Civil Aviation (Part 133) Manual of Standards 2018

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

Dated

Shane Patrick Carmody **DRAFT ONLY — NOT FOR SIGNATURE**
Director of Aviation Safety

Contents

Chapter 1 — Preliminary

1 Name

(1) This instrument is the *Civil Aviation (Part 133) Manual of Standards 2018*.

(2) This instrument may be cited as the *Part 133 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 133 Manual of Standards.

2 Commencement

(1) Subject to subsection (2), this instrument commences immediately after the commencement of Part 133 of CASR.

(2) Subsection 92 (2) commences 2 years after the commencement of this section.

3 Authority

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

Note: Regulation 133.030 of CASR provides a general power for CASA to issue a Manual of Standards for the purposes of Part 133 of CASR (Australian air transport operations — rotorcraft).

4 Definitions

Note: A number of expressions used in this instrument are defined in the definitions section of the *Civil Aviation Act 1988*, the Dictionary of the *Civil Aviation Safety Regulations 1998* or the definitions section of the *Civil Aviation Regulations 1988*, including the following:

(a) AIP;
(b) AOC;
(c) approved;
(d) ETSO;
(e) I.F.R.;
(f) I.M.C.;
(g) lowest safe altitude;
(h) movement area;
(i) national aviation authority;
(j) NOTAMS;
(k) recognised country;
(l) rotorcraft;
(m) V.F.R.;
(n) V.M.C.

In this instrument:

alternate aerodrome, for a flight of a rotorcraft:

(a) means an aerodrome, other than a helideck:

(i) to which the rotorcraft may proceed when it becomes impossible or inadvisable to proceed to, or land at, the aerodrome of intended landing; and

(ii) where the necessary services and facilities for landing the rotorcraft are available; and

(iii) where the rotorcraft's performance requirements can be met; and

(iv) which is operational at the expected time of use; and

(b) includes each of the following:

(i) a take-off alternate aerodrome for the flight;

(ii) an en route alternate aerodrome for the flight;

(iii) a destination alternate aerodrome for the flight.

Note 1: The aerodrome from which a flight of a rotorcraft departs may also be an en route alternate aerodrome, or a destination alternate aerodrome, for the flight.

Note 2: The expression ***alternate aerodrome*** has a different meaning for this instrument to that in regulation 2 of CAR.

Note 3: A rotorcraft's operator may choose to plan to have a take-off alternate aerodrome for a flight of the rotorcraft.

avoid area, of a rotorcraft, means the area delineated on the height-velocity envelope chart in the rotorcraft's flight manual that shows the parameters within which operations of the rotorcraft should be avoided.

destination alternate aerodrome, for a flight of a rotorcraft, means an alternate aerodrome at which the rotorcraft may land if it becomes either impossible, or inadvisable, to land at the aerodrome of intended landing.

en route alternate aerodrome, for a flight of a rotorcraft, means an alternate aerodrome at which the rotorcraft may land if a diversion becomes necessary while en route.

helideck has the meaning given by regulation 133.015 of CASR.

passenger list, for a flight, means a passenger list for the flight, or other document, containing the information mentioned in subregulation 133.135 (2) of CASR.

performance class 1: see section 27.

performance class 2: see section 27.

performance class 2 with exposure: see section 27.

performance class 3: see section 27.

recognised foreign State means any of the following foreign States, or another foreign State approved in writing by CASA for this manual of standards:

(a) Canada;

(b) Hong Kong (Special Administrative Region of China);

(c) New Zealand;

(d) United States of America;

(e) the following European Aviation Safety Agency (EASA) member States:

(i) Belgium;

(ii) Czech Republic;

(iii) Denmark;

(iv) Finland;

(v) France;

(vi) Germany;

(vii) Ireland;

(viii) Italy;

(ix) Netherlands;

(x) Norway;

(xi) Portugal;

(xii) Spain;

(xiii) Sweden;

(xiv) Switzerland;

(xv) United Kingdom.

suitable forced landing area has the meaning given by regulation 133.020 of CASR.

take-off alternate aerodrome, for a flight of a rotorcraft, means an alternate aerodrome at which the rotorcraft may land if this becomes necessary shortly after take-off, and it is not possible to use the departure aerodrome for the flight.

underwater escape training, for a rotorcraft, means training in emergency response knowledge and skills, including evacuation techniques, to be applied in the event of an emergency ditching of the rotorcraft.

Chapter 2 — General

Division 1 — Operational documents

5 Requirement or limitation in flight manual

(1) For paragraph 133.040 (3) (a) of CASR, each of the following circumstances are prescribed:

(a) a rotorcraft is conducting a medical transport operation at a medical transport operating site, and the rotorcraft's operator has risk-assessed the operation and found the site to be a suitable place to operate the rotorcraft safely;

(b) a rotorcraft is conducting an air transport winching operation, and the rotorcraft is being operated at a weight that will allow it to hover out of ground effect with 1 engine inoperative;

(c) a rotorcraft is conducting a medical transport operation involving a winching operation, and the rotorcraft's operator has applied the risk assessment and management processes stated in the operator's exposition to the winching operation;

(d) a rotorcraft is being flown in performance class 2 with exposure during the take-off, or landing, stage of a flight.

(2) For paragraph 133.040 (3) (b) of CASR, the kind of requirement or limitation that is prescribed is a limitation stated in the rotorcraft's flight manual that restricts the operation of the rotorcraft inside the rotorcraft's avoid area.

(3) In this section:

winching means the pick-up, or lowering, of an object or person to, or from, the rotorcraft by means of a winch or hoist fitted to the rotorcraft.

Division 2 — Flight-related documents

6 Carriage of documents

For paragraph 133.065 (1) (a) of CASR, the following documents are prescribed:

(a) the rotorcraft's flight manual;

(b) the rotorcraft's flight technical log;

(c) the journey log for the flight;

(d) the authorised aeronautical information for the flight;

(e) if there is required to be a minimum equipment list for the rotorcraft under regulation 133.045 of CASR — the rotorcraft's minimum equipment list;

(f) if an operational flight plan for the flight is required under regulation 133.145 of CASR — the operational flight plan for the flight;

(g) if the flight is a passenger transport operation — a copy of the passenger list for the flight.

7 Carriage of documents for international flights

For paragraph 133.075 (3) (a) of CASR, the following documents are prescribed:

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

(b) if the rotorcraft's radio station licence is an apparatus licence issued under the *Radiocommunications Act 1992* for the radiocommunications equipment on board the rotorcraft — the licence;

(c) if the rotorcraft's radio station licence is a class licence issued under the *Radiocommunications Act 1992* for the radiocommunications equipment on board the rotorcraft — a certified true copy of the licence;

(d) if the flight is a passenger transport operation — a copy of the passenger list for the flight;

(e) if the rotorcraft is carrying cargo on the flight — the manifests for the cargo;

(f) a certified true copy of the operator's Australian air transport AOC;

(g) a copy of the operations specifications issued to the operator in relation to the operator's Australian air transport AOC.

8 Keeping and updating documents etc.

For paragraph 133.080 (1) (a) of CASR, if the flight is a passenger transport operation, a copy of the passenger list for the flight is prescribed.

Division 3 — Emergency and survival equipment

9 Information about emergency and survival equipment

For subregulation 133.100 (1) of CASR:

(a) the equipment mentioned in column 1 of the items in the following table are prescribed; and

(b) the information mentioned in column 2 of an item in the table is prescribed for the equipment mentioned in column 1 of the item.

Information about emergency and survival equipment

Item	Column 1 Equipment	Column 2 Information
1	Life raft	The number, colour and type of life rafts carried on the flight
2	Pyrotechnic signalling device	The number, colour and type of pyrotechnic signalling devices carried on the flight
3	First-aid kit	Details of the emergency medical supplies in the first-aid kit
4	Emergency locator transmitter	The number of emergency locator transmitters carried on the flight, and for each transmitter, whether the transmitter is fixed or portable
5	Emergency and survival equipment not mentioned in items 1 to 4	Details of the emergency and survival equipment carried on the flight and, if emergency portable radio equipment is carried, the type and frequency of each radio

Chapter 3 — Operational procedures

Division 1 — Flight planning

10 Operational flight plans

For paragraph 133.145 (2) (b) of CASR, the following information is prescribed:

(a) the rotorcraft's registration mark;

(b) the flight number of the flight, if any;

(c) the date of the flight;

(d) the points of departure and destination for the flight;
(e) whether the flight is planned, whether in whole or part, to be a V.F.R. flight at night, an I.F.R. flight or both;
(f) the amount of fuel required to be carried on board the rotorcraft for the flight under regulation 133.203 of CASR, and the actual amount of fuel carried on board the rotorcraft 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 V.F.R. flight at night or I.F.R. flight — the published lowest safe altitude or the lowest safe altitude, as 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.

Division 2 — Fuel requirements

11 Purpose of Division 2

This Division prescribes the requirements for subregulation 133.203 (1) of CASR.

12 Definitions for Division 2

In this Division:

additional fuel means the supplementary amount of fuel required to allow a rotorcraft that suffers engine failure, or loss of pressurisation, at the critical point along the route (whichever results in the higher subsequent fuel consumption) to:
(a) proceed to an alternate aerodrome for the flight of the rotorcraft; and
(b) fly for 15 minutes at a holding speed, and at the holding fuel consumption rate, for the rotorcraft at 1 500 ft above the alternate aerodrome elevation, in ISA conditions; and
(c) make an approach and landing at the alternate aerodrome.

alternate fuel means the amount of fuel required to enable a rotorcraft to do the following in a sequence:
(a) perform a missed approach at the destination aerodrome for the flight of the rotorcraft;
(b) climb to the expected cruising altitude;
(c) fly the expected routing to the destination alternate aerodrome for the flight of the rotorcraft;
(d) descend to the point where the expected approach is initiated;
(e) conduct the approach;
(f) land at the destination alternate aerodrome.

altitude means the vertical distance that a point or object is from MSL.

APU means auxiliary power unit.

ATS means air traffic service.

contingency fuel means the amount of fuel required to compensate for unforeseen factors during a flight of a rotorcraft, which must not be less than the higher of the following amounts:

(a) 10% of the trip fuel amount for the flight;

(b) an amount of fuel required to fly for 5 minutes at a holding speed, and at the holding fuel consumption rate, for the rotorcraft at 1 500 ft above the destination aerodrome elevation, in ISA conditions.

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

(a) established by the rotorcraft's manufacturer, and published in the rotorcraft's flight manual;

(b) established using a fuel consumption monitoring system;

(c) established by the rotorcraft's operator and published in the operator's exposition, together 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 that:

(a) is required to fly a rotorcraft:

(i) at 1 500 ft above aerodrome elevation in ISA conditions; and

(ii) at the rotorcraft's estimated weight on arrival at the destination aerodrome (the ***relevant aerodrome***) for the flight of the rotorcraft, or the destination alternate aerodrome (also the ***relevant aerodrome***) for the flight, if required; and

(iii) for the kind of flight mentioned in column 1 of an item in the following table — at the speed mentioned in column 2 of the item for the period of the flight mentioned in column 3 of the item; and

(b) is usable fuel remaining in the rotorcraft's fuel tanks on completion of the final landing at the relevant aerodrome.

Table Final reserve fuel requirements

Item	**Kind of flight (by flight rules)** Column 1	**Speed** Column 2	**Final reserve fuel flight time** Column 3
1	I.F.R. flight	holding speed	30 minutes
2	V.F.R. flight at night	holding speed	30 minutes
3	V.F.R. flight by day	range speed	20 minutes

holding fuel means the amount of fuel a rotorcraft requires to fly for the period anticipated for holding, taking into account the operating conditions, calculated at the holding fuel consumption rate established for the rotorcraft for the anticipated meteorological conditions, or ISA, as applicable.

Note: See also the definition ***established***.

ISA means international standard atmosphere.

MSL means mean sea level.

taxi fuel means the amount of fuel expected to be used for start, hover and taxi operations before commencement of the take-off stage of a flight, taking into account:

(a) local conditions at the departure aerodrome for the flight; and
(b) APU consumption, if applicable.

trip fuel means the amount of fuel required to enable a rotorcraft to fly from take-off, or the point of in-flight re-planning, until landing at the destination aerodrome for the flight, and includes the following:

(a) fuel for take-off and climb from departure aerodrome elevation 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 at the destination aerodrome.

13 Fuel required to complete a flight

The operator, and pilot in command, of a rotorcraft must consider the following matters when determining whether the rotorcraft has sufficient fuel to complete a proposed flight safely:

(a) either of the following rotorcraft-specific fuel consumption data:
    (i) current rotorcraft-specific fuel consumption data derived from an approved fuel consumption monitoring system, if available;
    (ii) the rotorcraft's fuel consumption data stated in its flight manual;
(b) the operating conditions for the proposed flight, including the following:
    (i) the anticipated weight of the rotorcraft;
    (ii) relevant NOTAMS that may affect fuel planning for the flight;
    (iii) relevant meteorological reports and forecasts;
    (iv) relevant ATS procedures, restrictions and anticipated delays;
    (v) the effects of deferred maintenance items and configuration deviations;
(c) the potential for deviations from the planned flight route because of unforeseen factors.

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

(1) The pilot in command of a rotorcraft must ensure that, when a flight of the rotorcraft commences, the rotorcraft is carrying on board at least the total of the following amounts of fuel:

(a) the amount of unusable fuel stated in the rotorcraft's flight manual;

(b) the following amounts of usable fuel, calculated in accordance with subsection (2):

(i) taxi fuel;

(ii) trip fuel;

(iii) contingency fuel;

(iv) alternate fuel, if required;

(v) holding fuel, if required;

(vi) final reserve fuel;

(vii) additional fuel, if applicable.

(2) The calculation under paragraph (1) (b) must:

(a) use the higher of the fuel consumption recorded in:

(i) the fuel consumption data mentioned in paragraph 13 (a); and

(ii) the data obtained from the recording of fuel use in accordance with a procedure mentioned in subregulation 133.195 (1) of CASR; and

(b) take account of the operating conditions for the flight mentioned in paragraph 13 (b).

15 Procedures for monitoring amounts of fuel during a flight

(1) A rotorcraft's operator must have documented procedures to be followed by the pilot in command of the rotorcraft, during a flight of the rotorcraft, under which the pilot in command carries out fuel amount checks at regular intervals and determines the amount of useable fuel remaining on board at each interval by:

(a) comparing actual and planned fuel consumption for the flight; and

(b) checking whether the remaining useable fuel is sufficient to complete the flight to the destination aerodrome for the flight under subsection (2); and

(c) calculating how much useable fuel is expected to remain in the rotorcraft's fuel tanks when the rotorcraft lands at the destination aerodrome for the flight.

(2) For paragraph (1) (b), the amount of usable fuel required to be on board to complete the flight to the destination aerodrome, for the flight, must include the following:

(a) trip fuel;

(b) alternate fuel, if required;

(c) holding fuel, if required;

(d) final reserve fuel;

(e) additional fuel, if applicable;

(f) contingency fuel, if applicable.

(3) Also, the rotorcraft's operator must have documented procedures that require the pilot in command of the rotorcraft to re-plan the flight and proceed to an en route alternate aerodrome for the flight if, under paragraph (1) (b), it is determined that the amount of useable fuel remaining on board is insufficient to complete the flight to the destination aerodrome for the flight.

(4) If the pilot in command re-plans the flight under subsection (3), the amount of usable fuel required to be on board to continue the flight from the point of in-flight re-planning must include the following:

(a) trip fuel;

(b) alternate fuel, if required;

(c) holding fuel, if required;

(d) final reserve fuel;

(e) additional fuel, if applicable;

(f) contingency fuel, if applicable.

16 Procedures if fuel reaches stated amount during a flight

(1) A rotorcraft's operator must have documented procedures to be followed by the pilot in command of the rotorcraft, during a flight of the rotorcraft, as stated in this section.

(2) The procedures must state that:

(a) if it is calculated, under subsection 15 (1), that the amount of useable fuel on board upon landing the rotorcraft at the planned destination aerodrome, for the flight, would be less than the total of the alternate fuel, if required, and final reserve fuel, the pilot in command must:

(i) take into account the traffic and operational conditions likely to be prevailing on arrival at the planned destination aerodrome, the destination alternate aerodrome, or another en route alternate aerodrome, for the flight; and

(ii) proceed to any aerodrome mentioned in subparagraph (i) that will enable the pilot in command to perform a safe landing of the rotorcraft with not less than the final reserve fuel remaining on board; and

(b) if it is calculated, under subsection 15 (1), that the amount of useable fuel on board upon landing the rotorcraft at the planned destination aerodrome would be less than the final reserve fuel, the pilot in command must proceed to an en route alternate aerodrome, for the flight, which will enable the pilot in command to perform a safe landing at the aerodrome with not less than the final reserve fuel remaining on board.

(3) Also, the procedures must state that the pilot in command must request delay information from ATS when unforeseen factors may result in landing the rotorcraft at the destination aerodrome with less than either of the following remaining on board:

(a) if alternate fuel is required — the total of alternate fuel and fixed fuel reserve;

(b) if alternate fuel is not required — fixed fuel reserve.

(4) Also, the procedures must state that the pilot in command must declare to ATS a "MINIMUM FUEL" state if:

(a) the pilot in command commits to land the rotorcraft at an aerodrome (the ***chosen aerodrome***) under subsection (2); and

(b) it is calculated, under subsection 15 (1), that if there is any change to the existing ATS clearance issued to the rotorcraft to land at the chosen aerodrome, the rotorcraft will land with less than the final reserve fuel remaining on board.

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 occur.

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 as well as coordinate when transferring control of the rotorcraft to ensure other ATS units are aware of the flight's fuel state.

(5) Also, the procedures must state that if, under subsection 15 (1), it is calculated that the amount of useable fuel on board upon landing a rotorcraft 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 to ATS a situation of "emergency fuel" by broadcasting "MAYDAY, MAYDAY, MAYDAY FUEL".

Division 3 — Passenger transport and medical transport

17 Safety briefing card

The information prescribed for subregulation 133.255 (5) of CASR is the information that must be addressed in a safety briefing and instructions given, under regulation 133.260 of CASR, to a passenger for the flight of the rotorcraft.

18 Safety briefings and instructions

(1) This section prescribes the requirements for paragraph 133.260 (1) (a) of CASR.

(2) A safety briefing and instructions given to a passenger for the flight of the rotorcraft must address the following:

(a) the rules about smoking, or using e-cigarettes, during the flight;

(b) if the rotorcraft's seats are adjustable — how to adjust a seat;

(c) if the rotorcraft has a tray table or cot attached to the rotorcraft — when the tray table or cot must be in its stowed position;

(d) if an infant or child is carried on the rotorcraft — when and how the infant or child must be restrained;

(e) how and where to stow, or otherwise secure, carry-on baggage and personal effects, and the periods during the flight when these items must be stowed or secured;

(f) where the emergency exits are located and how to use them;

(g) if the rotorcraft is fitted with an escape path lighting system — where it is and how to use it to exit the rotorcraft;

(h) if equipment to dispense supplemental oxygen is required to be carried on the rotorcraft for the flight under regulation 133.600 of CASR — the location of the equipment and how to use it;

(i) if life jackets are required to be carried on the rotorcraft for the flight under regulation 133.615 of CASR — where they are located and how to use them, and the giving of a warning that life jackets must not be inflated inside the rotorcraft;

(j) if life rafts are required to be carried on the rotorcraft for the flight under regulation 133.615 of CASR — where they are located and how to use them;

(k) if survival equipment, other than survival equipment contained in a life raft, is required to be carried on the rotorcraft for the flight under a procedure mentioned in paragraph 133.617 (2) (a) of CASR — the location of the equipment and how to use it;

(l) the limitations on the use of portable electronic devices during different stages of the flight;

(m) if a safety briefing card for the rotorcraft is required, under regulation 133.255 of CASR, to be available to each passenger of the rotorcraft:

(i) where to find the safety briefing card; and

(ii) if the safety briefing card sets out different seating configurations for the rotorcraft — which configuration is in use for the flight;

(n) when seat belts must be worn during the flight, and how to use them;

(o) for a passenger seated in a seat adjacent to an emergency exit — what to do if it becomes necessary for passengers to use the exit;

(p) for a passenger with reduced mobility and any person accompanying or assisting the passenger during the flight — what to do if an emergency evacuation of the rotorcraft is necessary;

(q) when, and how, to assume the brace position.

(3) The safety briefing and instructions may be given:

(a) orally; or

(b) by audio presentation; or

(c) by audio-visual presentation; or

(d) by a combination of the methods mentioned in paragraphs (a) to (c).

(4) However, if the person receiving the safety briefing and instructions is a passenger with reduced mobility, the safety briefing and instructions must be given in a form appropriate to the passenger or any person accompanying or assisting the passenger during the flight.

Division 4 — External load operations

19 What this Division is about

This Division prescribes the requirements for paragraph 133.317 (1) (b) of CASR.

Note: Regulation 133.317 of CASR deals with an external load operation involving winching a person.

20 Definitions for Division 4

In this Division:

external load operation includes a series of external load operations carried out at a site.

in-flight risk assessment, for an external load operation, means an assessment carried out for the operation under section 24.

PPRP: see section 21.

pre-flight risk assessment, for an external load operation, means an assessment carried out for the operation under section 23.

risk assessor means:

(a) the pilot in command of a rotorcraft in an external load operation; or

(b) another person, mentioned in the operator's exposition, who is:

(i) qualified to conduct the type of external load operation for which the person prepares a pre-flight assessment; or

(ii) appointed in writing by the operator to prepare pre-flight risk assessments.

risk criteria, for an external load operation, means the following criteria:

(a) the potential for exposure of other persons or property to injury or damage because of the operation;

(b) the potential for exposure of any flight crew member, air crew member, or medical transport specialist, for the flight, or medical patient being transported during the flight, to injury because of the operation;

(c) the nature of the operation, and its characteristics;

(d) the nature of the location of the operation, and its characteristics;

(e) the nature of the rotorcraft to be used in the operation, its characteristics, and its performance class, if applicable;

(f) the nature and extent of the qualifications and experience of the flight crew members, air crew members and medical transport specialists for the operation;

(g) the hazards, external to the rotorcraft, which may be encountered during the operation.

safe risk strategies, for an external load operation, means risk and hazard elimination, reduction or mitigation strategies for the operation.

21 Meaning of *PPRP*

(1) A place is a people or property risk place (a ***PPRP***) if:

(a) the place will be beneath an external load operation conducted with a rotorcraft; and

(b) there are, or are likely to be, any of the following at the place:

(i) buildings, other than any building (a ***relevant building***) on which, or from which, a load is to be placed or removed, as part of the operation;

(ii) persons, other than persons (the ***participants***) involved in the operation;

(iii) vehicles, other than any vehicles of the participants; and

(c) there is a reasonable risk of a relevant event causing:

(i) the death of, or serious injury to, a person, other than a participant, at the place; or

(ii) serious damage to any building or vehicle at the place, other than a relevant building or any vehicle of a participant.

(2) Also, a place is a PPRP if the following apply:

(a) the place will not be beneath an external load operation conducted with a rotorcraft;

(b) in the event of the rotorcraft having a mechanical failure during the operation, the reasonably likely trajectory of the rotorcraft, or its external load, would be over the place;

(c) paragraphs (1) (b) and (c) apply.

(3) A place may be a PPRP even though a person has total control over who may enter, or be at, the place.

(4) In this section:

relevant event means:

(a) a collision between the rotorcraft and a building, or between the rotorcraft and land;

(b) the falling of any load from the rotorcraft.

22 Requirements generally

(1) The external load operation must meet the following requirements:

(a) for an external load operation, other than a medical transport operation that must be carried out urgently — the rotorcraft must be capable of hovering out of ground effect with 1 engine inoperative during the operation;

(b) for an external load operation that is a medical transport operation that must be carried out urgently after departing from a medical transport operating site:

(i) the rotorcraft must be operated in accordance with performance class 1 from 300 ft above the site; or

(ii) the rotorcraft must have a performance capability that allows it, with 1 engine inoperative from 300 ft above the site, to carry out a positive climb of at least 150 ft per minute at 1 000 ft above the site and clear any obstacles in the flight path until the performance class 1 climb profile is intercepted and maintained.

(2) Also, the operation must meet the risk assessment requirements stated in this Division.

23 Pre-flight risk assessment

(1) Before the external load operation commences, a risk assessor must assess the risks of the operation by conducting a pre-flight risk assessment, for the operation, based on the risk criteria.

(2) The assessment must be appropriate for the nature, size and complexity of the operation, and reasonably satisfy the operator that the operation:

(a) is within the capability of the rotorcraft and operator; and

(b) does not involve an unacceptable level of risk.

(3) As a result of the assessment, the risk assessor must develop appropriate safe risk strategies for the operation.

(4) The operator must ensure that the pilot in command and other crew members, for the operation, are familiar with the assessment.

(5) If the operation will be conducted over a place that is a PPRP, the assessment must:

(a) be in writing, and include details of the risk assessor's full name; and

(b) be approved by CASA, under regulation 133.025 of CASR, before the operation commences.

(6) This section does not apply if the operation is a medical transport operation that must be carried out urgently.

24 In-flight risk assessment

(1) This section applies if the external load operation is a medical transport operation that must be carried out urgently.

(2) During the course of the operation, the pilot in command and other crew members, for the operation, must assess the risks of the operation by conducting an in-flight risk assessment, for the operation, based on the risk criteria.

(3) As a result of the assessment, the pilot in command and other crew members must develop appropriate safe risk strategies for the operation.

Note: The requirements stated in this section do not derogate from the final authority and responsibilities that the pilot in command has, under regulation 91.100 of CASR, in relation to the operation of the rotorcraft.

25 Operator's exposition

The operator's exposition must contain the following:

(a) procedures for the qualifications, identification and use of a risk assessor mentioned in paragraph (b) of the definition ***risk assessor*** in section 20;

(b) the process to be followed in carrying out a pre-flight risk assessment, or in-flight risk assessment, for the external load operation;

(c) procedures to ensure the flight crew members, air crew members, and any medical transport specialists, for the operation, are familiar with the pre-flight risk assessment, or in-flight risk assessment, for the operation.

26 Ongoing risk assessments and monitoring

(1) The pilot in command for the flight must, during the external load operation:

(a) actively monitor the risks and hazards identified in the pre-flight risk assessment, or in-flight risk assessment, for the operation, with a view to identifying any new, or emerging, risks and hazards relevant to the operation; and

(b) continually review the pre-flight risk assessment, or in-flight risk assessment, for the operation, and modify the assessment, if necessary, to take account of:

(i) any new operationally-relevant information; and

(ii) any changed considerations, assessments or circumstances arising during the operation; and

(iii) any unforeseen matters arising during the operation; and

(iv) any new, or emerging, risks and hazards relevant to the operation, identified by the pilot in command or that the pilot in command has been informed of by another crew member for the operation; and

(c) after liaising with the other crew members for the flight, modify the safe risk strategies for the operation, if necessary, to take account of the matters mentioned in paragraphs (a) and (b); and

(d) as part of the ongoing risk assessments carried out by the pilot in command under paragraphs (a) to (c), determine whether the operation is safe to continue.

(2) Each crew member, other than the pilot in command, for the flight must, during the operation:

(a) actively monitor the risks and hazards identified in the pre-flight risk assessment, or in-flight risk assessment, for the operation, with a view to identifying any new, or emerging, risks and hazards relevant to the operation; and

(b) inform the pilot in command of any new, or emerging, risks and hazards, relevant to the operation, identified by the crew member.

Chapter 4 — Performance

Division 1 — Preliminary

27 Definitions for Chapter 4

In this Chapter:

adequate vertical margin: see section 28.

Category A, in relation to a rotorcraft, means a multi-engine rotorcraft that is:

(a) designed with engine and system isolation features stated for Category A requirements in any of the following:
  (i) Part 27 of the FARs;
  (ii) Part 29 of the FARs;
  (iii) EASA CS — 27;
  (iv) EASA CS — 29;
  (v) Part IVB of Annex 8 to the Chicago Convention; and

(b) capable of operation using take-off and landing data scheduled under a critical engine failure concept, which assures adequate designated ground or water area and adequate performance capability for continued safe flight or safe rejected take-off in the event of engine failure, as mentioned in the rotorcraft's flight manual.

Note: This definition is based on the ICAO, FAA and EASA definitions of the term ***Category A*** in relation to rotorcraft.

Category A rotorcraft means a rotorcraft that:

(a) meets the requirements of the definition ***Category A***; and

(b) is type-certificated in accordance with any of the following:
  (i) Part 27 of the FARs;
  (ii) Part 29 of the FARs;
  (iii) EASA CS — 27;
  (iv) EASA CS — 29;
  (v) Parts 6 and 7 of the *Civil Air Regulations* of the United States of America.

D, for a rotorcraft, means the maximum dimension of the rotorcraft.

defined point before landing, for a rotorcraft flying in performance class 2 or performance class 2 with exposure, means the point in the approach and landing stage of the flight after which:

(a) the rotorcraft may not be able to continue the flight safely with 1 engine inoperative; and

(b) a forced landing may be required.

exposure time, for a rotorcraft that is flying in still air, means the period during which the rotorcraft, with 1 engine inoperative, may not be able to achieve a safe forced landing or continue the flight safely.

helicopter clearway, for an aerodrome, means an area of ground or water that is selected and prepared by the aerodrome's operator as a suitable area over which a rotorcraft may accelerate and achieve the height mentioned in the rotorcraft's flight manual for the take-off procedure being used.

landing decision point, for a landing of a rotorcraft at an aerodrome, means the point, mentioned in the rotorcraft's flight manual, from which, if an engine failure is recognised:

(a) a baulked landing may be initiated; or

(b) the landing may be continued safely.

landing distance available, for a landing of a rotorcraft at an aerodrome, means the total of the following that are available for the rotorcraft to complete the landing from the height, mentioned in the rotorcraft's flight manual for the landing procedure being used, above the final approach and take-off area for the aerodrome:

(a) the length of the final approach and take-off area;

(b) the length of the area that is available and suitable for the rotorcraft to complete a landing on.

landing distance required, for a landing of a rotorcraft at an aerodrome, means the horizontal distance required for the rotorcraft to land and come to a full stop from a point 50 ft above the aerodrome.

minimum flight altitude, for a point on the route, or a route segment, of a flight of a rotorcraft, means:

(a) for an I.F.R. flight:

(i) the published lowest safe altitude for the route or route segment; or

(ii) if subparagraph (i) does not apply — the lowest safe altitude for the route or route segment; or

(b) for a V.F.R. flight at night — 1 000 ft above the highest obstacle on the ground or water within 10 NM of the rotorcraft at that point; or

(c) for a V.F.R. flight by day — 1 000 ft above the highest obstacle on the ground or water within 5 NM ahead of, and to either side of, the rotorcraft at that point.

performance class means:

(a) performance class 1; or

(b) performance class 2; or

(c) performance class 2 with exposure; or

(d) performance class 3.

performance class 1, for a stage of a flight of a rotorcraft: see section 30.

performance class 2, for a stage of a flight of a rotorcraft: see section 31.

performance class 2 with exposure, for a stage of a flight of a rotorcraft: see section 32.

performance class 3, for a stage of a flight of a rotorcraft: see section 33.

R, for a rotorcraft, means the largest radius of the rotorcraft's main rotor disc, as mentioned in the rotorcraft's flight manual.

rejected take-off distance available, for a take-off of a rotorcraft at an aerodrome, means the total of the following that are available for the rotorcraft to use to stop following an engine failure and rejection of the take-off at the take-off decision point for the take-off:

(a) the length of the final approach and take-off area for the aerodrome;

(b) the length of the area that is available and suitable for the rotorcraft to complete a landing on.

rejected take-off distance required, for a take-off of a rotorcraft at an aerodrome, means the horizontal distance required to fully contain the rotorcraft from the start of the take-off to the point where the rotorcraft comes to a full stop following an engine failure and rejection of the take-off at the take-off decision point for the take-off.

relevant obstacle, for the take-off stage, or the approach and landing, or baulked landing stage, of a flight of a rotorcraft flying in performance class 1 or 2, or performance class 2 with exposure, means an obstacle that is relevant, within the meaning of section 58, to that stage of the flight.

S, for a point in a flight of a rotorcraft, means the horizontal distance that the rotorcraft has travelled from the end of the take-off distance available, for a take-off of the rotorcraft, to that point.

stage, of a flight of a rotorcraft, means any of the following:

(a) take-off;

(b) take-off and initial climb;

(c) en route;

(d) approach and landing, or baulked landing.

take-off decision point, for a take-off of a rotorcraft at an aerodrome, means the point, mentioned in the rotorcraft's flight manual, before which, if an engine failure is recognised:

(a) the take-off may be safely rejected; or

(b) the take-off may be continued safely.

take-off distance available, for a take-off of a rotorcraft at an aerodrome, means the total of the following that are available for the rotorcraft to complete the take-off:

(a) the length of the final approach and take-off area for the aerodrome;

(b) the length of the helicopter clearway, for the aerodrome, that is suitable for the rotorcraft to overfly after the take-off decision point, for the take-off, and accelerate, if any.

take-off distance required: see section 29.

transition point, for a flight of a rotorcraft that begins in V.M.C. but is not conducted wholly in V.M.C., means the point in the flight at which the rotorcraft stops flying in V.M.C. and starts to fly in I.M.C.

V_{TOSS}, for a rotorcraft, means the minimum speed at which climb of the rotorcraft is achieved with 1 engine inoperative, and the remaining engines are operating within the operating limits mentioned in the rotorcraft's flight manual for a take-off.

28 Meaning of *adequate vertical margin*

The ***adequate vertical margin***, for a rotorcraft, is the minimum vertical distance the rotorcraft must be from an object during a stage of a flight mentioned in:

(a) the rotorcraft's flight manual; or

(b) if paragraph (a) does not apply — the rotorcraft operator's exposition.

29 Meaning of *take-off distance required*

(1) For a take-off of a multi-engine rotorcraft, the ***take-off distance required*** is the distance, calculated in accordance with the factors mentioned in subsection (2), from the start of the take-off to the point at which the rotorcraft achieves all of the following:

(a) V_{TOSS} for the rotorcraft;

(b) a height of 35 ft above the take-off aerodrome;

(c) a positive climb gradient.

(2) For subsection (1), the factors are that:

(a) 1 engine is inoperative at the take-off decision point for the take-off; and

(b) the remaining engines are operating within the operating limits mentioned in the rotorcraft's flight manual for a take-off.

30 When a rotorcraft is flown in *performance class 1*

A multi-engine rotorcraft is flown in ***performance class 1***, during the stage of flight mentioned in column 1 of an item in the following table, if the rotorcraft is flown, during the stage, in accordance with the requirements stated in the provision mentioned in column 2 of the item.

Table — Performance class 1 requirements

Item	Column 1 Stage of flight	Column 2 Provision
1	Take-off	section 59

Table — Performance class 1 requirements		
Item	**Column 1** **Stage of flight**	**Column 2** **Provision**
2	Take-off and initial climb	section 60
3	En route	section 61
4	Approach and landing, or baulked landing	section 62

31 When a rotorcraft is flown in *performance class 2*

A multi-engine rotorcraft is flown in ***performance class 2***, during the stage of flight mentioned in column 1 of an item in the following table, if the rotorcraft is flown, during the stage, in accordance with the requirements stated in the provision mentioned in column 2 of the item.

Table — Performance class 2 requirements		
Item	**Column 1** **Stage of flight**	**Column 2** **Provision**
1	Take-off	section 63
2	Take-off and initial climb	section 64
3	En route	section 65
4	Approach and landing, or baulked landing	section 66

32 When a rotorcraft is flown in *performance class 2 with exposure*

(1) A multi-engine rotorcraft is flown in ***performance class 2 with exposure*** during the take-off stage of a flight if, whilst it is being flown in performance class 2, a suitable forced landing area, for the flight, is not available to the rotorcraft from the beginning of the take-off to the lower of the following:

(a) the defined point after take-off;

(b) 300 ft above the departure aerodrome for the flight.

(2) Also, a multi-engine rotorcraft is flown in ***performance class 2 with exposure*** during the landing stage of a flight if, whilst it is being flown in performance class 2, a suitable forced landing area, for the flight, is not available to the rotorcraft after the defined point before landing to the point at which a safe landing is assured.

33 When a rotorcraft is flown in *performance class 3*

A rotorcraft is flown in ***performance class 3***, during the stage of flight mentioned in column 1 of an item in the following table if the rotorcraft is flown, during the stage, in accordance with the requirements stated in the provision mentioned in column 2 of the item.

Table — Performance class 3 requirements		
Item	**Column 1** **Stage of flight**	**Column 2** **Provision**
1	Take-off	section 67
2	Take-off and initial climb	section 68
3	En route	section 69
4	Approach and landing, or baulked landing	section 70

Division 2 — Flight in performance class 1 or 2 or performance class 2 with exposure

34 Requirement to be a Category A rotorcraft

For subregulation 133.380 (2) of CASR, a Category A rotorcraft is prescribed.

Division 3 — Flight in performance class 2 with exposure

Subdivision 1 — Preliminary

35 Definition for Division 3

In this Division:

PC2WE flight means a flight, of a rotorcraft, in performance class 2 with exposure during the take-off, or landing, stage of the flight.

Subdivision 2 — Requirements to be complied with

36 What this Subdivision is about

This Subdivision prescribes the requirements for paragraph 133.385 (2) (a) of CASR.

37 Maximum permitted exposure time

(1) The rotorcraft may only be flown if the exposure time for each of the following stages of the flight does not exceed 18 seconds:

(a) take-off and initial climb;

(b) approach and landing, or baulked landing.

(2) For paragraph (1) (a), the exposure time for the take-off and initial climb stage of the flight must be measured from commencement of the rotorcraft's forward motion, after becoming airborne, until the rotorcraft's gradient of climb with 1 engine inoperative is equal to the gradient of the obstacle-clear take-off surface.

(3) For paragraph (1) (b), the exposure time for the approach and landing, or baulked landing stage of the flight must be measured from the defined point before landing, for the rotorcraft, until the rotorcraft is able to make a safe landing.

38 Take-off weight limitations

The rotorcraft must have a maximum weight at take-off, for the flight, which does not exceed the lowest of the following weights:

(a) the maximum All-Up Weight;

(b) the all engines operative (AEO) hover out of ground effect (HOGE) weight that would allow acceleration from a vertical take-off profile for the environment;

(c) the weight at which the rate of climb with 1 engine inoperative would be 150 ft per minute at a height of 1 000 ft above the departure aerodrome for the flight;

(d) the weight at which, with 1 engine inoperative:

(i) at the defined point after take-off for the rotorcraft; or

(ii) at a height of 300 ft;

the gradient of climb would be equal to the gradient of the obstacle-clear take-off surface;

(e) the weight which, with 1 engine inoperative in the en route configuration, would allow a rate of climb of 50 ft per minute at the minimum flight altitude for each point in the en route stage of the flight;

(f) the weight which, allowing for normal consumption of fuel in-flight to the destination aerodrome for the flight or alternate aerodrome, if required, for the flight would allow the following with 1 engine inoperative:

(i) a rate of climb of 150 ft per minute at a height of 1 000 ft above the destination aerodrome or alternate aerodrome;

(ii) the landing distance required, for a landing of the rotorcraft, to equal the landing distance available, for a landing of the rotorcraft, at the destination aerodrome or alternate aerodrome.

39 Preventative maintenance

The rotorcraft must have had all preventative maintenance actions successfully completed, before the flight, as recommended for the rotorcraft and its engines by the holders of the type certificates for the rotorcraft and its engines.

40 Risk assessments

The rotorcraft may only be flown in accordance with:

(a) the rotorcraft operator's risk assessment procedures for PC2WE flight risks relevant to the rotorcraft; and

(b) the rotorcraft operator's operational and airworthiness measures, which are used to mitigate identified risks.

41 Flight manual and exposition

The rotorcraft may only be flown in accordance with:

(a) the rotorcraft flight manual procedures, if any, for PC2WE flights; and

(b) the rotorcraft operator's exposition procedures for PC2WE flights.

42 Flight crew training and checking requirements

(1) The rotorcraft may only be flown with flight crew members who have successfully completed all approved flight crew training and competency checking requirements.

(2) In this section:

approved flight crew training and competency checking requirements means flight crew training and competency checking requirements for PC2WE flights with the rotorcraft, based on which CASA issued its approval to the rotorcraft's operator to conduct PC2WE flights with the rotorcraft.

Subdivision 3 — Information to be included in application for approval

43 What this Subdivision is about

This Subdivision states the information that must be included in an application by a rotorcraft's operator for an approval, under regulation 133.025 of CASR, to conduct PC2WE flights with the rotorcraft.

44 Reliability and sudden power loss

(1) The information to be provided must be the information mentioned in subsection (2) or (3).

(2) The information is that:

(a) an assessment has been made of the incidence of sudden power loss in rotorcraft of the relevant type and in engines of the relevant type; and

(b) as a result of the assessment, rotorcraft of the relevant type, with engines of the relevant type, have been approved to conduct a PC2WE flight by:

(i) CASA under regulation 133.025 of CASR, or

(ii) the national aviation authority of a recognised foreign State under Appendix 1 to JAR-OPS 3.517 (a) or EASA Part CAT.POL.H.305.

(3) The information is power plant reliability statistics for the rotorcraft of the relevant type, and engines of the relevant type, which demonstrate:

(a) the incidence of sudden power loss in the 5-year period ending on the day of the application does not exceed 1 for 100 000 engine hours; or

(b) the incidence of sudden power loss in the 5-year period ending on the day of the application does not exceed 3 for 100 000 engine hours, and that the incidence is trending downwards.

45 Type certificate holder's modification standard

(1) The information to be provided must be the information mentioned in subsection (2) or (3).

(2) The information is a statement from the holder of the rotorcraft's type certificate, or the holders of the type certificates for the rotorcraft and its engines, of the modification standard designated by the holder or holders to enhance the reliability of the rotorcraft and its engines during an operation.

(3) The information is a statement from the holder of the rotorcraft's type certificate, or the holders of the type certificates for the rotorcraft and its engines, that no modification standard has been designated to enhance the reliability of the rotorcraft and its engines during an operation.

(4) If the information mentioned in subsection (2) is provided, the applicant must also provide information demonstrating that the rotorcraft, or the rotorcraft and its engines, conform to the designated modification standard.

46 Preventative maintenance

The information to be provided must be:

(a) information about the preventative maintenance actions recommended for the rotorcraft and its engines by the holder of the rotorcraft's type certificate, or the holders of the type certificates for the rotorcraft and its engines; and

(b) information demonstrating that the preventative maintenance actions are included in the rotorcraft's approved system of maintenance.

47 Risk assessment

(1) The information to be provided must be a statement of the operator about the following:

(a) risk assessment procedures for PC2WE flight risks relevant to the rotorcraft;

(b) the operational measures used to mitigate the identified risks;

(c) the airworthiness measures used to mitigate the identified risks.

(2) For paragraph (1) (b), the information about the measures must include information about the following:

(a) appropriate PC2WE flight procedures;

(b) flight crew training and competency checking.

(3) For paragraph (1) (c), the information about the measures must include information about the following:

(a) compliance with the rotorcraft manufacturer's safety modifications;

(b) compliance with the operator's incident reporting procedures;

(c) implementation of the operator's usage monitoring system.

48 Usage monitoring system

The information to be provided must be the following:

(a) details of the operator's usage monitoring system, which records and stores data related to the rotorcraft's engines and transmission systems;

(b) information demonstrating that the usage monitoring system is, and is likely to remain, a reliable, accurate, comprehensive and continuously-operating system unless modified to enhance it.

49 Flight manual and operator's exposition

(1) The information to be provided must be:

(a) a copy of the rotorcraft's flight manual, containing procedures for a PC2WE flight with the rotorcraft; and

(b) relevant excerpts from the operator's exposition in which the procedures mentioned in paragraph (a) are clearly referenced.

(2) However, if procedures for a PC2WE flight with the rotorcraft are not contained in the rotorcraft's flight manual, the information to be provided must be relevant excerpts from the operator's exposition in which the procedures are contained.

50 Flight crew training and checking

(1) The information to be provided must be details of the procedures of the operator, or a Part 142 operator engaged by the operator, for the mandatory training and competency checking of each flight crew member who performs, or is likely to perform, a PC2WE flight with the rotorcraft.

(2) For subsection (1), the training and competency checking must include training in, and competency checking of, flight crew techniques required to minimise risks when conducting PC2WE flights.

51 Incident reporting

(1) The information to be provided must be details of the operator's mandatory procedures for reporting to the holder of the rotorcraft's type certificate, or the holders of the type certificates for the rotorcraft and its engines, any of the following arising during a PC2WE flight with the rotorcraft:

(a) loss of power control;

(b) engine shutdown, including a precautionary shutdown;

(c) power unit failure for any cause, but excluding simulation of power unit failure during training.

(2) The information mentioned in subsection (1) must demonstrate that the procedures are, and are likely to remain, reliable, accurate, comprehensive and continuous, unless modified to enhance them.

Division 4 — Flight in performance class 3

52 Flight in performance class 3 over populous areas

For paragraph 133.405 (1) (c) of CASR, the following requirements are prescribed:

(a) the rotorcraft must not be flown in a way that may create a hazard to a person or property on the ground or water under the rotorcraft's flight path;

(b) the rotorcraft must be flown so that, for the particular route for the flight, the time during the flight over the populous area in which a suitable forced landing area, for the flight, is not available is minimised;

(c) the rotorcraft must be equipped with a particle detection system that:

(i) monitors the main and tail rotor transmission gearboxes; and

(ii) includes a flight deck caution indication for each gearbox mentioned in subparagraph (i);

(d) the operator's exposition for air transport operations must include:

(i) risk assessment, and risk management, procedures for flights over populous areas; and

(ii) details of training for the operator's pilots in conducting autorotative descents to locations with limited access to suitable forced landing areas for a flight of the rotorcraft.

Division 5 — Rotorcraft performance — exposition — procedures for stages of flight

53 Exposition procedures for operations — rotorcraft flown in performance class 1

(1) This section applies if a rotorcraft is, or will be, used to conduct a flight during a stage of which it is flown in performance class 1, whether or not Part 133 of CASR or this manual of standards requires it to be flown in performance class 1 during that stage of the flight.

(2) The rotorcraft operator's exposition must include the procedures mentioned in subsection (3) that relate to each stage of flight during which the rotorcraft is flown in performance class 1.

(3) The procedures are the following:

(a) procedures for the pilot in command of the rotorcraft for a flight to determine whether the rotorcraft's take-off weight for the flight is within the limits required to comply with the requirements stated in Division 7;

(b) procedures for the pilot in command to identify relevant obstacles for the flight under section 58;

(c) procedures for the pilot in command to determine the following for the flight:

(i) the most suitable flight path and track for take-off;

(ii) take-off obstacle clearance requirements;

(iii) the take-off decision point for the take-off of the rotorcraft;

(iv) en route obstacle clearance requirements;

(v) the most suitable flight path and track for the approach and landing, or baulked landing of the rotorcraft;

(vi) baulked landing obstacle clearance requirements;

(vii) the landing decision point for the landing of the rotorcraft.

54 Exposition procedures for operations — rotorcraft flown in performance class 2 or performance class 2 with exposure

(1) This section applies if a rotorcraft:

(a) is, or will be, used to conduct a flight during a stage of which it is flown in performance class 2, whether or not Part 133 of CASR or this manual of standards requires it to be flown in performance class 2 during that stage of the flight; or

(b) is, or will be, used to conduct a flight during a stage of which it is flown in performance class 2 with exposure.

(2) The rotorcraft operator's exposition must include the procedures mentioned in subsection (3) that relate to each stage of flight during which the rotorcraft is flown in performance class 2 or performance class 2 with exposure.

(3) The procedures are the following:

(a) procedures for the pilot in command of the rotorcraft for a flight to determine whether the rotorcraft's take-off weight for the flight is within the limits required to comply with the requirements stated in Division 8;

(b) procedures for the pilot in command to identify relevant obstacles for the flight under section 58;

(c) procedures for the pilot in command to determine the following for the flight:

(i) the most suitable flight path and track for take-off;

(ii) take-off obstacle clearance requirements;

(iii) the defined point after take-off for the rotorcraft;

(iv) en route obstacle clearance requirements;

(v) the most suitable flight path and track for the approach, landing and baulked landing, if any;

(vi) baulked landing obstacle clearance requirements;

(vii) the defined point before landing for the rotorcraft;

(d) for a rotorcraft flown in performance class 2 — procedures for the pilot in command to determine a contingency plan for the failure of an engine during take-off or landing, including a procedure to identify a suitable forced landing area for the flight:

(i) for an engine failure during take-off — before the defined point after take-off for the rotorcraft; and

(ii) for an engine failure during landing — after the defined point before landing for the rotorcraft;

(e) for a rotorcraft flown in performance class 2 with exposure:

(i) procedures for take-off or landing in performance class 2 with exposure that meet the requirements stated in Division 3, Subdivision 2; and

(ii) a procedure for the operator to calculate the exposure time for the rotorcraft.

55 Exposition procedures for operations — rotorcraft flown in performance class 3

(1) This section applies if a rotorcraft is, or will be, used to conduct a flight during a stage of which it is flown in performance class 3.

(2) The operator's exposition must include the following:

(a) procedures for the pilot in command of the rotorcraft for a flight to determine whether the rotorcraft's take-off weight is within the limits required to comply with the requirements stated in Division 9;

(b) procedures for the pilot in command to determine the following for the flight:

(i) the most suitable flight path and track for take-off;

(ii) take-off obstacle clearance requirements;

(iii) the location of suitable forced landing areas for the flight;

(iv) en route obstacle clearance requirements;

(v) the most suitable flight path and track for the approach and landing, or baulked landing, if any;

(vi) baulked landing obstacle clearance requirements.

56 Exposition procedures for operations — general

If a rotorcraft's flight manual does not include details of the minimum distance the rotorcraft must be from an object during a stage of flight, the rotorcraft operator's exposition must include the details.

Division 6 — Rotorcraft performance — pre-flight

57 Pre-flight determination of performance

(1) Before a rotorcraft begins a take-off or landing at an aerodrome, the pilot in command must be satisfied that the take-off or landing of the rotorcraft can be carried out safely, having regard to the factors mentioned in subsection (2), relating to the take-off and landing performance of the rotorcraft at the aerodrome.

(2) The factors are all of the following, for the aerodrome:

(a) pressure altitude;

(b) temperature, according to an authorised weather report;

(c) wind speed and wind direction, according to an authorised weather report.

(3) For the factor mentioned in paragraph (2) (c), if details of the wind speed and direction are not from a source that provides a precise and instantaneous reading of wind speed and direction, the wind speed and direction must be calculated using:

(a) if the headwind is more than 5 knots — a headwind component of not more than 50% of the headwind; and

(b) if a tailwind component is permitted in the rotorcraft's flight manual for take-off or landing — a tailwind component of at least 150% of the tailwind.

58 Pre-flight identification of relevant obstacles

(1) This section applies to a rotorcraft that, under Subpart 133.F of CASR and section 34, must be flown in performance class 1 or 2, or performance class 2 with exposure.

(2) In determining whether an obstacle is ***relevant*** to the take-off stage of a flight, or the baulked landing component of the approach and landing, or baulked landing stage of a flight, either subsection (3) or (5) must be applied.

(3) An obstacle is ***relevant*** to the take-off stage of a flight, or the baulked landing component of the approach and landing, or baulked landing stage of a flight, if:

(a) during the stage of the flight, the flight is of the kind mentioned in column 1 of an item in the following table; and

(b) the shortest distance between the obstacle and a point on the ground or water below the intended flight path for the flight is not more than the distance calculated in accordance with column 2 of the item; and

(c) at a particular stage of the flight, the obstacle is not less limiting to the flight than another obstacle along the planned flight path at that stage of the flight.

(4) When considering whether an obstacle is ***relevant*** to the baulked landing component of the approach and landing, or baulked landing stage of a flight, the divergence of the area, as determined under paragraph (3) (b), for the destination aerodrome for the flight only applies after the end of the take-off distance available at the aerodrome.

Table — Relevant obstacles — distance requirements

Item	Column 1 Kind of flight	Column 2 Distance
1	A V.F.R. flight by day	The sum of: (a) either: (i) if the rotorcraft's flight manual defines the final approach and take-off area for the rotorcraft — 0.5 of the minimum width of the final approach and take-off area; or (ii) if subparagraph (i) does not apply — 0.75 x D, for the rotorcraft; and (b) the greater of the following: (i) 0.25 x D, for the rotorcraft; (ii) 3 m; and (c) 0.10 x S, for the rotorcraft
2	A V.F.R. flight at night	The sum of: (a) either: (i) if the rotorcraft's flight manual defines the final approach and take-off area for the rotorcraft — 0.5 of the minimum width of the final approach and take-off area; or (ii) if subparagraph (i) does not apply — 0.75 x D, for the rotorcraft; and (b) the greater of the following: (i) 0.25 x D, for the rotorcraft; (ii) 3 m; and (c) 0.15 x S, for the rotorcraft
3	An I.F.R. flight using precision instrument navigation guidance	The sum of: (a) the greater of the following: (i) 1.5 x D, for the rotorcraft; (ii) 30 m; and (b) 0.10 x S, for the rotorcraft
4	An I.F.R. flight using non-precision instrument navigation guidance	The sum of: (a) the greater of the following: (i) 1.5 x D, for the rotorcraft; (ii) 30 m; and (b) 0.15 x S, for the rotorcraft
5	An I.F.R. flight not mentioned in item 3 or 4	The sum of: (a) the greater of the following: (i) 1.5 x D, for the rotorcraft; (ii) 30 m; and (b) 0.30 x S, for the rotorcraft

Table — Relevant obstacles — distance requirements

Item	Column 1 Kind of flight	Column 2 Distance
6	A flight in V.M.C. up to the transition point for the flight	Either: (a) for a V.F.R. flight by day — the distance calculated in accordance with item 1; or (b) for a V.F.R. flight at night — the distance calculated in accordance with item 2
7	A flight in I.M.C. after the transition point for the flight	Whichever of the following is applicable: (a) for an I.F.R. flight using precision instrument navigation guidance — the distance calculated in accordance with item 3; (b) for an I.F.R. flight using non-precision instrument navigation guidance — the distance calculated in accordance with item 4; (c) for an I.F.R. flight not mentioned in paragraph (a) or (b) — the distance calculated in accordance with item 5
8	For a flight involving a back-up take-off procedure, or with a lateral transition take-off procedure — the back-up take-off procedure, or lateral transition take-off procedure, part of the flight	The sum of: (a) either: (i) if the rotorcraft's flight manual defines the final approach and take-off area for the rotorcraft — 0.5 of the minimum width of the final approach and take-off area; or (ii) if subparagraph (i) does not apply — 0.75 x D, for the rotorcraft; and (b) the greater of the following: (i) 0.25 x D, for the rotorcraft; (ii) 3 m; and (c) either: (i) for a V.F.R. flight by day — 0.10 of the distance travelled from the back of the final approach and take-off area to the take-off decision point for the flight; or (ii) for a V.F.R. flight at night or the visual departure phase of an I.F.R. flight — 0.15 of the distance travelled from the back of the final approach and take-off area to the take-off decision point for the flight

(5) An obstacle is ***relevant*** to the take-off stage of a flight, or the baulked landing component of the approach and landing, or baulked landing stage of a flight, if the shortest distance between the obstacle and a point on the ground or water below the intended flight path for the flight, as determined by the pilot in command of the rotorcraft, is not more than:

(a) for a flight by day in which navigational accuracy can be achieved by reference to visual cues during the climb or landing of the rotorcraft — 7 x R, for the rotorcraft; or

(b) for a flight at night in which navigational accuracy can be achieved by reference to visual cues during the climb or landing of the rotorcraft — 10 x R, for the rotorcraft; or

(c) for a flight in which navigational accuracy can be achieved by navigation aids — 300 m; or

(d) for any other flight — 900 m.

(6) For a flight of a rotorcraft in performance class 2, or performance class 2 with exposure, the pre-flight identification of relevant obstacles may be carried out by a pilot survey using an operator's risk-based obstacle survey process, which includes the following risk control measures for operations beyond the defined point after take-off for the rotorcraft:

(a) for I.F.R. operations — that no entry into I.M.C. is planned below lowest safe altitude;

(b) unless the flight is conducted using NVIS, that the flight can only be flown at night if the survey for the location was, or has been previously, completed by day;

(c) the use of maps or visual observation to identify the climb track that provides the shallowest obstacle-free gradient from the final approach and take-off area, for the relevant aerodrome, and from the defined point after take-off for the rotorcraft;

(d) the use of maps, or visual observation, to identify the height, distance and gradient of the critical obstacle for the climb;

(e) if a turn is needed to align with the best 1-engine-inoperative departure track, a turn is permitted once at 200 ft above obstacles by day in V.M.C. or at night using NVIS, or 500 ft above obstacles at night, provided the pilot in command of the rotorcraft is satisfied the rotorcraft can clear further terrain as necessary to reach lowest safe altitude.

Division 7 — Rotorcraft performance — performance class 1

59 Performance class 1 — take-off

(1) For item 1 of the table in section 30, the requirements for the take-off stage of a flight of a rotorcraft are the requirements stated in this section.

(2) The take-off weight of the rotorcraft must not exceed the maximum weight, mentioned in the rotorcraft's flight manual, required:

(a) for the type of take-off procedure to be used; and

(b) to achieve the following rates of climb, with 1 engine inoperative:

(i) 100 ft per minute at 200 ft above the departure aerodrome, for the flight, at V_{TOSS} for the rotorcraft;

(ii) 150 ft per minute at 1 000 ft above the departure aerodrome.

(3) The take-off weight of the rotorcraft must not exceed the maximum weight, mentioned in the rotorcraft's flight manual, required to ensure:

(a) the rejected take-off distance required, for the take-off, does not exceed the rejected take-off distance available for the take-off; and

(b) either:

(i) the take-off distance required does not exceed the take-off distance available; or

(ii) if the take-off distance required exceeds the take-off distance available:

(A) the rotorcraft must be able to clear an obstacle from the take-off decision point, for the take-off, with 1 engine inoperative, by at least 35 ft; and

(B) if the take-off is from an elevated aerodrome, the rotorcraft must be able to clear the edge of the aerodrome by at least 4.5 m.

(4) If an engine becomes inoperative before the take-off decision point for the take-off, the rotorcraft must be able to safely land and stop within the rejected take-off distance available for the take-off.

(5) If an engine becomes inoperative while the rotorcraft is conducting a back-up take-off procedure or a lateral transition take-off procedure, the rotorcraft must be able to clear a relevant obstacle under the flight path for the procedure or transition by at least the adequate vertical margin, for the rotorcraft, for the take-off stage of the flight.

(6) The dimensions of the final approach and take-off area, for the aerodrome, must be at least the larger of the following:

(a) the dimensions of the final approach and take-off area, as mentioned in the rotorcraft's flight manual;

(b) 1.5 x D, for the rotorcraft.

(7) In this section:

elevated aerodrome means an aerodrome situated on a raised structure erected on land.

60 Performance class 1 — take-off and initial climb

(1) For item 2 of the table in section 30, the requirements for the take-off and initial climb stage of a flight of a rotorcraft are the requirements stated in this section.

(2) If an engine becomes inoperative after the take-off decision point, for the take-off, the rotorcraft must be able to achieve the rates of climb mentioned in paragraph 59 (2) (b).

(3) If an engine becomes inoperative after the take-off decision point, for the take-off, the rotorcraft must be able, from the end of the take-off distance required for the take-off until the rotorcraft reaches the minimum flight altitude for each point in the take-off and initial climb stage of the flight, to clear a relevant obstacle under the flight path by a margin of at least:

(a) for a V.F.R. flight — 35 ft; and

(b) for an I.F.R. flight — the sum of:

(i) 35 ft; and

(ii) 0.01 x S, for the point.

(4) For subsection (3), if a change of direction of more than 15° is required to achieve the margin, the rotorcraft must be able, during the change of direction, to clear the relevant obstacle by at least the total of:

(a) the margin; and

(b) 15 ft.

(5) For subsection (4), the rotorcraft may change direction by more than 15° in the take-off stage of the flight only if the rotorcraft is permitted to do so under its flight manual.

61 Performance class 1 — en route

(1) For item 3 of the table in section 30, the requirement for the en route stage of a flight of a rotorcraft is that, if an engine becomes inoperative during that stage of the flight:

(a) the rotorcraft must be able to achieve and maintain a rate of climb of at least 50 ft per minute at the minimum flight altitude for each point in the en route stage of the flight; or

(b) the requirements mentioned in subsection (2) must be met.

(2) For paragraph (1) (b), the requirements are that:

(a) the pilot in command of the rotorcraft for the flight must be permitted under subsection (3) to conduct a drift down manoeuvre; and

(b) the rotorcraft must be able to comply with the requirements for conducting a drift down manoeuvre mentioned in:

(i) for an I.F.R. flight — subsection (4); or

(ii) for a V.F.R. flight at night — subsection (5); or

(iii) for a V.F.R. flight by day — subsection (6); and

(c) the rotorcraft must be able to approach and land, or conduct a baulked landing, in accordance with the requirements stated in section 62.

(3) For paragraph (2) (a), the pilot in command is permitted to conduct a drift down manoeuvre if:

(a) the flight planning for the flight has taken into account the effect of wind on the flight path; and

(b) navigational accuracy for the rotorcraft's track for the drift down manoeuvre can be maintained:

(i) for an I.F.R. flight or a V.F.R. flight at night — using navigation aids; or

(ii) for a V.F.R. flight by day — using visual navigation and navigation aids, if any; and

(c) for a V.F.R. flight — V.M.C. exist.

(4) For subparagraph (2) (b) (i), the requirements for conducting a drift down manoeuvre for an I.F.R. flight are that the rotorcraft must be able to:

(a) descend to a height of 1 500 ft above an aerodrome that is suitable for the rotorcraft to land at; and

(b) fly at a height that ensures that the pilot in command does not contravene any provision of Part 91 of CASR dealing with minimum heights for I.F.R. flights for the rotorcraft's track for the drift down manoeuvre to the aerodrome.

(5) For subparagraph (2) (b) (ii), the requirements for conducting a drift down manoeuvre for a V.F.R. flight at night are that the rotorcraft must be able to:

(a) descend to a height of 1 500 ft above an aerodrome that is suitable for the rotorcraft to land at in V.M.C.; and

(b) fly at a height that ensures that the pilot in command does not contravene any provision of Part 91 of CASR dealing with minimum heights for V.F.R. flights at night for the rotorcraft's track for the drift down manoeuvre to the aerodrome.

(6) For subparagraph (2) (b) (iii), the requirements for conducting a drift down manoeuvre for a V.F.R. flight by day are that the rotorcraft must be able to:

(a) descend to a height of 1 000 ft above an aerodrome that is suitable for the rotorcraft to land at; and

(b) fly at least 1 000 ft above the highest obstacle on the ground or water within 900 m ahead of, and to either side of, the rotorcraft at each point on the rotorcraft's track for the drift down manoeuvre to the aerodrome.

62 Performance class 1 — approach and landing, or baulked landing

(1) For item 4 of the table in section 30, the requirements for the approach and landing, or baulked landing stage of a flight of a rotorcraft are the requirements stated in this section.

(2) The landing weight of the rotorcraft must not exceed the maximum weight, mentioned in the rotorcraft's flight manual, required:

(a) for the type of approach procedure to be used; and

(b) to achieve the following rates of climb with 1 engine inoperative:

(i) 100 ft per minute at 200 ft above the aerodrome;

(ii) 150 ft per minute at 1 000 ft above the aerodrome.

(3) The landing weight of the rotorcraft must not exceed the maximum weight, mentioned in the rotorcraft's flight manual, required for the rotorcraft to safely land and stop with 1 engine inoperative within the landing distance available for a landing of the rotorcraft at the aerodrome.

(4) If an engine becomes inoperative before the landing decision point for the landing, the rotorcraft must be able to:

(a) safely land and stop within the final approach and take-off area for the aerodrome; or

(b) both:

(i) conduct a baulked landing; and

(ii) clear a relevant obstacle, if any, under the baulked landing climb flight path in accordance with the requirements of subsections 60 (3), (4) and (5).

(5) If an engine becomes inoperative at or after the landing decision point for the landing, the rotorcraft must be able to safely land and stop within the final approach and take-off area for the aerodrome.

(6) The dimensions of the final approach and take-off area, for the aerodrome, must be at least the larger of the following:

(a) the dimensions of the final approach and take-off area, as mentioned in the rotorcraft's flight manual;

(b) 1.5 x D, for the rotorcraft.

Division 8 — Rotorcraft performance — performance class 2

63 Performance class 2 — take-off

(1) For item 1 of the table in section 31, the requirements for the take-off stage of a flight of a rotorcraft are the requirements stated in this section.

(2) The take-off weight of the rotorcraft must not exceed the maximum weight, mentioned in the rotorcraft's flight manual, required:

(a) for the type of take-off procedure to be used; and

(b) to achieve a rate of climb, with 1 engine inoperative, of 150 ft per minute at 1 000 ft above the departure aerodrome for the flight.

(3) If an engine becomes inoperative before the defined point after take-off, the rotorcraft must be able to do one of the following without creating a hazard to a person under the flight path:

(a) safely continue the climb out;

(b) safely land on a suitable forced landing area for the flight.

64 Performance class 2 — take-off and initial climb

For item 2 of the table in section 31, the requirements for the take-off and initial climb stage of a flight of a rotorcraft are that, if an engine becomes inoperative at the lower of the following:

(a) the defined point after take-off for the rotorcraft;

(b) 300 ft above the departure aerodrome for the flight;

the rotorcraft must be able to clear a relevant obstacle, if any, under the flight path in accordance with the requirements of subsection 60 (3), or be able to use an alternative obstacle avoidance procedure stated in the operator's exposition that demonstrates equivalent safety.

65 Performance class 2 — en route

For item 3 of the table in section 31, the requirement for the en route stage of a flight of a rotorcraft is that, if an engine becomes inoperative during that stage of the flight:

(a) the rotorcraft must be able to achieve and maintain a rate of climb of at least 50 ft per minute at the minimum flight altitudes for each point in the en route stage of the flight; or

(b) the requirements mentioned in subsections 61 (2), (3), (4) and (5), as applicable, must be met.

Note: The performance class 2 requirements for the en route stage of a flight of a rotorcraft are the same as the performance class 1 requirements for the en route stage of a flight of a rotorcraft (see section 61).

66 Performance class 2 — approach and landing, or baulked landing

(1) For item 4 of the table in section 31, the requirements for the approach and landing, or baulked landing stage of a flight of a rotorcraft are the requirements stated in this section.

(2) The landing weight of the rotorcraft must not exceed the maximum weight, mentioned in the rotorcraft's flight manual, required:

(a) for the type of approach procedure to be used; and

(b) to achieve a rate of climb, with 1 engine inoperative and the remaining engines operating with maximum continuous power, of 150 ft per minute at 1 000 ft above the landing aerodrome; and

(c) for the rotorcraft to safely land within the landing distance available for a landing of the rotorcraft at the aerodrome.

(3) If an engine becomes inoperative before the defined point before landing for the rotorcraft, the rotorcraft must be able to:

(a) conduct a baulked landing; and

(b) clear a relevant obstacle, if any, under the baulked landing climb flight path, in accordance with the requirements of subsection 60 (3), or use an alternative obstacle avoidance procedure stated in the operator's exposition that demonstrates equivalent safety.

(4) During the part of the flight after the defined point before landing for the rotorcraft until the point of landing, a suitable forced landing area for the flight must be available to the rotorcraft.

Division 9 — Rotorcraft performance — performance class 3

67 Performance class 3 — take-off

(1) For item 1 of the table in section 33, the requirements for the take-off stage of a flight of a rotorcraft are the requirements stated in this section.

(2) The take-off weight of the rotorcraft must not exceed the maximum weight, mentioned in the rotorcraft's flight manual, required:

(a) for the type of take-off procedure to be used; and

(b) to:

(i) hover in ground effect, with the rotorcraft's engines operating at the power required for hover in ground effect, in the meteorological conditions existing at the time of take-off; or

(ii) if the rotorcraft cannot hover in ground effect due to the location of, or the terrain at, the departure aerodrome for the flight — hover out of ground effect, with the rotorcraft's engines operating at the power required for hover out of ground effect, in the meteorological conditions existing at the time of take-off; and

(c) to have sufficient additional power available for the type of take-off procedure to be used while hovering in ground effect or out of ground effect.

(3) The rotorcraft must:

(a) remain outside the rotorcraft's avoid area; or

(b) if it is necessary for the rotorcraft to enter the avoid area to avoid an accident or incident — not remain inside the avoid area for longer than the minimum period necessary to avoid the accident or incident.

68 Performance class 3 — take-off and initial climb

(1) For item 2 of the table in section 33, the requirements for the take-off and initial climb stage of a flight of a rotorcraft are the requirements stated in this section.

(2) The rotorcraft must clear an obstacle, if any, under the take-off flight path by at least the adequate vertical margin, for the rotorcraft, for the take-off and initial climb stage of the flight.

(3) If:

(a) the rotorcraft is operating over a populous area and a requirement mentioned in section 52 is not met for the rotorcraft; and

(b) an engine becomes inoperative;

then, until the rotorcraft reaches the minimum safe height for the flight under Part 91 of CASR or the Part 91 Manual of Standards, the rotorcraft must clear an obstacle, if any, under the flight path to a suitable forced landing area for the flight by at least the adequate vertical margin for the rotorcraft for the take-off and initial climb stage of the flight.

(4) The rotorcraft must:

(a) remain outside the rotorcraft's avoid area; or

(b) if it is necessary for the rotorcraft to enter the avoid area to avoid an accident or incident — not remain inside the avoid area for longer than the minimum period necessary to avoid the accident or incident.

69 Performance class 3 — en route

For item 3 of the table in section 33, the requirements for the en route stage of a flight of a rotorcraft are the following:

(a) the weight of the rotorcraft must allow the rotorcraft, with all engines operating, to achieve the minimum flight altitude for each point in the en route stage of the flight;

(b) the rotorcraft must be flown in a way that minimises the time during the en route stage of the flight in which a suitable forced landing area, for the flight, is not available.

70 Performance class 3 — approach and landing, or baulked landing

For item 4 of the table in section 33, the requirement for the approach and landing, or baulked landing stage of a flight of a rotorcraft is that the landing weight of the rotorcraft must not exceed the maximum weight, mentioned in the rotorcraft's flight manual, required:

(a) for the type of approach procedure to be used; and

(b) to achieve:

(i) a hover in ground effect, with the rotorcraft's engines operating at the power required for landing; or

(ii) if the rotorcraft cannot achieve a hover in ground effect due to the location of, or the terrain at, the aerodrome — a hover out of ground effect, with all engines operating; and

(c) to achieve a baulked landing, with all the rotorcraft's engines operating, at any point of the flight path for the approach and landing; and

(d) to clear an obstacle, if any, by at least the adequate vertical margin, for the rotorcraft, for the approach and landing, or baulked landing stage of the flight.

Chapter 5 — Instruments, indicators, equipment and systems

Division 1 — Interpretation

71 Definitions for Chapter 5

In this Chapter:

AS/NZS means Australian and New Zealand Standard published jointly by Standards Australia and Standards New Zealand.

display includes indicate.

(E)TSO means ETSO or TSO.

NAA means national aviation authority.

system: see section 72.

the Regulations means CAR and CASR.

unserviceable, in relation to a system, means the system is incapable of functioning in all respects as intended by its manufacturer.

72 Meaning of *system*

(1) In this Chapter, unless the contrary intention appears, ***system*** includes each of the following:

(a) an instrument, indicator or item of equipment;

(b) any combination of 1 or more instruments, indicators or items of equipment;

(c) any combination of 1 or more instruments, indicators and items of equipment.

(2) In this Chapter, unless the contrary intention appears, each of the following is taken to be a system:

(a) an instrument, indicator or item of equipment;

(b) any combination of 1 or more instruments, indicators or items of equipment;

(c) any combination of 1 or more instruments, indicators and items of equipment.

73 Reference to ICAO document

(1) In this Chapter, 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 Chapter, 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 contained in the Chicago Convention.

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

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

(5) If a provision of this Chapter 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 manual of standards, 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 manual of standards, unless the contrary intention appears. Such references in Notes are to documents which may be used as guidance or background information.

74 Reference to AS/NZS, TSO or ETSO

(1) In this Chapter, unless the contrary intention appears, a reference to a particular AS/NZS is a reference to the particular AS/NZS, as in force or existing from time to time.

(2) In this Chapter, unless the contrary intention appears, a reference to a particular TSO is a reference to the TSO, as in force or existing from time to time, even if the citation of the TSO in this MOS has an alphabetical version letter that is not the latest such version letter.

(3) In this Chapter, unless the contrary intention appears, a reference to a particular ETSO is a reference to the ETSO, as in force or existing from time to time, even if the citation of the ETSO in this MOS has an alphabetical version letter that is not the latest such version letter.

Division 2 — Flight instruments, indicators, equipment and systems

75 What this Division is about

This Division prescribes the matters for subregulation 133.520 (1) of CASR.

76 V.F.R. flight by day

(1) A rotorcraft for a V.F.R. flight by day must be fitted with 1 or more systems for measuring and displaying the following flight information for the rotorcraft:
  (a) indicated airspeed;
  (b) pressure altitude;
  (c) magnetic heading;
  (d) time;
  (e) slip;
  (f) outside air temperature.

(2) A rotorcraft for a V.F.R. flight by day, for which 2 pilots are required under the Regulations or the rotorcraft's flight manual, must be fitted with at least 1 additional system, independent of the corresponding system mentioned in subsection (1), for measuring and displaying the following flight information for the rotorcraft:
  (a) indicated airspeed;
  (b) pressure altitude;
  (c) slip.

(3) For subsections (1) and (2), the system for measuring and displaying the flight information mentioned in column 1 of an item in the following table must meet the requirements mentioned in column 2 of the item.

Table System requirements — rotorcraft for a V.F.R. flight by day

Item	Flight information Column 1	Requirements Column 2
1	Pressure altitude	The system must have an adjustable datum scale calibrated in millibars or hectopascals.
2	Magnetic heading	The system must be: (a) a direct reading magnetic compass; or (b) a remote indicating compass and a standby direct reading magnetic compass.
3	Time	1. The system must display accurate time in hours, minutes, and seconds. 2. The system must be: (a) fitted to the rotorcraft and visible to the pilot from the pilot's normal sitting position; or (b) worn by, or immediately accessible to, the pilot for the duration of the flight.

77 V.F.R. flight at night

(1) A rotorcraft for a V.F.R. flight at night must be fitted with a system for measuring and displaying the following flight information for the rotorcraft:
- (a) indicated airspeed;
- (b) pressure altitude;
- (c) magnetic heading;
- (d) time;
- (e) turn and slip;
- (f) attitude;
- (g) vertical speed;
- (h) stabilised heading;
- (i) outside air temperature;
- (j) whether the supply of power to gyroscopic instruments, if any, is adequate.

(2) A rotorcraft for a V.F.R. flight at night, for which 2 pilots are required under the Regulations or the rotorcraft's flight manual, must be fitted with at least 1 additional system, independent of the corresponding system mentioned in subsection (1), for measuring and displaying the following flight information for the rotorcraft:
- (a) indicated airspeed;
- (b) pressure altitude;
- (c) turn and slip;
- (d) attitude;

(e) vertical speed;

(f) stabilised heading.

(3) For subsections (1) and (2), the system for measuring and displaying the flight information mentioned in column 1 of an item in the following table must meet the requirements mentioned in column 2 of the item.

Table System requirements — rotorcraft for a V.F.R. flight at night

Item	**Flight information** Column 1	**Requirements** Column 2
1	Indicated airspeed	The system 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 rotorcraft's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports.
2	Pressure altitude	1. The system must: (a) have an adjustable datum scale calibrated in millibars or hectopascals; and (b) be calibrated in feet, except that, if a flight is conducted in a foreign country which measures flight levels or altitudes in metres, the system must be calibrated in metres, or fitted with a conversion placard or device. 2. The system 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 rotorcraft's static source and alternative static source at the same time; or (b) 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 a standby direct reading magnetic compass.
4	Time	1. The system must display accurate time in hours, minutes, and seconds. 2. The system must be: (a) fitted to the rotorcraft and visible to the pilot from the pilot's normal sitting position; or (b) worn by, or immediately accessible to, the pilot for the duration of the flight.

Item	Flight information Column 1	Requirements Column 2
5	Turn and slip	The system must display turn and slip information, except where a second independent source of attitude information is fitted, in which case only the display of slip information is required. Note: A second independent source of attitude information may be a standby attitude indicator, or a second attitude indicating system.
6	Attitude	1. The rotorcraft must be fitted with 2 attitude indicator systems. 2. One of the 2 systems that are fitted to the rotorcraft must have an alternate power supply in addition to its primary power supply.
7	Vertical speed	1. The system 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 rotorcraft's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports. 2. If the rotorcraft is operated to or from vessels or platforms at sea at night, or over an area where the rotorcraft's attitude cannot be maintained by use of visual external surface cues, the system must: (a) be an instantaneous vertical speed indicator (***IVSI***); or (b) meet performance requirements for acceleration sensitivity equivalent to an IVSI.

78 I.F.R. flight

(1) A rotorcraft for an I.F.R. flight must be fitted with a system for measuring and displaying the following flight information for the rotorcraft:

(a) indicated airspeed;
(b) pressure altitude;
(c) magnetic heading;
(d) time;
(e) slip;
(f) attitude;
(g) vertical speed;
(h) stabilised heading;
(i) standby attitude;
(j) outside air temperature.
(k) whether the supply of power to gyroscopic instruments, if any, is adequate.

(2) A rotorcraft for an I.F.R. flight, for which 1 pilot is required under the Regulations or the rotorcraft's flight manual, must be fitted with at least 1 additional system, independent of the corresponding system mentioned in subsection (1), for measuring and displaying the pressure altitude for the rotorcraft.

(3) A rotorcraft for an I.F.R. flight, for which 2 pilots are required under the Regulations or the rotorcraft's flight manual, must be fitted with at least 1 additional system, independent of the corresponding system mentioned in subsection (1), for measuring and displaying the following flight information for the rotorcraft:

(a) indicated airspeed;

(b) pressure altitude;

(c) slip;

(d) attitude;

(e) vertical speed;

(f) stabilised heading.

(4) For subsections (1) to (3), the system for measuring and displaying the flight information mentioned in column 1 of an item in the following table must meet the requirements mentioned in column 2 of the item.

Table System requirements — rotorcraft for an I.F.R. flight

Item	**Flight information** Column 1	**Requirements** Column 2
1	Indicated airspeed	1. The system 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 rotorcraft's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports. 2. At least 1 airspeed indicating system must include a means of preventing malfunction due to condensation or icing.
2	Pressure altitude	1. The system must: (a) have an adjustable datum scale calibrated in millibars or hectopascals; and (b) be calibrated in feet, except that, if a flight is conducted in a foreign country which measures flight levels or altitudes in metres, the system must be calibrated in metres or fitted with a conversion placard or device. 2. The system 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 rotorcraft's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports.

Item	Flight information Column 1	Requirements Column 2
3	Magnetic heading	The system must be: (a) a direct reading magnetic compass; or (b) a remote indicating compass and a standby direct reading magnetic compass.
4	Time	1. The system must display accurate time in hours, minutes, and seconds. 2. The system must be: (a) fitted to the rotorcraft and visible to the pilot from his or her normal sitting position; or (b) worn by, or immediately accessible to, the pilot for the duration of the flight.
5	Vertical speed	1. The system 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 rotorcraft's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports. 2. The system must: (a) be an instantaneous vertical speed indicator (***IVSI***); or (b) meet performance requirements for acceleration sensitivity equivalent to an IVSI.
6	Stabilised heading	The system 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 an alternate power supply.
7	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 the flight crew, for a period of 30 minutes following the failure of the electrical power generating system.

Division 3 — Flight recording equipment

79 What this Division is about

This Division prescribes the matters for subregulation 133.540 (1) of CASR.

80 Definitions for Division 3

In this Division:

APU means auxiliary power unit.

combination recorder means an item of equipment combining the capabilities and functions of a FDR and CVR.

CVR means cockpit voice recorder.

FDR means flight data recorder.

81 Flight data recorder

One FDR must be fitted to the following:

(a) a rotorcraft that:
  (i) has a MTOW of more than 5 700 kg; and
  (ii) was first issued with a certificate of airworthiness on or after 1 January 1965;

(b) a multi-engine rotorcraft that:
  (i) has a MTOW of more than 3 175 kg; and
  (ii) is type certificated in the transport category; and
  (iii) was first issued with a certificate of airworthiness on or after 1 January 2005.

82 Cockpit voice recorder

One CVR must be fitted to the following:

(a) a rotorcraft that:
  (i) has a MTOW of more than 5 700 kg; and
  (ii) was first issued with a certificate of airworthiness on or after 1 January 1965;

(b) a multi-engine rotorcraft that:
  (i) has a MTOW of more than 3 175 kg; and
  (ii) is type certificated in the transport category; and
  (iii) was first issued with a certificate of airworthiness on or after 1 January 1987.

83 Data link recording

RESERVED

84 Combination recorders

If a rotorcraft is required, under this Division, to be fitted with both 1 FDR and 1 CVR, the requirements may be met if the rotorcraft is fitted with 1 combination recorder.

85 Recorder technical requirements

(1) Each of the recorders fitted to a rotorcraft, for a flight, under this Division must comply with Part III of ICAO Annex 6.

(2) A FDR, or combination recorder, fitted to a rotorcraft, for a flight, under this Division must be fitted with an acoustic underwater locating device that:

(a) has its own power source; and

(b) remains active for 30 days after the device enters water, ice melt or snow.

86 Unserviceable flight recording equipment

(1) A recorder fitted to a rotorcraft, for a flight, under this Division may be unserviceable at the beginning of the flight if:

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

(b) the flight is a test flight or training flight; or

(c) for a rotorcraft fitted with 1 CVR and 1 FDR under this Division:

(i) the unserviceable recorder has not been unserviceable for more than 21 days; and

(ii) the other recorder is serviceable.

(2) In this section:

CVR includes a combination recorder.

FDR includes a combination recorder.

87 Continuous operation of flight recorders

(1) A FDR fitted to a rotorcraft, for a flight, under this Division must operate continuously from the time the rotorcraft begins moving under its own power until the time the flight ends and the rotorcraft can no longer move under its own power.

(2) Subject to subsections (3) and (4), a CVR fitted to a rotorcraft, for a flight, under this Division must operate continuously during the period:

(a) beginning when the first pilot checklist commences before the engines are started for the flight; and

(b) ending when the final pilot checklist is completed at the end of the flight.

(3) Subsection (4) applies if:

(a) there is no APU, or other alternative power source, for the rotorcraft; and

(b) it is reasonably necessary to preserve the rotorcraft's primary power source in order to start the rotorcraft's engines for a flight; and

(c) a FDR fitted to the rotorcraft under this Division is operated continuously during the period beginning just before the engines are started for the flight and ending when the final pilot checklist is completed at the end of the flight.

(4) Despite subsection (2), a CVR fitted to the rotorcraft under this Division must operate continuously during the period:
  (a) beginning before the engines are started for the flight; and
  (b) ending when the final pilot checklist is completed at the end of the flight.

(5) In this section:

CVR includes a combination recorder.

FDR includes a combination recorder.

88 Flight data recorder or combination recorder not to be operated during rotorcraft maintenance

(1) A FDR fitted to a rotorcraft, for a flight, under this Division must not be operated during the maintenance of the rotorcraft or of an aeronautical product fitted to the rotorcraft, unless the maintenance is to the recorder or an engine.

(2) For subsection (1), an APU fitted to the rotorcraft is not an engine, unless it is used to propel the rotorcraft.

(3) In this section:

FDR includes a combination recorder.

Division 4 — Ancillary or auxiliary equipment

Subdivision 1 — Preliminary

89 What this Division is about

This Division prescribes the matters for subregulation 133.545 (1) of CASR.

Subdivision 2 — Altitude alerting systems

90 Altitude alerting system and assigned altitude indicator – I.F.R. flights

(1) A pressurised rotorcraft must be fitted with an altitude alerting system.

(2) A rotorcraft, other than a pressurised rotorcraft, for an I.F.R. flight, or a V.F.R. flight at night, must be fitted with:
  (a) an assigned altitude indicator; or
  (b) an altitude alerting system.

(3) An altitude alerting system fitted to a rotorcraft under subsection (1) or paragraph (2) (b) must:
  (a) include a display that shows the assigned altitude; and
  (b) alert the flight crew, for the flight, if the rotorcraft approaches a preselected altitude; and

(c) alert the flight crew, including by a sound signal, if the rotorcraft deviates from a preselected altitude; and

(d) be readable and adjustable by each flight crew member from his or her normal sitting position in a pilot's seat.

Subdivision 3 — Automatic pilot systems

91 Automatic pilot system

(1) A rotorcraft flown by a single pilot for one of the following flights:

(a) an I.F.R. flight;

(b) a V.F.R. flight at night, which is:

(i) a passenger transport operation; or

(ii) a flight over an area where the rotorcraft's attitude cannot be maintained by use of visual external surface cues;

must be fitted with an automatic pilot system.

(2) An automatic pilot system fitted to a rotorcraft under subsection (1) must have at least the following modes:

(a) an altitude-hold mode;

(b) a heading mode.

Subdivision 4 — Airborne collision avoidance systems

RESERVED

Subdivision 5 — Terrain awareness and warning systems

92 Helicopter terrain awareness and warning system

(1) This section applies to a rotorcraft for an I.F.R. flight:

(a) with a maximum operational passenger seat configuration of more than 9; and

(b) that is conducting a passenger transport operation.

(2) This section also applies to a rotorcraft, for an I.F.R. flight, conducting a medical transport operation.

Note: Under subsection 2 (2), this subsection commences 2 years after the commencement of section 2.

(3) The rotorcraft must be fitted with an approved HTAWS.

(4) In this section:

approved HTAWS means a HTAWS that is authorised by CASA, or the NAA of a recognised country, in accordance with (E)TSO-C194.

HTAWS means helicopter terrain awareness and warning system.

Subdivision 6 — Global navigation satellite systems

93 Definitions for Subdivision 6

In this Subdivision:

approved GNSS means:

(a) a GNSS that is authorised by CASA, or the NAA of a recognised country, in accordance with one of the following:

(i) (E)TSO-C129;

(ii) (E)TSO-C145;

(iii) (E)TSO-C146;

(iv) (E)TSO-C196a;

(b) a multi-sensor navigation system that:

(i) includes a GNSS and inertial integration; and

(ii) is approved in writing by CASA as providing a level of performance equivalent to a GNSS mentioned in paragraph (a).

Note: An approved GNSS authorised in accordance with (E)TSO-C129 is unlikely to satisfy the GNSS position source requirements for ADS-B surveillance.

DME means distance measuring equipment.

GNSS means global navigation satellite system.

LSALT means lowest safe altitude.

MSA, or ***minimum sector altitude***, means the lowest usable altitude that provides at least 300 m (or 1 000 ft) clearance above all objects within a sector of a circle of radius 46 km (or 25 NM) centred on a significant point.

NDB means non-directional beacon.

RNAV means a method of navigation which permits aircraft operations on any desired flight path within:

(a) the coverage of ground-based or space-based navigation aids; or

(b) the limits of the capability of self-contained navigation aids; or

Note: Self-contained navigation aids are such aids on board an aircraft.

(c) a combination of paragraphs (a) and (b).

RNP means a statement of the navigation performance necessary for an aircraft operation within a defined airspace.

VOR means VHF omnidirectional radio range.

94 Flight under the I.F.R.

A rotorcraft for a flight under the I.F.R. must be fitted with:

(a) a multi-sensor navigation system that:

(i) includes a GNSS and inertial integration; and

(ii) is approved in writing by CASA as providing a level of performance equivalent to an approved GNSS; or

(b) at least 2 approved GNSS; or

(c) an approved GNSS, and either an automatic direction finder (ADF) or a VOR navigation receiver.

95 Use of approved GNSS

(1) A rotorcraft must use an approved GNSS as a navigation system for any of the following:

(a) an approved RNAV instrument approach procedure, including the related missed approach procedure;

(b) a RNAV standard instrument departure (SID) or RNAV standard instrument arrival (STAR).

(2) A rotorcraft may use an approved GNSS as an RNAV system for any of the following:

(a) an oceanic, remote area or domestic en route phase of flight that is not an I.F.R. flight;

(b) a V.F.R. operation.

96 Use of suitable area navigation systems on conventional routes and procedures

(1) This section applies to a flight of a rotorcraft if:

(a) a means is required for operating on, or transitioning to, conventional routes and procedures (other than RNAV or RNP); and

(b) the rotorcraft's flight manual authorises navigation to RNP 2 (en route), RNP 1 or RNP AR (terminal and approach); and

(c) other applicable requirements of this Division are complied with.

(2) An approved GNSS may be used:

(a) as a substitute means of navigation if:

(i) a conventional navigation aid is not available; or

(ii) the rotorcraft is not equipped with an ADF, VOR or DME; or

(iii) the installed ADF, VOR or DME is inoperative; or

(b) as an alternative means of navigation if:

(i) a conventional navigation aid is serviceable; and

(ii) the rotorcraft is equipped with serviceable equipment that is compatible with the conventional navigation aids.

(3) For subsections (1) and (2), an approved GNSS may be used as a substitute for, or alternative to, the following conventional navigation aids:

(a) VOR;

(b) DME;

(c) VOR/DME;

(d) NDB;

(e) Outer Marker;

(f) Middle Marker.

(4) For subsections (1) and (2), before using an approved GNSS as a substitute for, or alternative to, the conventional navigation aids for:

(a) terminal operations (SID or STAR); or

(b) approach operations phases of flight;

the pilot in command, for the flight, must verify that:

(c) the intended waypoints or procedures can be loaded from the navigation database by name; and

(d) latitude and longitude waypoints manually entered by a pilot are not used; and

(e) the navigation system will fly the procedure as published in authorised aeronautical information; and

(f) RAIM or other approved integrity monitoring is available.

97 Restrictions on use of approved GNSS

For the flight of a rotorcraft, an approved GNSS must not be used for the following:

(a) navigation using procedures that are advised by NOTAMS as not authorised for use;

Note: For example, the pilot in command, for the flight, may not use an approved GNSS to navigate on a procedure that is based on a recently decommissioned navigation aid.

(b) lateral navigation on localised-based courses (including localised back-course guidance) without reference to raw localised data.

98 Procedures for using approved GNSS for certain phases of flight

(1) The pilot in command of an en route rotorcraft may use an approved GNSS with data that has been manually entered into a database, only if the data entries:

(a) for an operation with at least 2 pilots — have been cross-checked for accuracy by at least 2 flight crew members for the flight; or

(b) for a single pilot operation — have been checked independently against other aeronautical information.

Note: For example, other aeronautical information may be contained in authorised aeronautical information for the flight required under paragraph 91.120 (3) (a) of CASR.

(2) The pilot in command of an en route rotorcraft must ensure that GNSS-derived position and tracking information obtained from manually entered data or supplied data is checked:

(a) at, or before, each reporting point published in the AIP or designated by ATS; and

(b) at, or before, each en route waypoint; and

(c) at hourly intervals during area navigation; and

(d) after the insertion of new data relating to the flight, such as a new flight plan or alteration of an existing flight plan.

(3) The pilot in command of an en route rotorcraft may use an approved GNSS as a navigation aid for an Oceanic or remote area phase of flight only if an appropriate en route prediction analysis conducted before the flight ensures that GNSS availability will provide a useable service.

(4) In this section:

en route rotorcraft means a rotorcraft that is engaged in one of the following phases of flight:

(a) Oceanic;

(b) remote area;

(c) domestic en route.

99 RNAV(GNSS) approach procedures

(1) If the pilot in command, for a flight, of a rotorcraft is conducting an approach using RNAV(GNSS), the pilot in command:

(a) may only carry out a GNSS non-precision approach by using a current approved database with a GNSS non-precision approach procedure for the destination; and

(b) if carrying out a non-precision approach procedure or missed approach procedure — must not use an approved GNSS with data that has been manually entered.

(2) Subject to subsection (3), if the pilot in command, for a flight, of a rotorcraft is carrying out a RNAV(GNSS) non-precision approach procedure that has passed the initial approach fix but has not arrived at the final approach fix, the pilot in command must carry out a missed approach procedure if there is:

(a) a RAIM warning or other reason to doubt the validity of GNSS-derived information; or

(b) RAIM loss.

(3) If a RAIM warning or RAIM loss ends before the pilot in command commences a missed approach procedure, the pilot in command may execute the missed approach using GPS-derived information.

(4) If there is reason to doubt the validity of GNSS-derived information, the pilot in command, for a flight, of a rotorcraft must adopt procedures appropriate to loss of GNSS as a navigation aid.

(5) The pilot in command, for a flight, of a rotorcraft may use an approved GNSS as a navigation aid for descent below the relevant LSALT or MSA in accordance with this section.

100 Use of approved GNSS in V.F.R. operations

(1) An approved GNSS may be used under the V.F.R. for the following:

(a) to supplement map reading and other visual navigation techniques;

(b) in operations at night — for:

(i) position fixing and long-range navigation; or

(ii) operations on designated PBN routes, including application of PBN-based LSALT;

(iii) deriving distance information for en route navigation, traffic separation and ATS separation;

(iv) meeting the night V.F.R. requirements for radio navigation systems and alternate aerodrome requirements in this MOS.

Note: ATS may apply PBN-based separation standards to rotorcraft meeting the requirements for night V.F.R. PBN.

(2) If an approved GNSS is used for night V.F.R. PBN applications, the flight crew, for a flight, must be appropriately qualified for the night V.F.R. PBN application.

(3) In this section:

PBN, or ***performance-based navigation***, means area navigation based on performance requirements for rotorcraft operating along an ATS route:

(a) on an instrument approach procedure; or

(b) in designated airspace.

Note: Performance requirements are expressed in navigation specifications (RNAV specification, and RNP specification) in terms of the accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular Class of airspace.

101 Operating without RAIM on domestic en route phase of flight

(1) If there is RAIM loss or loss of integrity on a domestic en route phase of a flight of a rotorcraft while using an approved GNSS, the pilot in command of the rotorcraft must:

(a) monitor the rotorcraft's track by reference to the other navigation aids with which the rotorcraft is equipped; or

(b) carry out procedures for the loss of navigation equipment, as set out in one of the following:

(i) the operator's exposition;

(ii) the rotorcraft's flight manual;

(iii) the GNSS manufacturer's instructions;

(iv) the RAIM loss or loss of integrity procedures published by CASA for this section.

(2) If the pilot in command of a rotorcraft on a domestic en route phase of a flight is using an approved GNSS within a control area, the pilot in command must advise ATS if:

(a) there is RAIM loss or loss of integrity for more than 5 minutes; or

(b) RAIM or data integrity is not available when ATS requests the provision of GNSS-derived information; or

(c) RAIM or data integrity is not available when ATS grants a clearance, or imposes a requirement, based on GNSS-derived information; or

(d) the GNSS receiver is in dead reckoning mode, or experiences loss of its navigation function, for more than 1 minute; or

(e) the indicated displacement of the rotorcraft from the centre line of its track is found to exceed 2 NM.

(3) If:

(a) valid position information is lost, with the GNSS receiver being placed in 2-dimensional or dead reckoning mode; or

(b) there is RAIM loss for more than 5 minutes;

then the pilot in command must use another means of navigation until RAIM is restored and the rotorcraft is re-established on track.

(4) If RAIM has been lost for more than 5 minutes, the pilot in command:

(a) must not use GNSS-derived information or supply it to ATS; and

(b) after RAIM is restored — must notify ATS before using or supplying RAIM information.

(5) After RAIM or data integrity is restored, the pilot in command must notify ATS of the restoration before GNSS-derived information is used.

(6) When advising ATS that RAIM has been lost for more than 5 minutes or of its subsequent restoration, the pilot in command must use the expression “RAIM failure” or “RAIM restored”.

(7) If GNSS-derived information is supplied to ATS when RAIM has been unavailable for less than 5 minutes, the pilot in command must conclude the report with the expression “Negative RAIM”.

102 Use and supply of GNSS-derived distance information

(1) This section applies if the pilot in command, for a flight, of a rotorcraft is using an approved GNSS.

(2) If ATS asks for distance information without specifying the source of the information, the pilot in command may provide GNSS-derived distance information.

(3) If ATS asks for a DME distance, the pilot in command may provide GNSS-derived distance information if a DME distance is not available.

(4) When supplying GNSS-derived distance information to ATS, the pilot in command must include the source and point of reference.

Note: These are examples of source and the point of reference: *"115 GNSS ML VOR", "80 GNSS CTM NDB", "267 GNSS BEEZA"*.

(5) The pilot in command may only supply GNSS-derived distance information by reference to waypoints, navigation aids and other relevant data from a current approved database.

103 GNSS arrivals, and DME or GNSS arrivals

(1) The pilot in command, for a flight, of a rotorcraft may use an approved GNSS in a GNSS arrival, or DME or GNSS arrival, only if:

(a) the coordinates of the destination VOR or NDB to which the procedure relates are obtained from a current approved database; and

(b) RAIM or data integrity is available at the time of descending below the applicable LSALT or MSA.

(2) During a DME or GNSS arrival, the pilot in command, for a flight, of a rotorcraft must:

(a) use the destination VOR or NDB to provide the primary track guidance; and

(b) if there is a significant disparity between the track guidance provided by the destination VOR or NDB and the GNSS track indication — discontinue the arrival procedure.

(3) The pilot in command, for a flight, of a rotorcraft must immediately conduct a missed approach if, at any time during the approach:

(a) there is doubt as to the validity of the GNSS information, for example, RAIM warning; or

(b) GNSS integrity is lost, for example, RAIM not available.

(4) For the purposes of paragraph (2) (b), a significant disparity is:

(a) for a NDB — a divergence of more than 6.9^{o}; and

(b) for a VOR — a divergence of more than 5.2^{o}.

(5) The pilot in command of a rotorcraft may use an approved GNSS as a navigation aid for descent below the relevant LSALT or MSA in accordance with this section.

104 Use of GNSS instead of DME

(1) An approved GNSS may be used instead of DME for instrument approaches for which DME is required, but only if:

(a) the substituted DME reference position can be selected from the database; and

(b) the reference position used is annotated on the approach chart.

(2) The pilot in command, for a flight, of a rotorcraft may use an approved GNSS as a navigation aid for descent below the relevant LSALT or MSA in accordance with this section.

Subdivision 7 — Aeronautical databases

105 Application of Subdivision

This Subdivision applies to a flight of a rotorcraft if it is fitted with a computerised navigation system, the database of which may be used by a pilot for a flight of the rotorcraft.

106 Computerised navigation systems — databases

(1) The data in the computerised navigation system's database must be:
   (a) current for the flight; and
   (b) in a form that ensures the navigational information within the database cannot be changed by the rotorcraft's operator or a pilot for the flight; and
   (c) for an Australian registered aircraft — supplied by a data service provider authorised for that purpose under Part 175 of CASR.

(2) Updating of the computerised navigation system's database must be carried out in accordance with the instructions issued by the system's manufacturer.

(3) Without limiting subsection (2), the database may be updated by a pilot for a flight only if the pilot is:
   (a) qualified under Part 61 of CASR to fly the rotorcraft using the system; and
   (b) authorised in writing by the rotorcraft's operator to update the system.

107 Computerised navigation systems — requirements

(1) This section applies if the computerised navigation system is used for one of the following flights:
   (a) an I.F.R. flight;
   (b) a V.F.R. flight at night.

(2) For subsection (1):
   (a) the system must be operated in accordance with instructions issued by the system's manufacturer; and
   (b) any data that is manually entered into the system must be checked against published navigational data.

108 Computerised navigation systems — additional requirements for 2-pilot operations

(1) This section applies if:
   (a) the computerised navigation system is used for an I.F.R. flight, or V.F.R. flight at night; and

(b) the rotorcraft is flown by 2 pilots as required under the Regulations or the rotorcraft's flight manual.

(2) Any data that is manually entered into the system by one of the pilots must be checked against published navigational data by the other pilot.

Subdivision 8 — Radio communication equipment

109 Rotorcraft to be fitted with radio communication equipment

(1) This section applies to a rotorcraft for a flight for which radio communication equipment must be fitted in accordance with the following table (the ***table***).

(2) The rotorcraft in the operation mentioned in column 1 of an item in the table, in the class of airspace mentioned in column 2 of the item, must be fitted with radio communication systems that meet the requirements mentioned in column 3 of the item.

(3) At least one of the radio communication equipment systems required to be fitted to the rotorcraft under subsection (2) must be capable of continuous communication with ATS on all frequencies necessary to meet reporting, broadcast and listening watch requirements.

Table Radio communication equipment — requirements

Item	**Operation** Column 1	**Class of airspace** Column 2	**Requirements** Column 3
1	I.F.R. or V.F.R. flight at night	Any Class (Classes A, B, C, D, E or G)	1. The rotorcraft must be fitted with: (a) 2 VHF radio communication systems; or (b) 1 VHF radio communication system and 1 HF radio communication system. 2. A HF radio communication system fitted to the rotorcraft must only be used for communication with ATS when beyond the range of VHF communication.

Item	Operation Column 1	Class of airspace Column 2	Requirements Column 3
2	V.F.R. flight by day	Any Class (Classes A, B, C, D, E or G)	1. The rotorcraft must be fitted with: (a) 2 VHF radio communication systems; or (b) 1 VHF radio communication system and 1 HF radio communication system. 2. A HF radio communication system fitted to the rotorcraft must only be used for communication with ATS when beyond the range of VHF communication.

Subdivision 9 — Transponders and surveillance equipment

110 Definitions for Subdivision 9

In this Subdivision:

ADS-B means automatic dependent surveillance – broadcast.

ADS-B OUT means the capability of an aircraft or vehicle to periodically broadcast position and other information for surveillance purposes.

aircraft address means the unique 24-bit binary code available for assignment to an aircraft for the purposes of air-ground communications, navigation and surveillance.

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

(a) authorised by 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 114; or
(c) another system, approved in writing by CASA 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 or Mode C transponder authorised:

(a) by CASA, or the NAA of a recognised country, in accordance with (E)TSO-C74a; 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:

(i) (E)TSO-C112; and

(ii) (E)TSO-C166b; or

(b) another system, approved in writing by CASA as having a level of performance equivalent to a system mentioned in paragraph (a).

Note: CASA Advisory Circular 21-46 provides guidelines on Mode S transponder equipment.

approved Mode S transponder with ADS-B OUT 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 connected to an approved GNSS position source;

(b) an alternate ADS-B OUT equipment configuration meeting the requirements mentioned in section 115;

(c) another system approved in writing by CASA as having a level of performance equivalent to a system mentioned in paragraphs (a) or (b).

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

ASAO means an approved self-administering aviation organisation, within the meaning of Part 149 of CASR.

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

(a) if the aircraft is registered on the Australian Civil Aircraft Register — CASA; or

(b) if the aircraft is placed on an ASAO's aircraft register — the ASAO; or

(c) if the aircraft is a foreign registered aircraft — the NAA of the country of registration.

ATC means air traffic control.

DAPs means Mode S EHS downlink aircraft parameters.

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

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

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 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 code for an aircraft's pressure altitude when interrogated by an SSR.

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

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

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

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

NACp means Navigation Accuracy Category – Position, as specified in 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-260A.

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*, dated 13 September 2000.

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

surveillance radar means radar equipment used by ATC to determine the position of an aircraft.

secondary surveillance radar (SSR) means a surveillance radar system that is used to interrogate aircraft equipped with transponders.

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

transponder means an aircraft's secondary surveillance radar (SSR) transponder.

111 Transponder and surveillance equipment to be fitted

(1) This section applies to a rotorcraft for a flight for which transponder and surveillance equipment must be fitted in accordance with the following table (the ***table***).

(2) The rotorcraft in the operation mentioned in column 1 of an item in the table, in the class of airspace mentioned in column 2 of the item, must be fitted with transponder and surveillance equipment meeting the requirements mentioned in column 3 of the item.

Table Transponder and surveillance equipment — requirements

Item	**Operation** **Column 1**	**Class of airspace** **Column 2**	**Requirements** **Column 3**
1	I.F.R.	Any Class (Class A, B, C, D, E or G)	At least 1 approved Mode S transponder with ADS-B OUT.
2	Any (I.F.R. or V.F.R.)	Class C — at certain aerodromes	For a rotorcraft 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 fitted to a rotorcraft, for a flight, is required to be ADS-B capable, but ADS-B transmission is not required for V.F.R. flight.
3	V.F.R.	Class A, B, C or E	(a) For a rotorcraft 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; or (b) for any other rotorcrafts — at least 1 approved transponder.

Item	Operation Column 1	Class of airspace Column 2	Requirements Column 3
			Note: An approved Mode S transponder fitted to a rotorcraft, for a flight, is required to be ADS-B capable, but ADS-B transmission is not required for V.F.R. flight.
4	V.F.R.	Class G — from 10 000 ft and above	(a) For a rotorcraft 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; or (b) for any other rotorcrafts — at least 1 approved transponder. Note: An approved Mode S transponder fitted to a rotorcraft, for a flight, is required to be ADS-B capable, but ADS-B transmission is not required for V.F.R. flight.
5	V.F.R.	Class A — from flight level 290 and above	(a) For a rotorcraft 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 OUT; or (b) for any other rotorcrafts — at least 1 approved transponder.

112 Operation of transponders — general requirements

(1) Subject to subsections (2) to (4), if an approved transponder is fitted to a rotorcraft for a flight, it must be operated at all times.

(2) A rotorcraft is not required to operate a transponder if ATC issues an instruction that the transponder is not to be operated.

(3) A rotorcraft for a flight in formation with other rotorcrafts is not required to operate a transponder if an approved transponder is operated by another rotorcraft in the formation.

(4) If a rotorcraft is fitted with more than 1 approved transponder, only 1 transponder is to be operated at any time.

(5) If an approved transponder is fitted to a rotorcraft for a flight, 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 the following table (the ***table***).

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

(7) If an approved transponder capable of reporting pressure altitude is fitted to a rotorcraft 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 kind authorised by CASA, or the NAA of a recognised country, in accordance with (E)TSO-C88.

Table Transponders — Mode A standard codes

Item	**Situation** Column 1	**Mode A Code** Column 2
1	(a) Flights in Class A, C or D airspace (b) I.F.R. flights in Class E airspace	3000
2	I.F.R. flights in Class G airspace	2000
3	V.F.R. flights in Class E or Class G airspace	1200
4	Flights in Class G over water at a distance more than 15 NM 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 radio communication	7600
9	In-flight emergency (unless otherwise instructed by ATC)	7700

113 Mode S transponders — specific requirements

(1) An approved Mode S transponder fitted to a rotorcraft, for a flight, must be configured as follows:

(a) the assigned aircraft address must be entered into the equipment;

(b) as far as practicable for the equipment — one of the following forms of aircraft flight identification must be entered into the equipment:

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

(ii) if no flight notification is filed with ATC for the flight — the aircraft registration mark or ASAO identifier, as applicable.

(2) An approved Mode S transponder with ADS-B OUT fitted to a rotorcraft, for a flight, must be configured as follows:

(a) the assigned aircraft address must be entered into the equipment;

(b) one of the following forms of aircraft flight identification must be entered into the equipment:

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

(ii) if no flight notification is filed with ATC for the flight — the aircraft registration mark or ASAO identifier, as applicable.

(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 a rotorcraft that was first issued with a certificate of airworthiness before 9 February 2012.

(5) If the approved Mode S transponder transmits any Mode S EHS DAPs, the transmitted DAPs must comply with the standards set out in paragraph 3.1.2.10.5.2.3 and Table 3-10 of Volume IV, Surveillance and Collision Avoidance Systems, of ICAO Annex 10.

Note 1: Paragraph 3.1.2.10.5.2.3 includes 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 are EHS DAPs-capable, and operational use of EHS DAPs is to be introduced in Australia. Implementation of Mode S EHS DAPs transmissions that are not in accordance with the ICAO standards may be misleading to ATC. Operators need to ensure that correct parameters are being transmitted.

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

(a) has a certificated MTOW above 5 700 kg; or

(b) is capable of normal operation at a maximum cruising true air speed above 250 knots;

the transponder's receiving and transmitting antennae must:

(c) be located in the upper and lower fuselage; and

(d) operate in diversity, as specified in paragraphs 3.1.2.10.4 to 3.1.2.10.4.5 (inclusive) of Volume IV, Surveillance and Collision Avoidance Systems, of ICAO Annex 10.

Note: Paragraph 3.1.2.10.4.2.1 is recommendatory only.

(7) Subject to subsection (8), a rotorcraft must not fly in Australian territory if it is fitted with Mode S transponder equipment, other than an approved Mode S transponder with ADS-B OUT, 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.

(8) Subsection (7) does not apply to a rotorcraft if it is undertaking an ADS-B test flight in V.M.C. in airspace below flight level 290.

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

(1) For a rotorcraft manufactured on or after 8 December 2016, an alternate GNSS position source is acceptable if the source:

(a) is certified by the NAA of a recognised country for use in I.F.R. flight; and

(b) has included in its specification and operation the following:

(i) FDE, computed in accordance with the definition at paragraph 1.7.3 of RTCA/DO-229D;

(ii) the output function HPL, computed in accordance with the definition at paragraph 1.7.2 of RTCA/DO-229D;

(iii) functionality that, for the purpose of HPL computation, accounts for the absence of the SA of the GPS in accordance with paragraph 1.8.1.1 of RTCA/DO-229D.

(2) For a rotorcraft manufactured 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.

115 Alternate ADS-B OUT equipment configuration — requirements

(1) For a rotorcraft first issued with a certificate of airworthiness on or after 8 December 2016, an alternate ADS-B OUT equipment configuration is acceptable if:

(a) it has been certified by the NAA of a recognised country as meeting the standards of EASA AMC 20-24 or EASA CS-ACNS; and

(b) the rotorcraft's flight manual attests to the certification; and

(c) the GNSS system meets the performance requirements mentioned in subsection 114 (1).

(2) For a rotorcraft first issued with a certificate of airworthiness before 8 December 2016, an alternate ADS-B OUT equipment configuration is acceptable if:

(a) it has been certified by the NAA of a recognised country as meeting the standards of EASA AMC 20-24; and

(b) the rotorcraft's flight manual attests to the certification; and
(c) the GNSS system meets the performance requirements mentioned in subsection 114 (2).

(3) For a rotorcraft first issued with a certificate of airworthiness on or after 8 December 2016, an alternate ADS-B OUT equipment configuration is acceptable if:
(a) it has been certified by the NAA of a recognised country as meeting the equipment standards of 14 CFR 91.227; and
(b) the rotorcraft's flight manual attests to the certification; and
(c) the GNSS system meets the performance requirements mentioned in subsection 114 (1).

(4) For a rotorcraft first issued with a certificate of airworthiness before 8 December 2016, an alternate ADS-B OUT equipment configuration is acceptable if:
(a) it has been certified by the NAA of a recognised country as meeting the equipment standards of 14 CFR 91.227; and
(b) the rotorcraft's flight manual attests to the certification; and
(c) the GNSS system meets the performance requirements mentioned in subsection 114 (2).

Subdivision 10 — Airborne weather radar equipment

116 Airborne weather radar equipment

(1) This section applies to a rotorcraft, for an I.F.R. flight, which:
(a) has a MTOW of more than 5 700 kg; and
(b) is a passenger transport operation or medical transport operation.

(2) The rotorcraft must be fitted with airborne weather radar equipment.

Subdivision 11 — Night vision imaging systems

RESERVED

Division 5 — Rotorcraft lighting

117 What this Division is about

This Division prescribes the matters for subregulation 133.575 (1) of CASR.

118 Rotorcraft lighting systems — V.F.R. flight by day

A rotorcraft for a V.F.R. flight by day must be fitted with anti-collision lights.

119 Rotorcraft lighting systems — V.F.R. flight at night and I.F.R. flight

(1) A rotorcraft for a V.F.R. flight at night, or for an I.F.R. flight, must be fitted with, or carry, the following lighting systems:

(a) cockpit lighting that meets the requirements mentioned in subsection (2);

(b) cabin lighting that enables each occupant of the rotorcraft to see and use:

(i) his or her seatbelt and oxygen facilities, if any; and

(ii) the normal and emergency exits;

(c) for each crew member for the flight — an independent portable light accessible to the crew member from his or her normal sitting position in a crew member's seat in the rotorcraft;

(d) anti-collision lights;

(e) navigation lights;

(f) at least 2 landing lights, or a single landing light with two independent illumination sources.

Note: See Part 90 of CASR for requirements relating to emergency lighting.

(2) The lighting from a cockpit lighting system must:

(a) illuminate each system that may be used by the flight crew; and

(b) illuminate the documents that may be used by the flight crew, including checklists and flight documents; and

(c) be compatible with each instrument or item of equipment that may be used by a pilot for the flight; and

(d) be arranged in a way that:

(i) enables all placards and instrument markings to be read from each pilot's normal sitting position in a pilot's seat in the rotorcraft; and

(ii) each pilot's eyes are shielded from direct and reflected light; and

(e) be adjustable, so that the intensity of the lighting can be varied for the light conditions.

120 Anti-collision lights — display

(1) An anti-collision light system fitted to a rotorcraft, for a flight, under section 118 or 119 must be comprised of:

(a) at least 1 red beacon light; or

(b) at least 2 white strobe lights; or

(c) a combination of the lights mentioned in paragraphs (a) and (b).

(2) For an anti-collision light system comprising red beacon lights only, the lights must be displayed as follows:

(a) for a turbine-engine rotorcraft — from immediately before the engines are started until the time the engines are shut down at the end of the flight; and

(b) for any other rotorcraft — from immediately after the engines are started until the time the engines are shut down at the end of the flight.

(3) For an anti-collision light system comprising white strobe lights only, the lights must be displayed as follows:

(a) for a turbine-engine rotorcraft — from immediately before the engines are started until the time the engines are shut down at the end of the flight; and

(b) for any other rotorcraft — from immediately after the engines are started until the time the engines are shut down at the end of the flight.

(4) For an anti-collision light system comprising a combination of red beacon lights and white strobe lights, the lights must be displayed as follows:

(a) for the red beacon lights — in accordance with the requirements mentioned in subsection (2); and

(b) for the white strobe lights — despite subsection (3), in accordance with the following:

(i) if the rotorcraft, 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 rotorcraft is crossing the active runway;

(ii) from the time the rotorcraft first enters the runway from which the rotorcraft will take off until the time the rotorcraft leaves the runway on which it has landed.

(5) Subsections (2), (3) and (4) do not apply if:

(a) the anti-collision light system was serviceable at the beginning of the flight but becomes unserviceable during the flight; or

(b) the pilot in command for the flight reasonably believes that, in the circumstances, reflection or glare from the anti-collision light system may cause a hazard to another aircraft.

121 Navigation lights — display

A navigation light system fitted to a rotorcraft, for a flight, under section 119 must be displayed at night, or in poor visibility, whether the rotorcraft is in the air or on the movement area of an aerodrome.

Division 6 — In-flight communication systems

122 What this Division is about

This Division prescribes the matters for subregulation 133.585 (1) of CASR.

123 Flight crew intercommunication system

(1) A rotorcraft, for a flight, must be fitted with a flight crew intercommunication system that:

(a) consists of 1 headset, and 1 microphone that is not of the hand-held type, for each pilot for the flight; and

(b) is accessible to each pilot in his or her normal sitting position in a pilot's seat.

(2) Also, when a rotorcraft begins a flight with 1 pilot, as required under the rotorcraft's flight manual, it must be fitted with another headset, and another microphone that is not of the hand-held type.

(3) Also, when a rotorcraft begins a flight with 2 pilots, as required under the Regulations, or the rotorcraft's flight manual, it must be fitted with, or carry, another headset, and another microphone that is not of the hand-held type.

124 Public-address system

(1) This section applies to a rotorcraft, for a flight, that has a maximum operational passenger seat configuration of more than 9, unless:

(a) the flight crew and the passengers occupy the same compartment; and

(b) the pilot's voice is clearly audible from all passenger seats during a flight.

(2) The rotorcraft must be fitted with a public-address system to enable the crew to address the passengers.

(3) For subsection (1), the public-address system must:

(a) operate independently of the other communication systems fitted to the aircraft — except for headsets, microphones, audio panel selector switches and related equipment; and

(b) be immediately accessible for use by a pilot in a pilot's seat;

(c) for a cabin crew member seated adjacent to a floor-level passenger emergency exit — be accessible for use within 10 seconds by that cabin crew member; and

(d) be audible from all passenger seats; and

(e) following a failure of the rotorcraft's electrical power system — continue to provide reliable operation for a period of at least 10 minutes.

Division 7 — Oxygen equipment and supplies

Subdivision 1 — Pressurised rotorcraft

125 Application of Subdivision 1

This Subdivision applies to a pressurised rotorcraft.

126 Supplemental oxygen equipment

(1) This section applies if the rotorcraft's altitude will exceed 10 000 ft during the flight.

(2) For paragraph 133.600 (1) (a) of CASR, supplemental oxygen equipment, which can dispense the amount of supplemental oxygen required for the flight by this Subdivision, is prescribed.

127 Requirements for passenger supplemental oxygen equipment

(1) This section prescribes, for paragraph 133.600 (1) (d) of CASR, the requirements relating to supplemental oxygen equipment required to be fitted to, or carried on, the rotorcraft for the flight.

Rotorcraft first registered on or after 9 November 1998

(2) Subsection (3) applies:
   (a) to a rotorcraft first registered, in Australia or elsewhere, on or after 9 November 1998; and
   (b) if, during the flight:
      (i) the rotorcraft is flown above flight level 250; or
      (ii) the rotorcraft is flown at or below flight level 250, and the rotorcraft cannot safely descend to flight level 130 within 4 minutes.

(3) The requirements are the following:
   (a) the equipment must deploy automatically;
   (b) the equipment must be immediately available to each passenger on the flight, wherever seated;
   (c) the equipment must have at least 10% more dispensing units (the ***extra units***) than the number of passenger seats on the rotorcraft;
   (d) the extra units must be evenly distributed throughout the rotorcraft's passenger compartments.

Rotorcraft first registered before 9 November 1998

(4) Subsection (5) applies if the rotorcraft is first registered, in Australia or elsewhere, before 9 November 1998.

(5) The requirements are the following:
   (a) the equipment must have a dispensing unit that is immediately available to each passenger on the flight, wherever seated;
   (b) the equipment must have at least 10% more dispensing units (the ***extra units***) than the number of passenger seats on the rotorcraft; and
   (c) the extra units must be evenly distributed throughout the rotorcraft's passenger compartments.

128 Occupants of pilot seats

(1) This section applies if a rotorcraft begins a flight during which the rotorcraft's cabin pressure altitude will exceed 10 000 ft.

(2) For paragraph 133.600 (1) (b) of CASR, the amount of supplemental oxygen prescribed is an amount that is sufficient to supply each person mentioned in subsection (3) for the period of the flight mentioned in subsection (4).

(3) For subsection (2), the persons are:
   (a) each pilot who is in a pilot seat; and

(b) each other person:

(i) who is in a pilot seat; and

(ii) whose supplemental oxygen is provided from the flight crew's supplemental oxygen supply.

(4) For subsection (2), the period is the greater of the following:

(a) 30 minutes;

(b) the period while the rotorcraft's cabin pressure altitude exceeds 10 000 ft.

Note: The oxygen supply for the protective breathing equipment for a flight crew member at his or her flight control seat may be from, and is not additional to, the amount of the rotorcraft's supplemental oxygen supply required for the flight under this section: see subsection 132 (3).

129 Passengers

(1) This section applies to a flight of a rotorcraft to which an item mentioned in column 1 of the following table (the ***table***) applies.

Pressurised rotorcraft — amount of supplemental oxygen for passengers

Item	Column 1	Column 2	Column 3
	If, during the flight …	**the rotorcraft must carry sufficient supplemental oxygen to supply the following percentage of passengers …**	**for the following period …**
1	the rotorcraft's cabin pressure altitude exceeds flight level 150	100%	the greater of the following: (a) 10 minutes; (b) the period while the rotorcraft's cabin pressure altitude exceeds flight level 150
2	the rotorcraft's cabin pressure altitude exceeds flight level 140 but does not exceed flight level 150	30%	the period while the rotorcraft's cabin pressure altitude exceeds flight level 140
3	both: (a) the rotorcraft's cabin pressure altitude exceeds 10 000 ft for more than 30 minutes (the ***first 30 minutes***); and (b) the rotorcraft's cabin pressure altitude does not exceed flight level 140	10%	the period, after the first 30 minutes, while the rotorcraft's cabin pressure altitude exceeds 10 000 ft

(2) Subsection (3) applies to a flight of a rotorcraft, other than a flight mentioned in subsection (4).

(3) For paragraph 133.600 (1) (b) of CASR, the amount of supplemental oxygen prescribed, for the segment of the flight mentioned in column 1 of an item in the table, is the amount sufficient to supply the percentage of the passengers, for the

flight, mentioned in column 2 of the item for the period of the flight mentioned in column 3 of the item.

(4) Subsection (5) applies to a flight of a rotorcraft if:
  (a) during the flight, the rotorcraft will be flown above flight level 130 but not above flight level 250; and
  (b) at all points along the route of the flight, the rotorcraft will be able to:
    (i) descend safely to flight level 130 within 4 minutes; and
    (ii) complete the planned flight or land at an aerodrome that is suitable for the rotorcraft to land at.

(5) For paragraph 133.600 (1) (b) of CASR, the amount of supplemental oxygen prescribed is either:
  (a) for the segment of the flight mentioned in column 1 of an item in the table, the amount sufficient to supply the percentage of the passengers, for the flight, mentioned in column 2 of the item for the period of the flight mentioned in column 3 of the item; or
  (b) an amount of supplemental oxygen sufficient to supply 10% of the passengers for the flight for the period while the rotorcraft's cabin pressure altitude exceeds 10 000 ft and does not exceed flight level 130.

(6) In this section:

passenger:
  (a) includes a pilot who is not in a pilot seat; but
  (b) does not include a person who is in a pilot seat and whose supplemental oxygen is provided from the flight crew's supplemental oxygen supply.

130 First-aid oxygen

(1) This section applies if:
  (a) a flight of a rotorcraft is a passenger transport operation; and
  (b) the rotorcraft is required by its flight manual to be flown by more than 1 pilot; and
  (c) during the flight, the rotorcraft will be flown above flight level 250.

(2) For subregulation 133.600 (1) of CASR, it is prescribed that the rotorcraft must carry the following for the flight:
  (a) a volume of undiluted oxygen, for use in first aid if the cabin depressurises, that is at least the volume mentioned in subsection (3);
  (b) at least 2 oxygen masks that are suitable for use in dispensing that oxygen;
  (c) equipment for dispensing that oxygen that meets the requirement mentioned in subsection (4).

(3) For paragraph (2) (a), the volume is the volume that will provide an average oxygen gas flow rate, calculated assuming dry oxygen gas at standard temperature and pressure, of 3 litres per minute per person:

(a) for the greater of:
(i) 2% of the number of passengers carried on the flight; and
(ii) 1 passenger; and
(b) for the period of the flight, following a cabin depressurisation, during which the rotorcraft's cabin pressure altitude exceeds 8 000 ft and does not exceed flight level 150.

(4) For paragraph (2) (c), the requirement is that the equipment must:
(a) be capable of generating a flow rate, calculated assuming dry oxygen gas at standard temperature and pressure, of at least 4 litres per minute per person; and
(b) have a means to reduce the flow to not less than 2 litres per minute per person at any altitude.

131 Oxygen masks for pilots

(1) For subregulation 133.600 (1) of CASR, the following are prescribed:
(a) an oxygen mask, for use by each pilot who is in a pilot seat, must be fitted to the rotorcraft;
(b) the oxygen mask must be within immediate reach of a pilot who is in a pilot seat.

(2) Also, for subregulation 133.600 (1) of CASR, if, during the flight, the rotorcraft will be flown above flight level 250, the following are prescribed:
(a) the oxygen mask must be of a kind that can, within 5 seconds of being deployed for use and with 1 hand from the ready position, be placed on the face, and be secured and sealed;
(b) while the rotorcraft is flown above flight level 250, at least 1 pilot who is in a pilot seat must wear and use the oxygen mask.

132 Protective breathing equipment

(1) For paragraph 133.600 (1) (a) of CASR, the following equipment is prescribed:
(a) protective breathing equipment that can provide oxygen, for at least 15 minutes, for each pilot who is in a pilot seat;
(b) if the rotorcraft is required by its flight manual to be flown by 2 pilots — portable protective breathing equipment that can provide oxygen, or a mixture of oxygen and another suitable gas, continuously for at least 15 minutes, for each pilot.

(2) For paragraph (1) (a), the oxygen supply for the portable breathing equipment for a pilot who is in a pilot seat may be from, and is not additional to, the amount of supplemental oxygen required for the flight under section 135.

(3) For paragraph 133.600 (1) (c) of CASR, the following requirements are prescribed:
(a) the protective breathing equipment required by paragraph (1) (a) must be easily accessible for immediate use by a pilot while the pilot is in a pilot seat;

(b) the portable protective breathing equipment required by paragraph (1) (b) must be located in, or as close as is practicable to, the rotorcraft's cockpit;

(c) the use of the protective breathing equipment, other than portable protective breathing equipment, must not prevent, or be likely to prevent, a pilot from effectively using the rotorcraft's flight crew intercommunication system.

Subdivision 2 — Non-pressurised rotorcraft

133 Application of Subdivision 2

This Subdivision applies to a non-pressurised rotorcraft.

134 Supplemental oxygen equipment

For paragraph 133.600 (1) (a) of CASR, supplemental oxygen equipment, which can dispense the amount of supplemental oxygen required for the flight by this Subdivision, is prescribed.

135 Amount of supplemental oxygen

(1) This section applies to a flight of a rotorcraft to which an item mentioned in column 1 of the following table (the ***table***) applies.

(2) For paragraph 133.600 (1) (b) of CASR, the amount of supplemental oxygen prescribed, for the segment of the flight mentioned in column 1 of an item in the table, is the amount sufficient to supply the percentage of the passengers, for the flight, mentioned in column 2 of the item for the period of the flight mentioned in column 3 of the item.

Amount of supplemental oxygen required for flight

Item	Column 1 **If, during the flight …**	Column 2 **the rotorcraft must carry supplemental oxygen to supply …**	Column 3 **for the following period …**
1	both: (a) the rotorcraft's cabin pressure altitude exceeds 10 000 ft for more than 30 minutes (the ***first 30 minutes***); and (b) the rotorcraft's cabin pressure altitude does not exceed flight level 130	the following: (a) each pilot who is in a flight control seat; (b) each other person who is in a flight control seat and whose supplemental oxygen is provided from the flight crew's supplemental oxygen supply; (c) 10% of the passengers for the flight	the period, after the first 30 minutes, while the rotorcraft's altitude exceeds 10 000 ft
2	the rotorcraft's altitude exceeds flight level 130	all persons on board the rotorcraft	the period while the rotorcraft's altitude exceeds flight level 130

(3) In this section:

passenger:

(a) includes a pilot who is not in a pilot seat; but

(b) does not include a person who is in a pilot seat and whose supplemental oxygen is provided from the flight crew's supplemental oxygen supply.

Division 8 — Emergency and survival equipment

136 Approved emergency locator transmitter etc.

(1) Subject to subsection (2), subsection (3) applies to a flight of a rotorcraft if either:

(a) the rotorcraft has a maximum operational passenger seat configuration of more than 3; or

(b) during the flight, the rotorcraft will not remain within 50 NM of the departure aerodrome for the flight.

(2) Subsection (3) does not apply if:

(a) the rotorcraft is fitted with an unserviceable approved emergency locator transmitter, and the flight is for the purpose of taking the rotorcraft to a place for the repair or re-fitting of the transmitter; and

(b) an approved portable emergency locator transmitter is carried on the rotorcraft during the flight; and

(c) no passengers are carried on the flight.

(3) For subregulation 133.615 (1) of CASR, the following are prescribed:

(a) the rotorcraft must be fitted with an approved emergency locator transmitter;

(b) the transmitter must be readily accessible to the crew, for the flight, during the flight.

(4) Subsection (5) applies if:

(a) the rotorcraft has a maximum operational passenger seat configuration of not more than 3; and

(b) during the flight, the rotorcraft will remain within 50 NM of the departure aerodrome for the flight; and

(c) the rotorcraft is not fitted with an approved emergency locator transmitter.

(5) For subregulation 133.615 (1) of CASR, the following are prescribed:

(a) the rotorcraft must carry an approved portable emergency locator transmitter;

(b) the transmitter must be readily accessible to the crew, for the flight, during the flight.

(6) If the rotorcraft is required to carry a life raft equipped with an approved portable emergency locator transmitter under section 140, the requirement under that section is additional to the requirement under subsection (5).

137 Hand-held fire extinguishers

(1) This section prescribes the matters for subregulation 133.615 (1) of CASR.

(2) At least 1 hand-held fire extinguisher must be located in the rotorcraft's cockpit.

(3) If the rotorcraft has a maximum operational passenger seat configuration of 7 or more, at least 1 hand-held fire extinguisher must be located in the rotorcraft's passenger compartment.

(4) If a cargo or luggage compartment of the rotorcraft 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.

(5) The following requirements apply in relation to a hand-held fire extinguisher located in a compartment of the rotorcraft under subsection (2), (3) or (4):

(a) the type and quantity of extinguishing agent in the fire extinguisher must be suitable for extinguishing the kinds of fire likely to occur in the compartment;

(b) the fire extinguisher must not be installed in a manner that is likely to facilitate the accidental discharge of its contents;

(c) if the fire extinguisher is of the dry chemical type, it must not be located, or discharged, in:

(i) the rotorcraft's cockpit; or

(ii) a compartment of the rotorcraft that is not separated from the cockpit by a door or partition.

138 First-aid kit

(1) For paragraph 133.615 (1) (a) of CASR, a first-aid kit is prescribed.

(2) For paragraph 133.615 (1) (b) of CASR, the following requirements, relating to the first-aid kit, are prescribed:

(a) the first-aid kit must contain sufficient supplies for the number of persons to be carried on a flight of the rotorcraft;

(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 a flight when the rotorcraft is on the ground or water and not in operation.

139 Life jackets etc.

(1) This section applies to a flight of a rotorcraft if:

(a) in the event of an emergency occurring during take-off or landing, the rotorcraft is reasonably likely to land in water; or

(b) the flight is to, or from, a helideck;

(c) for a single-engine rotorcraft, or a multi-engine rotorcraft, flown in performance class 3 — the rotorcraft will be flown further over water than the distance from which, with 1 engine inoperative, the rotorcraft could reach land;

(d) for a multi-engine rotorcraft — the rotorcraft will be flown over water more than 50 NM from land.

(2) For subregulation 133.615 (1) of CASR, the following are prescribed:

(a) during the flight, a person on board who is not an infant must wear an approved life jacket, which is equipped with a survivor locator light and whistle;

(b) during the flight, a person on board who is an infant must wear an approved infant life jacket, which is equipped with a survivor locator light and whistle, or be in an infant flotation cot.

140 Life rafts

Flights to which section applies

(1) Subject to subsection (7), this section applies to a flight of a rotorcraft if:

(a) the flight is a passenger transport operation; and

(b) during the flight, the rotorcraft will be flown further over water than the distance mentioned in subsection (2) from a suitable forced landing area for the flight.

(2) For paragraph (1) (b), the distance is:

(a) for a multi-engine rotorcraft — the shorter of:

(i) the distance that the rotorcraft would fly in 30 minutes at the planned cruising speed for the flight in still air; and

(ii) 50 NM; or

(b) for a single-engine rotorcraft with operational control that would enable, in the event of an emergency, an immediate initiation of an emergency response to the rotorcraft — 25 NM; or

(c) for a single-engine rotorcraft to which paragraph (b) does not apply — the distance that the rotorcraft would fly in 5 minutes at the planned cruising speed for the flight in still air.

Capacity of life rafts

(3) Subsection (4) applies if not more than 11 persons are on the rotorcraft.

(4) For subregulation 133.615 (1) of CASR, the following are prescribed:

(a) the rotorcraft must carry at least 1 life raft sufficient to provide a place for each person on board the rotorcraft;

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

(i) a survivor locator light; and

(ii) an approved portable emergency locator transmitter;

(c) each life raft must be stowed in a manner so that it can be readily deployed if the rotorcraft has to 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.

(5) Subsection (6) applies if more than 11 persons are on the rotorcraft.

(6) For subregulation 133.615 (1) of CASR, the following are prescribed:

(a) the rotorcraft must carry at least 2 life rafts sufficient to provide a place for each person on board the rotorcraft;

(b) there must be a place on a life raft for each person, other than an infant, on board the rotorcraft:

(i) assuming that the life raft with the greatest rated-capacity cannot be used; and

(ii) based on the overload capacity of the other life rafts;

(c) for a rotorcraft first issued with a certificate of airworthiness on or after 1 January 1991:

(i) at least 50% of the life rafts carried on the rotorcraft must be deployable by remote control; and

(ii) if a life raft is not deployable by remote control and weighs more than 40 kg — the life raft must be equipped with a means of mechanically-assisted deployment;

(d) each life raft carried on the rotorcraft must be equipped with:

(i) a survivor locator light; and

(ii) an approved portable emergency locator transmitter;

(e) each life raft must be stowed in a manner so that it can be readily deployed if the rotorcraft has to ditch;

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

Exception

(7) This section does not apply to a flight of a rotorcraft if:

(a) the rotorcraft has a maximum operational passenger seat configuration of not more than 5; and

(b) the rotorcraft will be flown less than 10 NM over water from land; and

(c) the rotorcraft has operational control that would enable, in the event of an emergency, an immediate initiation of an emergency response to the rotorcraft.

141 Emergency flotation equipment

(1) This section applies to a flight of a rotorcraft that is a passenger transport operation.

Flights to, or from, helidecks

(2) Subsection (5) applies if the flight is to, or from, a helideck.

Other flights over water

(3) Subsection (5) also applies if:

(a) the rotorcraft will be flown further over water from land than the distance in which, with 1 engine inoperative, the rotorcraft could reach a suitable forced landing area, for the flight, on land; and

(b) the flight over water is not permitted under subsection (4).

(4) For paragraph (3) (b), the flight over water is permitted if:

(a) it is in a rotorcraft access lane mentioned in the AIP; or

(b) both:

(i) it is to comply with instructions from air traffic control; and

(ii) it is for no longer than 2 minutes at normal cruising speed in still air.

(5) For paragraph 133.615 (1) (a) of CASR, emergency flotation equipment is prescribed.

142 Sea anchors etc. and sound signalling equipment

(1) This section applies to a flight of a rotorcraft if:

(a) the rotorcraft is an amphibian; and

(b) during the flight, it will take-off from, or land on, water.

(2) For paragraph 133.615 (1) (a) of CASR, the following are prescribed:

(a) a sea anchor;

(b) equipment and fittings necessary for mooring the rotorcraft;

(c) if the flight is conducted on, or over, water to which the International Regulations apply — equipment for making the sound signals required for the flight by the International Regulations.

143 Survival equipment

(1) This section applies to a flight of a rotorcraft if:

(a) the flight is in, or through, an area prescribed as a designated remote area by the Part 91 Manual of Standards; or

(b) the rotorcraft is required by section 140 to carry a life raft for the flight; or

(c) CASA has given the operator a direction, under regulation 11.245 of CASR, that this section applies to the flight or to a route that the flight will take.

(2) For paragraph 133.615 (1) (a) of CASR, the following are prescribed:

(a) survival equipment for sustaining life appropriate to the area in, or through, which the flight will be conducted;

(b) pyrotechnic signalling devices required to ensure the distress signals, set out in Appendix 1 to Annex 2, *Rules of the Air*, to the Chicago Convention, can be made.

Chapter 6 — Flight crew

Division 1 — Training and checking requirements

144 What this Division is about

This Division prescribes the requirements for subregulation 133.670 (4) of CASR.

145 Conversion training and operator proficiency checking requirements

(1) A flight crew member, for a flight, meets the conversion training and operator proficiency checking requirements of the rotorcraft's operator, and for the rotorcraft, if:

(a) the flight crew member has successfully completed the operator's conversion training and operator proficiency check for the rotorcraft; and

(b) the training includes the training mentioned in subsection (2).

(2) For paragraph (1) (b), the training is the following:

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

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

(c) training in the procedures relating to the operator's operations;

(d) training in the standard operating procedures for the rotorcraft;

(e) training in normal and emergency procedures for a rotorcraft of that kind;

(f) training specific to the operation of the rotorcraft;

(g) emergency and safety equipment training, for the rotorcraft, about the following:

(i) if the rotorcraft is, or will be, used to conduct a flight for which regulation 133.615 of CASR requires the rotorcraft to carry life jackets — the actual donning of a life jacket by the flight crew member, and underwater escape training;

(ii) if the rotorcraft is, or will be, used to conduct a flight for which regulation 133.615 of CASR requires the rotorcraft to carry life rafts — the use of a life raft;

(iii) the handling of fire extinguishers by the flight crew member;

(iv) the location, removal and use of all emergency and safety equipment carried on the rotorcraft;

(v) aerodrome and rotorcraft security procedures;

(vi) evacuation procedures;

(vii) procedures for dealing with emergency situations, both in-flight and on the ground;

(viii) passenger briefing and safety demonstrations;

(ix) general emergency and survival training.

146 Differences training requirements

(1) A flight crew member, for a flight, meets the differences training requirements of the rotorcraft's operator, and for the rotorcraft, if:

(a) the flight crew member has successfully completed the operator's differences training for the rotorcraft; and

(b) the training includes the training mentioned in subsection (2).

(2) For paragraph (1) (b), the training is the following:

(a) if the limitations or systems of a rotorcraft of that kind are of a kind that the person has not previously received training for — training in the limitations or systems;

(b) if the equipment on a rotorcraft of that kind is of a kind that the person has not previously received training for — training in the location and use of the equipment;

(c) if the normal and emergency procedures for a rotorcraft of that kind are of a kind that the person has not previously received training for — training in the procedures.

147 Line training and operator proficiency checking requirements

(1) A flight crew member, for a flight, meets the line training and operator proficiency checking requirements of the rotorcraft's operator, and for the rotorcraft, if:

(a) the flight crew member has successfully completed the operator's line training for the rotorcraft; and

(b) the training includes the training mentioned in subsection (2).

(2) For paragraph (1) (b), the training is training about the following:

(a) the rotorcraft's procedures when conducting line operations;

(b) aerodrome and terminal ground handling and parking procedures;

(c) procedures for passenger handling and public safety during line operations;

(d) passenger briefing and safety demonstrations in line operations;

(e) specific route and aerodrome familiarisation;

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

148 Recurrent training and operator proficiency checking requirements

(1) A flight crew member, for a flight, meets the recurrent training and operator proficiency checking requirements of the rotorcraft's operator, and for the rotorcraft, if the requirements stated in this section are met by the flight crew member.

(2) The flight crew member must successfully undertake a recurrent operator proficiency check, which demonstrates that the flight crew member is competent to carry out the flight crew member's duties, as a flight crew member, for flights with the rotorcraft.

(3) The operator proficiency check mentioned in subsection (2) must be undertaken:

(a) for a person who is a flight crew member only for V.F.R. flights by day — initially between 5 and 7 months after commencing unsupervised line operations for the operator, and subsequently at intervals of not more than 12 months after the previous operator proficiency check; or

(b) otherwise — at intervals of not more than 6 months after the previous operator proficiency check.

(4) If the flight is a flight for which, under this manual of standards, flight crew members, for the flight, are required to wear life jackets and undertake underwater escape training, the flight crew member must hold an underwater escape training competency gained during the past 3 years.

(5) The flight crew member must hold a general emergency and safety equipment training competency, in relation to the rotorcraft, covering the matters mentioned in paragraph 155 (2) (g).

(6) The competency mentioned in subsection (5) must be renewed by the flight crew member at 12-monthly intervals.

149 Use of available qualified flight simulator for training or checking etc.

(1) This section applies to a flight crew member for a flight of a rotorcraft of a type mentioned in the following table.

Table Types of rotorcraft

Rotorcraft type certificate holder or manufacturer	**Rotorcraft models and variants**
Agusta Westland Agusta Bell	AB/AW 139 AW 189
Airbus Helicopters Aerospatiale Eurocopter or EADS	AS 332 L AS 332 L2 EC225 EC175
Sikorsky	S 76A series S 76B series S 76C series S 76D series S 70 S 92

(2) Subject to subsection (4) and without limiting the requirements stated in sections 145 and 148, the flight crew member must undergo conversion training and recurrent training, and successfully undertake the consequent operator proficiency check, in relation to the flight component of the matters mentioned in paragraphs 145 (2) (a) to (f) in:

(a) an available qualified flight simulator; or

(b) the rotorcraft, subject to the conditions mentioned in subsection (3) being met.

(3) For paragraph (2) (b), the conditions are the following:

(a) the training session and consequent operator proficiency check must not require the carrying out of any non-normal exercises that disable a vital system of the rotorcraft in-flight;

(b) any simulated non-normal exercises, carried out as part of the training session and consequent operator proficiency check, must be carried out using the rotorcraft's 1 engine inoperative training mode selector switch;

(c) the training session and consequent operator proficiency check must have been risk-assessed, and managed, by the rotorcraft's operator in accordance with the operator's risk assessment and management processes stated in the operator's exposition.

(4) The flight crew member must at least once a year undergo either the conversion training session or recurrent training session mentioned in subsection (2), and successfully undertake the consequent operator proficiency check, in an available qualified flight simulator.

(5) When the flight crew member undergoes the conversion training session or recurrent training session mentioned in subsection (2) in an available qualified flight simulator, the training must consist of training in relation to:

(a) non-normal exercises relevant to the rotorcraft; and

(b) the normal operations of the operator with the rotorcraft.

(6) In this section:

available, in relation to a qualified flight simulator, means that the flight simulator:

(a) exists in Australia or a recognised foreign State; and

(b) is offered for use on a commercial basis; and

(c) is serviceable; and

(d) is available to the operator to reserve and use.

non-normal exercise means an aircraft operation that involves a simulated system failure of a kind that affects, or would be likely to affect, the flying performance, or handling characteristics, of the aircraft beyond the parameters of normal operation.

qualified, in relation to a flight simulator, means:

(a) if the flight simulator exists in Australia — qualified, under Part 60 of CASR, to Level C or D; or

(b) if the flight simulator only exists in a recognised foreign State — approved by the national aviation authority of the State for use equivalent to the use the flight simulator could be put to if it were qualified, under Part 60 of CASR, to Level C or D.

vital system, of a rotorcraft, means a system that if operated in a simulated failed-state would reasonably be considered to cause a reduction in safety of the rotorcraft in-flight.

150 Remedial training requirements

(1) This section applies if a flight crew member has had the flight crew member's line flying status, for the rotorcraft, removed by the rotorcraft's operator because of an unsuccessful operator proficiency check.

(2) Before being assigned to duty for a flight of the rotorcraft, the flight crew member must have had the flight crew member's line flying status, for the rotorcraft, reinstated by the operator after:

(a) successfully completing the remedial training requirements identified in the operator proficiency check result; and

(b) subsequently successfully completing an operator proficiency check for the rotorcraft.

Division 2 — Command training for pilot in command

151 Command training requirements

For paragraph 133.685 (2) (c) of CASR, the requirements prescribed are the following:

(a) either:

(i) flying training conducted in a rotorcraft of that kind; or

(ii) training conducted in an approved flight simulator for a rotorcraft of that kind;

(b) successful completion of an operator proficiency check for the rotorcraft that complies with the requirements of the operator's training and checking manual relating to a pilot in command of the rotorcraft;

(c) training in the responsibilities of the pilot in command of a rotorcraft of that kind;

(d) training in relation to pilot incapacitation;

(e) supervised line flying on a rotorcraft of that kind as pilot in command under supervision for the number of flight hours mentioned in the operator's training and checking manual;

(f) successful completion of a line operator proficiency check that complies with the requirements of the operator's training and checking manual relating to a pilot in command of the rotorcraft.

Chapter 7 — Crew other than flight crew

Division 1 — Training and checking requirements for cabin crew

152 Training and checking requirements

The requirements prescribed for subregulation 133.790 (4) of CASR are the same as the requirements prescribed for an air crew member under Division 2.

Division 2 — Training and checking requirements for air crew

153 What this Division is about

This Division prescribes the requirements for subregulation 133.825 (2) of CASR.

154 Meaning of *proficiency check*

In this Division:

proficiency check means an assessment, conducted by an operator in accordance with the operator's training and checking responsibilities under CASR, of whether a person is competent to safely carry out the person's duties as an air crew member in the operator's rotorcraft.

155 Conversion training and proficiency checking requirements

(1) An air crew member, for a flight, meets the conversion training and proficiency checking requirements for the operator of the rotorcraft and the rotorcraft if:
  (a) the air crew member has successfully completed the operator's conversion training and proficiency check for the rotorcraft; and
  (b) the training includes the training mentioned in subsection (2).

(2) For paragraph (1) (b), the training is the following:
  (a) training in the duties and responsibilities of the air crew member's position;
  (b) training in the operator's safety management system's risk assessment and management practices;
  (c) training in the procedures relating to the operator's operations;
  (d) training in the standard operating procedures for the rotorcraft;
  (e) normal and emergency procedures for a rotorcraft of that kind;
  (f) training specific to the operation of the rotorcraft;
  (g) emergency and safety equipment training, for the rotorcraft, about the following:
    (i) if the rotorcraft is, or will be, used to conduct a flight for which regulation 133.615 of CASR requires the rotorcraft to carry life jackets — the actual donning of a life jacket by the air crew member, the use of the rotorcraft's emergency exits and underwater escape training;
    (ii) if the rotorcraft is, or will be, used to conduct a flight for which regulation 133.615 of CASR requires the rotorcraft to carry life rafts — the use of a life raft;
    (iii) the handling of fire extinguishers by the air crew member;
    (iv) the location, removal and use of all emergency and safety equipment carried on the rotorcraft;
    (v) aerodrome and rotorcraft security procedures;
    (vi) evacuation procedures;

(vii) procedures for dealing with emergency situations, both in-flight and on the ground;

(viii) passenger briefing and safety demonstrations;

(ix) general emergency and survival training.

156 Differences training requirements

(1) An air crew member, for a flight, meets the differences training requirements for the operator of the rotorcraft and the rotorcraft if:

(a) the air crew member has successfully completed the operator's differences training for the rotorcraft; and

(b) the training includes the training mentioned in subsection (2).

(2) For paragraph (1) (b), the training is the following:

(a) if the limitations or systems of a rotorcraft of that kind are of a kind that the person has not previously received training for — training in the limitations or systems;

(b) if the equipment on a rotorcraft of that kind is of a kind that the person has not previously received training for — training in the location and use of the equipment;

(c) if the normal and emergency procedures for a rotorcraft of that kind are of a kind that the person has not previously received training for — training in the procedures.

157 Line training and proficiency checking requirements

An air crew member, for a flight, meets the line training and proficiency checking requirements for the operator of the rotorcraft and the rotorcraft if the air crew member has successfully completed the operator's line training for the rotorcraft.

158 Recurrent training and proficiency check requirements

(1) An air crew member, for a flight, meets the recurrent training and proficiency checking requirements for the operator of the rotorcraft and the rotorcraft if the requirements stated in this section are met by the air crew member.

(1A) The air crew member must undertake at least the training mentioned in subsection 155 (2), other than underwater escape training.

(2) The air crew member must successfully undertake a recurrent proficiency check, which demonstrates that the air crew member is competent to carry out the air crew member's duties, as an air crew member, for flights with the rotorcraft.

(3) The training mentioned in subsection (1A), and the proficiency check mentioned in subsection (2), must be undertaken at 12-monthly intervals.

(4) If the flight is a flight for which, under this manual of standards, air crew members, for the flight, are required to wear life jackets and undertake underwater escape training, the air crew member must hold an underwater escape training competency gained during the past 3 years.

(5) The air crew member must hold a general emergency and safety equipment training competency, in relation to the rotorcraft, covering the matters mentioned in paragraph 155 (2) (g).

(6) The competency mentioned in subsection (5) must be renewed by the air crew member at 12-monthly intervals.

159 Remedial training requirements

(1) This section applies if an air crew member has had the air crew member's line flying status, for the rotorcraft, removed by the rotorcraft's operator because of an unsuccessful proficiency check.

(2) Before being assigned to duty for a flight of the rotorcraft, the air crew member must have had the air crew member's line flying status, for the rotorcraft, reinstated by the operator after:

(a) successfully completing the remedial training requirements identified in the proficiency check result; and

(b) subsequently successfully completing a proficiency check for the rotorcraft.

Division 3 — Training and checking requirements for medical transport specialists

160 What this Division is about

This Division prescribes the requirements for subregulation 133.840 (2) of CASR.

161 Meaning of *proficiency check*

In this Division:

proficiency check means an assessment, conducted by an operator in accordance with the operator's training and checking responsibilities under CASR, of whether a person is competent to safely carry out the person's duties as a medical transport specialist in the operator's rotorcraft.

162 Conversion training and proficiency checking requirements

(1) A medical transport specialist, for a flight, meets the conversion training and proficiency checking requirements for the operator of the rotorcraft and the rotorcraft if:

(a) the medical transport specialist has successfully completed the operator's conversion training and proficiency check for the rotorcraft; and

(b) the training includes the training mentioned in subsection (2).

(2) For paragraph (1) (b), the training is the following:

(a) training in the duties and responsibilities of the medical transport specialist's position;

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

(c) training in the procedures relating to the operator's operations;

(d) training in the standard operating procedures for the rotorcraft;

(e) normal and emergency procedures for a rotorcraft of that kind;

(f) training specific to the operation of the rotorcraft;

(g) emergency and safety equipment training, for the rotorcraft, about the following:

(i) if the rotorcraft is, or will be, used to conduct a flight for which regulation 133.615 of CASR requires the rotorcraft to carry life jackets — the actual donning of a life jacket by the medical transport specialist, the use of the rotorcraft's emergency exits and underwater escape training;

(ii) if the rotorcraft is, or will be, used to conduct a flight for which regulation 133.615 of CASR requires the rotorcraft to carry life rafts — the use of a life raft;

(iii) the handling of fire extinguishers by the medical transport specialist;

(iv) the location, removal and use of all emergency and safety equipment carried on the rotorcraft;

(v) aerodrome and rotorcraft security procedures;

(vi) evacuation procedures;

(vii) procedures for dealing with emergency situations, both in-flight and on the ground;

(viii) passenger briefing and safety demonstrations;

(ix) general emergency and survival training.

163 Differences training requirements

(1) A medical transport specialist, for a flight, meets the differences training requirements for the operator of the rotorcraft and the rotorcraft if:

(a) the medical transport specialist has successfully completed the operator's differences training for the rotorcraft; and

(b) the training includes the training mentioned in subsection (2).

(2) For paragraph (1) (b), the training is the following:

(a) if the limitations or systems of a rotorcraft of that kind are of a kind that the person has not previously received training for — training in the limitations or systems;

(b) if the equipment on a rotorcraft of that kind is of a kind that the person has not previously received training for — training in the location and use of the equipment;

(c) if the normal and emergency procedures for a rotorcraft of that kind are of a kind that the person has not previously received training for — training in the procedures.

164 Line training and proficiency checking requirements

A medical transport specialist, for a flight, meets the line training and proficiency checking requirements for the operator of the rotorcraft and the rotorcraft if the medical transport specialist has successfully completed the operator's line training for the rotorcraft.

165 Recurrent training and proficiency check requirements

(1) A medical transport specialist, for a flight, meets the recurrent training and proficiency checking requirements for the operator of the rotorcraft and the rotorcraft if the requirements stated in this section are met by the medical transport specialist.

(1A) The medical transport specialist must undertake at least the training mentioned in subsection 162 (2), other than underwater escape training.

(2) The medical transport specialist must successfully undertake a recurrent proficiency check, which demonstrates that the medical transport specialist is competent to carry out the medical transport specialist's duties, as a medical transport specialist, for flights with the rotorcraft.

(3) The training mentioned in subsection (1A), and the proficiency check mentioned in subsection (2), must be undertaken at 12-monthly intervals.

(4) If the flight is a flight for which, under this manual of standards, medical transport specialists, for the flight, are required to wear life jackets and undertake underwater escape training, the medical transport specialist must hold an underwater escape training competency gained during the past 3 years.

(5) The medical transport specialist must hold a general emergency and safety equipment training competency, in relation to the rotorcraft, covering the matters mentioned in paragraph 162 (2) (g).

(6) The competency mentioned in subsection (5) must be renewed by the medical transport specialist at 12-monthly intervals.

166 Remedial training requirements

(1) This section applies if a medical transport specialist has had the medical transport specialist's line flying status, for the rotorcraft, removed by the rotorcraft's operator because of an unsuccessful proficiency check.

(2) Before being assigned to duty for a flight of the rotorcraft, the medical transport specialist must have had the medical transport specialist's line flying status, for the rotorcraft, reinstated by the operator after:

(a) successfully completing the remedial training requirements identified in the proficiency check result; and

(b) subsequently successfully completing a proficiency check for the rotorcraft.