the nominated destination alternate aerodrome, for the flight, to be located on a remote island.

Chapter 6 — Narrow runway requirements

RESERVED

Chapter 7 — Fuel requirements

7.01 Purpose of Chapter 7

This Chapter prescribes requirements for subregulation 135.215(1) of CASR.

7.02 Definitions for Chapter 7

In this Chapter:

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

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

contingency fuel, for an aeroplane and flight, means the amount of fuel required to compensate for unforeseen factors, which must not be less than the greater of the following amounts:

(a) 10% of the trip fuel amount for the flight;
(b) an amount of fuel required to fly, in ISA conditions, for 5 minutes at the holding speed, for the aeroplane, at 1 500 ft above the planned destination aerodrome.

destination alternate fuel means the amount of fuel required to enable an aeroplane to do the following in a sequence:

(a) perform a missed approach at the destination aerodrome;
(b) climb to the expected cruising altitude;
(c) fly the expected routing to the destination alternate aerodrome;
(d) descend to the point where the expected approach is initiated;
(e) conduct the approach;
(f) land at the destination alternate aerodrome.

established, for the definition of ***holding fuel*** in this section, means any of the following:

(a) established by the aeroplane's manufacturer, and published in the aeroplane's flight manual;
(b) established by the use of a fuel consumption monitoring system;
(c) established by the aeroplane's operator and published in the operator's exposition, along with:
    (i) the relevant data and methodology used; or
    (ii) references to another accessible location of the data and methodology used.

final reserve fuel means the calculated 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 kind of flight mentioned in column 2 of the item—for the period of the flight mentioned in column 3 of the item; and
  (ii) at 1 500 ft above aerodrome elevation in ISA conditions; and
  (iii) at holding speed; and
  (iv) at the aeroplane's estimated weight on arrival at the destination alternate aerodrome, or planned destination aerodrome if no destination alternate aerodrome is required for the flight; and
(b) that is usable fuel remaining on completion of the final landing at the aerodrome.

Table—Final reserve fuel requirements

Item	Column 1	Column 2	Column 3
	Aeroplane	**Kind of flight**	**Final reserve fuel flight time**
1	A piston-engine aeroplane	IFR flight or VFR flight	45 minutes
2	A turbine-engine aeroplane	IFR flight or VFR flight	30 minutes

holding fuel means the amount of fuel required by an aeroplane to fly for the period 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 conditions.

Note: See the definition of ***established*** in this section.

MSL means mean sea level.

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

(a) if the flight arrives at the point with adequate fuel to complete the flight to the planned destination aerodrome while maintaining the fuel required by subsection 7.04(2) —continue to that aerodrome; or
(b) otherwise — divert to an en route alternate aerodrome while maintaining the fuel required by subsection 7.04(3).

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) APU consumption, if applicable.

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

(a) fuel for take-off and climb from the departure aerodrome to initial cruising level or altitude, taking into account the expected departure routing;

(b) fuel for cruise from top of climb to top of descent, including any step climb or descent;
(c) fuel from top of descent to the point where the approach is initiated, taking into account the expected arrival procedure;
(d) fuel for executing an approach and landing.

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.

7.03 General requirements

Fuel consumption data

(1) When determining the quantity of usable fuel required under this Chapter for a flight of an aeroplane, the operator, and pilot in command, must each use 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;
(b) the aeroplane's 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 quantity of usable fuel required under this Chapter, the operator, and 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 ATS 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.

7.04 Amounts of fuel to be carried on board for a flight

(1) The operator, and 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 total of the following amounts of usable fuel:
(a) taxi fuel;
(b) trip fuel;

(c) destination alternate fuel, if required;
(d) holding fuel, if required;
(e) contingency fuel;
(f) final reserve fuel;
(g) additional fuel, if applicable.

(2) The operator, and pilot in command, must each ensure, 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;
(b) destination alternate fuel, if required;
(c) holding fuel, if required;
(d) contingency fuel;
(e) final reserve fuel;
(f) additional fuel, if applicable.

(3) The operator, and pilot in command, must each ensure 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;
(b) destination alternate fuel, if required;
(c) holding fuel, if required;
(d) final reserve fuel;
(e) additional fuel if applicable.

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

(5) Subsection (6) applies if an aeroplane:
(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 pilot in command, must each ensure the aeroplane is carrying at least the following amounts of usable fuel:
(a) destination alternate fuel from that time;
(b) holding fuel, if required;
(c) final reserve fuel.

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

(1) The operator, and pilot in command, of an aeroplane must each ensure that for a flight of the aeroplane*:*
(a) the amount of usable fuel on board the aeroplane is determined before the flight commences, and recorded; and

(b) 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 stated 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 135.205, and paragraphs 119.205(1)(h) and (o), of CASR.

(2) The pilot in command must do all of 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 meet:

(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 7.04(2); and

(ii) otherwise — the requirements of subsection 7.04(3);

(d) calculate the amount of usable fuel expected to be remaining when the aeroplane lands at the destination aerodrome.

7.06 Procedures if fuel reaches specified amount

(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 7.04(3), the pilot in command must:

(a) take into account the traffic and operational conditions likely to be prevailing 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 stated in section 7.04.

(2) The pilot in command must request from ATS 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) final reserve fuel;

(b) destination alternate fuel, if required.

(3) The pilot in command must declare to ATS 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 ATS 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 happen.

Note 2: Pilots in command should not expect any form of priority handling because of a "minimum fuel" declaration. ATS will, however, advise the flight crew of any additional expected delays, and coordinate when transferring control of the aeroplane to ensure other ATS units are aware of the flight's fuel state.

(4) If the pilot in command of an aeroplane for a flight becomes aware that the amount of useable fuel on board upon landing at the nearest aerodrome where a safe landing can be made would be less than the final reserve fuel, 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.

7.07 Operational variations—fuel calculations

(1) Despite sections 7.03 and 7.04, an aeroplane operator may use an operational variation, stated in the operator's exposition for the purpose of this section, that relates to the calculation of any of the following, if the requirements stated 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) details of the operational variation, including procedures in relation to the use of the operational variation, proposed for inclusion in the operator's exposition.

Note: Under regulation 119.105 of CASR, CASA may direct the operator to remove from the operator's exposition, or revise in the exposition, the operational variation if CASA were to find there was insufficient evidence the operational variation 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 — Prescribed single-engine aeroplanes

8.01 Purpose of Chapter 8

This Chapter prescribes:

(a) kinds of single-engine aeroplane for subregulation 135.240(3) of CASR; and

(b) matters for subregulation 135.240(2) of CASR.

8.02 Definition for Chapter 8

In this Chapter:

relevant aeroplane means a kind of single-engine aeroplane prescribed under section 8.03.

8.03 Prescribed kinds of single-engine aeroplane

For subregulation 135.240(3) of CASR, the following kinds of single-engine aeroplane are prescribed:

(a) an aeroplane approved under subparagraph 174B(2)(d)(ii), or subparagraph 175A(1)(d)(ii), of CAR, as at immediately before the commencement of this manual of standards;

(b) an aeroplane whose type acceptance certificate states the aeroplane is eligible to be:

(i) an approved single-engine turbine powered aeroplane (ASETPA); or

(ii) a prescribed single-engine aeroplane for the purposes of regulation 135.240 of CASR.

Note: The term ***type acceptance certificate*** is defined in the Dictionary.

8.04 Prescribed matters—engine malfunction or failure

(1) A prescribed matter, for subregulation 135.240(2) of CASR, is an engine malfunction or failure that happens during the take-off and initial climb stage of the flight, which makes it necessary, in the interests of safety, for the pilot in command of a relevant aeroplane to:

(a) abort the take-off; or

(b) after the take-off stage of the flight:

(i) if a suitable forced landing area, for the flight, is available—land the aeroplane on the area; or

(ii) if a suitable forced landing area, for the flight, is not available—land the aeroplane on the most suitable terrain for a forced landing in the vicinity of the aerodrome from which it took off; or

(iii) carry out a turn-back manoeuvre for the aeroplane.

(2) In this section:

turn-back manoeuvre, for the aeroplane, means a manoeuvre pre-determined by the aeroplane's operator, taking into account the minimum altitude and indicated airspeed required for the manoeuvre, by which the pilot in command of the aeroplane turns the aeroplane around after take-off and executes a glide approach to, and landing on, any part of the aerodrome from which the aeroplane took off.

8.05 Prescribed matters—decision speed

(1) A prescribed matter, for subregulation 135.240(2) of CASR, is the determination of the decision speed for a runway from which a relevant aeroplane is to take-off.

(2) In this section:

decision speed, for a runway, means the last speed a relevant aeroplane reaches, whilst travelling on the runway during take-off, at which the pilot in command of the aeroplane may elect to abort the take-off.

8.06 Prescribed matters—forced landing

(1) A prescribed matter, for subregulation 135.240(2) of CASR, is the conduct of a forced landing by a relevant aeroplane in VMC, or IMC, at an altitude of more than 1 000 ft AGL, initiated during any of the following stages of a flight of the aeroplane:
   (a) climb;
   (b) en route;
   (c) descent;
   (d) approach to land.

(2) Also, a prescribed matter, for subregulation 135.240(2) of CASR, is the conduct of a forced landing by a relevant aeroplane in VMC, or IMC, at an altitude of not more than 1 000 ft AGL.

8.07 Prescribed matters—engine ignition and performance

(1) A prescribed matter for subregulation 135.240(2) of CASR is the happening of any of the following events during a flight of a relevant aeroplane:
   (a) the activation of a chip detector system warning;
   (b) an uncommanded engine shutdown;
   (c) the exceeding of an engine performance parameter;
   (d) the activation of a fire warning;
   (e) engine failure.

(2) Also, a prescribed matter, for subregulation 135.240(2) of CASR, is electrical load shedding.

(3) In this section:

chip detector system means an engine oil metal contamination detection system.

8.08 Prescribed matters—suitable route and forced landing areas

(1) A prescribed matter, for subregulation 135.240(2) of CASR, is the assessment, before a proposed flight of a relevant aeroplane, of a suitable route for the flight.

(2) Also, a prescribed matter, for subregulation 135.240(2) of CASR, is the identification, before a proposed flight of a relevant aeroplane, of aerodromes and suitable forced landing areas, for the flight, which are available for a forced landing by the aeroplane during the flight.

8.09 Procedures—suitable route and forced landing areas

(1) In determining the procedures for the relevant matters, the operator of a relevant aeroplane must have regard to the following considerations:

(a) the nature of the terrain that would be overflown during a proposed flight;

(b) the weather information for the route of a proposed flight, including seasonal and other adverse meteorological influences that could affect the flight;

(c) the route limitations that limit the time for the aeroplane to be outside the glide range of a suitable forced landing area for a proposed flight;

(d) if water would be over-flown during a proposed flight:

(i) the ditching capability of the aeroplane's design, taking into account the requirement stated in paragraph 135.015(3)(a) of CASR; and

(ii) the identification of areas of water that meet the requirements stated in paragraph 135.015(3)(c) of CASR.

(2) For a relevant aeroplane, the procedures for the relevant matters must state that the maximum time for the aeroplane to be outside the glide range of a suitable forced landing area, for a proposed flight, is 15 minutes at the normal cruise speed plus the time taken for a glide to 1 000 ft AGL.

(3) The procedures for the relevant matters must state that before a proposed flight, the positions of aerodromes and suitable forced landing areas, for the flight, along the flight route must be programmed into the aeroplane's area navigation system.

(4) In this section:

relevant matters means the matters prescribed under section 8.08.

Chapter 9— Safety briefings, instructions and demonstrations

9.01 Safety briefing card

(1) For paragraph 135.275(4)(a) of CASR, the following information is prescribed:

(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 aeroplane's aircraft flight manual instructions;

(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, which 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 11.55:

(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 11.58 — where they are located and how to use them during an initial evacuation of the aeroplane.

9.02 Safety briefings, instructions, or demonstrations, before take-off

(1) This section prescribes requirements for subregulation 135.280(1) of CASR.

(2) A safety briefing, instruction or demonstration mentioned in this section must be given to a passenger before the aeroplane takes off for a flight.

(3) 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.

(4) A specific safety briefing must be provided directly to any passenger with reduced mobility on the flight, and any person (the ***accompanying person***) accompanying, or assisting, the passenger, 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 accompanying person.

(5) A specific safety briefing must be provided directly to any passenger responsible for an infant on the flight, which 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 11.55.

(6) Subject to subsection (7), a specific safety briefing must be provided directly to any passenger on the flight who is seated in an emergency exit row, which outlines what to do if it becomes necessary to use the exit.

(7) Subsection (6) does not apply if:
  (a) a crew member who has been assigned to the flight is seated in a crew station adjacent to the exit; and
  (b) the crew member has been assigned emergency evacuation responsibilities for the exit in accordance with the operator's exposition.

(8) If life jackets are required to be carried on the aeroplane under section 11.55, there must be a demonstration of the method of donning, and inflating, a life jacket.

(9) 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;
  (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 aeroplane's aircraft flight manual instructions;
  (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, which 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 11.55:

(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 11.58:

(i) where they are located; and

(ii) if a life raft is intended to be used by a passenger without instructions at the time of use — how to use it during an initial evacuation of the aeroplane;

(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) if a safety briefing card, for the aeroplane, is required to be available to each passenger under subregulation 135.275(2) of CASR:

(i) where to find it; and

(ii) if it 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.

(p) if a safety briefing card, for the aeroplane, is not required to be available to each passenger under subregulation 135.275(2) of CASR — when, and how, to assume the brace position, including the position for passengers with infants.

Note 1: Smoking on the aeroplane during the flight is prohibited under section 10.10 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.

9.03 Safety instructions during flight

(1) This section prescribes requirements for subregulation 135.280(1) of CASR.

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

(3) 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 during flight (for example, a tray table or bassinet) must be stowed.

Note 1: Regulation 135.255 of CASR requires an aeroplane operator's exposition to include procedures for giving instructions to passengers about securely stowing carry-on baggage, including before the landing of the aeroplane.

Note 2: Regulation 135.315 of CASR requires an aeroplane operator's exposition to include procedures for the operation of portable electronic devices for a flight of the aeroplane. Regulation 91.170 of CASR makes provision in relation to the operation of such devices during a flight.

Chapter 10— Performance

Division 1 — Small aeroplanes

Subdivision 1—Preliminary

10.01 Application of Division 1

This Division applies in relation to the operation of the following aeroplanes:

(a) a propeller-driven aeroplane with an MTOW of not more than 5 700 kg;

(b) a jet-driven, single-engine aeroplane with an MTOW of not more than 5 700 kg;

(c) a jet-driven, multi-engine aeroplane with an MTOW of not more than 2 722 kg.

10.02 Definitions for this Division

In this Division:

approved landing factor, for a propeller-driven aeroplane, means the landing factor for which the aeroplane operator holds an approval under regulation 135.020 of CASR.

approved take-off factor, for a propeller-driven aeroplane, means the take-off factor for which the aeroplane operator holds an approval under regulation 135.020 of CASR.

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.

factored landing distance: see section 10.11.

factored take-off run: see section 10.04.

landing distance available, for a landing of an aeroplane at an aerodrome, means the length of runway at the aerodrome established by the aeroplane's operator to be available and suitable for the ground run of an aeroplane landing.

landing distance required, for an aeroplane, means the landing distance for the aeroplane calculated in accordance with the relevant requirements stated in the aeroplane's flight manual.

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

(a) the ambient temperature;

(b) the temperature assumed to be the ambient temperature determined using the procedures, stated in the aeroplane operator's exposition, for estimating the ambient temperature at take-off for the purpose of determining take-off performance.

safe area, of an aerodrome, means an area of land or water, before the start of the landing distance available for a landing of an aeroplane at the aerodrome, which:

(a) has no obstacles; and

(b) has a surface that is not suitable to be used for the ground run of the aeroplane during landing.

standard landing factor means:

(a) for an aeroplane with an MTOW of not more than 2 000 kg—1.15; and

(b) for an aeroplane with an MTOW of more than 2 000 kg, but less than 4 500 kg—a factor derived by linear interpolation, between 1.15 and 1.43, according to the aeroplane's MTOW; and

(c) for an aeroplane with an MTOW of 4 500 kg or more—1.43.

standard take-off factor means:

(a) for an aeroplane with an MTOW of not more than 2 000 kg—1.15; and

(b) for an aeroplane with an MTOW 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 MTOW; and

(c) for an aeroplane with an MTOW of 3 500 kg or more—1.25.

take-off distance available, for a take-off of an aeroplane at an aerodrome, means the total of:

(a) the length of the take-off run available for a runway at the 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 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 an aeroplane taking off at the aerodrome.

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.

Subdivision 2—Take-off performance

10.03 Purpose of Subdivision 2

The purpose of this Subdivision is to prescribe requirements for subregulation 135.345(1) of CASR.

Note 1: Regulation 135.340 of CASR requires a calculation that relates to an aeroplane's performance for a flight to be made using performance data set out in the aeroplane's

aircraft flight manual instructions or performance data, for the aeroplane, approved by CASA. See the 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.

10.04 Meaning of *factored take-off run*

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

Table—Factored take-off run

Item	Column 1 Aeroplane	Column 2 Factor
1	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	Propeller-driven aeroplane for which there is an approved take-off factor	The approved take-off factor for the aeroplane

10.05 Approval of take-off factor for a propeller-driven aeroplane

CASA may, under regulation 135.020 of CASR, approve a take-off factor for a propeller-driven 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.

10.06 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 10.07 to 10.09;

(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 Subdivision 3.

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 135.040, of CASR if an aeroplane is not operated in accordance with the aeroplane's aircraft flight manual instructions.

10.07 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.

(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.

10.08 Initial climb performance and obstacle clearance

(1) This section applies if the flight of an aeroplane is an IFR flight, or VFR flight at night.

(2) 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, 91.277, 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.

(3) For the purposes of subsection (2), 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.

10.09 En route obstacle clearance for multi-engine aeroplane

(1) The operator, and pilot in command, of a multi-engine aeroplane must each ensure that the aeroplane has the performance to conduct the flight in accordance with regulation 91.265, 91.267, 91.277, 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.

Subdivision 3—Landing performance

10.10 Purpose of Subdivision 3

The purpose of this Subdivision is to prescribe requirements for subregulation 135.350(1) of CASR.

10.11 Meaning of *factored landing distance*

For an aeroplane mentioned in column 1 of an item in the following table, conducting a landing mentioned in column 2 of the item, the ***factored landing distance*** is the landing distance required, for the aeroplane, multiplied by the factor mentioned in column 3 of the item.

Table—Factored landing distance

Item	Column 1 Aeroplane	Column 2 Landing	Column 3 Factor
1	Propeller-driven aeroplane for which: (a) there is a flight manual; and (b) there is no approved landing factor	A landing that is not part of a land and hold short operation	The standard landing factor for the aeroplane
2	Propeller-driven aeroplane for which there is an approved landing factor	A landing that is not part of a land and hold short operation	The approved landing factor for the aeroplane
3	Jet-driven aeroplane	A landing that is not part of a land and hold short operation	1.67
4	Aeroplane not mentioned in item 1, 2 or 3	A landing that is: (a) part of a land and hold	1.67

Table—Factored landing distance			
Item	**Column 1** **Aeroplane**	**Column 2** **Landing**	**Column 3** **Factor**
		short operation; and (b) on a dry runway into wind	
5	Aeroplane not mentioned in item 1, 2 or 3	A landing that is: (a) part of a land and hold short operation; and (b) not on a dry runway into wind	1.92

10.12 Approval of landing factor for a propeller-driven aeroplane

CASA may, under regulation 135.020 of CASR, approve a landing factor for a propeller-driven aeroplane, for operations at a particular aerodrome, which is less than the standard landing factor for the aeroplane, only if the proposed landing factor has been risk assessed by the aeroplane's operator for operations at the aerodrome.

10.13 Maximum permitted landing weight

The operator, and pilot in command, must each ensure that, for the landing of the aeroplane at any aerodrome, the aeroplane's weight does not exceed each of the following:

(a) a weight that would enable the aeroplane to meet the requirement stated in section 10.14;

(b) a weight that would enable, if a safe landing could not be conducted and a missed approach was necessary to be conducted, the avoidance of obstacles in the vicinity of the missed approach path by a safe margin, as determined by the operator's exposition.

Note: The weight at landing for an aeroplane is also limited by the ***maximum landing weight*** for the aeroplane, which in the Dictionary, for a type certificated aeroplane, is defined to mean the maximum landing weight for the aeroplane permitted by its flight manual. It is an offence under regulation 91.095, or 135.040, of CASR if an aeroplane is not operated in accordance with the aeroplane's aircraft flight manual instructions.

10.14 Landing distance requirement

(1) The operator, and pilot in command, must each ensure the factored landing distance, for a landing of the aeroplane on a runway at an aerodrome, does not exceed the landing distance available for the runway.

(2) For the purposes of subsection (1), the following matters must be taken into account:

(a) the landing configuration of the aeroplane;

(b) unless a short landing operation, under an approval under section 10.15, is being conducted — that the aeroplane crosses the runway threshold at a height of 50 ft;

(c) the aerodrome elevation;
(d) the type of runway surface, and runway surface condition;
(e) the runway slope in the direction of landing;
(f) 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;
(g) the obstacles, if any, in the vicinity of the approach flight path.

10.15 Approval of short landing operation by day

(1) In this section:

short landing operation, of an aeroplane at an aerodrome, means a landing of the aeroplane at the aerodrome where the airborne component of the landing distance required, for the aeroplane, commences at a position in the aerodrome's safe area.

(2) This section applies if an aeroplane's operator wishes to conduct a short landing operation at an aerodrome by day with the aeroplane.

(3) CASA may, under regulation 135.020 of CASR, approve the operation if:
(a) for an IFR flight—the operator's short landing operation minima for the aerodrome includes a runway visibility of at least 1.5 km; and
(b) the operator's exposition includes a set of operating wind limitations, referencing headwind, crosswind, and tailwind, limits; and
(c) if the tailwind limit mentioned in the operator's exposition is zero—the operator's exposition states that there must not be a short landing operation at the aerodrome when a tailwind is present; and
(d) the operator demonstrates how the pilot aerodrome familiarisation and proficiency checking requirements, for a short landing operation, will be met by the operator's pilots in relation to the aerodrome; and
(e) the height at which the aeroplane will cross the beginning of the useable length of the aerodrome's safe area in a short landing operation is at least 50 ft; and
(f) the operator demonstrates how the operator's pilots will determine the height mentioned in paragraph (e); and
(g) the operator has the aerodrome operator's written approval to use the aerodrome's safe area to conduct a short landing operation with the aeroplane; and
(h) the width of the aerodrome's safe area, centred on the aerodrome runway centreline, is at least the greater of the following:
(i) twice the width of the runway;
(ii) twice the wingspan of the aeroplane; and
(i) the aerodrome's safe area is not more than 90 m long; and
(j) the aerodrome's safe area does not have any hazards or other characteristics that would endanger an aeroplane undershooting the aerodrome's approach flight path; and

(k) no mobile object will be permitted on the aerodrome's safe area while the aerodrome is being used in a short landing operation; and

(l) the slope of the aerodrome's safe area does not exceed 5% upward, or 2% downward, in the direction of landing.

Division 2 — Large aeroplanes

10.16 Application of Division 2

This Division applies in relation to the operation of the following aeroplanes:

(a) a propeller-driven, multi-engine aeroplane with an MTOW of more than 5 700 kg;

(b) a jet-driven, multi-engine aeroplane with an MTOW of more than 2 722 kg.

10.17 Take-off performance and landing performance requirements

For subregulations 135.345(1), and 135.350(1), of CASR, the prescribed requirements relating to take-off performance and landing performance, for a flight of an aeroplane, are the requirements stated in Chapter 9 of the Part 121 Manual of Standards.

Chapter 11—Equipment

Division 1—General

11.01 Purpose of Chapter 11 etc.

(1) This Chapter prescribes requirements for subregulation 135.370(1) of CASR.

(2) The requirements apply to the aeroplane's operator, unless a provision of this Chapter states that a requirement applies to another person, in which case it applies to the operator and other person.

(3) In addition to the operator, the requirements stated in the following provisions also apply to the pilot in command of the aeroplane:
  (a) subsections 11.16(3) to (6);
  (b) subsection 11.18(2);
  (c) subsections 11.42(3) and (4);
  (d) subsections 11.57(1) to (3);
  (e) subsections 11.61(1) to (7);
  (f) subsections 11.62(1) and (2).

(4) A person other than the operator, or, for the provisions mentioned in subsection (3), the pilot in command, may also be subject to a requirement stated in a provision of this Chapter, as stated in the provision setting out the requirement.

(5) 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; and
  (c) for any reference to the fitment, or carriage, of equipment, the equipment referred to must be operative.

Division 2—Approvals, visibility and inoperability

11.02 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 meet the requirements of, or be 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, emergency medical kit or universal precaution kit;
(g) survival equipment, including signalling equipment.

(3) Before a foreign-registered aeroplane begins a flight, the equipment required by this Chapter to be fitted to, or carried on, the aeroplane must have been approved by the NAA 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 meet the requirements of, or be approved under, Part 21 of CASR; and
(b) for a foreign-registered aeroplane — the equipment need not have been approved by the NAA of the aeroplane's State of registry; and
(c) no information, or data, provided by the equipment may be used by a flight crew member, of the aeroplane, to comply with any requirement of the civil aviation legislation in relation to communications or navigation; and
(d) the equipment, whether functional or otherwise, must not at any time affect the airworthiness of the aeroplane.

11.03 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.

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

11.04 Flight with inoperative equipment

(1) Subject to subsection (2), an aeroplane may begin a flight with equipment that is inoperative, despite a requirement under this Chapter that the equipment be fitted to, or carried on, the aeroplane for the flight.

(2) Subsection (1) only applies if the aeroplane is operated:
(a) in accordance with the minimum equipment list (MEL) for the aeroplane, for the flight, in accordance with regulation 91.935 of CASR; or
(b) if the equipment is inoperative because of a defect that has been approved as a permissible unserviceability for the aeroplane for the flight in accordance with regulation 21.007 of CASR — in accordance with the permissible unserviceability.

Division 3—Flight instruments

11.05 Day VFR flight instrument requirements

(1) An aeroplane in an operation under the VFR by day 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) outside air temperature.

(2) An aeroplane in an operation under the VFR by day, for which 2 pilots are required under the civil aviation legislation or the aeroplane's flight manual, 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.

(3) Despite subsections (1) and (2), for an aeroplane in an operation under the VFR by day, the equipment for measuring and displaying the flight information mentioned in column 1 of an item in Table 11.05(3) must meet the requirements mentioned in column 2 of the same item.

Table 11.05(3)—Requirements for flight instruments – VFR flight by day

Item	Column 1 Flight information	Column 2 Requirements
1	Pressure altitude	The equipment must: (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 that measures flight levels or altitudes in metres, the equipment must be calibrated in metres or fitted with a conversion placard or device.
2	Magnetic heading	The equipment must be: (a) a direct reading magnetic compass; or (b) a remote indicating compass and standby direct reading magnetic compass.

Table 11.05(3)—Requirements for flight instruments – VFR flight by day		
Item	**Column 1** **Flight information**	**Column 2** **Requirements**
3	Time	1. The equipment must display accurate time in hours, minutes, and seconds. 2. The equipment must be: (a) fitted to the aeroplane; or (b) worn by, or be immediately accessible to, the pilot for the duration of the flight.

11.06 Night VFR flight instrument requirements

(1) An aeroplane in an operation under the VFR at night 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 VFR at night, for which 2 pilots are required under the civil aviation legislation or the aeroplane's flight manual, 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 VFR at night, the equipment for measuring and displaying the flight information

mentioned in column 1 of an item in Table 11.06(3) must meet the requirements mentioned in column 2 of the same item.

Table 11.06(3)—Requirements for flight instruments – VFR flight at night

Item	Column 1 Flight information	Column 2 Requirements
1	Indicated airspeed	1. For an aeroplane that has an MTOW of not more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports. 2. For an aeroplane that has an MTOW of more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) 2 independent static sources, each consisting of a balanced pair of flush static ports.

Table 11.06(3)—Requirements for flight instruments – VFR flight at night

Item	Column 1 Flight information	Column 2 Requirements
2	Pressure altitude	1. The equipment must: (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 that measures flight levels or altitudes in metres, the equipment must be calibrated in metres or fitted with a conversion placard or device. 2. For an aeroplane that has an MTOW of not more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports. 3. For an aeroplane that has an MTOW of more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) 2 independent static sources, each consisting of a balanced pair of flush static ports.
3	Magnetic heading	The equipment must be: (a) a direct reading magnetic compass; or (b) a remote indicating compass and standby direct reading magnetic compass.
4	Time	1. The equipment must display accurate time in hours, minutes and seconds. 2. The equipment must be: (a) fitted to the aeroplane; or (b) worn by, or be immediately accessible to, the pilot for the duration of the flight.

Table 11.06(3)—Requirements for flight instruments – VFR flight at night		
Item	**Column 1** **Flight information**	**Column 2** **Requirements**
5	Turn and slip	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: (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 that has a source of power independent of the power operating other gyroscopic instruments.
6	Attitude	The equipment must have an alternate power supply in addition to its primary power supply: (a) unless the turn and slip 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 that has a source of power independent of the power operating other gyroscopic instruments.
7	Vertical speed	1. For an aeroplane that has an MTOW of not more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports. 2. For an aeroplane that has an MTOW of more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) 2 independent static sources, each consisting of a balanced pair of flush static ports.

Table 11.06(3)—Requirements for flight instruments – VFR flight at night		
Item	**Column 1** **Flight information**	**Column 2** **Requirements**
8	Stabilised heading	The equipment must have an alternate power supply in addition to its primary power supply: (a) unless the turn and slip 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 that has a source of power independent of the power operating other gyroscopic instruments. Note: A gyro-magnetic type of remote indicating compass meets this requirement if it has a primary power supply and alternate power supply.

11.07 IFR flight instruments

(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, for which only a single pilot is required under the civil aviation legislation and aeroplane's flight manual, must be fitted with equipment, separate from, and independent of, the corresponding equipment mentioned in subsection (1), for measuring and displaying pressure altitude and attitude.

(3) An aeroplane in an operation under the IFR, for which 2 pilots are required under the civil aviation legislation or aeroplane's flight manual, 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.

(4) An aeroplane in an operation under the IFR that has an MTOW of more than 5 700 kg must be fitted with standby attitude equipment that, for the avoidance of doubt, is additional to the attitude equipment required under subsections (1), (2) or (3).

(5) Despite subsections (1) to (4), 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(5) must meet the requirements mentioned in column 2 of the same item.

Table 11.07(5)—Requirements for flight instruments – IFR flight

Item	Column 1 Flight information	Column 2 Requirements
1	Indicated airspeed	1. For an aeroplane that has an MTOW of not more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports. 2. For an aeroplane that has an MTOW of more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) 2 independent static sources, each consisting of a balanced pair of flush static ports. 3. At least 1 unit of equipment for indicated airspeed must include a means of preventing malfunction due to condensation or icing.

Table 11.07(5)—Requirements for flight instruments – IFR flight

Item	Column 1 Flight information	Column 2 Requirements
2	Pressure altitude	1. The equipment must: (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 that measures flight levels or altitudes in metres, the equipment must be calibrated in metres or fitted with a conversion placard or device. 2. For an aeroplane that has an MTOW of not more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports. 3. For an aeroplane that has an MTOW of more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) 2 independent static sources, each consisting of a balanced pair of flush static ports.
3	Magnetic heading	The system must be: (a) a direct reading magnetic compass; or (b) a remote indicating compass and standby direct reading magnetic compass.
4	Time	1. The equipment must display accurate time in hours, minutes and seconds. 2. The equipment must be: (a) fitted to the aeroplane; or (b) worn by, or be immediately accessible to, the pilot for the duration of the flight.
5	Turn and slip	1. The equipment must display turn and slip information, except where a third 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.
6	Attitude	The equipment must have an alternate power supply in addition to its primary power supply.

Table 11.07(5)—Requirements for flight instruments – IFR flight		
Item	**Column 1** **Flight information**	**Column 2** **Requirements**
7	Vertical speed	1. For an aeroplane that has an MTOW of not more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports. 2. For an aeroplane that has an MTOW of more than 5 700 kg, the equipment must be capable of being connected to: (a) an alternate static system that: (i) is selectable by a pilot; and (ii) includes a selector that can open, or block, the aeroplane's static source and alternative static source at the same time; or (b) 2 independent static sources, each consisting of a balanced pair of flush static ports.
8	Stabilised heading	The equipment must have an alternate power supply in addition to its primary power supply. Note: A gyro-magnetic type of remote indicating compass meets this requirement if it has a primary power supply and alternate power supply.
9	Standby attitude	The system must: (a) have a source of power independent of the electrical generating system; and (b) operate independently of other attitude systems; and (c) continue to operate without any action by a flight crew member, for a period of 30 minutes following the failure of the electrical power generating system.

Division 4—Operational equipment

11.08 Radiocommunication systems

(1) An aeroplane (a ***relevant aeroplane***) for a flight, which must have radiocommunications, must be fitted with 1 radiocommunication system that is capable of continuous communication on all frequencies necessary to meet reporting, broadcast and listening watch requirements under regulations 91.630, 91.635, 91.640, and 91.675, of CASR.

(2) Subject to subsection (3), and without limiting subsection (1), for a flight in any class of airspace, a relevant aeroplane must be fitted with at least 2 independent radiocommunication systems:

(a) each capable, under normal operating conditions, of communicating with an appropriate ground station from any point on the route, including in the event of any diversion; and
(b) each capable of receiving meteorological information at any time during the flight; and
(c) at least one of which must have two-way voice communication capability; and
(d) at least one of which must provide for communication on the aeronautical emergency frequency 121.5 MHz.

(3) Despite subsection (2), an aeroplane for a VFR flight by day must be fitted with the following radiocommunication systems:
(a) at least 1 VHF radiocommunication system;
(b) if a VHF radiocommunication system would not allow for continuous communication with ATS at all stages of the flight — an additional radiocommunication system capable of communicating with ATS when VHF communications with ATS are not available.

(4) For subsection (3), the additional radiocommunication system fitted to the aeroplane for use during a period (the ***relevant period***) when VHF communications are not available must only be used for communication with ATS during the relevant period.

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

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

(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).

(2) Without limiting the requirements under subsections (5) and (6), an aeroplane for a VFR flight at night must be fitted with:
(a) an approved GNSS; or
(b) an ADF or VOR.

(3) Subject to subsections (7) and (8), and without limiting the requirements under subsections (5) and (6), an aeroplane for an IFR flight must be fitted with at least:

(a) 2 approved GNSS; or
(b) 1 approved GNSS and either:
(i) 1 ADF; or
(ii) 1 VOR.

(4) For subsections (2) and (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-C129a;
(b) (E)TSO-C145a;
(c) (E)TSO-C146a;
(d) (E)TSO-C196a;

then the relevant options must be connected.

(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 aeroplane's operational flight plan; and
(b) the requirements of:
(i) ATS; 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.

(7) For paragraph (3)(a), an approved GNSS used to comply with that paragraph may not be authorised in accordance with (E)TSO-C129.

(8) For paragraph (3)(b), an approved GNSS fitted to the aeroplane must not be one authorised in accordance with (E)TSO-C129, unless:
(a) the aeroplane was manufactured before 6 February 2014; and
(b) the GNSS was installed before 6 February 2014.

11.10 Automatic pilot

(1) An aeroplane operated by a single pilot for:
(a) an IFR flight; or
(b) a VFR flight at night;

must be fitted with an automatic pilot.

(2) An automatic pilot fitted to an aeroplane under subsection (1) must have at least the following modes:
(a) an altitude-hold mode;
(b) a heading mode.

(3) An automatic pilot may be inoperative at the beginning of a flight only if the flight is conducted in VMC by day.

11.11 Equipment to ensure clear view through the windshield

(1) An aeroplane with an MTOW 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 an MTOW of 5 700kg 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.

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 who has been, or is, in a passenger seat must pass to reach a passenger emergency exit, the door or curtain must be fitted in accordance with subsection (2).

(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

(1) A flight of an aeroplane that will be conducted in, or through, an area defined by the Part 91 Manual of Standards as a remote area must carry survival equipment that is appropriate for sustaining life in the area in, or through which, the flight will be conducted.

(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 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 FL490 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 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 ionising, and neutron, radiation of galactic, and solar, origin.

Division 5—Lighting systems

11.15 Cockpit, and cabin, lighting requirements

(1) An aeroplane operating at 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 at night must:
  (a) illuminate each item of equipment that may be used by a flight crew member; and
  (b) illuminate the documents that may be used by a flight crew member, including checklists and flight documents; and
  (c) be compatible with each item of equipment that may be used by a flight crew member; and
  (d) be arranged in a way that:
    (i) enables all placards and instrument markings to be read from each flight crew member's normal sitting position in a flight crew member's seat in the aeroplane; and
    (ii) each flight crew member'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 at night, must be fitted with anti-collision lights.

(2) The anti-collision light equipment fitted to an aeroplane must consist of:
  (a) at least 1 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 consisting of 1, 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;
  (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 consisting of 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 consisting of 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 stated 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) to (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 at 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 at night, or in poor visibility, must be fitted with navigation lights.

(2) When required to be fitted, navigation lights must be displayed during a flight or on the movement area of an aerodrome.

Division 6—Alerting and warning system requirements

11.19 Definitions for Division 6

In this Division:

ACAS means airborne collision avoidance system.

airborne collision avoidance system has the meaning given in the Dictionary.

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

(a) (E)TSO-C119c;

(b) (E)TSO-C219.

resolution advisory (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 (TA), for an ACAS, means an indication given to the flight crew that a certain intruder aircraft is a potential threat.

11.20 Altitude alerting equipment and assigned altitude indicator

(1) The following aeroplanes, if operating under the IFR, must be fitted with altitude alerting equipment in accordance with subsection (2):

(a) a piston-engine aeroplane, or unpressurised turbine-engine aeroplane, operating in controlled airspace above FL 150;

(b) a pressurised 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 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), that is operating under the IFR in controlled airspace, must

be fitted with altitude alerting equipment at least in the form of an assigned altitude indicator.

(4) This section applies subject to section 11.21.

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

Altitude alerting equipment (the ***equipment***) or an assigned altitude indicator (the ***indicator***), fitted to an aeroplane under section 11.20, may be inoperative at the beginning of a flight of the aeroplane, but only if:

(a) the flight:

(i) begins within 72 hours of the time the equipment, or indicator, was found to be inoperative; and

(ii) is from an aerodrome at which there is no facility for the equipment, or indicator, 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.

11.22 Airborne collision avoidance system—ACAS

(1) An aeroplane mentioned in subsection (2) must be fitted with an approved ACAS.

(2) For subsection (1), the aeroplane must be a turbine-engine aeroplane that:

(a) has an MTOW of more than 5 700 kg; and

(b) was first issued with a certificate of airworthiness on, or after, 1 January 2014.

11.23 ACAS—requirements for use

(1) During the period mentioned in subsection (2), an approved ACAS fitted to an aeroplane under section 11.22 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.

11.24 Flight with inoperative ACAS

An approved ACAS may be inoperative at the beginning of a flight only if:

(a) the flight begins:

(i) from an aerodrome at which there is no facility for the approved ACAS to be repaired or replaced; and

(ii) within 72 hours of the time the approved ACAS was found to be inoperative; and

(b) the flight is to an aerodrome at which there is a facility for the approved ACAS to be repaired or replaced; and

(c) the aeroplane is not declared to be RVSM-capable in the ATS flight plan (if any) for the flight; and

(d) if the aeroplane is required to be fitted with an altitude alerting system (the ***system***) or an assigned altitude indicator (as applicable) (the ***indicator***) — the system or indicator is not also inoperative.

11.25 Terrain awareness and warning system (TAWS)

(1) In this section:

approved TAWS means a terrain awareness and warning system that is authorised in writing by CASA, or the NAA of a recognised country, in accordance with one of the following:

(a) TSO-C151b;

(b) ETSO-C151b.

TAWS-Class A means an approved TAWS that meets the performance requirements for TAWS Class A mentioned in RTCA/DO-367.

TAWS-Class B means an approved TAWS that meets the performance requirements for TAWS Class B mentioned in RTCA/DO-367.

RTCA/DO-367 means document RTCA/DO-367 titled *Minimum Operational Performance Standards (MOPS) for Terrain Awareness and Warning Systems (TAWS) Airborne Equipment*, dated 31 May 2017, of the RTCA Inc. of Washington D.C. USA (***RTCA Inc.***).

(2) This section applies to an aeroplane (a ***relevant aeroplane***), for an IFR flight or a VFR flight at night, which:

(a) has an MTOW of more than 5 700 kg; and

(b) is conducting a passenger transport operation or medical transport operation.

(3) Until immediately before 2 December 2023, a relevant aeroplane must be fitted with:

(a) a ground proximity warning system (GPWS), but only in accordance with the requirements stated in subsection 9 of *Civil Aviation Order 20.18*, as in force immediately before the commencement of this instrument; or

(b) for a turbine-engine aeroplane — a TAWS-Class A; or

(c) for a piston-engine aeroplane — a TAWS-Class A or a TAWS-Class B.

(4) With effect from the beginning of 2 December 2023, a turbine-engine aeroplane must be fitted with a TAWS-Class A.

(5) With effect from the beginning of 2 December 2023, a piston-engine aeroplane must be fitted with a TAWS-Class A or TAWS-Class B.

(6) This section applies subject to section 11.26.

11.26 Flight with inoperative TAWS equipment

A GPWS, or a TAWS, fitted to an aeroplane under section 11.25, may be inoperative at the beginning of a flight of the aeroplane if:

(a) the flight begins:

(i) from an aerodrome at which there is no facility for the GPWS, or TAWS, to be repaired or replaced; and

(ii) within 24 hours of the time the GPWS, or TAWS, was found to be inoperative; or

(b) an authorised weather forecast indicates that the flight, when operating below the minimum heights stated in subregulations 91.265(2), 91.267(2), and 91.305(2), of CASR will be conducted in VMC by day.

11.27 Airborne weather ra dar equipment

(1) In this section:

relevant aeroplane means:

(a) a pressurised turbine-engine aeroplane; or

(b) a pressurised piston-engine aeroplane with an MTOW of more than 5 700 kg, which is required, under the Regulations, to be flown by 2 or more pilots.

(2) This section applies to a relevant aeroplane, for an IFR flight or VFR flight at night, that is conducting a passenger transport operation or medical transport operation.

(3) A relevant aeroplane must be fitted with airborne weather radar equipment.

(4) This section applies subject to section 11.28.

11.28 Flight with inoperative airborne weather radar equipment

(1) Airborne weather radar equipment, fitted to an aeroplane under section 11.27, 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 that 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

11.29 Definitions

In this Division:

combination recorder means a single recording system combining the capabilities and the functions of an FDR and a CVR.

CVR means cockpit voice recorder.

FDR means flight data recorder.

11.30 Flight data recorder

One FDR must be fitted to an aeroplane that has an MTOW of more than 5 700 kg and which:

(a) is turbine-powered; or
(b) was first issued with a certificate of airworthiness on, or after, 1 July 1965.

11.31 Cockpit voice recorder

One CVR must be fitted to the following:

(a) an aeroplane that has an MTOW of more than 5 700 kg and which:
    (i) is turbine-powered; or
    (ii) was first issued with a certificate of airworthiness on, or after, 1 July 1965;
(b) a multi-engine turbine-powered aeroplane that:
    (i) has an MTOW 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.

11.32 Combination recorders

If the combined effect of sections 11.30 and 11.31 is that the aeroplane must be fitted with both 1 FDR and 1 CVR, the requirements may be met by the fitment of:

(a) 2 combination recorders; or
(b) 1 FDR and 1 combination recorder; or
(c) 1 CVR and 1 combination recorder.

11.33 FDR, CVR and combination recorder technical requirements

(1) An FDR, or 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 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 combination recorder — the recorder retains its last 25 hours of flight data recording; and
   (b) for a CVR or combination recorder — the recorder retains its last 30 minutes of cockpit voice recording; and
   (c) for an FDR or combination recorder — the recorder data is preserved from the last 2 occasions on which flight data recording was calibrated.

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

11.34 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 when the aeroplane first 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;
   (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 CVR within a combination recorder, fitted to an aeroplane under this Division, must record continuously during the same periods as an FDR and CVR are required to operate under subsections (1) and (2).

(4) If:

(a) there is no APU, 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 FDR 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 the maintenance of the aeroplane or an aeronautical product fitted to the aeroplane, except if the maintenance is to the recorder or an engine.

(6) For subsection (5), an APU fitted to the aeroplane is not an engine, unless it is capable of propelling the aeroplane.

(7) This section applies subject to section 11.35.

11.35 Flight with an inoperative FDR, CVR or combination recorder

An FDR, CVR, or combination recorder, fitted to an aeroplane under this Division, may be inoperative at the beginning of a flight only if:

(a) the flight begins from a departure aerodrome with no facility for the recorder to be repaired or replaced; and

(b) each of the following is the case:

(i) one FDR or CVR (whether alone or within a combination recorder) remains operative; and

(ii) the inoperative FDR, or CVR, has not been inoperative for more than 21 days.

11.36 Data link recorder

RESERVED

Division 8—Aeroplane interior communication systems

11.37 Flight crew intercommunication system

(1) Subject to subsections (2) and (3), an aeroplane must be fitted with a flight crew intercommunication system that consists of 1 headset, and 1 microphone that is not of the hand-held type, for each pilot for the flight.

(2) An aeroplane that is only required, by the civil aviation legislation or aeroplane's flight manual, to conduct a flight with a single pilot must be fitted with another headset, and another microphone that is not of the hand-held type.

(3) An aeroplane that is only required, by the civil aviation legislation or aeroplane's flight manual, to conduct a flight with 2 pilots must be fitted with, or carry, another headset, and another microphone that is not of the hand-held type.

11.38 Crew interphone system

(1) This section applies if a crew member occupies a crew station remote from the flight deck.

(2) An aeroplane must be fitted with a crew interphone system (the ***system***) in accordance with this section.

(3) The 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; and
  (b) each crew member at the crew member's crew station.

(4) The system must enable any crew member to activate an in-coming call alert that:
  (a) uses aural or visual signals; and
  (b) distinguishes between normal and emergency calls.

(5) The system must provide 2-way communication between the flight crew compartment and each crew station in another aircraft compartment.

Division 9—Oxygen equipment and oxygen supplies

11.39 Definitions for Division 9

In this Division:

assisting crew member means a crew member who assists flight crew members with the fight 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 flight crew member's face, secure and seal.

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 supplemental oxygen equipment capable of storing, and dispensing, supplemental oxygen to crew members and passengers.

(2) Subject to subsection (3), a relevant aeroplane must carry sufficient supplemental oxygen to meet the requirements set out in Table 11.40(2).

(3) For a flight of a relevant aeroplane that:

(a) during the flight will be flown above 13 000 ft but not above FL250; and

(b) at all points along the route of the flight, will be able to:

(i) descend safely to 13 000 ft within 4 minutes; and

(ii) complete the planned flight, or land, at an aerodrome that is suitable for the aeroplane to land at;

then the amount of supplemental oxygen required for the passengers (if any) is either:

(c) that which is sufficient to meet the passenger requirements set out in Table 11.40(2); or

(d) an amount of supplemental oxygen enough to supply 10% of the passengers for the flight for the period while the aeroplane's cabin pressure altitude exceeds 10 000 ft and does not exceed 13 000 ft.

(4) For a person mentioned in column 1 of an item in Table 11.40(2), supplemental oxygen must be made available through an oxygen dispensing unit in accordance with the supply requirements mentioned for the item in column 2.

(5) Each flight crew member, and any assisting crew member, must use an oxygen mask that is supplying supplemental oxygen while the aeroplane's cabin altitude exceeds 10 000 ft.

Table 11.40(2) – Supplemental oxygen – requirements for pressurised aeroplanes

Item	Column 1 Person	Column 2 Supplemental oxygen supply requirements
1	Flight crew members, or assisting crew members	1. There must be supply for each flight crew member, or assisting crew member, for the period that is the greater of the following: (a) 30 minutes; (b) the period while the aeroplane's cabin pressure altitude exceeds 10 000 ft.

Table 11.40(2) – Supplemental oxygen – requirements for pressurised aeroplanes

Item	Column 1 Person	Column 2 Supplemental oxygen supply requirements
2	Air crew members	1. For any period exceeding 30 minutes when the cabin pressure altitude exceeds 10 000 ft, but does not exceed 13 000 ft, there must be supply for each air crew member for the entire period. 2. There must be supply for each air crew member for the entire period (the ***relevant period***) the cabin pressure altitude exceeds 13 000 ft. There must be at least 30 minutes supply for each air crew member, even if the relevant period is less than 30 minutes.
3	Passenger	1. During the period when the aeroplane's cabin pressure altitude exceeds 15 000 ft, there must be supply for each passenger for the greater of the following periods: (a) 10 minutes; (b) the period while the aeroplane's cabin pressure altitude exceeds 15 000 ft. 2. For any period when the cabin pressure altitude exceeds 14 000 ft, but does not exceed 15 000 ft, there must be supply for the entire period for at least 30% of the passengers. 3. For any period when the aeroplane's cabin pressure altitude exceeds 10 000 ft, but does not exceed 14 000 ft, for more than 30 minutes (the ***first 30 minutes***), there must be supply for the period, for at least 10% of the passengers, after the first 30 minutes

11.41 Supplemental oxygen — unpressurised aeroplanes

(1) An unpressurised aeroplane operated at a pressure altitude above 10 000 ft (a ***relevant aeroplane***) must be fitted with supplemental oxygen equipment capable of storing, and dispensing, supplemental oxygen to crew members and passengers.

(2) A relevant aeroplane must carry sufficient supplemental oxygen to meet the requirements set out in Table 11.41(2).

(3) For a person mentioned in column 1 of an item in Table 11.41(2), 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 any 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, or 2, of Table 11.41(2), under the following circumstances:

(a) when the aeroplane's cabin pressure altitude exceeds 13 000 ft; or

(b) if the aeroplane's cabin pressure altitude exceeds 10 000 ft for a period of, or periods totalling, 30 minutes—during any further period when the aeroplane's cabin pressure altitude exceeds 10 000 ft.

Table 11.41(2) – Supplemental oxygen – requirements for unpressurised aeroplanes

Item	Column 1 Person	Column 2 Supplemental oxygen supply requirements
1	Flight crew members, or assisting crew members	For any period when the aeroplane's cabin pressure altitude exceeds 10 000 ft, but does not exceed 13 000 ft, for more than 30 minutes (the ***first 30 minutes***) there must be supply for the period, after the first 30 minutes.
2	Crew members or passengers	There must be supply for each crew member, or passenger, for the entire period the cabin pressure altitude exceeds 13 000 ft.
3	Passengers	For any period when the aeroplane's cabin pressure altitude exceeds 10 000 ft, but does not exceed 13 000 ft, for more than 30 minutes (the ***first 30 minutes***), there must be supply for the period, after the first 30 minutes.

11.42 Oxygen masks — pressurised aeroplane

(1) This section applies for a flight of a pressurised aeroplane.

(2) An oxygen mask, for use by each pilot who is in a pilot seat, must:
  (a) be fitted to the aeroplane; and
  (b) be within immediate reach of a pilot who is in a pilot seat.

(3) If, during the flight, the aeroplane will be flown above flight level 250, at least 1 pilot occupying a pilot seat must:
  (a) 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
  (b) have access to a quick-donning mask that is supplied with supplemental oxygen when the mask is donned.

(4) During the period when the aircraft is flown above FL 450 during the flight, at least 1 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); or
  (b) a quick-donning mask.

11.43 Oxygen dispensing units for passengers — pressurised aeroplane

(1) This section prescribes the requirements relating to oxygen dispensing units required to be fitted to a pressurised aeroplane under section 11.40.

(2) Subsection (3) applies if the aeroplane:
   (a) was first issued with a certificate of airworthiness on, or after, 9 November 1998; 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.

(3) For the passengers:
   (a) the oxygen dispensing units must be automatically deployable; and
   (b) the units must be immediately available to each passenger on the flight, wherever seated; and
   (c) the number of dispensing units must exceed the number of passenger seats by 10% (the ***additional units***); and
   (d) the additional units must be evenly distributed throughout the aeroplane's passenger compartments.

(4) Subsection (5) applies if the aeroplane is not one mentioned in subsection (2).

(5) For the passengers:
   (a) the oxygen dispensing 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% (the ***additional units***); and
   (c) the additional units must be evenly distributed throughout the aeroplane's passenger compartments.

11.44 Protective breathing equipment — flight crew members

(1) When a pressurised aeroplane begins a flight (a ***relevant aircraft***), it must be carrying protective breathing equipment (the ***PBE***) for each flight crew member in accordance with this section.

(2) The PBE must meet the following requirements:
   (a) it must protect the wearer's eyes, nose and mouth;
   (b) 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;
   (c) it 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 equipment required to be fitted to the aeroplane under section 11.40 or 11.41, as applicable to the flight.

(3) The PBE 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, megaphone or radiocommunications equipment, fitted to or carried on the aeroplane.

11.45 Portable protective breathing equipment

(1) When a pressurised aeroplane that is required by the civil aviation legislation or aeroplane's flight manual to be flown by 2 pilots begins a flight, it must be carrying portable protective breathing equipment (***portable PBE units***) in accordance with this section.

(2) A portable PBE unit is required for each pilot.

(3) Each portable PBE unit must meet the following requirements:
  (a) it must protect the wearer's eyes, nose and mouth;
  (b) 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;
  (c) it must be able to supply oxygen, or a mixture of oxygen and another suitable gas, continuously for at least 15 minutes.

(4) Portable PBE units must be located in, or as close as is practicable to, the aeroplane's cockpit.

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) This section applies to a pressurised aeroplane that:
  (a) is flown above FL 250 at any stage during the flight; and
  (b) is conducting a passenger transport operation; and
  (c) is required by the civil aviation legislation, or aeroplane's flight manual, to be flown by more than 1 pilot.

(3) 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 each is in force immediately before the commencement of this instrument; or
  (b) this section.

(4) 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.

(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 a minute for each 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 exceeds 8 000 ft, but does not exceed 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 a minute for each person STPD; and
   (b) may have a means of reducing the flow to not less than 2 litres a minute for each person STPD at any altitude.

Division 10—Emergency locator transmitters

11.47 Carriage of ELTs

Automatic ELT

(1) Subject to subsections (3) and (4), when an aeroplane begins a flight, it must be fitted with an automatic ELT.

(2) For subsection (1), if the automatic ELT has a switch marked, however described, as 'armed', the pilot in command must ensure that the switch is set to this position at the time the flight begins.

(3) Subsection (1) only applies to an aeroplane that during the flight is flown more than 50 nautical miles from the departure aerodrome for the flight.

(4) Subsection (1) does not apply to a flight of an aeroplane if:
   (a) the aeroplane is fitted with an unserviceable automatic ELT, and the flight is for the purpose of taking the aeroplane to a place for the repair, or re-fitting, of the ELT; and
   (b) a survival ELT is carried on the aeroplane during the flight; and
   (c) no passengers are carried on the flight.

Survival ELT

(5) Subject to subsection (6), when an aeroplane begins a flight, it must be fitted with, or carry, a survival ELT.

(6) Subsection (5) only applies to an aeroplane that:
   (a) during the flight is flown 50 nautical miles or less from the departure aerodrome for the flight; and
   (c) the aeroplane is not fitted with an automatic ELT.

Additional ELT requirements

(7) For subsections (4) and (5), a survival ELT must be carried in one of the following locations on the aeroplane:
   (a) on the person of a crew member;
   (b) in, or adjacent to, a life raft;
   (c) adjacent to an emergency exit used for evacuation of the aeroplane in an emergency.

(8) If the aeroplane is required to carry a life raft equipped with a survival ELT under Division 12, the requirement under that Division is additional to the requirement under subsection (5).

11.48 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 search and rescue 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.

11.49 Requirements to be classed as an automatic ELT

(1) In this Division:

automatic ELT is an ELT that meets the requirements mentioned in subsection (2).

(2) For 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).

11.50 Requirements to be classed as an survival ELT

(1) In this Division:

survival ELT is an ELT that meets the requirements mentioned in subsection (2).

(2) For 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;

(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).

11.51 Transitional requirements for ELTs

(1) Until immediately before 2 December 2023, an aeroplane for a flight must be fitted with, or carry, 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 paragraph (1)(a), if immediately before 2 December 2021, the aeroplane flight would have been:

(a) classed as a charter flight —the ELT requirements are those that would have applied to such a charter flight; or

(b) classed as a regular public transport (***RPT***) flight —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 this Division.

Division 11—Portable emergency equipment

11.52 Hand-held fire extinguishers

(1) An aeroplane must carry at least the following number of hand-held fire extinguishers:
   (a) 1 in the flight crew compartment;
   (b) for an aeroplane that has a maximum operational passenger seat configuration of 7 or more — at least 1 hand-held fire extinguisher must be located in the aeroplane's passenger compartment;
   (c) for a cargo or luggage compartment of the aeroplane that is accessible in-flight and is not fitted with a fixed fire and smoke detection and extinguishing system — at least 1 hand-held fire extinguisher must be located in, or as close as is practicable to, the compartment;
   (d) despite paragraphs (a), (b) and (c) — for an aeroplane with a passenger seating capacity of not more than 9, in which the flight crew and passengers occupy the same compartment — 1, readily available to the pilot in command.

(2) 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) such as to minimise the hazard of toxic gas concentration in compartments occupied by persons.

11.53 First-aid kits

(1) This section applies from the beginning of 2 December 2023.

(2) A first aid kit that meets the following requirements must be carried on a flight of an aeroplane:
   (a) the first-aid kit must contain enough supplies for the number of persons to be carried on the flight;
   (b) the first-aid kid must be readily recognisable as a first-aid kit;
   (c) the first-aid kit must be readily accessible by each crew member and adult passenger, if any, for the flight when the aeroplane is on the ground or water, and not in operation.

Division 12—Equipment for flights over water

11.54 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 amphibian; and
(b) the flight involves a 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 Dictionary.

11.55 Life jacket carriage requirements

(1) This section applies to a flight of an aeroplane:
(a) in the event of an emergency happening during take-off or landing, the aeroplane is reasonably likely to land in water; or
(b) if the aeroplane is a seaplane or amphibian; or
(c) for a single-engine aeroplane that is not a seaplane or amphibian — if, during the flight, the aeroplane is flown further over water than the distance from which, with the engine inoperative, the aeroplane could reach a suitable forced landing area for the flight; or
(d) for a multi-engine aeroplane that is not a seaplane or amphibian — if during the flight the aeroplane is flown more than 50 nautical miles 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.

11.56 Stowage of life jackets

(1) This section applies to an aeroplane that is required to carry an approved life jacket, or flotation device, under this Division.

(2) When the aeroplane begins the flight, unless the life jacket, or flotation device, is being worn:
(a) subject to subsection (3), 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.

(3) Subsection (2) does not apply if:
(a) the operator's emergency procedures provide for the following to occur when preparing the aeroplane 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.

11.57 Wearing life jackets

(1) A person (other than an infant) on board a single-engine aeroplane must wear a life jacket if the flight is over water that is further than the distance from which, with the engine inoperative, the aeroplane could reach land.

(2) This section does not apply if:

(a) the aeroplane is flown:

(i) over water for the purpose of climbing after take-off from, or descending to land at, an aerodrome; and

(ii) in accordance with a navigational procedure that is normal for the climb, or descent, at the aerodrome; or

(b) the aeroplane is flown higher than 2 000 ft above the water.

(3) For subsection (1), a person may be taken to be wearing a life jacket if it is secured to the person in a way that allows the person to put it on quickly and easily in an emergency.

11.58 Life raft carriage requirements

(1) When an aeroplane begins a flight to which this section applies, it must meet the following the requirements:

(a) it must carry sufficient life rafts to provide a place on a life raft for each person on the aeroplane;

(b) each life raft carried on the aeroplane must be equipped with:

(i) a survivor locator light; and

(ii) a survival ELT;

(c) each life raft must be stowed in a manner so that it can be readily deployed if the aeroplane must ditch;

(d) if a life raft is stowed in a compartment or container, the compartment or container must be conspicuously marked as containing the life raft.

(2) Subject to subsection (3), this section applies to a flight of an aeroplane if during the flight the aeroplane is flown further over water than the following distances:

(a) for a jet-driven multi-engine aeroplane with an MTOW 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 nautical miles;

(b) for a turbine-engine propeller-driven aeroplane with an MTOW 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 nautical miles;

(c) for any other multi-engine 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 nautical miles;

(d) for a single-engine aeroplane — the distance in which, with the engine inoperative, the aeroplane could reach a suitable forced landing area, situated on land, for the flight.

(3) This section does not apply to:

(a) the flight of an aeroplane over water for the purpose of climbing after take-off from, or descending to land at, an aerodrome when using a navigational procedure that is normal for that purpose; or

(b) the flight of an aeroplane if:

(i) the aeroplane will be flown not more than the distance mentioned in subsection (4); and

(ii) the operator's exposition includes measures to mitigate the risk to passengers, if any, of a forced landing of the aeroplane other than in, or on, a suitable forced landing area for the flight.

(4) For paragraph (3)(a), the distance is the total of:

(a) the distance the aeroplane would fly in 5 minutes at its normal cruising speed in still air; and

(b) the distance in which, with the engine inoperative, the aeroplane could reach a suitable forced landing area, situated on land, for the flight.

(5) For paragraph (1)(a), 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.

(6) 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).

Division 13—Transponders and surveillance equipment

11.59 Definitions

In this Division:

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 11.64;

(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 11.63; 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 Mode C transponder, which is authorised:

(a) by CASA, or the NAA 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 NAA of a recognised country, in accordance with TSO-C112 or ETSO-2C112a; 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 Mode S transponder with ADS-B capability means an approved Mode S transponder that is:

(a) authorised by CASA, or the NAA 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 approved Mode S transponder.

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

(a) for an aircraft registered on the Australian Civil Aircraft Register — CASA; or

(b) for an aircraft that is a foreign-registered aircraft — the relevant NAA.

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, as in force or existing from time to time.

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, as in force or existing from time to time.

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, and 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 2.2.3.2.7.2.6 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.

***SSR**, or **secondary surveillance radar**,* 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.*

11.60 Carriage of transponders and surveillance equipment

(1) An aeroplane for a flight for which a transponder is required under this section must be fitted with an approved transponder that meets the requirements relevant to the intended operation and class of airspace.

(2) For subsection (1), an aeroplane in an operation mentioned in column 1 of an item in Table 11.60(2), in the class of airspace mentioned in column 2 of the item, must be fitted with surveillance equipment meeting the requirements mentioned in column 3 of the item.

Table 11.60(2)—Surveillance equipment requirements

Item	Column 1 Operation	Column 2 Class of airspace	Column 3 Requirements
1	IFR	Any (Classes A, B, C, D, E and G)	At least 1 approved ADS-B OUT equipment configuration.
2	Any (IFR or VFR)	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. *Note* An approved Mode S transponder with ADS-B capability is not required to transmit ADS-B OUT for a VFR flight.
3	VFR	Class A, B, C or E	(a) For an aeroplane first issued with a certificate of airworthiness on or after 6 February 2014, or modified by having its transponder replaced on or after 6 February 2014 — at least 1 approved Mode S transponder with ADS-B capability; or (b) for any other aeroplane — at least 1 approved transponder. *Note* An approved Mode S transponder with ADS-B capability is not required to transmit ADS-B OUT for a VFR flight.
4	VFR	Class G — from 10 000 ft and above	(a) For an aeroplane first issued with a certificate of airworthiness on or after 6 February 2014, or modified by having its transponder replaced on or after 6 February 2014 — at least 1 approved Mode S transponder with ADS-B capability; or (b) for any other aeroplane — at least 1 approved transponder. *Note* An approved Mode S transponder with ADS-B capability is not required to transmit ADS-B OUT for a VFR flight.
5	VFR	Class A — from FL 290 and above	At least 1 approved ADS-B OUT equipment configuration.

11.61 Operation of transponders — general requirements

(1) During the period mentioned in subsection (2), a transponder fitted to an aeroplane for a flight must be operated in a mode that enables an SSR response to be transmitted.

(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) However, an aeroplane must not operate a transponder if ATC issues an instruction that the transponder is not to be operated.

(4) Only one transponder may be operated at any time.

(5) For each transponder, the Mode A code must be set:
  (a) to the transponder code assigned by ATC for the flight; or
  (b) if no transponder code is so assigned — to the relevant standard code in Table 11.61(5)(b).

(6) For paragraph (5)(b), for a situation mentioned in column 1 of an item in Table 11.61(5)(b), the Mode A code is the number mentioned in column 2 for the item.

(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 must be determined by a barometric encoder of a type authorised by CASA or the NAA of a recognised country in accordance with (E)TSO-C88a.

Table 11.61(5)(b)—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 nautical miles from shore.	4000
5	Flights engaged in coastal surveillance.	7615
6	Ground testing by aircraft maintenance staff.	2100
7	Unlawful interference.	7500
8	Loss of radiocommunication.	7600
9	In flight emergency, unless otherwise instructed by ATC.	7700

11.62 Mode S transponders — specific requirements

(1) An approved Mode S transponder 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) as far as practicable for the equipment — with one of the following forms of aircraft flight identification entered into the equipment:

(i) if a flight notification is filed with ATC for the flight — the aircraft identification mentioned in the flight notification;

(ii) if no flight notification is filed with ATC for the flight — the aircraft registration mark.

(2) 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 plan is filed with ATS for the flight — the aircraft identification mentioned in the flight notification;

(ii) if no flight plan is filed with ATS for the flight — the aircraft registration mark.

(3) 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 (4) — the aircraft flight identification.

(4) Transmission of the aircraft flight identification by an approved Mode S transponder is optional for an aeroplane that was first issued with a certificate of airworthiness before 9 February 2012 (an ***older aeroplane***). However, an older aeroplane that is equipped to transmit, may transmit its aircraft flight identification.

(5) If an approved Mode S transponder transmits any Mode S EHS DAPs, the transmitted DAPs must comply with the standards stated 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 ATC. Operators need to ensure that EHS DAPs are being transmitted.

(6) If an approved Mode S transponder is fitted to an aeroplane first issued with a certificate of airworthiness on or after 9 February 2012:

(a) having a certificated MTOW 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 stated 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.

(7) 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.

11.63 Alternate GNSS position source for ADS-B OUT — requirements

(1) For an aeroplane first issued with a certificate of airworthiness on or after 8 December 2016, an alternate GNSS position source is acceptable if the source:

(a) is certified by CASA or the NAA 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 of the term at paragraph 1.7.3 of RTCA/DO-229D;

(ii) the output function HPL, computed in accordance with the definition of the term 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 issued with a certificate of airworthiness 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.

11.64 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 NAA of a recognised country, during type certification, as meeting the standards of EASA AMC 20-24 or EASA CS-ACNS; and

(b) the aeroplane's flight manual or flight manual supplement attests to the certification; and

(c) the GNSS system meets the performance requirements mentioned in subsection 11.63(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 aeroplane's flight manual attests to the certification; and
   (c) the GNSS system meets the performance requirements mentioned in subsection 11.63(1).

(3) For an aeroplane first issued with a certificate of airworthiness 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 aeroplane's flight manual attests to the certification; and
   (c) the GNSS system meets the performance requirements mentioned in subsection 11.63(1).

(4) For an aeroplane first issued with a certificate of airworthiness 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 aeroplane's flight manual attests to the certification; and
   (c) the GNSS system meets the performance requirements mentioned in subsection 11.63(2).

11.65 Aeroplane flown with inoperative transponder

An approved transponder 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 approved transponder to be repaired or replaced; and
   (b) ends not more than 72 hours after the time the approved transponder was found to be inoperative.

Note: See also section 11.04 for additional requirements related to flight with inoperative equipment. For a flight with an inoperative transponder, 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 an operative transponder.

Chapter 12 — Flight crew member training and checking

Division 1—Preliminary

12.01 Definitions for Chapter 12

In this Chapter:

flight crew member ***general emergency check of competency*** means an assessment, conducted by an aeroplane's operator in accordance with the operator's exposition, of whether a person is competent, as a flight crew member, in relation to the matters mentioned in subsection 12.04(2).

flight crew member line check means an assessment, conducted by an aeroplane's operator in accordance with the operator's exposition, of whether a person is competent to safely carry out the person's duties as a flight crew member in the aeroplane, which relates to the matters mentioned in subsection 12.06(2).

flight crew member proficiency check means an assessment, conducted by an aeroplane's operator in accordance with the operator's exposition, of whether a person is competent to safely carry out the person's duties as a flight crew member in the aeroplane, which relates to the matters mentioned in subsection 12.05(2).

Division 2—Flight crew member training and checking events

12.02 Purpose of Division 2

This Division prescribes requirements for subregulation 135.380(4) of CASR.

Note: Paragraph 119.205(1)(h) of CASR requires an Australian air transport operator to include in the operator's exposition the details of each plan, process, procedure, program, and system, implemented by the operator to safely conduct and manage the operator's Australian air transport operations in compliance with the civil aviation legislation.

12.03 Training and checking requirements

A flight crew member meets the training and checking requirements for the flight crew member and flight if:

(a) the flight crew member has successfully completed the operator's general emergency training under section 12.04 and the operator's flight crew member general emergency check of competency; and

(b) the flight crew member has successfully completed the operator's conversion training under section 12.05 and the operator's flight crew member proficiency check; and

(c) the flight crew member is undertaking, or has successfully completed, the operator's line training under section 12.06 and the operator's flight crew member line check; and

(d) if required, the flight crew member has successfully completed the operator's differences training under section 12.07; and

(e) the flight crew member has successfully completed the operator's recurrent training and checking under section 12.08; and

(f) if required, the flight crew member has successfully completed the operator's remedial training under section 12.09.

12.04 General emergency training

(1) The flight crew member must have successfully completed the operator's general emergency training for the aeroplane.

(2) The training must deal with the following:

(a) training in general emergency and survival procedures;

(b) training in aerodrome and aeroplane security procedures;

(c) training in procedures for the location of, access to, and use of, the emergency and safety equipment on the aeroplane;

(d) if life jackets and life rafts are required to be carried on the aeroplane for the flight under regulation 135.370 of CASR — training in ditching procedures, and training, including in-water practical training, in underwater escape and the use of life jackets and life rafts;

(e) for a flight to which paragraph (d) does not apply, but for which life jackets are required to be carried on the aeroplane under regulation 135.370 of CASR — training in ditching procedures, and training, including in-water practical training, in underwater escape and the use of life jackets.

12.05 Conversion training and flight crew member proficiency check

(1) The flight crew member must have successfully completed the operator's conversion training, and flight crew member proficiency check, for the aeroplane.

(2) The training must deal with the following:

(a) training in the duties and responsibilities for the flight crew member's position;

(b) training in the standard operating procedures for the type or class of aeroplane used for the flight;

(c) training in the normal, non-normal and emergency procedures for an aeroplane of that type or class;

(d) training in any flight procedures or manoeuvres, conducted in an aeroplane of that type or class, for which the operator holds an approval under regulation 91.045, or 135.020, of CASR;

Note: Examples of approvals issued under regulation 91.045, or 135.020, of CASR include approvals to conduct low visibility operations and flights using certain PBN navigation specifications.

(e) training in the procedures for any other operations conducted by the operator in an aeroplane of that type or class that the flight crew member has not previously experienced, for example, precision runway monitor operations or land and hold short operations.

12.06 Line training and flight crew member line check

(1) The flight crew member must be undertaking, or have successfully completed, the operator's line training, and flight crew member line check, for the aeroplane.

(2) The training must deal with the following:

(a) training in the operator's safety management system's risk assessment and management practices;

(b) training in the procedures for the conduct of line operations;

(c) training in the procedures related to aerodrome ground handling, aeroplane parking and public safety;

(d) if passengers are carried on the flight — training in the conduct of passenger handling, briefings and safety demonstrations;

(e) training specific to the operator's area of operations, or routes if the operator's exposition describes the area of operations as a specific route or a number of routes;

(f) training in pre-flight, and post-flight, activities relating to line operations.

(3) Also, for a pilot in command of the aeroplane, if under regulation 135.410 of CASR, the operator's exposition includes details of training requirements in relation to a particular aerodrome for the flight, the training must deal with the requirements.

12.07 Differences training

(1) If required, the flight crew member must have successfully completed the operator's differences training for the aeroplane.

(2) The successful completion of the training is evidenced by a course completion certificate given to the flight crew member, under paragraph 61.200(e) of CASR, in relation to the training.

12.08 Recurrent training and checking

(1) The flight crew member must have successfully completed the operator's recurrent training and checking for the aeroplane, in accordance with the requirements mentioned in subsections (2) and (3).

(2) The flight crew member must successfully undertake the operator's flight crew member general emergency check of competency, for the relevant type or class of aeroplane, as follows:

(a) in relation to the use of life rafts or underwater escape — subject to subsection (4), at intervals of not more than 3 years after the previous check;

(b) otherwise — subject to subsection (4), at intervals of not more than 1 year after the previous check.

(3) The flight crew member must successfully undertake the operator's flight crew member proficiency check, for the relevant type or class of aeroplane, as follows:

(a) for a flight crew member only conducting a flight under the VFR by day — subject to subsections (4) and (5), initially 6 months after first commencing

unsupervised line operations for the operator, and then at intervals of 1 year after the previous proficiency check;

(b) otherwise — subject to subsections (4) and (5), initially 6 months after first commencing unsupervised line operations for the operator, and then at intervals of 6 months after the previous proficiency check.

(4) Any check of competency or proficiency mentioned in this section, required to be completed at intervals of 1 or 3 years, successfully completed within 90 days before, or after, its due date is taken to meet the requirements of this section as if it had been completed on the due date.

(5) Any check of competency or proficiency mentioned in this section, required to be completed at intervals of 6 months, successfully completed within 30 days before, or after, its due date is taken to meet the requirements of this section as if it had been completed on the due date.

(6) A flight crew member who fails to demonstrate competency, or continuing competency, for the relevant type or class of aeroplane, under this section must not conduct an operation with the relevant type or class of aeroplane until he or she has met the remedial training requirements mentioned in section 12.09.

Note: An operator commits an offence if the operator assigns a person to duty as a flight crew member for a flight if the person has not been assessed as competent by the operator, in accordance with the operator's training and checking system, to perform the duties assigned to the person for the flight: see regulation 135.385 of CASR.

12.09 Remedial training

(1) This section applies if a flight crew member fails the operator's flight crew member general emergency check of competency, or flight crew member proficiency check, under section 12.08 for a specific type or class of aeroplane.

(2) The flight crew member must have successfully completed the operator's remedial training for the relevant type or class of aeroplane, in accordance with subsection (3).

(3) Before being assigned by the operator to duty as a flight crew member for a flight in the relevant type or class of aeroplane, the flight crew member must:

(a) successfully complete a program of remedial training in relation to the matters in which the flight crew member failed to demonstrate competency for the relevant type or class of aeroplane, as identified in the flight crew member general emergency check of competency or flight crew member proficiency check, as the case requires; and

(b) then successfully complete the operator's flight crew member general emergency check of competency or flight crew member proficiency check, as the case requires, for the relevant type or class of aeroplane; and

(c) then have the status of a flight crew member eligible to carry out unsupervised operations in the relevant type or class of aeroplane reinstated by the operator.

Division 3—Individuals who conduct training and checking

12.10 Purpose of Division 3

This Division prescribes the requirements for subparagraph 135.387(2)(a)(ii) of CASR.

12.11 Requirements for individual conducting training and checking

(1) The training or check must be conducted by an individual who:

(a) has met the minimum experience and entry control requirements, stated in the operator's exposition, for a training pilot, check pilot, or training and check pilot, as applicable; and

(b) has completed the training program, for a training pilot, check pilot, or training and check pilot, as applicable, included in the operator's exposition; and

(c) has met the relevant recency or proficiency requirements that are the subject of the training or check, as stated in the operator's exposition, CASR and Division 2; and

(d) has been nominated, in writing, by the operator to be a training pilot, check pilot, or training and check pilot, as applicable, for the operator's training and checking system.

(2) For paragraph (1)(d), the nomination must be made by an entry in the operator's exposition or a document provided by the operator to CASA, and state that the individual meets the requirements stated in paragraphs (1)(a) to (c).

12.12 CASA may test nominated individual

(1) CASA may test an individual nominated by the operator under paragraph 12.11(1)(d) to be a training pilot, check pilot, or training and check pilot, as applicable, to assess the individual's competency in the role.

Note: If CASA conducts a test of the individual and determines that the individual should not be permitted to conduct training or checks under this Chapter, then CASA has the power under Subpart 11.G of CASR to direct the individual to undertake further training before commencing, or continuing, in the role.

(2) For subsection (1), CASA must give the individual written notice of the test.

(3) The date, time and location of the test stated in a notice under subsection (2) must be reasonable in the circumstances.

(4) CASA must give the individual a copy of the result of the test, including the CASA testing officer's assessment of the individual's competency in the role.

Division 4 — Command training for pilot in command

12.13 Command training requirements

For paragraph 135.395(1)(c) of CASR, the following requirements are prescribed:

(a) training in the responsibilities of the pilot in command of an aeroplane of that type or class;

(b) supervised line flying as pilot in command under supervision for the required number of flight hours mentioned in the aeroplane operator's exposition.

Note: Before the pilot can operate the aeroplane as pilot in command, the pilot is also required to have successfully completed the operator's flight crew member proficiency check, and flight crew member line check, for the aeroplane, relating to a pilot in command of the aeroplane.

Division 5 — Pilot in command in non-command seat

12.14 Non-command seat proficiency check requirements

For paragraph 135.405(1)(b), and (2)(b), of CASR, the following requirements are prescribed:

(a) the pilot in command must complete a relevant part of the operator's flight crew member proficiency check under section 12.08 while operating the aeroplane from the non-command seat as pilot in command or in command under supervision;

(b) the relevant part of the flight crew member proficiency check must check that the pilot in command is competent to carry out the required non-command seat flight crew member's duties in the aeroplane.

Chapter 13 — Air crew member training and checking

Division 1—Preliminary

13.01 Definitions for Chapter 13

In this Chapter:

air crew member general emergency check of competency means an assessment, conducted by an aeroplane's operator in accordance with the operator's exposition, of whether a person is competent, as an air crew member, in relation to the matters mentioned in subsection 13.04(2).

air crew member line check means an assessment, conducted by an aeroplane's operator in accordance with the operator's exposition, of whether a person is competent to safely carry out the person's duties as an air crew member in the aeroplane, which relates to the matters mentioned in subsection 13.06(2).

air crew member proficiency check means an assessment, conducted by an aeroplane's operator in accordance with the operator's exposition, of whether a person is competent to safely carry out the person's duties as an air crew member in the aeroplane, which relates to the matters mentioned in subsection 13.05(2).

Division 2—Air crew member training and checking events

13.02 Purpose of Division 2

This Division prescribes requirements for subregulation 135.445(2) of CASR.

Note: Paragraph 119.205(1)(h) of CASR requires an Australian air transport operator to include in the operator's exposition the details of each plan, process, procedure, program, and system, implemented by the operator to safely conduct and manage the operator's Australian air transport operations in compliance with the civil aviation legislation.

13.03 Training and checking requirements

An air crew member meets the training and checking requirements for the air crew member and flight if:

(a) the air crew member has successfully completed the operator's general emergency training under section 13.04 and the operator's air crew member general emergency check of competency; and

(b) the air crew member has successfully completed the operator's conversion training under section 13.05 and the operator's air crew member proficiency check; and

(c) the air crew member is undertaking, or has successfully completed, the operator's line training under section 13.06 and the operator's air crew member line check; and

(d) if required, the air crew member has successfully completed the operator's differences training under section 13.07; and

(e) the air crew member has successfully completed the operator's recurrent training and checking under section 13.08; and

(f) if required, the air crew member has successfully completed the operator's remedial training under section 13.09.

13.04 General emergency training

(1) The air crew member must have successfully completed the operator's general emergency training for the aeroplane.

(2) The training must deal with the following:

(a) training in general emergency and survival procedures;

(b) training in aerodrome and aeroplane security procedures;

(c) training in procedures for the location of, access to, and use of, the emergency and safety equipment on the aeroplane;

(d) if life jackets and life rafts are required to be carried on the aeroplane for the flight under regulation 135.370 of CASR — training in ditching procedures, and training, including in-water practical training, in underwater escape and the use of life jackets and life rafts;

(e) for a flight to which paragraph (d) does not apply, but for which life jackets are required to be carried on the aeroplane under regulation 135.370 of CASR — training in ditching procedures, and training, including in-water practical training, in underwater escape and the use of life jackets.

13.05 Conversion training and air crew member proficiency check

(1) The air crew member must have successfully completed the operator's conversion training, and air crew member proficiency check, for the aeroplane.

(2) The training must deal with the following:

(a) training in the duties and responsibilities for the air crew member's position;

(b) training in the standard operating procedures for the kind of aeroplane used for the flight;

(c) training in the normal, non-normal and emergency procedures for an aeroplane of that kind;

(d) training in the procedures for any other operations conducted by the operator in an aeroplane of that kind that the air crew member has not previously experienced, for example, low visibility operations or NVIS operations.

13.06 Line training and air crew member line check

(1) The air crew member must be undertaking, or have successfully completed, the operator's line training, and air crew member line check, for the aeroplane.

(2) The training must deal with the following:

(a) training in the operator's safety management system's risk assessment and management practices;

(b) training in the procedures for the conduct of line operations;

(c) training in the procedures related to aerodrome ground handling, aeroplane parking and public safety;
(d) if passengers are carried on the flight — training in the conduct of passenger handling, briefings and safety demonstrations;
(e) training specific to the operator's area of operations;
(f) training in pre-flight, and post-flight, activities relating to line operations.

13.07 Differences training

(1) If required, the air crew member must have successfully completed the operator's differences training for the aeroplane.
(2) The training must deal with the following:
(a) if the limitations or systems of an aeroplane of that kind are of a kind that the air crew member has not previously received training for — training in the limitations or systems;
(b) if the equipment on an aeroplane of that kind is of a kind that the air crew member has not previously received training for — training in the location, and use, of the equipment;
(c) if the normal and emergency procedures for an aeroplane of that kind are of a kind that the air crew member has not previously received training for — training in the procedures.

13.08 Recurrent training and checking

(1) The air crew member must have successfully completed the operator's recurrent training and checking for the aeroplane, in accordance with the requirements mentioned in subsections (2) and (3).
(2) The air crew member must successfully undertake the operator's air crew member general emergency check of competency, for the relevant kind of aeroplane, as follows:
(a) in relation to the use of life rafts or underwater escape — subject to subsection (4), at intervals of not more than 3 years after the previous check;
(b) otherwise — subject to subsection (4), at intervals of not more than 1 year after the previous check.
(3) Subject to subsection (4), the air crew member must successfully undertake the operator's air crew member proficiency check, for the relevant kind of aeroplane, initially 1 year after first commencing unsupervised line operations for the operator, and then at intervals of 1 year after the previous proficiency check:
(4) Any check of competency or proficiency mentioned in this section, required to be completed at intervals of 1 or 3 years, successfully completed within 90 days before, or after, its due date is taken to meet the requirements of this section as if it had been completed on the due date.
(5) An air crew member who fails to demonstrate competency, or continuing competency, for the relevant kind of aeroplane, under this section must not perform the duties of an air crew member in the relevant kind of aeroplane until he or she has met the remedial training requirements mentioned in section 13.09.

13.09 Remedial training

(1) This section applies if an air crew member fails the operator's air crew member general emergency check of competency, or air crew member proficiency check, under section 13.08 for a specific kind of aeroplane.

(2) The air crew member must have successfully completed the operator's remedial training for the relevant kind of aeroplane, in accordance with subsection (3).

(3) Before being assigned by the operator to duty as an air crew member for a flight in the relevant kind of aeroplane, the air crew member must:

(a) successfully complete a program of remedial training in relation to the matters in which the air crew member failed to demonstrate competency for the relevant kind of aeroplane, as identified in the air crew member general emergency check of competency or air crew member proficiency check, as the case requires; and

(b) then successfully complete the operator's air crew member general emergency check of competency or air crew member proficiency check, as the case requires, for the relevant kind of aeroplane; and

(c) then have the status of an air crew member eligible to perform the duties of an air crew member in the relevant kind of aeroplane reinstated by the operator.

Division 3—Individuals who conduct training and checking

13.10 Application of Division 3

This Division applies if an air crew member of an aeroplane operator's personnel undertakes training or, a check, that is required under regulation 135.445 of CASR or Division 2.

13.11 Requirements for individual conducting training and checking

(1) The training or check must be conducted by an individual who:

(a) has met the minimum experience and entry control requirements, stated in the operator's exposition, for a training air crew member, check air crew member, or training and check air crew member, as applicable; and

(b) has completed the training program, for a training air crew member, check air crew member, or training and check air crew member, as applicable, included in the operator's exposition; and

(c) has met the relevant recency or proficiency requirements that are the subject of the training or check, as stated in the operator's exposition, CASR and Division 2; and

(d) has been nominated, in writing, by the operator to be a training air crew member, check air crew member, or training and check air crew member, as applicable, for the operator's training and checking system.

(2) For paragraph (1)(d), the nomination must be made by an entry in the operator's exposition or a document provided by the operator to CASA, and state that the individual meets the requirements stated in paragraphs (1)(a) to (c).

(3) The requirements of this section are directions to the operator for the purposes of regulation 11.245 of CASR.

(4) The directions cease to be in force at the end of 1 December 2024.

13.12 CASA may test nominated individual

(1) CASA may test an individual nominated by the operator under paragraph 13.11(1)(d) to be a training air crew member, check air crew member, or training and check air crew member, as applicable, to assess the individual's competency in the role.

Note: If CASA conducts a test of the individual and determines that the individual should not be permitted to conduct training or checks under this Chapter, then CASA has the power under Subpart 11.G of CASR to direct the individual to undertake further training before commencing, or continuing, in the role.

(2) For subsection (1), CASA must give the individual written notice of the test.

(3) The date, time and location of the test stated in a notice under subsection (2) must be reasonable in the circumstances.

(4) CASA must give the individual a copy of the result of the test, including the CASA testing officer's assessment of the individual's competency in the role.

Chapter 14 — Medical transport specialist training and checking

Division 1—Preliminary

14.01 Definitions for Chapter 14

In this Chapter:

medical transport specialist general emergency check of competency means an assessment, conducted by an aeroplane's operator in accordance with the operator's exposition, of whether a person is competent, as a medical transport specialist, in relation to the matters mentioned in subsection 14.04(2).

medical transport specialist line check means an assessment, conducted by an aeroplane's operator in accordance with the operator's exposition, of whether a person is competent to safely carry out the person's duties as a medical transport specialist in the aeroplane, which relates to the matters mentioned in subsection 14.06(2).

medical transport specialist proficiency check means an assessment, conducted by an aeroplane's operator in accordance with the operator's exposition, of whether a person is competent to safely carry out the person's duties as a medical transport specialist in the aeroplane, which relates to the matters mentioned in subsection 14.05(2).

Division 2—Medical transport specialist training and checking events

14.02 Purpose of Division 2

This Division prescribes requirements for subregulation 135.460(2) of CASR.

Note: Paragraph 119.205(1)(h) of CASR requires an Australian air transport operator to include in the operator's exposition the details of each plan, process, procedure, program, and system, implemented by the operator to safely conduct and manage the operator's Australian air transport operations in compliance with the civil aviation legislation.

14.03 Training and checking requirements

A medical transport specialist meets the training and checking requirements for the medical transport specialist and flight if:

(a) the medical transport specialist has successfully completed the operator's general emergency training under section 14.04 and the operator's medical transport specialist general emergency check of competency; and

(b) the medical transport specialist has successfully completed the operator's conversion training under section 14.05 and the operator's medical transport specialist proficiency check; and

(c) the medical transport specialist is undertaking, or has successfully completed, the operator's line training under section 14.06 and the operator's medical transport specialist line check; and
(d) if required, the medical transport specialist has successfully completed the operator's differences training under section 14.07; and
(e) the medical transport specialist has successfully completed the operator's recurrent training and checking under section 14.08; and
(f) if required, the medical transport specialist has successfully completed the operator's remedial training under section 14.09.

14.04 General emergency training

(1) The medical transport specialist must have successfully completed the operator's general emergency training for the aeroplane.
(2) The training must deal with the following:
(a) training in general emergency and survival procedures;
(b) training in aerodrome and aeroplane security procedures;
(c) training in procedures for the location of, access to, and use of, the emergency and safety equipment on the aeroplane;
(d) if life jackets and life rafts are required to be carried on the aeroplane for the flight under regulation 135.370 of CASR — training in ditching procedures, and training, including in-water practical training, in underwater escape and the use of life jackets and life rafts;
(e) for a flight to which paragraph (d) does not apply, but for which life jackets are required to be carried on the aeroplane under regulation 135.370 of CASR — training in ditching procedures, and training, including in-water practical training, in underwater escape and the use of life jackets.

14.05 Conversion training and medical transport specialist proficiency check

(1) The medical transport specialist must have successfully completed the operator's conversion training, and medical transport specialist proficiency check, for the aeroplane.
(2) The training must deal with the following:
(a) training in the duties and responsibilities for the medical transport specialist's position;
(b) training in the standard operating procedures for the kind of aeroplane used for the flight;
(c) training in the normal, non-normal and emergency procedures for an aeroplane of that kind;
(d) training in the procedures for any other operations conducted by the operator in an aeroplane of that kind that the medical transport specialist has not previously experienced, for example, low level operations.

14.06 Line training and medical transport specialist line check

(1) The medical transport specialist must be undertaking, or have successfully completed, the operator's line training, and medical transport specialist line check, for the aeroplane.

(2) The training must deal with the following:

(a) training in the operator's safety management system's risk assessment and management practices;

(b) training in the procedures for the conduct of line operations;

(c) training in the procedures related to aerodrome ground handling, aeroplane parking and public safety;

(d) if medical patients are carried on the flight — training in the conduct of medical patient handling, briefings and safety demonstrations;

(e) training in pre-flight, and post-flight, activities relating to line operations.

14.07 Differences training

(1) If required, the medical transport specialist must have successfully completed the operator's differences training for the aeroplane.

(2) The training must deal with the following:

(a) if the limitations or systems of an aeroplane of that kind are of a kind that the medical transport specialist has not previously received training for — training in the limitations or systems;

(b) if the equipment on an aeroplane of that kind is of a kind that the medical transport specialist has not previously received training for — training in the location, and use, of the equipment;

(c) if the normal and emergency procedures for an aeroplane of that kind are of a kind that the medical transport specialist has not previously received training for — training in the procedures.

14.08 Recurrent training and checking

(1) The medical transport specialist must have successfully completed the operator's recurrent training and checking for the aeroplane, in accordance with the requirements mentioned in subsections (2) and (3).

(2) The medical transport specialist must successfully undertake the operator's medical transport specialist general emergency check of competency, for the relevant kind of aeroplane, as follows:

(a) in relation to the use of life rafts or underwater escape — subject to subsection (4), at intervals of not more than 3 years after the previous check;

(b) otherwise — subject to subsection (4), at intervals of not more than 1 year after the previous check.

(3) Subject to subsection (4), the medical transport specialist must successfully undertake the operator's medical transport specialist proficiency check, for the relevant kind of aeroplane, initially 1 year after first commencing unsupervised

line operations for the operator, and then at intervals of 1 year after the previous proficiency check:

(4) Any check of competency or proficiency mentioned in this section, required to be completed at intervals of 1 or 3 years, successfully completed within 90 days before, or after, its due date is taken to meet the requirements of this section as if it had been completed on the due date.

(5) A medical transport specialist who fails to demonstrate competency, or continuing competency, for the relevant kind of aeroplane, under this section must not perform the duties of a medical transport specialist in the relevant kind of aeroplane until he or she has met the remedial training requirements mentioned in section 14.09.

14.09 Remedial training

(1) This section applies if a medical transport specialist fails the operator's medical transport specialist general emergency check of competency, or medical transport specialist proficiency check, under section 14.08 for a specific kind of aeroplane.

(2) The medical transport specialist must have successfully completed the operator's remedial training for the relevant kind of aeroplane, in accordance with subsection (3).

(3) Before being assigned by the operator to duty as a medical transport specialist for a flight in the relevant kind of aeroplane, the medical transport specialist must:

(a) successfully complete a program of remedial training in relation to the matters in which the medical transport specialist failed to demonstrate competency for the relevant kind of aeroplane, as identified in the medical transport specialist general emergency check of competency or medical transport specialist proficiency check, as the case requires; and

(b) then successfully complete the operator's medical transport specialist general emergency check of competency or medical transport specialist proficiency check, as the case requires, for the relevant kind of aeroplane; and

(c) then have the status of a medical transport specialist eligible perform the duties of a medical transport specialist in the relevant kind of aeroplane reinstated by the operator.

Division 3—Individuals who conduct training and checking

14.10 Application of Division 3

This Division applies if a medical transport specialist of an aeroplane operator's personnel undertakes training, or a check, that is required under regulation 135.460 of CASR or Division 2.

14.11 Requirements for individual conducting training and checking

(1) The training or check must be conducted by an individual who:

(a) has met the minimum experience and entry control requirements, stated in the operator's exposition, for a training medical transport specialist, check medical transport specialist, or training and check medical transport specialist, as applicable; and

(b) has completed the training program, for a training medical transport specialist, check medical transport specialist, or training and check medical transport specialist, as applicable, included in the operator's exposition; and

(c) has met the relevant recency or proficiency requirements that are the subject of the training or check, as stated in the operator's exposition, CASR and Division 2; and

(d) has been nominated, in writing, by the operator to be a training medical transport specialist, check medical transport specialist, or training and check medical transport specialist, as applicable, for the operator's training and checking system.

(2) For paragraph (1)(d), the nomination must be made by an entry in the operator's exposition or a document provided by the operator to CASA, and state that the individual meets the requirements stated in paragraphs (1)(a) to (c).

(3) The requirements of this section are directions to the operator for the purposes of regulation 11.245 of CASR.

(4) The directions cease to be in force at the end of 1 December 2024.

14.12 CASA may test nominated individual

(1) CASA may test an individual nominated by the operator under paragraph 14.11(1)(d) to be a training medical transport specialist, check medical transport specialist, or training and check medical transport specialist, as applicable, to assess the individual's competency in the role.

Note: If CASA conducts a test of the individual and determines that the individual should not be permitted to conduct training or checks under this Chapter, then CASA has the power under Subpart 11.G of CASR to direct the individual to undertake further training before commencing, or continuing, in the role.

(2) For subsection (1), CASA must give the individual written notice of the test.

(3) The date, time and location of the test stated in a notice under subsection (2) must be reasonable in the circumstances.

(4) CASA must give the individual a copy of the result of the test, including the CASA testing officer's assessment of the individual's competency in the role.