CHAPTER 26 EQUIPMENT

Division 26.1 General

26.01 Purpose

(1) For subregulation 91.810 (1), this Chapter prescribes requirements relating to:

(a) the fitment and non-fitment of equipment to an aircraft; and

(b) the carrying of equipment on an aircraft; and

(c) equipment that is fitted to, or carried on, an aircraft.

Note Requirements in relation to equipment may also be in relation to inoperative equipment.

(2) For subregulation 91.810 (1), unless the contrary intention appears in or for a particular provision, the pilot in command of an aircraft is subject to each of the requirements set out in the provisions of this Chapter.

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

(a) a reference to a pilot seeing or viewing anything from a pilot's seat is taken to mean that the thing is seen or viewed from the pilot's normal sitting position in the seat; and

(b) any mention of feet (or ft) in the context of an altitude is taken to mean feet above mean sea level (AMSL), unless otherwise stated.

Division 26.2 Approvals, visibility and inoperative equipment

26.02 Approval of aircraft equipment

(1) In this section:

relevant aircraft means any of the following:

(a) a light sport aircraft for which a special certificate of airworthiness has been issued and is in force under regulation 21.186 of CASR;

(b) a light sport aircraft for which an experimental certificate has been issued and is in force under paragraph 21.191 (j) or (k) of CASR;

(c) any other aircraft for which an experimental certificate has been issued and is in force under paragraph 21.191 (g) or (h) of CASR.

(2) Before an Australian aircraft begins a flight, any equipment that is required to be fitted to, or carried on, the aircraft under this Chapter (other than equipment required under Division 26.16) must be compliant with the requirements of, or approved under, Part 21 of CASR.

Note Division 26.16 contains requirements for mandatory or optional carriage of surveillance equipment, most of which requires TSO or ETSO authorisation. However, the Division also contains a conditional alleviation. For the relevant equipment, a requirement for Part 21 approval would inappropriately negate this conditional alleviation.

(3) Subsection (2) does not apply to the following:

(a) an item of equipment used to display the time;

(b) an independent portable light, for example, a flashlight or torch;

(c) a headset;

(d) a sea anchor and other equipment for mooring;

(e) survival equipment, including signalling equipment.

(4) Subsection (2) does not apply to a relevant aircraft in respect of any required radiocommunication system if the aircraft is fitted with a radiocommunication system

which provides the pilot with the same radiocommunication capability as would be provided if the radiocommunication system had complied with subsection (2).

(6) Before a foreign-registered aircraft begins a flight in Australian airspace, the equipment required by this Chapter to be fitted to, or carried on, the aircraft must have been approved by the NAA of the aircraft's State of registry.

(7) If equipment is carried on an aircraft although not required by this Chapter to be fitted or carried, then:

(a) the equipment need not be compliant with the requirements of, or approved under, Part 21 of CASR; and

(b) for a foreign-registered aircraft — the equipment need not have been approved by the NAA of the aircraft's State of registry; and

(c) any information, or data, provided by the equipment must not be used by any flight crew member for a flight to comply with any requirement of the civil aviation legislation in relation to communications or navigation; and

(d) the equipment, whether functional or otherwise, must not at any time affect the airworthiness of the aircraft.

Note For other requirements in relation to surveillance equipment that is not required to be fitted or carried, see section 26.69.

26.03 Visibility and accessibility of pilot-operated equipment

(1) This section applies in relation to equipment that is required under this Chapter to be fitted to, or carried on, an aircraft for a flight.

(2) Any equipment that is for a pilot's manual or visual use in, or from, the cockpit must be visible to, and usable by, the pilot from the pilot's seat in the aircraft.

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

26.04 Serviceability of equipment

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

(a) another section of this Chapter provides otherwise; or

Note A minimum equipment list (a ***MEL***), approved under regulation 91.935, can only permit equipment required to be fitted to, or carried on, an aircraft by this Chapter, to be unserviceable within the limits of the requirements contained in this Chapter. For example, section 26.26 contains an allowable time period of 72 hours related to flights with inoperative altitude alerting equipment. An MEL would not be approved if it contained a maximum time period for altitude alerting equipment to be inoperative that was greater than the time period specified by either a master minimum equipment list (MMEL) or the legislation.

(b) the equipment:

(i) is inoperative because of a defect that has been approved as a permissible unserviceability for the aircraft for the flight; and

(ii) is fitted or carried in accordance with the permissible unserviceability.

Division 26.3 Flight instruments — aeroplanes

26.05 Application

This Division applies to an aeroplane, subject to Division 26.5.

26.06 Aeroplane VFR flight by day

(1) Subject to subsection (2), an aeroplane for a VFR flight by day must be fitted with equipment for measuring and displaying the following flight information:

(a) indicated airspeed;

(b) pressure altitude;

(c) magnetic heading;

(d) time;

(e) Mach number — but only for an aeroplane with operating limitations expressed in terms of Mach number;

(f) turn and slip — but only for an aeroplane conducting an aerial work operation;

(g) outside air temperature — but only for an aeroplane conducting an aerial work operation from an aerodrome at which ambient air temperature is not available from ground-based instruments.

(2) For subsection (1), the equipment for measuring and displaying the flight information mentioned in column 1 of an item in Table 26.06 (2) must meet the requirements mentioned in column 2 of the item.

Table 26.06 (2) – Requirements for equipment – aeroplane VFR flight by day

	Column 1	**Column 2**
Item	**Flight information**	**Requirements**
1	Pressure altitude	The equipment must: (a) have an adjustable datum scale calibrated in millibars or hPa; and (b) be calibrated in ft, except that, if a flight is conducted in a foreign country which measures FLs or altitudes in metres, the equipment must be calibrated in metres, or fitted with a conversion placard or device.
2	Magnetic heading	The equipment must be: (a) a direct reading magnetic compass; or (b) both: (i) a remote indicating compass; and (ii) a standby direct reading magnetic compass.
3	Time	1. The equipment must display accurate time in hours, minutes and seconds. 2. The equipment must be: (a) fitted to the aircraft; or (b) worn by, or immediately accessible to, the pilot for the duration of the flight.

26.07 Aeroplane VFR flight by night

(1) An aeroplane for a VFR flight by night must be fitted with:

(a) an approved GNSS; or

(b) an ADF or VOR.

Note 1 See subsection 1.07 (6) for definitions.

Note 2 For aircraft entering oceanic airspace with RNP 2, 4 or 10 navigation specification capability, see subsections 11.03 (1B) and (1C) in relation to long range navigation systems (LRNS) operability requirements.

(2) For subsection (1), if an approved GNSS unit is provided with the automatic barometric aiding options specified in any of the following (the ***relevant options***):

(a) (E)TSO-C129a;

(b) (E)TSO-C145a;

(c) (E)TSO-C146a;

(d) (E)TSO-C196a;

then the relevant options must be connected.

(3) Subject to subsection (4), an aeroplane for a VFR flight by night must be fitted with equipment for measuring and displaying the following flight information for the aeroplane:

(a) indicated airspeed;

(b) pressure altitude;

(c) magnetic heading;

(d) time;

(e) Mach number — but only for an aeroplane with operating limitations expressed in terms of Mach number;

(f) turn and slip;

(g) attitude;

(h) vertical speed;

(i) stabilised heading;

(j) outside air temperature;

(k) whether the supply of power to gyroscopic instruments (if any) is adequate.

(4) For subsection (3), the equipment for measuring and displaying the flight information mentioned in column 1 of an item in Table 26.07 (4) must meet the requirements mentioned in column 2 of the item.

Table 26.07 (4) – Requirements for equipment – aeroplane VFR flight by night

	Column 1	**Column 2**
Item	**Flight information**	**Requirements**
1	Indicated airspeed	The equipment must be capable of being connected to: (a) an alternate source of static pressure that: (i) is selectable by a pilot; and (ii) includes a selector that can open or block the aeroplane's static source and alternative static source at the same time; or (b) a balanced pair of flush static ports.
2	Pressure altitude	1. The equipment must: (a) have an adjustable datum scale calibrated in millibars or hPa; and

	Column 1	Column 2
Item	**Flight information**	**Requirements**
		(b) be calibrated in feet, except that, if a flight is conducted in a foreign country which measures FLs or altitudes in metres, the equipment must be: (i) calibrated in metres; or (ii) fitted with a conversion placard or device. 2. The equipment must be capable of being connected to: (a) an alternate source of static pressure that is selectable by a pilot; or (b) a balanced pair of flush static ports.
3	Magnetic heading	The equipment must be: (a) a direct reading magnetic compass; or (b) both: (i) a remote indicating compass; and (ii) 1a standby direct reading magnetic compass.
4	Time	1. The equipment must display accurate time in hours, minutes and seconds. 2. The equipment must be: (a) fitted to the aircraft; or (b) worn by, or immediately accessible to, the pilot for the duration of the flight.
5	Turn and slip	The equipment must display turn and slip information, except when a second independent source of attitude information is available in which case only the display of slip information is required.
6	Vertical speed	The equipment must be capable of being connected to: (a) an alternate source of static pressure that is selectable by a pilot; or (b) a balanced pair of flush static ports.
7	Stabilised heading	*Note* A gyromagnetic type of remote indicating compass meets this requirement if it has a primary power supply and an alternate power supply.

26.08 Aeroplane IFR flight

(1) An aeroplane for an IFR flight must be fitted with the following navigation equipment:

(a) for an aeroplane that is manufactured on or after 6 February 2014 — at least 1 approved GNSS but not one authorised in accordance with (E)TSO-C129;

Note For ***approved GNSS***, see subsection 1.07 (6).

(b) for an aeroplane that was manufactured before 6 February 2014:

(i) if the GNSS equipment is installed on or after 6 February 2014 — at least 1 approved GNSS, but not one authorised in accordance with (E)TSO-C129;

(ii) if the GNSS equipment was installed before 6 February 2014 — at least:

(A) 1 approved GNSS, but not one authorised in accordance with (E)TSO-C129; or

(B) 1 approved GNSS that is authorised in accordance with (E)TSO-C129, and an ADF or VOR.

Note For aircraft entering oceanic airspace with RNP 2, 4 or 10 navigation specification capability, see subsections 11.03 (1B) and (1C) in relation to long range navigation systems (LRNS) operability requirements.

(2) If, in accordance with subsection (1), an approved GNSS unit is provided with the automatic barometric aiding options specified in any of the following (the ***relevant options***):

(a) (E)TSO-C129a;

(b) (E)TSO-C145a;

(c) (E)TSO-C146a;

(d) (E)TSO-C196a;

then the relevant options must be connected.

(3) Subject to subsection (4), an aeroplane for an IFR flight must be fitted with equipment for measuring and displaying the following flight information:

(a) indicated airspeed;

(b) pressure altitude;

(c) magnetic heading;

(d) time;

(e) Mach number — but only for an aeroplane with operating limitations expressed in terms of Mach number;

(f) turn and slip;

(g) attitude;

(h) vertical speed;

(i) stabilised heading;

(j) outside air temperature;

(k) whether the supply of power to gyroscopic instruments (if any) is adequate.

(4) For subsection (3), the equipment for measuring and displaying the flight information mentioned in column 1 of an item in Table 26.08 (4) must meet the requirements mentioned in column 2 of the item.

Table 26.08 (4) – Requirements for equipment – aeroplane IFR flight

	Column 1	**Column 2**
Item	**Flight information**	**Requirements**
1	Indicated airspeed	1. The equipment must be capable of being connected to: (a) an alternate source of static pressure that is selectable by a pilot; or (b) a balanced pair of flush static ports.

	Column 1	Column 2
Item	**Flight information**	**Requirements**
		2. Subject to clause 3, the equipment for indicated airspeed must include a means of preventing malfunction due to condensation or icing. 3. If more than 1 unit of indicated airspeed equipment is fitted, at least 1 of the units must include a means of preventing malfunction due to condensation or icing.
2	Pressure altitude	1. The equipment must: (a) have an adjustable datum scale calibrated in millibars or hPa; and (b) be calibrated in ft, except that, if a flight is conducted in a foreign country which measures FLs or altitudes in metres, the equipment must be calibrated in metres or fitted with a conversion placard or device. 2. The equipment must be capable of being connected to: (a) an alternate source of static pressure that is selectable by a pilot; or (b) a balanced pair of flush static ports.
3	Magnetic heading	The equipment must be: (a) a direct reading magnetic compass; or (b) both: (i) a remote indicating compass; and (ii) a standby direct reading magnetic compass.
4	Time	1. The equipment must display accurate time in hours, minutes and seconds. 2. The equipment must be: (a) fitted to the aircraft; or (b) worn by, or immediately accessible to, the pilot for the duration of the flight.
5	Turn and slip	1. The equipment must display turn and slip information, except where a second independent source of attitude information is available, in which case only the display of slip information is required. 2. The equipment must have an alternate power supply in addition to its primary power supply unless: (a) the equipment has a source of power independent of the power operating other gyroscopic instruments; or (b) a second independent source of attitude information is available.

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

Division 26.4 Rotorcraft-specific requirements

26.09 Application

This Division applies to a rotorcraft, subject to Division 26.5.

26.10 Rotorcraft VFR flight by day

(1) A rotorcraft for a VFR flight by day must be fitted with equipment for measuring and displaying the following flight information:

(a) indicated airspeed;

(b) pressure altitude;

(c) magnetic heading;

(d) time;

(e) slip — but only for a rotorcraft conducting an aerial work operation;

(f) outside air temperature — but only for a rotorcraft conducting an aerial work operation from an aerodrome at which ambient air temperature is not available from ground-based instruments.

(2) For subsection (1), the equipment for measuring and displaying the flight information mentioned in column 1 of an item in Table 26.10 (2), as required under subsection (1), must meet the requirements mentioned in column 2 of the item.

Table 26.10 (2) – Requirements for equipment – rotorcraft VFR flight by day

	Column 1	Column 2
Item	**Flight information**	**Requirements**
1	Pressure altitude	The equipment must: (a) have an adjustable datum scale calibrated in millibars or hPa; and (b) be calibrated in feet, except that, if a flight is conducted in a foreign country which measures FLs or altitudes in metres, the equipment must be: (i) calibrated in metres; or (ii) fitted with a conversion placard or device.
2	Magnetic heading	The equipment must be: (a) a direct reading magnetic compass; or (b) both: (i) a remote indicating compass; and (ii) a standby direct reading magnetic compass.
3	Time	1. The equipment must display accurate time in hours, minutes and seconds. 2. The equipment must be: (a) fitted to the aircraft; or (b) worn by, or immediately accessible to, the pilot for the duration of the flight.

26.11 Rotorcraft VFR flight by night

(1) A rotorcraft for a VFR flight by night must be fitted with:

(a) an approved GNSS; or

(b) an ADF or VOR.

Note 1 See subsection 1.07 (6) for definitions.

Note 2 For aircraft entering oceanic airspace with RNP 2, 4 or 10 navigation specification capability, see subsections 11.03 (1B) and (1C) in relation to long range navigation systems (LRNS) operability requirements.

(2) For subsection (1), if an approved GNSS unit is provided with the automatic barometric aiding options specified in any of the following (the ***relevant options***):

(a) (E)TSO-C129a;

(b) (E)TSO-C145a;

(c) (E)TSO-C146a;

(d) (E)TSO-C196a;

then the relevant options must be connected.

(3) Subject to subsection (5), a rotorcraft for a VFR flight by night must be fitted with equipment for measuring and displaying the following flight information:

(a) indicated airspeed;

(b) pressure altitude;

(c) magnetic heading;

(d) time;

(e) slip;

(f) attitude;

(g) standby attitude or turn indicator — but not if the rotorcraft is conducting an agricultural operation;

(h) vertical speed;

(i) stabilised heading — but not if the rotorcraft is conducting an agricultural operation;

(j) outside air temperature;

(k) whether the supply of power to gyroscopic instruments (if any) is adequate.

(4) A single pilot may only begin a rotorcraft VFR flight by night over land or water if:

(a) the rotorcraft's attitude during the flight can be maintained by the use of visual external surface cues provided by lights on the ground, or celestial illumination, or by lighting fitted to the aircraft; or

(b) the rotorcraft is fitted with an automatic pilot system, or an automatic stabilisation system.

Note Visual external surface cues can be established by using either unaided sight, or NVIS or other enhanced vision systems where permitted.

(5) For subsection (3), the equipment for measuring and displaying the flight information mentioned in column 1 of an item in Table 26.11 (5) must meet the requirements mentioned in column 2 of the item.

Table 26.11 (5) – Requirements for equipment – rotorcraft VFR flight by night

	Column 1	**Column 2**
Item	**Flight information**	**Requirements**
1	Pressure altitude	The equipment must: (a) have an adjustable datum scale calibrated in millibars or hPa; and (b) be calibrated in feet, except that, if a flight is conducted in a foreign country which measures FLs or altitudes in metres, the equipment must be: (i) calibrated in metres; or (ii) fitted with a conversion placard or device.
2	Magnetic heading	The equipment must be: (a) a direct reading magnetic compass; or (b) both: (i) a remote indicating compass; and (ii) a standby direct reading magnetic compass.
3	Time	1. The equipment must display accurate time in hours, minutes and seconds. 2. The equipment must be: (a) fitted to the aircraft; or (b) worn by, or immediately accessible to, the pilot for the duration of the flight.

	Column 1	Column 2
Item	**Flight information**	**Requirements**
4	Attitude	The equipment must have a primary power supply and an alternate power supply.
5	Standby attitude or turn	The equipment power supply must be independent of the power source for the attitude information.
6	Vertical speed	If the rotorcraft is operated onto vessels or platforms at sea by night, the equipment must: (a) be an instantaneous vertical speed indicator (***IVSI***); or (b) meet performance requirements for acceleration sensitivity equivalent to an IVSI.
7	Stabilised heading	*Note* A gyromagnetic type of remote indicating compass meets this requirement if it has a primary power supply and an alternate power supply.

26.12 Rotorcraft IFR flight

(1) A rotorcraft for an IFR flight must be fitted with the following navigation equipment:

(a) for a rotorcraft that is manufactured on or after 6 February 2014 — at least 1 approved GNSS, but not one authorised in accordance with (E)TSO-C129;

Note For ***approved GNSS***, see subsection 1.07 (6).

(b) for a rotorcraft that was manufactured before 6 February 2014:

(i) if the GNSS equipment is installed on or after 6 February 2014 — at least 1 approved GNSS, but not one authorised in accordance with (E)TSO-C129;

(ii) if the GNSS equipment was installed before 6 February 2014 — at least:

(A) 1 approved GNSS, but not one authorised in accordance with (E)TSO-C129; or

(B) 1 approved GNSS that is authorised in accordance with (E)TSO-C129, and an ADF or VOR.

Note For aircraft entering oceanic airspace with RNP 2, 4 or 10 navigation specification capability, see subsections 11.03 (1B) and (1C) in relation to long range navigation systems (LRNS) operability requirements.

(2) If, in accordance with subsection (1), an approved GNSS unit is provided with the automatic barometric aiding options specified in any of the following (the ***relevant options***):

(a) (E)TSO-C129a;

(b) (E)TSO-C145a;

(c) (E)TSO-C146a;

(d) (E)TSO-C196a;

then the relevant options must be connected.

(3) A rotorcraft for IFR flight must be fitted with an automatic pilot system or an automatic stabilisation system.

(4) A rotorcraft for IFR flight must be fitted with equipment for measuring and displaying the following flight information:

(a) indicated airspeed;

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

(5) When a rotorcraft begins an IFR flight with only 1 pilot, as permitted by or under the civil aviation legislation or the AFM, it must be fitted with equipment for measuring and displaying pressure altitude that is separate from, and independent of, the corresponding equipment mentioned in paragraph (4) (b).

(6) When a rotorcraft begins an IFR flight with 2 pilots, as required by or under the civil aviation legislation or the AFM, it must be fitted with equipment for measuring and displaying the following, that is separate from, and independent of, the corresponding equipment mentioned in paragraphs (4) (a), (b), (e), (f) and (h):
(a) indicated airspeed;
(b) pressure altitude;
(c) slip;
(d) attitude;
(e) vertical speed.

(7) For subsections (4), (5) and (6), the equipment for measuring and displaying the flight information mentioned in column 1 of an item in Table 26.12 (7) must meet the requirements mentioned in column 2 of the item.

Table 26.12 (7) – Requirements for equipment – rotorcraft IFR flight

	Column 1	**Column 2**
Item	**Flight information**	**Requirements**
1	Indicated airspeed	1. The equipment must be capable of being connected to: (a) an alternate source of static pressure that is selectable by a pilot; or (b) a balanced pair of flush static ports. 2. Subject to clause 3, the equipment for measuring and displaying indicated airspeed must include a means of preventing malfunction due to condensation or icing. 3. If more than 1 unit of indicated airspeed equipment is fitted, at least 1 of the units must include a means of preventing malfunction due to condensation or icing. 4. The equipment must operate independently of other sources of indicated information.

	Column 1	Column 2
Item	**Flight information**	**Requirements**
2	Pressure altitude	1. The equipment must: (a) have an adjustable datum scale calibrated in millibars or hPa; and (b) be calibrated in feet, except that, if a flight is conducted in a foreign country which measures FLs or altitudes in metres, the equipment must be: (i) calibrated in metres; or (ii) fitted with a conversion placard or device. 2. The equipment must be capable of being connected to: (a) an alternate source of static pressure that is selectable by a pilot; or (b) a balanced pair of flush static ports.
3	Magnetic heading	The equipment must be: (a) a direct reading magnetic compass; or (b) both: (i) a remote indicating compass; and (ii) a standby direct reading magnetic compass.
4	Time	1. The equipment must display accurate time in hours, minutes and seconds. 2. The equipment must be: (a) fitted to the aircraft; or (b) worn by, or immediately accessible to, the pilot for the duration of the flight.
5	Attitude	1. The equipment must have a primary power supply and an alternate power supply. 2. The equipment must operate independently of other sources of turn and slip information.
6	Standby attitude	The equipment must: (a) have a source of power independent of the electrical generating system; and (b) operate independently of other sources of attitude information; and (c) continue to operate without any action by a flight crew member for a period of 30 minutes following the failure of the electrical power-generating system.

	Column 1	Column 2
Item	**Flight information**	**Requirements**
7	Vertical speed	1. The equipment must be capable of being connected to: (a) an alternate source of static pressure that is selectable by a pilot; or (b) a balanced pair of flush static ports. 2. The equipment must: (a) be an instantaneous vertical speed indicator (***IVSI***); or (b) meet performance requirements equivalent to an IVSI.
8	Stabilised heading	The equipment must have a primary power supply and an alternate power supply. *Note* A gyromagnetic type of remote indicating compass meets this requirement if it has a primary power supply and an alternate power supply.

Division 26.5 Experimental and light sport aircraft and Australian registered aircraft

26.13 Application — VFR flight requirements do not apply to certain light sport aircraft

(1) In this section:

relevant aircraft means 1 of the following:

(a) a light sport aircraft for which a special certificate of airworthiness has been issued and is in force under regulation 21.186 of CASR;

(b) a light sport aircraft for which an experimental certificate has been issued and is in force under paragraph 21.191 (j) or (k) of CASR.

(2) Sections 26.06 and 26.07 do not apply to a relevant aircraft if the aircraft is fitted with equipment which provides the pilot with the same flight and navigation information as would be provided through compliance with section 26.06 or 26.07, as the case may be.

26.14 Application — VFR and IFR flight requirements do not apply to certain experimental aeroplanes

(1) In this section:

relevant aeroplane means an aeroplane for which an experimental certificate has been issued and is in force under paragraph 21.191 (g) or (h) of CASR.

(2) Sections 26.06, 26.07 and 26.08 (other than subsection 26.08 (1)), do not apply to a relevant aeroplane if the aeroplane is fitted with equipment which provides the pilot with the same flight and navigation information as would be provided through compliance with section 26.06, 26.07 or 26.08 (other than subsection 26.08 (1)), as the case may be.

Note The effect of subsection (2) is that for IFR flight, a relevant aeroplane must be fitted with an approved GNSS in accordance with subsection 26.08 (1).

26.15 Application — VFR and IFR flight requirements do not apply to certain experimental rotorcraft

(1) In this section:

relevant rotorcraft means a rotorcraft for which an experimental certificate has been issued and is in force under paragraph 21.191 (g) or (h) of CASR.

(2) Sections 26.10, 26.11 (other than subsection (2)) and 26.12 (other than subsections (1) and (2), do not apply to a relevant rotorcraft if the rotorcraft is fitted with equipment which provides the pilot with the same flight and navigation information as would be provided through compliance with section 26.10, 26.11 (other than subsection (2)) or 26.12 (other than subsections (1) and (2)), as the case may be.

Note The effect of subsection (2) is that for a VFR flight by night over land or water that is conducted by a single pilot, a relevant rotorcraft must be fitted with an automatic pilot system or an automatic stabilisation system in accordance with subsection 26.11 (2); and that for an IFR flight, a relevant rotorcraft must be fitted with an approved GNSS in accordance with subsection 26.12 (1), and an automatic pilot system or an automatic stabilisation system in accordance with subsection 26.12 (2).

26.16 Application — VFR and IFR flight requirements do not apply to certain registered aircraft

Divisions 26.3 and 26.4 do not apply to a registered aircraft if it is fitted with equipment that the type certificating authority of a recognised country determines will achieve, for the intended operation of the aircraft, a level of safety equivalent to that which would be achieved if Division 26.3 or 26.4 (as the case requires) applied.

26.17 Electronic flight information systems

(1) This section applies to an aircraft:

(a) to which section 26.13, 26.14 or 26.15 applies; and

(b) which is fitted with 1 of the following systems:

(i) an electronic flight information system (an ***EFIS***);

(ii) an electronic display indicator;

(iii) another system for electronically displaying flight information.

(2) The system must be provided with:

(a) a battery-powered back-up; or

(b) a source of power independent of the aircraft's primary electrical system.

(3) The battery-powered back-up must:

(a) be fully charged before the flight begins; and

(b) have sufficient capacity to power the EFIS panel or other display for at least 60 minutes.

Division 26.6 Operational equipment

26.18 Radiocommunication systems

(1) Subject to subsection (2), an aircraft for a flight, in any class of airspace, whether controlled or uncontrolled, must be fitted with radiocommunication systems capable of:

(a) collectively communicating on all frequencies necessary to meet the reporting, broadcast and listening watch requirements under regulations 91.630, 91.635, 91.640 and 91.675, from any point on the route of the flight, including in the event of any diversions; and

(b) 2-way voice communications; and

(c) communicating on the aeronautical emergency frequency 121.5 MHz.

Note 1 Certain light sport aircraft and experimental aircraft do not have to comply with the requirement for this equipment to be approved under Part 21 of CASR: see subsection 26.02 (5).

Note 2 Regulation 91.400 places certain requirements on aircraft without an operative radio at certain non-controlled aerodromes.

(2) Subject to subsections (3) and (4), an aircraft for a flight under the VFR by day in Class G airspace at or below 5 000 ft AMSL (a ***relevant aircraft***) is not required to comply with subsection (1).

(3) Subsection (2) does not apply if a relevant aircraft is operating in accordance with the VMC criteria at item 4, 5 or 6 of Table 2.07 (3).

(4) Subsection (2) does not apply if a relevant aircraft is operating within, or intending to enter, an MBA.

Note Certain operational requirements for MBA are contained in section 11.10A. Radio broadcast requirements for MBA are contained in section 21.09.

26.19 When aircraft may begin a flight with inoperative radiocommunications

An aircraft for which a radiocommunication system is required may begin a flight with inoperative radiocommunication system if:

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

(b) the flight is to the nearest facility at which the radiocommunication system can be repaired or replaced; and

(c) for the portions of the flight conducted in controlled airspace:

(i) ATS is informed, before the flight begins, of the inoperative radiocommunication system; and

(ii) clearance is obtained from ATS for the flight; and

(d) for the portions of the flight conducted in Class G airspace above 5 000 ft AMSL, or conducted in an MBA:

(i) the flight is conducted during the day in VMC; and

(ii) the flight is conducted in-company with another aircraft (the ***other aircraft***); and

(iii) the other aircraft is carrying an operative radio; and

(iv) the pilot in command of the other aircraft ensures that all the broadcasts and reports required by regulation 91.630 are made for both aircraft; and

(v) the pilot in command of the other aircraft is:

(A) if the aircraft is an Australian aircraft — authorised under Part 61 of CASR to operate the radio; or

(B) if the aircraft is a foreign registered aircraft — authorised to operate the radio under the law of the aircraft's State of registry.

Note 1 For continuation of a flight with an inoperative radiocommunication system, see sections 11.10 and 11.18.

Note 2 Regulation 91.400 places certain requirements on aircraft without an operative radio at certain non-controlled aerodromes.

26.20 Equipment to measure and record cosmic radiation

(1) An aeroplane conducting an IFR flight above FL 490 must be fitted with equipment to measure and display the total cosmic radiation received in the aeroplane's cabin.

(2) For subsection (1), the equipment must continuously measure and display:

(a) the dose rate of total cosmic radiation being received during the flight; and

(b) the cumulative dose of total cosmic radiation received on each flight.

(3) In this section:

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

Division 26.7 Lighting systems

26.21 Cockpit and cabin lighting requirements

(1) An aircraft operating by night must be fitted with or carry, as applicable, the following lighting equipment:

(a) cockpit lighting that meets the requirements mentioned in subsection (3);

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

(i) the occupant's seatbelt and oxygen facilities, if any; and

(ii) the normal and emergency exits;

(c) for each flight crew member — an independent portable light accessible to the flight crew member from the flight crew member's normal seat in the aircraft;

(d) for each other crew member (if any) — an independent portable light accessible to the crew member at the crew member's crew station.

(2) An aircraft operating by day must be fitted with or carry, as applicable, cockpit lighting that meets the requirements mentioned in subsection (3) if natural light does not adequately illuminate the items of equipment and documents mentioned in paragraphs (3) (a) and (b).

(3) For paragraph (1) (a) and subsection (2), the cockpit lighting equipment of an aircraft must:

(a) illuminate each item of equipment that may be used by a flight crew member; and

(b) illuminate the documents that may be used by a flight crew member, including checklists and flight documents; and

(c) be compatible with each item of equipment that may be used by a pilot; and

(d) be arranged in a way that:

(i) enables all placards and instrument markings to be read from each pilot's normal sitting position in a pilot's seat in the aircraft; 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.

26.22 Anti-collision lights

(1) Subject to subsection (2), an aircraft operating by day or night must be fitted with the number of anti-collision lights required by the aircraft type design.

(2) The anti-collision light equipment fitted to an aircraft must comprise:

(a) at least 1 red beacon light; or

(b) at least 2 white strobe lights; or

(c) a combination of at least all of the lights mentioned in paragraphs (a) and (b).

(3) For anti-collision light equipment comprising 1 or more red beacon lights only, the lights must be displayed as follows:

(a) for a turbine-engine aircraft — from immediately before the engines are started until the time the engines are shut down at the end of the flight;

(b) for any other aircraft — from whichever of the following is the earlier, until the time the engines are shut down at the end of the flight:

(i) as required by the aircraft's flight manual instructions; or

(ii) from immediately after the engines are started.

(4) For anti-collision light equipment comprising white strobe lights only, the lights must be displayed as follows:

(a) for a turbine-engine aircraft — from immediately before the engines are started until the time the engines are shut down at the end of the flight;

(b) for any other aircraft — from whichever of the following is the earlier, until the time the engines are shut down at the end of the flight:

(i) as required by the aircraft's flight manual instructions; or

(ii) from immediately after the engines are started.

(5) For anti-collision light equipment comprising a combination of red beacon lights and white strobe lights, the lights must be displayed as follows:

(a) for the red beacon lights — in accordance with the requirements in subsection (3);

(b) for the white strobe lights — in accordance with the following:

(i) if the aircraft, 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 aircraft is crossing the active runway;

(ii) from the time the aircraft first enters the runway from which the aircraft will take off until the time the aircraft leaves the runway on which it has landed.

(6) Subsections (3), (4) and (5) do not apply to an aircraft in an operation to the extent that:

(a) the pilot in command reasonably believes that, in the circumstances, reflection or glare from the anti-collision light system may cause a hazard to an aircraft; or

(b) a specific provision of another MOS expressly provides for occasions when particular lights need not be displayed.

Note See, for example, section 12.09 of the Part 138 MOS: display of exterior lighting in an NVIS operation that is an aerial work operation. See also section 3.08 of this MOS.

26.23 Landing lights

An aircraft operating by night must be fitted with at least 1 landing light.

26.24 Navigation lights

(1) An aircraft operating by night must be fitted with navigation lights.

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

(3) Subsection (2) does not apply to an aircraft in an operation to the extent that a specific provision of another MOS expressly provides for occasions when particular lights need not be displayed.

Note See, for example, section 12.09 of the Part 138 MOS: display of exterior lighting in an NVIS operation that is an aerial work operation. See also section 3.08 of this MOS.

Division 26.8 Alerting and warning system requirements

26.25 Altitude alerting system and assigned altitude indicator — IFR flights

(1) For an IFR flight, the following aircraft must be fitted with altitude alerting equipment in accordance with subsection (2):

(a) a piston-engine aircraft operating in controlled airspace above FL 150;

(b) an unpressurised turbine-engine aircraft operating in controlled airspace above FL 150;

(c) a pressurised turbine-engine aircraft operating in any controlled airspace.

(2) For subsection (1), the altitude alerting equipment must:

(a) include an assigned altitude indicator; and

(b) alert the flight crew members if the aircraft approaches a preselected altitude; and

(c) alert the flight crew members, including by an aural or visual warning, if the aircraft deviates from a preselected altitude.

(3) If an aircraft, other than an aircraft to which subsection (1) applies, is operating under the IFR in controlled airspace, the aircraft must be fitted with altitude alerting equipment that at least includes an assigned altitude indicator.

26.26 Aircraft flown with inoperative altitude alerting equipment — IFR flights

Despite section 26.25, altitude alerting equipment may be inoperative at the beginning of a flight only if the flight:

(a) begins within 72 hours of the time the equipment was found to be inoperative; and

(b) is from an aerodrome at which there is no facility for the equipment to be repaired or replaced.

26.27 Aeroplane airborne collision avoidance system — ACAS II

RESERVED

Note No requirements are currently prescribed. This section has been reserved to preserve the MOS structure for any future provisions that would be appropriate following consultation.

26.28 ACAS II requirements for use

RESERVED

Note No requirements are currently prescribed. This section has been reserved to preserve the MOS structure for any future provisions that would be appropriate following consultation.

26.29 Flight with inoperative ACAS

RESERVED

Note No requirements are currently prescribed. This section has been reserved to preserve the MOS structure for any future provisions that would be appropriate following consultation.

Division 26.9 Flight recording equipment

26.30 Definitions — flight recorders

In this Division:

combination recorder means a single recording system combining the capabilities and functions of a flight data recorder (an ***FDR***) and a cockpit voice recorder (a ***CVR***).

recorder means a combination recorder, an FDR or a CVR.

26.30A Non-application — agricultural category and restricted category aircraft

In this Division, sections 26.31 to 26.35, inclusive, do not apply to an aircraft that is type certificated in any of the following:

(a) the agricultural category;

(b) the restricted category.

26.31 Aeroplane flight data recorder

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

(a) is turbine powered; or

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

26.32 Aeroplane cockpit voice recorder

One CVR must be fitted to the following:

(a) an aeroplane that has an MTOW of more than 5 700 kg and which:

(i) is turbine powered; or

(ii) is of a type first certificated in its country of manufacture on, or after, 1 July 1965;

(b) a multi-engine turbine powered aeroplane that:

(i) has an MTOW of 5 700 kg or less; and

(ii) is pressurised; and

(iii) is type certificated in its country of manufacture for operation with more than 11 seats (including seats specifically designed for the use of crew members); and

(iv) was first issued with a certificate of airworthiness after 1 January 1988.

26.33 Rotorcraft flight data recorder

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

(a) is turbine powered; or

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

26.34 Rotorcraft cockpit voice recorder

One CVR must be fitted to the following:

(a) a rotorcraft that has an MTOW of more than 5 700 kg and which:

(i) is turbine powered; or

(ii) is of a type first certificated in its country of manufacture on, or after, 1 July 1965;

(b) a multi-engine turbine powered rotorcraft that:

(i) has an MTOW of 5 700 kg or less; and

(ii) is pressurised; and

(iii) is type certificated in its country of manufacture for operation with more than 11 seats (including seats specifically designed for the use of crew members); and

(iv) was first issued with a certificate of airworthiness after 1 January 1988.

26.35 Combination recorders — for aeroplane or rotorcraft

(1) If the combined effect of sections 26.31 and 26.32 for an aeroplane is that the aeroplane must be fitted with both 1 FDR and 1 CVR, the requirements may be met by the fitment of:

(a) 2 combination recorders; or

(b) 1 FDR and 1 combination recorder; or

(c) 1 CVR and 1 combination recorder.

(2) If the combined effect of sections 26.33 and 26.34 for a rotorcraft is that the rotorcraft must be fitted with both 1 FDR and 1 CVR, the requirements may be met by the fitment of:

(a) 1 combination recorder; or

(b) 1 FDR and 1 combination recorder; or

(c) 1 CVR and 1 combination recorder.

26.36 FDR, CVR and combination recorder technical requirements

(1) An FDR or a combination recorder must comply with 1 of the following:

(a) the requirements of CAO 103.19;

(b) (E)TSO-C124a.

Note These standards include the minimum recording time requirements.

(2) A CVR or a combination recorder must comply with 1 of the following:

(a) the requirements of CAO 103.20;

(b) (E)TSO-C123a.

Note These standards include the minimum recording time requirements.

(3) The operator of an aircraft that must ensure that:

(a) for an aircraft required to be equipped with an FDR or a combination recorder:

(i) the recorder retains its last 25 hours of flight data recording; and

(ii) data are preserved from the last 2 occasions on which flight data recording was calibrated; and

(b) for an aircraft required to be equipped with an a CVR or a combination recorder — the recorder retains its last 30 minutes of cockpit voice recording.

Note The purpose of subparagraph (a) (ii) is to enable determination of the accuracy of recorded data.

26.37 Use of FDR, CVR and combination recorders

(1) Subject to subsection (4), an FDR fitted to an aircraft under this Division must record continuously from the time when the aircraft first begins moving under its own power for a flight until the time the flight is terminated and the aircraft can no longer move under its own power.

(2) Subject to subsection (4), a CVR fitted to an aircraft under this Division must:

(a) start to record before the aircraft first begins moving under its own power for a flight; and

(b) as far as practicable if electrical power is available — start to record as early as possible during the cockpit checks before the engines are started at the beginning of a flight; and

(c) record continuously until the termination of the flight when the aircraft is no longer capable of moving under its own power and the engines have been shut down; and

(d) as far as practicable if electrical power is available — continue recording until as close as possible to the conclusion of the cockpit checks immediately following engine shutdown at the end of the flight.

(3) The FDR and the CVR within a combination recorder fitted to an aircraft under this Division must record continuously during the same periods as an FDR and a CVR are required to operate under subsections (1) and (2).

(4) If:

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

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

(c) the FDR is operated continuously during the period beginning just before the engines are started for take-off and ending when the final pilot checklist is completed at the end of the flight;

then, a CVR fitted to an aircraft under this Division must record continuously during the period:

(d) beginning after the engines are started for the flight; and

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

(5) An FDR or combination recorder fitted to an aircraft under this Division must not be operated during maintenance of the aircraft or of an aeronautical product fitted to the aircraft, except if the maintenance is to the recorder or an aircraft engine.

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

26.38 Flight with inoperative FDR, CVR or combination flight recording equipment

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

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

(b) for an aircraft that is only required to be fitted with 1 CVR or 1 FDR — the inoperative recorder has not been inoperative for more than 21 days; and

(c) for an aircraft that is required to be fitted with 1 CVR and 1 FDR:

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

(ii) the other recorder is operative; and

(d) for an aircraft that is fitted with 1 combination recorder — the inoperative recorder has not have been inoperative for more than 3 days; and

(e) for an aircraft that is fitted with more than 1 combination recorders:

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

(ii) the other combination recorder is operative.

26.39 Data link recorder

RESERVED

Note No requirements are currently prescribed. This section has been reserved to preserve the MOS structure for any future provisions that would be appropriate following consultation.

Division 26.10 Aircraft interior communication systems

26.40 Flight crew intercommunications system — VFR flights

(1) This section applies to an aircraft (a ***relevant aircraft***):

(a) that is flown under the VFR; and

(b) whose flight is required by or under the civil aviation legislation or the aircraft's AFM to be conducted by at least 2 pilots; and

(c) whose cockpit noise levels at any stage of the flight prevent the pilots from communicating with each other in speech at the level of normal conversation.

(2) A relevant aircraft must be fitted with a flight crew intercommunications system which, for each flight crew member, includes a headset and microphone that are not of the hand-held type.

26.41 Flight crew intercommunications system — IFR flights

(1) This section applies to an aircraft (a ***relevant aircraft***) that is flown under the IFR.

(2) When a relevant aircraft begins a flight with 1 pilot, as permitted by or under the civil aviation legislation or the AFM, it must be fitted with or carry:

(a) 2 headsets and microphones that are not of a hand-held type; or

(b) 1 headset and microphone that is not of a hand-held type, and 1 hand-held microphone with a loudspeaker.

(3) When a relevant aircraft begins a flight with at least 2 pilots, as required by or under the civil aviation legislation or the AFM, it must be fitted with:

(a) 3 headsets and 3 microphones that are not of a hand-held type; or

(b) 2 headsets and microphones that are not of a hand-held type, and 1 hand-held microphone with a loudspeaker.

26.42 Public-address system

(1) This section applies to an aircraft (a ***relevant aircraft***) that has:

(a) a maximum operational passenger seating configuration of 20 or more; and

(b) at least 1 passenger on board for a flight.

(2) When a relevant aircraft begins a flight, it must be fitted with a public-address system to enable the pilot in command to address the passengers.

Division 26.11 Oxygen equipment and oxygen supplies

26.43 Supplemental oxygen

(1) An aircraft must carry sufficient supplemental oxygen to meet the requirements set out in Table 26.43 (2).

(2) An aircraft to which subsection (1) applies must be fitted with, or carry, supplemental oxygen equipment capable of storing and dispensing the supplemental oxygen to crew members and passengers.

(3) For a person mentioned in column 1 of an item in Table 26.43 (2), supplemental oxygen must be made available through an oxygen dispensing unit (a dispensing unit) in accordance with the supply requirements mentioned for the item in column 2.

(4) Each flight crew member must use the supplemental oxygen that is made available to each of them in accordance with the supply requirements mentioned in column 2 of item 1 of Table 26.43 (2).

Table 26.43 (2) – Supplemental oxygen requirements

	Column 1	**Column 2**
Item	**Person**	**Supplemental oxygen supply requirements**
1	Flight crew member or cabin crew member	(a) For any period exceeding 30 minutes when the cabin pressure altitude is continuously at least FL 125 but less than FL 140, there must be supply for the entire period. (b) For any period when the cabin pressure altitude is at least FL 140, there must be supply for the entire period. (c) Without otherwise affecting paragraphs (a) and (b), when a pressurised aircraft is flown at an altitude of FL 250 or more (***relevant flight***), there must be at least 10 minutes supply even if the entire period of relevant flight is less than 10 minutes.
2	Passenger	(a) For any period when the cabin pressure altitude is at least FL 150, there must be supply for the entire period. (b) Without otherwise affecting paragraph (a), when a pressurised aircraft is flown at an altitude of FL 250 or more (***relevant flight***), there must be at least 10 minutes supply after descending below FL 250 even if the entire period of relevant flight is less than 10 minutes.

26.44 Oxygen mask usage requirements — pressurised aircraft above FL 250

(1) In this section:

quick-donning mask means an oxygen mask that:

(a) is for a flight crew member's personal use; and

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

(2) This section applies for a flight of a pressurised aircraft that is flown above FL 250 at any time during the flight.

(3) At least 1 pilot occupying a pilot seat must:

(a) be wearing a sealed oxygen mask (securely worn) that:

(i) is being supplied with supplemental oxygen; or

(ii) automatically supplies supplemental oxygen when the cabin pressure altitude is at or above FL 140; or

(b) have access to a quick-donning mask that is supplied with supplemental oxygen when the mask is donned.

(4) During the period when the aircraft is flown above FL 450, at least 1 pilot occupying a pilot seat must be wearing 1 of the following that is being supplied with supplemental oxygen:

(a) a sealed oxygen mask (securely worn); or

(b) a quick-donning mask.

26.45 Protective breathing equipment — flight crew members

(1) When a pressurised aircraft begins a flight with at least 2 pilots, as required by or under the civil aviation legislation or the AFM, it must be carrying protective breathing equipment (***PBE***) for each flight crew member in accordance with this section.

(2) The PBE must:

(a) protect the wearer's eyes, nose and mouth; and

(b) the part protecting the wearer's eyes:

(i) must not adversely affect vision in any noticeable way; and

(ii) must allow corrective glasses to be worn in a normal position; and

(b) be able to supply oxygen continuously for at least 15 minutes.

Note The oxygen supply for the PBE for each flight crew member can be provided by the supplemental oxygen required under section 26.43.

(3) The PBE for a flight crew member must be accessible for immediate use at the flight crew member's crew station.

(4) The PBE must not prevent, or be likely to prevent, a flight crew member from effectively using any crew intercommunications or radiocommunications equipment fitted to or carried on the aircraft.

26.46 Portable protective breathing equipment

(1) When a pressurised aircraft begins a flight with at least 2 pilots, as required by or under the civil aviation legislation or the AFM, it must be carrying portable protective breathing equipment (***portable PBE units***) for each flight crew member in accordance with this section.

(2) Each portable PBE unit must:

(a) protect the wearer's eyes, nose and mouth; and

(b) the part protecting the wearer's eyes:

(i) must not adversely affect vision in any noticeable way; and

(ii) must allow corrective glasses to be worn in a normal position; and

(b) be able to supply oxygen, or a mixture of oxygen and another suitable gas, continuously for at least 15 minutes.

(3) Portable PBE units must be located as follows:

(a) for a flight where no crew members other than the minimum flight crew members are carried — 1 portable PBE unit must be located in, or as close as practicable to, the flight crew compartment;

(b) as far as practicable — 1 portable PBE unit must be located adjacent to each of the hand-held fire extinguishers required to be carried on a flight under Division 26.13;

(c) if compliance with paragraph (b) is not practicable — 1 portable PBE unit must be located adjacent to each individual cabin crew member crew station that is being used by a cabin crew member for the flight.

(4) Portable PBE units must not prevent, or be likely to prevent, a crew member from effectively using any crew intercommunications or radiocommunications equipment fitted to or carried on the aircraft.

26.47 First aid oxygen equipment — pressurised aircraft

(1) In this section:

BTPD means body temperature and pressure dry.

BTPS means body temperature and pressure saturated.

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

(a) there has been a cabin depressurisation; and

(b) the amounts of supplemental oxygen supply otherwise required under this Division have been exhausted.

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

STPD means standard temperature and pressure dry.

(2) This section applies to a pressurised aircraft (a ***relevant aircraft***) that:

(a) begins a flight with at least 2 pilots as required by or under the civil aviation legislation or the AFM; and

(b) is flown above FL 250 at any stage during the flight; and

(c) has at least 1 passenger on board for the flight.

(3) Until immediately before 2 December 2023, a relevant aircraft must comply with the requirements related to first aid oxygen (however described) in accordance with:

(a) CAO 20.4 and CAO 108.26, as in force immediately before the commencement of this instrument; or

(b) this section.

(4) With effect from the beginning of 2 December 2023, a relevant aircraft must be fitted with or carry first aid oxygen in accordance with this section.

(5) When the aircraft begins the flight, it must carry, for use in first aid, such a volume of first aid oxygen as will provide an average oxygen gas flow rate, calculated assuming dry oxygen gas at standard temperature and pressure, of 3 litres per minute per person:

(a) for whichever of the following is the greater number of persons:

(i) 2% of the number of passengers carried on the flight;

(ii) 1 passenger; and

(b) for the flight period after a cabin depressurisation event during which the aircraft's cabin pressure altitude is above 8 000 ft but is not above FL 150.

(6) When the aircraft begins the flight, it must carry, for use in dispensing first aid oxygen, a sufficient number of first aid oxygen dispensing units relative to the number of passengers on board, but in no case less than 2 such units.

(7) An oxygen dispensing unit:

(a) must be capable of generating a flow rate, calculated assuming dry oxygen gas at standard temperature and pressure, of at least 4 litres per minute per person STPD; and

(b) may have a means of reducing the flow to not less than 2 litres per minute per person STPD at any altitude.

Division 26.12 Emergency locator transmitters

26.48 Carriage of ELTs

(1) When an aircraft begins a flight, it must comply with the following requirements:

(a) for a flight other than one mentioned in paragraph (b) — the flight must:

(i) be fitted with an automatic ELT; or

(ii) carry at least 1 survival ELT;

(b) for a flight where more than 1 life raft is carried to comply with the requirements of section 26.60 — the flight must:

(i) be fitted with an automatic ELT and carry a survival ELT; or

(ii) carry at least 2 survival ELTs.

(2) Despite paragraph (1) (a), but without affecting paragraph (1) (b), when a single-engine aircraft is flown further over water than the distance from which, with the engine inoperative, the aircraft could reach an area of land that is suitable for a forced landing — the aircraft must carry a survival ELT.

(3) Without affecting paragraph (1) (b) (but subject to subsection (4)), paragraph (1) (a) does not apply to:

(a) a single-seat aircraft; or

(b) an aircraft in a flight for a purpose related to any of the following:

(i) the aircraft's manufacture;

(ii) the preparation or delivery of the aircraft following its purchase or transfer of operator;

(iii) the positioning of an Australian aircraft from a location outside Australia to any place at which any ELTs required to be fitted to the aircraft by this Division will be registered with AMSA; or

(c) an aircraft flown no more than 50 NM from its place of departure.

(3A) Without affecting paragraph (1) (b) (but subject to subsection (4)), subsection (2) does not apply to a single-engine aircraft if:

(a) the aircraft is a single-seat aircraft; or

(b) the aircraft flight is for a purpose related to any of the following:

(i) the aircraft's manufacture;

(ii) the preparation or delivery of the aircraft following its purchase or transfer of operator;

(iii) the positioning of an Australian aircraft from a location outside Australia to any place at which any ELTs required to be fitted to the aircraft by this Division will be registered with AMSA; or

(b) the aircraft is:

(i) fitted with an operative radio capable, in the event of an emergency, of alerting an appropriate person in relation to the emergency; or

(ii) otherwise capable of continuous communication with a person on the ground during the aircraft's flight.

(4) For paragraph (1) (b), an automatic ELT or a survival ELT that is fitted or carried need not meet the requirements of paragraph 26.49 (b) or (c) (as applicable), if the flight is for a purpose related to any of the following:

(a) the aircraft's manufacture; or

(b) the preparation or delivery of the aircraft following its purchase or transfer of operator; or

(c) the positioning of an Australian aircraft from a location outside Australia to any place at which any ELTs required to be fitted to the aircraft by this Division will be registered with AMSA.

(5) For subsection (1), if the ELT carried is an automatic ELT that has a switch marked with the word "armed" (or with a similar word) — then the pilot in command must ensure that the switch is set to the armed position at the time the flight begins.

(6) For subsections (1) and (2), if the ELT carried is a survival ELT — then the pilot in command must ensure that the ELT is carried in 1 of the following locations on the aircraft:

(a) on the person of a crew member; or

(b) in, or adjacent to, a life raft; or

(c) adjacent to an emergency exit used for evacuation of the aircraft in an emergency.

26.49 ELT — basic technical requirements

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

(a) if the transmitter is activated — the transmitter must transmit simultaneously on 121.5 MHz and 406 MHz;

(b) if the transmitter is fitted to, or carried on, an Australian aircraft — the transmitter must be registered with the Australian Maritime Safety Authority (***AMSA***) and with no other authority;

(c) if the transmitter is fitted to, or carried on, a foreign-registered aircraft — the transmitter must be registered with the authority of the aircraft's State of registry that is responsible for SAR services, and not with AMSA;

(d) the transmitter must, for identification purposes, be coded in accordance with the requirements for the transmitter in Appendix 1 to Chapter 5 of Part II, Voice Communications, in Volume III of ICAO Annex 10, *Aeronautical Telecommunications*;

(e) if the transmitter is fitted with a lithium-sulphur dioxide battery — the battery must be authorised by the FAA or EASA in accordance with (E)TSO-C142a.

26.50 Automatic ELT

(1) In this Division:

automatic ELT is an ELT that meets the requirements in:

(a) section 26.49; and

(b) subsection (2).

(2) For paragraph (b), the ELT:

(a) must be automatically activated on impact; and

(b) must be 1 of the following types:

(i) a type authorised by the FAA or EASA in accordance with (E)TSO-C126;

(ii) a type authorised by EASA in accordance with:

(A) ETSO-2C91a for operation on 121.5 MHz; and

(B) ETSO-2C126 for operation on 406 MHz;

(iii) a type approved under Part 21 of CASR as having a level of performance equivalent to a type of transmitter mentioned in subparagraph (i) or (ii).

26.51 Survival ELT

(1) In this Division:

survival ELT is an ELT that meets the requirements in:

(a) section 26.49; and

(b) subsection (2).

(2) For paragraph (1) (b), the ELT must be:

(a) removable from the aircraft; and

(b) 1 of the following types:

(i) an emergency position-indicating radio beacon of a type that meets the requirements of AS/NZS 4280.1:2003;

(ii) a personal locator beacon of a type that meets the requirements of AS/NZS 4280.2:2003;

(iii) a type authorised by the FAA or EASA in accordance with (E)TSO-C126;

(iv) a type authorised by EASA in accordance with:

(A) ETSO-2C91a for operation on 121.5 MHz; and

(B) ETSO-2C126 for operation on 406 MHz;

(v) a type approved under Part 21 of CASR as having a level of performance equivalent to a type mentioned in subparagraph (i), (ii), (iii) or (iv).

26.52 Aircraft flown with inoperative ELT

(1) This section only applies to an aircraft:

(a) required to fit, or carry, an ELT under paragraph 26.48 (1) (a); and

(b) that is not required to carry a life raft under section 26.60.

(2) The aircraft may begin a flight with an inoperative automatic ELT, or an inoperative survival ELT, if the flight is for the purpose of taking the aircraft to a place for the maintenance or repair of the ELT.

(3) The aircraft may begin a flight without an automatic ELT or a survival ELT if:

(a) the ELT has been temporarily removed from the aircraft for maintenance; and

(b) an entry has been made in the aircraft's flight technical log, stating:

(i) the ELT's make, model and serial number; and

(ii) the date on which the ELT was removed from the aircraft; and

(iii) the reason for the removal of the ELT; and

(c) a placard stating "Emergency locator transmitter not installed or carried" has been placed in the aircraft in a position where it can be seen by the pilot in command; and

(d) a period of no more than 90 days has passed since the ELT was temporarily removed from the aircraft for the maintenance mentioned in paragraph (a).

(4) Despite paragraph 26.48 (1) (a), if an inoperative automatic ELT has been removed from an aircraft, the aircraft is not required to carry a survival ELT during the period that the inoperative ELT is permitted to be inoperative under this section.

(5) Despite paragraph 26.48 (1) (a), if an inoperative survival ELT has been removed from an aircraft, the aircraft is not required to be fitted with an automatic ELT during the period that the inoperative ELT is permitted to be inoperative under this section.

Division 26.13 Portable emergency equipment

26.53 Hand-held fire extinguishers — aeroplanes

(1) In this section:

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

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

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

(2) This section applies to an aeroplane with an MTOW above 5 700 kg.

(3) The aeroplane must carry at least the following number of hand-held fire extinguishers in the locations mentioned:

(a) 1 in the flight crew compartment;

(b) 1 in each galley or 1 readily accessible for use in each galley, being a galley that is not in a passenger, crew or cargo compartment;

(c) 1 that is accessible to the crew members, and that is conveniently located for use in relation to each of the following:

(i) a class A cargo or baggage compartment;

(ii) a class B cargo or baggage compartment;

(iii) a class E cargo or baggage compartment;

(d) for an aircraft with the maximum certificated passenger seating capacity mentioned in an item of column 1 of Table 26.53 (3) (d) — the number mentioned in column 2 for the item, conveniently located to provide adequate availability for use in each passenger compartment;

Table 26.53 (3) (d) — Requirements for number of hand-held fire extinguishers

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

(e) despite paragraphs (a) and (d) — for an aeroplane with a maximum certificated passenger seating capacity of not more than 9, in which the flight crew members and the passengers occupy the same compartment — 1, readily available to the pilot in command;

(f) despite paragraphs (a) and (d) — for an aeroplane with a maximum certificated passenger seating capacity of more than 9, in which the flight crew members and the passengers occupy the same compartment:

(i) 1, readily available to the pilot in command; and

(ii) 1, readily available to the passengers.

26.54 Hand-held fire extinguishers — rotorcraft

(1) This section applies to a rotorcraft that is type certificated in the transport category.

(2) The rotorcraft must carry at least the following number of hand-held fire extinguishers:

(a) 1 in the flight crew compartment;

(b) for a rotorcraft that has a maximum certificated passenger seating capacity of 7 or more — 1 in the passenger compartment;

(c) despite paragraph (b) — for a rotorcraft with a maximum certificated passenger seating capacity of not more than 9, in which the flight crew members and the passengers occupy the same compartment — 1, readily available to the pilot in command;

(d) despite paragraph (b) — for a rotorcraft with a maximum certificated passenger seating capacity of more than 9, in which the flight crew members and the passengers occupy the same compartment:

(i) 1, readily available to the pilot in command; and

(ii) 1, readily available to the passengers.

Division 26.14 Equipment for flights over water

26.55 Sea anchors etc. and sound signals — seaplanes, amphibians and certain rotorcraft

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

(a) the aircraft is a seaplane, an amphibian, or a rotorcraft designed to take off from, and land on, water or land; and

(b) the flight involves take-off from, or landing on, water.

(2) When the aircraft begins the flight, it must carry the following:

(a) a sea anchor;

(b) other equipment for mooring.

(3) If the flight is conducted on or over water to which the International Regulations apply, the aircraft must carry equipment for making the sound signals required by the International Regulations for the flight.

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

26.56 Life jackets — carriage requirements

(1) This section applies to an aircraft flight:

(a) if the aircraft is a seaplane or an amphibian; or

(b) for a single-engine aircraft that is not a seaplane or an amphibian — if, during the flight, the aircraft is flown further over water than the distance from which, with the engine inoperative, the aircraft could reach an area of land that is suitable for a forced landing; or

(c) for a multi-engine aircraft that is not a seaplane or an amphibian — if during the flight the aircraft is flown more than 50 NM from an area of land that is suitable for a forced landing.

(2) When the aircraft begins the flight, it must carry the following:

(a) for each infant on board — a life jacket, or another equally effective flotation device, that may have a whistle;

(b) for each other person on board — a life jacket that must have a whistle.

(3) This section does not apply if:

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

(b) the aircraft is flown in accordance with a navigational procedure that is normal for the climb or descent at the aerodrome.

26.57 Stowage of life jackets

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

(2) When the aircraft begins the flight, then, unless the life jacket or flotation device is being worn:

(a) each infant's life jacket or flotation device must be stowed where it is readily accessible by an adult responsible for the infant, in the event of an emergency evacuation; and

(b) each other person's life jacket must be stowed where it is readily accessible from the person's seat in the event of an emergency evacuation.

26.58 Wearing life jackets — aircraft generally

(1) Subject to section 26.59, a person (other than an infant) on board a single-engine aircraft must wear a life jacket if the flight is over water that is further than the distance from which, with the engine inoperative, the aircraft could reach land.

(2) A person (other than an infant) on board a rotorcraft must wear a life jacket if the flight is over water to or from a helideck.

(3) This section does not apply if:

(a) for any aircraft:

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

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

(b) for any aeroplane — the aeroplane is being flown higher than 2 000 ft above the water.

(4) For subsections (1) and (2), a person may be taken to be wearing a life jacket if it is secured to the person in a way that allows the person to quickly and easily put it on in an emergency.

26.59 Wearing life jackets – rotorcraft – special provision

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

(a) the rotorcraft takes off from, or lands at, an aerodrome in a populous area; and

(b) an area of water is the only reasonably available forced-landing area for the ***relevant period***.

(2) During the relevant period, each person on the rotorcraft (other than an infant, if any) must wear a life jacket.

(3) For paragraph (1) (b), the ***relevant period*** is:

(a) for a take-off — the period after take-off until the rotorcraft reaches the minimum height at or above which the rotorcraft is required to be flown under regulation 91.265; or

(b) for a landing — the period after the rotorcraft descends below the minimum height at or above which the rotorcraft is required to be flown under regulation 91.265, until the rotorcraft has landed.

26.60 Life rafts —carriage requirements

(1) When an aircraft begins a flight to which this section applies, it must carry sufficient life rafts to provide a place on a life raft for each person on the aircraft.

(2) This section applies to an aircraft flight if during the flight the aircraft is flown further over water than the following distances:

(a) for a jet-driven multi-engine aeroplane with an MTOW of more than 2 722 kg — whichever is the shorter of the following:

(i) the distance the aeroplane would fly in 2 hours at its normal cruising speed in still air;

(ii) 400 NM;

(b) for a turbine-engine propeller-driven aeroplane with an MTOW of more than 5 700 kg — whichever is the shorter of the following:

(i) the distance the aeroplane would fly in 2 hours at its normal cruising speed in still air;

(ii) 400 NM;

(c) for any other aircraft — whichever is the shorter of the following:

(i) the distance the aircraft would fly in 30 minutes at its normal cruising speed in still air;

(ii) 100 NM.

(3) For subsection (1), when working out the number of life rafts to be carried on an aircraft:

(a) the capacity of a life raft is the rated capacity specified for it by the manufacturer of the life raft; and

(b) the number of infants on board the aircraft need not be taken into account.

(4) Any overload capacity of a life raft is not to be taken into account in determining its capacity for the purposes of paragraph (3) (a).

26.61 Stowage of life rafts

(1) This section applies to an aircraft that is required to carry a life raft under this Division.

(2) The life raft must be stowed and secured so that it can be readily deployed if the aircraft has to ditch.

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

26.62 Overwater survival equipment

(1) This section applies if an aircraft is required to carry a life raft under section 26.60.

(2) When the aircraft begins the flight, it must carry the following:

(a) survival equipment for sustaining life, as appropriate for the overwater area to be overflown;

(b) signalling equipment that can make the distress signals set out in Appendix 1 to ICAO Annex 2, *Rules of the Air* if required.

Division 26.15 Remote areas

26.63 Definitions

In this Division:

Central Australia remote area has the meaning given by section 26.65.

remote area means 1 of the following:

(a) Central Australia remote area;

(b) Snowy Mountains remote area;

(c) Tasmania remote area.

Snowy Mountains remote area has the meaning given by section 26.65.

Tasmania remote area has the meaning given by section 26.65.

Note The actual definitions are located in section 26.65, adjacent to supporting maps.

26.64 Remote area survival equipment

(1) This section applies to the flight of an aircraft over a remote area.

(2) When the aircraft begins the flight, it must carry survival equipment for sustaining life, as appropriate for the remote area to be overflown.

26.65 Meaning of remote area

(1) ***Central Australia remote area*** means the area of Australia, illustrated by the shading in Figure 26.65-1 Central Australia remote area, that:

(a) is enclosed within the boundary of the following lines: a line from Kalgoorlie to Leigh Creek, to Bourke, to Mt Isa, to Townsville, to Cairns, then following the coast north to Cape Horn, then along the coastline of the Gulf of Carpentaria and on to Darwin, then following the coastline to Anna Plains, then to Wiluna, to Laverton, and back to Kalgoorlie; and

(b) includes Australian-administered islands adjacent to the remote area between Cairns and Anna Plains; and

(c) excludes the area within a 50 NM radius of Darwin; and

(d) excludes the flight corridors within sight of, and not more than 5 NM from the following:

(i) the Stuart highway between Alice Springs and Darwin;

(ii) the Barkly highway between Tenant Creek and Mt Isa;

(iii) the Bruce Highway between Townsville and Cairns.

Snowy Mountains remote area means the area of Australia, illustrated by the shading in Figure 26.65-2 Snowy Mountains remote area, that is enclosed within the boundary of the following lines: a line from Mt Franklin to Tharwa, to Berridale, to Delegate, to Mt Baw, to Jamieson, to Khancoban, and back to Mt Franklin.

Tasmania remote area means the area of Australia, illustrated by the shading in Figure 26.65-3 TAS remote area, that is enclosed within the boundary of the following lines: a line from West Point to Black Bluff, to 15 NM beyond Cape Bruny, then back to West Point at a distance of 15 NM off the coastline (disregarding bays and inlets).

(2) For subsection (1):

(a) subject to paragraph (b), a line, other than a coastline, is taken to be a straight line; and

(b) a line to or from a named town is taken to come no closer than 5 NM from the town centre on the side of the town adjacent to the remote area.

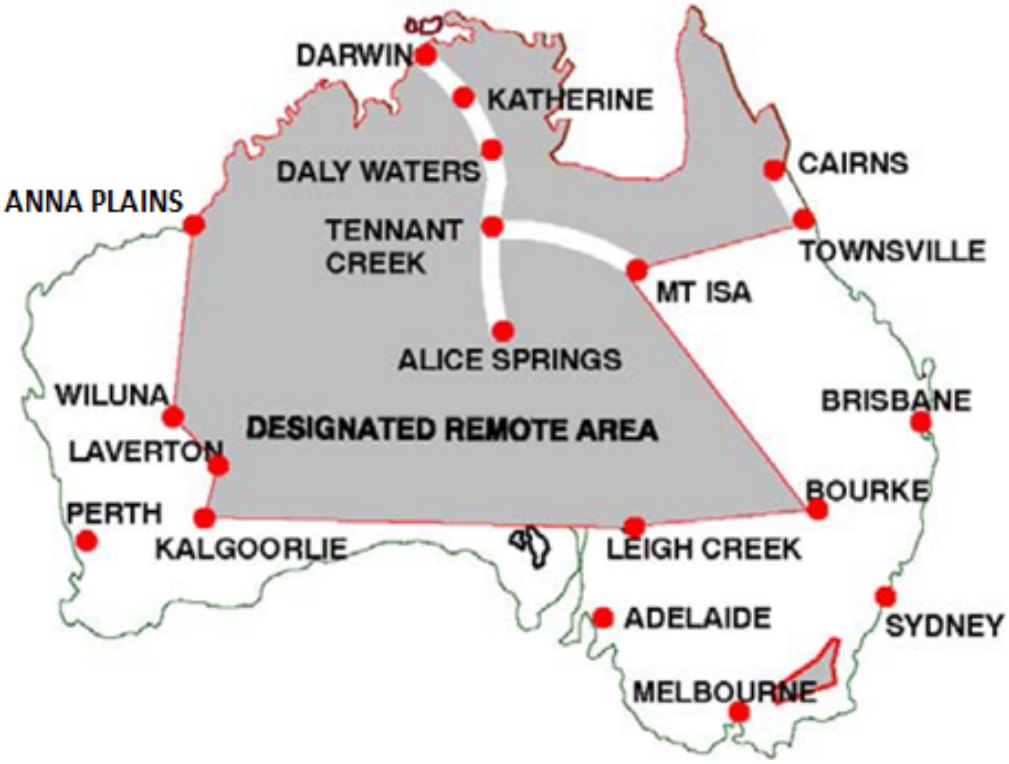

Figure 26.65-1 Central Australia Remote Area

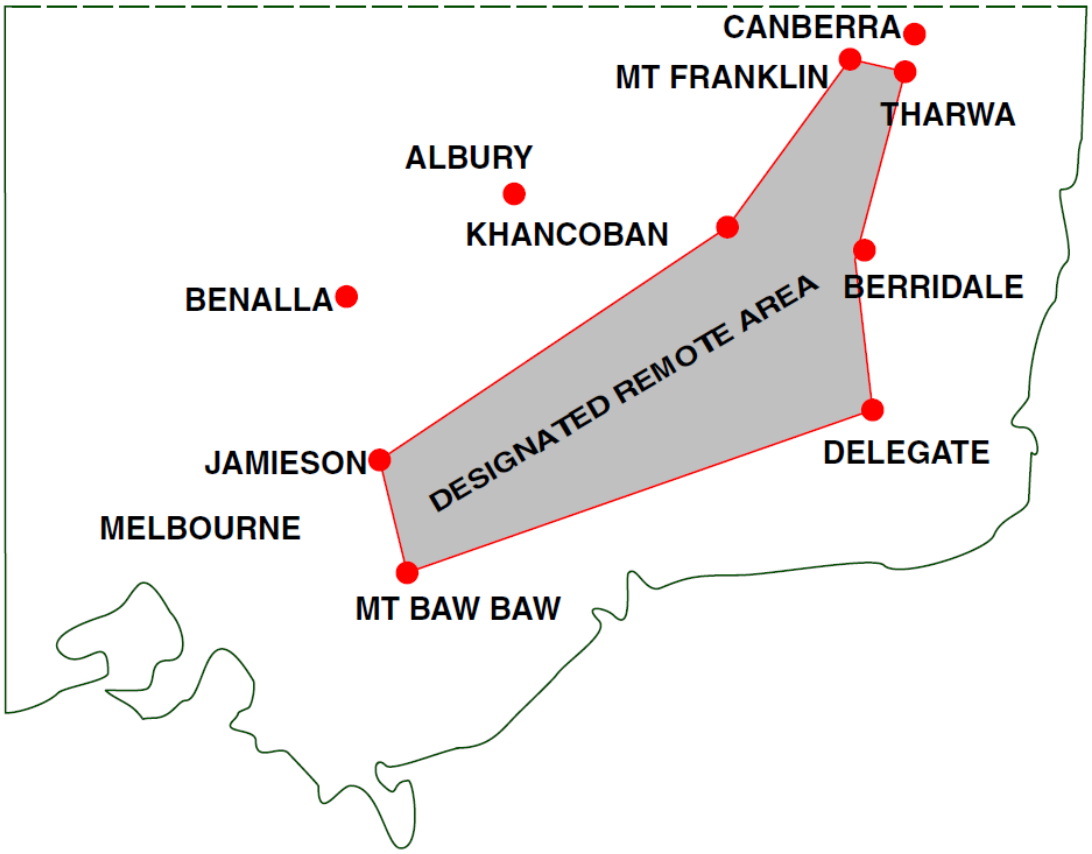

Figure 26.65-2 Snowy Mountains remote area

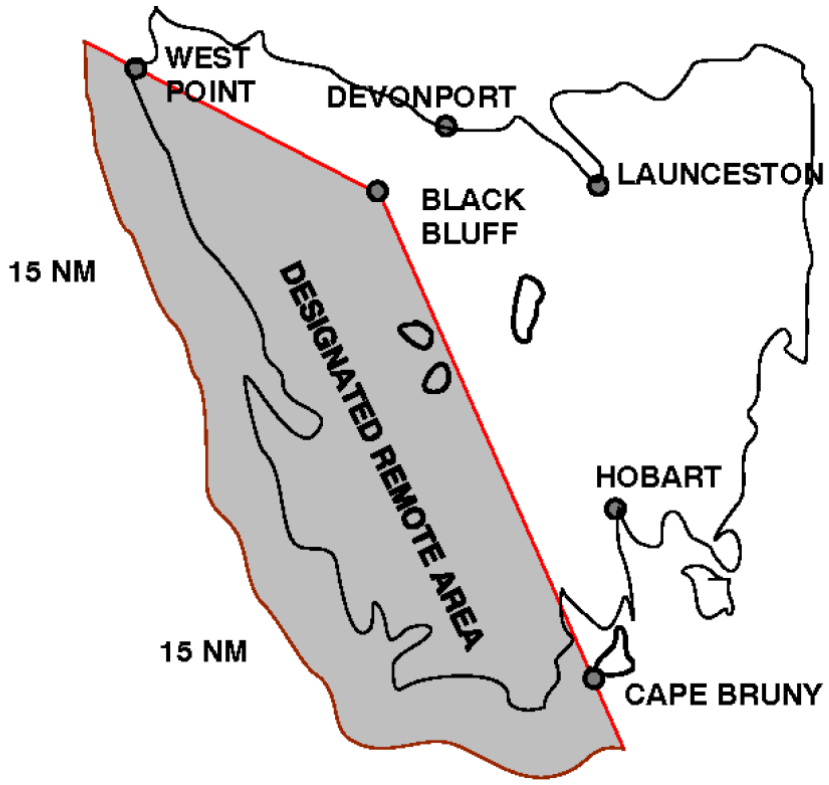

Figure 26.65-3 Tasmania remote area

Division 26.16 Surveillance equipment

26.66 Exceptions to (E)TSO or NAA requirements

(1) In this section:

relevant aircraft means any of the following:

(a) a light sport aircraft for which a special certificate of airworthiness has been issued and is in force under regulation 21.186 of CASR;

(b) a light sport aircraft for which an experimental certificate has been issued and is in force under paragraph 21.191 (j) or (k) of CASR;

(c) any other aircraft for which an experimental certificate has been issued and is in force under paragraph 21.191 (g) or (h) of CASR.

(2) A requirement in this Division that an item of equipment, or element of an item of equipment, be authorised in accordance with a particular TSO or ETSO, does not apply to a relevant aircraft in respect of any surveillance equipment if:

(a) the configuration of the surveillance equipment that is fitted or carried provides the pilot, other aircraft and ATS with the same surveillance capability as would be provided if the equipment complied with the particular TSO or ETSO; and

(b) the pilot or the operator has a statement of conformance (however described) from the equipment manufacturer stating the particular standard or standards of the TSO or ETSO with which the equipment conforms.

(3) The requirement in subsection 26.75 (4) that an approved integrated TABS device (the ***equipment***) be authorised by the relevant NAA of the equipment manufacturer does not apply to a relevant aircraft if:

(a) the configuration of the equipment that is fitted or carried provides the pilot, other aircraft and ATS with the same surveillance capability as would be provided if the equipment had been expressly authorised by the relevant NAA; and

(b) the pilot or the operator has a statement of conformance (however described) from the equipment manufacturer stating the equipment meets the requirements of this Division for the equipment.

26.67 Definitions

In this Division:

14 CFR 91.225 means regulation 91.225 of the United States Title 14 Code of Federal Regulations (CFR) titled *Automatic Dependent Surveillance-Broadcast (ADS-B) Out equipment and use*.

ADS-B means automatic dependent surveillance – broadcast.

ADS-B test flight means a flight to prove ADS-B transmitting equipment that is newly installed on the aircraft undertaking the flight.

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

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

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

approved ADS-B OUT equipment configuration means an equipment configuration capable of ADS-B OUT operation on the ground and in flight, and that is 1 of the following:

(a) an approved Mode S transponder with ADS-B capability connected to an approved GNSS position source;

(b) an alternate ADS-B OUT equipment configuration meeting the requirements mentioned in section 26.72;

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

approved EC device configuration means an equipment configuration meeting the requirements mentioned in section 26.72C.

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

(a) authorised by the FAA or EASA in accordance with 1 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 26.71; or

(c) another system approved under Part 21 of CASR as having a level of performance equivalent to performance in accordance with paragraph (a) or (b).

approved integrated TABS configuration means an equipment configuration meeting the requirements mentioned in section 26.72B.

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

(a) by CASA or the NAA of a recognised country in accordance with TSO-C74c or ETSO-C74d; or

(b) by CASA in accordance with ATSO-1C74c.

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

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

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

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

(a) authorised by CASA or the NAA of a recognised country in accordance with (E)TSO-C166; or

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

approved Mode S transponder with Class B TABS position source device configuration means an equipment configuration meeting the requirements mentioned in section 26.72A.

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

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

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

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

Class A TABS means TABS functionality relating to transponder function, altitude source function, and ADS-B OUT function, in accordance with (E)TSO-C199.

Class B TABS means TABS functionality relating to position source function, in accordance with (E)TSO-C199.

Class B TABS position source device means a device with a Class B TABS functionality.

DAPs means Mode S EHS downlink aircraft parameters.

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

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

GPS means Global Positioning System.

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

integrated TABS device means a device with integrated Class A TABS and Class B TABS functionality.

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

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

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

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

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

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

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

NACp means Navigation Accuracy Category – Position as specified in paragraph 2.2.3.2.7.1.3.8 of RTCA/DO-260B.

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

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

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

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

RTCA/DO-260B means RTCA Inc. document RTCA/DO-260B titled *Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance – Broadcast (ADS-B) and Traffic Information Services – Broadcast (TIS-B)*, dated 2 December 2009, unless a later version as in force from time to time is expressly referred to.

SA means Selective Availability, and is a function of the GPS that has the effect of degrading the accuracy of the computed GPS position of a GNSS equipped aircraft.

SDA means System Design Assurance as specified in section 2.2.3.2.7.2.4.6 of RTCA/DO-260B.

SIL means Source Integrity Level as specified in paragraph 2.2.3.2.7.1.3.10 of RTCA/DO-260B.

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

surveillance equipment means equipment that broadcasts data as a means to identify an aircraft, determine its three-dimensional position or obtain other information (such as, but not limited to, velocity and selected altitude or flight level).

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

TABS means traffic awareness beacon system.

transponder means an aircraft's SSR transponder.

UK CAP 1391 means Civil Aviation Authority of the United Kingdom document number CAP 1391 titled *Electronic conspicuity devices*, 2nd edition, dated April 2018, or any later edition.

26.68 Required surveillance equipment

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

Note See section 26.66 regarding certain aircraft that can be fitted with, or carry, surveillance equipment that is not in accordance with a TSO or ETSO provided certain conditions are met.

(1A) An aircraft operating at Brisbane, Sydney, Melbourne or Perth aerodrome must be fitted with, or carry, at least 1 approved Mode S transponder with ADS-B capability.

Note An approved Mode S transponder with ADS-B capability is not required to transmit ADS-B OUT for a VFR flight.

(2) For subsection (1), an aircraft in an operation mentioned in column 1 of an item in Table 26.68 (2), in the class of airspace mentioned in column 2 of the item, must be fitted with surveillance equipment meeting the requirements mentioned in column 3 of the item.

Table 26.68 (2) – Surveillance equipment – requirements

	Column 1	**Column 2**	**Column 3**
Item	**Operation**	**Class of airspace**	**Requirements**
1	IFR	Any (Classes A, B, C, D, E and G)	At least 1 approved ADS-B OUT equipment configuration.
2	VFR	Any — from FL290 and above	At least 1 approved ADS-B OUT equipment configuration.
3	VFR	Class A, B or C (below FL290)	At least 1: (a) approved ADS-B OUT configuration; or (b) approved Mode S transponder with Class B TABS position source device configuration; or (c) approved transponder being: (i) for an aircraft, manufactured on or after 6 February 2014, or modified by having its transponder installation replaced on or after 6 February 2014 — an approved Mode S transponder

	Column 1	Column 2	Column 3
Item	**Operation**	**Class of airspace**	**Requirements**
			with ADS-B capability; or (ii) for any other aircraft — approved transponder. *Note* An approved Mode S transponder with ADS-B capability is not required to transmit ADS-B OUT for a VFR flight.
4	VFR	Class E (not above FL290) Class G — from 10 000 ft to not above FL290	At least 1: (a) approved ADS-B OUT configuration; or (b) approved equipment configuration of a Mode S transponder with Class B TABS position source device; or (c) approved transponder being: (i) for an aircraft, manufactured on or after 6 February 2014, or modified by having its transponder installation replaced on or after 6 February 2014 — a Mode S transponder with ADS-B capability; or (ii) for any other aircraft — an approved transponder; or (d) an approved integrated TABS device. *Note* An approved Mode S transponder with ADS-B capability is not required to transmit ADS-B OUT for a VFR flight.

(3) Item 4 in Table 26.68 (2) does not apply to an aircraft if the aircraft does not have:

(a) an engine; or

(b) sufficient engine-driven electrical power generation capacity to power the surveillance equipment.

26.68A Requirements for other surveillance equipment for VFR aircraft

(1) An aircraft may be fitted with, or carry, surveillance equipment in addition to the surveillance equipment required by section 26.68, but only if the requirements of this section are met.

(2) An aircraft may be fitted with, or carry, surveillance equipment in circumstances where surveillance equipment is not required by section 26.68, but only if the requirements of this section are met.

(3) For subsections (1) and (2), an aircraft in an operation mentioned in column 1 of Table 26.68A (3), in the class of airspace mentioned in column 2 of the item, may be fitted with, or carry, surveillance equipment that meets the requirements mentioned in column 3 of the item.

Table 26.68A (3) – Optional surveillance equipment – requirements

Item	Operation	Class of airspace	Capability and Requirements
	Column 1	**Column 2**	**Column 3**
1	VFR	Classes A, B, C or E — below FL290 Class G — from 10 000 ft but not above FL290	An approved EC device configuration. *Note* An EC device may be operated concurrently with a Mode A/C, or a Mode S transponder (other than one that is transmitting ADS-B — see section 26.72C.
2	VFR	Class G — below 10 000 ft	Any of the following: (a) approved ADS-B OUT configuration; (b) approved equipment configuration of a Mode S transponder with Class B TABS position source device; (c) approved transponder being: (i) for an aircraft manufactured on or after 6 February 2014, or modified by having its transponder installation replaced on or after 6 February 2014 — a Mode S transponder with ADS-B capability; or (ii) for any other aircraft — an approved transponder; (d) an approved integrated TABS device; (e) an approved EC device configuration. *Note* An approved Mode S transponder with ADS-B capability is

Item	Operation	Class of airspace	Capability and Requirements
	Column 1	**Column 2**	**Column 3**
			not required to transmit ADS-B OUT for a VFR flight. *Note* An EC device may be operated concurrently with a Mode A/C, or a Mode S transponder (other than one that is transmitting ADS-B).

26.69 Operation of surveillance equipment — general requirements

(1) The requirements of this section are subject to section 26.73.

(2) Surveillance equipment required to be fitted to, or carried on, an aircraft by section 26.68 must be continuously operated during the circumstances mentioned in section 26.68.

Note Continuous operation for a transponder means that the equipment must be operated in a mode that enables an SSR response to be transmitted and, where an altitude reporting capability is available, that this capability is also activated.

(2A) Surveillance equipment (other than approved transponders) fitted to, or carried on, an aircraft under section 26.68A must be continuously operated during the circumstances mentioned in that section for the specific kind of equipment.

(3) Subsections (2) and (2A) do not apply if ATC has issued an instruction that the surveillance equipment is not to be operated.

(4) Unless otherwise required by ATC, an aircraft that is flying in formation with, or is in-company with, 1 or more other aircraft, is not required to operate surveillance equipment if serviceable surveillance equipment is operated by any of the other aircraft at all times while the aircraft are flying in formation or are in-company.

(5) If an aircraft is fitted with more than 1 approved transponder, only 1 transponder is to be operated at any time.

(6) If an approved transponder is fitted to an aircraft for a flight, the Mode A code must be set:

(a) to the transponder code assigned by ATS for the flight; or

(b) if no transponder code is so assigned — to the relevant standard code in Table 26.69 (7).

(7) For paragraph (6) (b), for a situation mentioned in column 1 of an item in Table 26.69 (7), the Mode A code is the number mentioned in column 2 for the item.

(7A) Subject to subsection (7B), if an emergency situation described in an item of column 1 of Table 26.69 (7A) occurs during a flight, a pilot of the aircraft for the flight must set the Mode A code mentioned in column 2 for the item.

(7B) Despite subsection (7A), a pilot of an aircraft for a flight does not have to set a Mode A code mentioned in column 2 of Table 26.69 (7A) if the pilot reasonably believes that maintaining an existing Mode A code would result in a safer outcome.

(8) Pressure altitude information reported by an approved transponder or approved ADS-B OUT equipment configuration must be determined by:

(a) a barometric encoder of a type that is authorised in accordance with (E)TSO-C88a; or

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

Table 26.69 (7) – Transponders – Mode A standard codes

	Column 1	Column 2
Item	**Situation**	**Mode A Code**
1	(a) Flights in Class A, B, C or D airspace; (b) IFR flights in Class E airspace.	3000
2	IFR flights in Class G airspace.	2000
3	VFR flights in Class E or Class G airspace.	1200
4	Flights in Class G over water at a distance greater than 15 NM from shore.	4000
5	Flights engaged in coastal surveillance.	7615
6	Ground testing by aircraft maintenance staff.	2100

Table 26.69 (7A) – Transponders – Mode A emergency codes

	Column 1	Column 2
Item	**Situation**	**Mode A Code**
1	Unlawful interference.	7500
2	Loss of radiocommunication.	7600
3	In-flight emergency (unless otherwise instructed by ATC).	7700

26.70 Mode S transponders, ADS-B OUT and electronic conspicuity equipment — specific requirements

(1) An approved Mode S transponder fitted to an aircraft for a flight must have the following items entered into the equipment:

(a) the assigned aircraft address;

(b) as far as practicable for the equipment — 1 of the following forms of aircraft flight identification:

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

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

(2) An approved ADS-B OUT equipment configuration, approved integrated TABS configuration or approved EC device configuration, fitted to, or carried on, an aircraft for a flight, must have the following items entered into the equipment:

(a) the assigned aircraft address;

(b) 1 of the following forms of aircraft flight identification:

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

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

(3) An approved Mode S transponder must transmit each of the following when interrogated on the manoeuvring area of an aerodrome or in flight:

(a) the assigned aircraft address;

(b) the Mode A code;

(c) the Mode C code;

(d) subject to subsection (4) — the aircraft flight identification.

(4) Transmission of the aircraft flight identification by an approved Mode S transponder is optional for an aircraft that was first certificated in its country of manufacture before 9 February 2012 (an ***older aircraft***). However, an older aircraft that is equipped to do so may transmit its aircraft flight identification.

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

Note 1 Paragraph 3.1.2.10.5.2.3 includes paragraphs 3.1.2.10.5.2.3.1 and 3.1.2.10.5.2.3.2 and 3.1.2.10.5.2.3.3.

Note 2 Australian Mode S SSR supports EHS DAPs. Transmission of Mode S EHS DAPs that are not in accordance with the ICAO standards may provide misleading information to ATS. Operators need to ensure that EHS DAPs are being transmitted.

(6) If an approved Mode S transponder is fitted to an aircraft first certificated in its country of manufacture on or after 9 February 2012:

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

(b) that is capable of normal operation at a maximum cruising true airspeed above 250 kts;

then 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), an aircraft fitted with, or carrying, ADS-B OUT equipment that is not an approved ADS-B OUT equipment configuration, approved EC device configuration, approved integrated TABS configuration or approved Mode S transponder with Class B TABS position source device configuration, must not fly in Australian territory, 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 an aircraft if it is undertaking an ADS-B test flight in VMC in airspace below FL 290.

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

(1) For an aircraft first certificated in its country of manufacture on or after 8 December 2016, an alternate GNSS position source is acceptable if the source:

(a) is certified by the NAA of a recognised country for use in IFR flight; and

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

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

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

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

(2) For an aircraft first certificated in its country of manufacture before 8 December 2016, an alternate GNSS position source is acceptable if it meets the requirements of subsection (1), other than subparagraph (1) (b) (iii) which is optional.

26.72 Alternate ADS-B OUT equipment configuration — requirements

An alternate ADS-B OUT equipment configuration must meet the following requirements:

(a) it has been approved or accepted by:

(i) the NAA of a recognised country as meeting the standards of EASA AMC 20-24 or EASA CS-ACNS; or

(ii) the FAA as meeting the standards of 14 CFR 91.225 for 1090 Megahertz (MHz) Extended Squitter ADS-B; and

(b) the AFM or flight manual supplement attests to the certification; and

(c) the GNSS system meets the relevant performance requirements mentioned in section 26.71.

26.72A Approved Mode S transponder with Class B TABS position source device equipment configuration — requirements

(1) A Mode S transponder must be of a type that is:

(a) authorised in accordance with (E)TSO-C166B; or

(b) approved under Part 21 of CASR as having a level of performance equivalent to that of a type compliant with paragraph (a).

(2) When required to be operated, the Mode S transponder must transmit NACp, NIC, SIL and SDA values in accordance with the authorised capability of the GNSS position source.

(3) The geographical position transmitted by the Mode S transponder must be determined by:

(a) a Class B TABS position source device that is authorised in accordance with (E)TSO-C199; or

(b) another source approved under Part 21 of CASR as having a level of performance equivalent to that of a device compliant with paragraph (a).

(4) If a Mode S transponder with Class B TABS position source device transmits a SIL value of less than 2, the aircraft must not enter any controlled airspace in which the aircraft must be fitted with, or carry, equipment that is of an approved ADS-B OUT equipment configuration.

26.72B Approved integrated TABS device — requirements

(1) An approved integrated TABS device (the ***device***) must only be operated in transmitting mode if the flight is conducted:

(a) under the VFR; and

(b) below FL290; and

(c) in Class D, E or G airspace.

(2) The device must meet the technical specifications in (E)TSO-C199 that are for a device with integrated Class A TABS and Class B TABS functionality.

(3) The device must transmit a SIL value of 1.

(4) The device must be authorised by the relevant NAA of the equipment manufacturer as meeting the standards mentioned in subsections (2) and (3).

Note Section 26.66 provides for an exception to the relevant NAA authorisation requirement for certain kinds of light sport, experimental and other aircraft.

26.72C Approved EC device — requirements

(1) An approved EC device (an ***EC device***) must only be operated in transmitting mode if the flight is conducted:

(a) under the VFR; and

(b) below FL290.

(2) The EC device must not be operated in transmitting mode concurrently with a Mode S transponder that is also transmitting ADS-B.

Note An EC device may be operated concurrently with a Mode A/C, or a Mode S transponder (other than one that is transmitting ADS-B) but it is not a substitute for mandatory carriage of a transponder in relevant airspace.

(3) The EC device must meet the technical specifications in UK CAP 1391, except in relation to the matters mentioned in subsections (4), (5) and (6).

(4) The EC device must use a Class B TABS position source that complies with the performance standards specified in (E)TSO-C199.

(5) The EC device must:

(a) be capable of transmitting a SIL value of 1, in accordance with the standards in UK CAP 1391 for an EC device that uses a Class B TABS position source; and

(b) transmit that SIL value of 1.

(6) The EC device must:

(a) meet the requirements described in paragraph 2.2.3.2.7.2.4.6 of RTCA/DO-260B for transmitting an SDA of 1; and

(b) transmit an SDA value of 1.

(7) The EC device must use a barometric encoder for altitude information.

(8) The EC device must be mounted in accordance with the manufacturer's instructions.

(9) The EC device, when mounted in accordance with the manufacturer's instructions, must not:

(a) interfere with aircraft controls; or

(b) otherwise affect the safe operation of the aircraft.

(10) The following administrative standards for the EC device must be complied with:

(a) an EC device must have a statement of compliance (however described) from the EC device manufacturer certifying that the device meets the following requirements (***a declaration of capability and conformance*** or ***declaration***):

(i) if the declaration was made before 2 December 2021 — clauses 1 to 5 of Part B of Appendix XIV of Civil Aviation Order 20.18 as in force immediately before 2 December 2021;

(ii) otherwise — subsections (3) to (7);

(b) the pilot in command of an aircraft that uses the EC device must carry the declaration, or a copy of it, on board the aircraft;

(c) an EC device model must not be operated in a transmit mode anywhere in Australia unless it is listed on the CASA website as an EC device model for which the manufacturer has made a valid declaration;

(d) the manufacturer of an EC device model may apply in writing to CASA:

(i) for a statement that CASA considers that the manufacturer has made a valid declaration of capability and conformance to subsections (3) to (7); and

(ii) for inclusion of the EC device model on the CASA website;

(e) CASA may remove an EC device model from the CASA website if:

(i) the manufacturer requests its removal in writing; or

(ii) if CASA is satisfied that removal is required in the interests of aviation safety.

26.73 Aircraft flown with inoperative surveillance equipment

Surveillance equipment required by section 26.68 may be inoperative at the beginning of a flight if:

(a) the flight begins from an aerodrome at which there is no facility for the surveillance equipment to be repaired or replaced; and

(b) the flight ends not more than 72 hours after the time the surveillance equipment was found to be inoperative; and

(c) before the flight commences, the pilot in command informs ATS about the unserviceability.

Note See also section 26.04 for additional requirements related to flight with inoperative equipment. For a flight with inoperative surveillance equipment, within controlled airspace or at a controlled aerodrome, Division 11.2 has requirements related to ATC clearances. Whether a clearance is issued, or when a clearance may be issued, could be affected by the flight's inoperative equipment.

Division 26.17 Equipment for NVIS flights

26.74 Purpose

For subregulation 91.810 (1), this Division prescribes requirements relating to:

(a) the fitment and non-fitment of NVIS equipment to an aircraft; and

(b) the carrying of NVIS equipment on an aircraft; and

(c) NVIS equipment that is fitted to, or carried on, an aircraft.

Note The effect of item 16 of Table 91.035 is that this Division 26.17 applies to all NVIS flights except NVIS flights conducted as a Part 133 operation. The Part 133 MOS contains the equipment requirements for such flights.

26.74A Application

(1) This Division applies in relation to the use of NVIS by a flight crew member of an aircraft in an NVIS flight.

(2) This Division does not apply in relation to the use of NVIS by a person on an NVIS flight who is not a flight crew member, unless the person is involved in air navigation or terrain avoidance functions.

26.75 Definitions

adverse event means any event or incident in which life or property is:

(a) lost, injured or damaged in, on or by an aircraft in which NVIS is used; or

(b) at significant risk of loss or damage in, on or by an aircraft.

Note The following are some examples of significant risks: a near miss; NVIS equipment failure, malfunction or abnormal operation; the failure, malfunction or abnormal operation of NVIS-related or affected equipment; unintentional IMC penetration; inadvertent loss of visibility; abnormal degree or accelerated onset of fatigue.

NVIS certified means that an aircraft has been modified for NVIS flight by 1 of the following:

(a) an approval under Part 21 of CASR;

(b) the type certificate holder under the type certificate;

(c) a supplemental type certificate.

NVIS compatible lighting means aircraft interior or exterior lighting:

(a) with spectral wavelength, colour, luminance level and uniformity, that has been modified, or designed, for use with NVIS; and

(b) that does not degrade or interfere with the image intensification capability performance of the NVIS beyond acceptable standards mentioned in subsection 26.76 (2).

26.76 Aircraft general and lighting standards for NVIS flights

(1) An aircraft for an NVIS flight must be NVIS certified.

Note NVIS certification means that the aircraft also has NVIS compatible lighting.

(2) The design of a required aircraft lighting system modification for an NVIS flight must be based on the requirements of:

(a) RTCA/DO-275, as in force from time to time; or

(b) MIL-STD-3009, Lighting, Aircraft, NVIS Compatible, of the US Department of Defense, as in force from time to time.

26.77 Performance and other specifications for NVG image intensifier tubes

(1) NVG image intensifier tubes for an NVIS flight must meet the minimum operational performance specification that is:

(a) defined in RTCA/DO 275, as in force from time to time, as modified in accordance with subsection (5); or

(b) approved in writing by CASA as equivalent to that under paragraph (a) in terms of tube resolution, system resolution, system luminance gain, photosensitivity and signal to noise ratio.

(2) Each NVG image intensifier tube and associated NVIS equipment (the ***NVG tubes and equipment***) must be:

(a) certified by its manufacturer as being for aviation use; and

(b) identified by the manufacturer's unique serial number; and

(c) acquired (with or without valuable consideration) by the aircraft operator directly from:

(i) the manufacturer or the manufacturer's official supplier (an ***official source***); or

(ii) a person who acquired it directly from an official source (the ***initial acquirer***); or

(iii) a person who acquired it as the first or later acquirer in a line of direct and provable acquisitions originating from the initial acquirer (a ***subsequent acquirer***); and

Note 1 In this subsection, "acquired (with or without valuable consideration)" refers to, for example, an acquisition through a purchase or a donation or in any other way.

Note 2 CASA considers the source of second-hand NVG tubes and equipment to be a matter that may affect safety.

(d) in the case of replacement of NVG image intensifier tubes with tubes that are sourced from other than an official source — as follows:

(i) replaced as a pair;

(ii) of the same form, fit and function as the tubes being replaced;

(iii) such that the replacement does not to involve modification of the NVIS mounting frame or optical components;

(iv) compliant with paragraph (1) (a).

Note For guidance only, US AN/AVS 9 NVIS, although manufactured by different manufacturers, are produced to the same US Department of Defense specification and, therefore, these tubes are interchangeable.

(3) If 2 or more NVIS pilots on an NVIS flight use dissimilar NVG image intensifier tubes and equipment, the pilot in command must use the highest level of NVIS tubes and equipment in terms of resolution, gain and acuity.

Note Use of dissimilar NVIS does not remove the requirement that the minimum standard of any set used must be in accordance with subsections (1) and (2).

(4) An NVIS pilot who occupies a control seat of an aircraft during an NVIS flight must use the NVIS manufacturer's approved helmet mounted attachment device for the NVIS.

(5) For paragraph (1) (a), column 3 of each item of Table 26.77 (5) shows how a relevant operational performance specification in the paragraph of RTCA/DO-275 mentioned in column 1 of the item, and summarised (if any) in column 2 of the item, is modified.

Table 26.77 (5) — Modifications of RTCA/DO 275

	Column 1	**Column 2**	**Column 3**
Item	**RTCA/DO-275 (as in force from time to time)**	**Summary**	**Amended performance requirement**
1	Para 2.2.1.1 System Resolution	1.0 cycles per milliradian (cy/mr). At 14º off axis = 0.81 cy/mr	1.3 cy/mr

	Column 1	Column 2	Column 3
Item	**RTCA/DO-275 (as in force from time to time)**	**Summary**	**Amended performance requirement**
		With a variable focus @ through infinity = 0.49cy/mr	
2	Para 2.2.1.2 System Luminance Gain – Filmed non-autogating	= 2 500 foot-Lamberts (fL) per fL at an input light level of 1 x 10^{-4} fL	= 5 500 foot-Lamberts (fL) per fL at an input light level of 1 x 10^{-4} fL = 1750 cd/m^2/lx at an input light level of 1.1 x 10^{-3} lx
3	System Luminance Gain – Filmless autogating		=16 000 cd/m^2/lx at an input light level of 2 x 10^{-5} lx
4	Para 2.2.1.3 Field-of-View	38º vertical and horizontal	40º
5	Para 2.2.1.4 Magnification	1:1 +/- 2%	1:1
6	Para 2.2.1.7.1 Spectral Transmission	Meet Class B filter requirements	Class B filter
7	Para 2.2.1.10 Eyepiece Diopter Range	Adjustable +1.0 to –2.0, or Fixed –0.5 and –1.0	+2 to -6
8	Para 2.2.1.12 Objective Focus Range	Adjustable from beyond infinity to no greater than 45 cm close range	25 cm close
9	Para 2.2.13 Exit Pupil/Eye Relief	Type I – 25 mm, Type II – 20 mm	25 mm
10	Para 2.2.2.3 Flip-Up/Flip Down	Required capability	Push button
11	Para 2.2.2.4 Fore-and-Aft Adjustment	Sufficient to align with users' eyes	27 mm total
12	Para 2.2.2.4 Tilt Adjustment	Sufficient to align with users' eyes	10º
13	Para 2.2.2.5 Interpupillary Adjustment	Desired but not required. If not installed, exit pupil must be large enough to see full FOV	51 to 72 mm

	Column 1	Column 2	Column 3
Item	**RTCA/DO-275 (as in force from time to time)**	**Summary**	**Amended performance requirement**
14	Para 2.2.2.6 Voltage Required	2.7 – 3.0 V DC 50mA nominal Backup power supply required	2.7 – 3.0 V DC 50mA nominal Backup available
15	Technology	Intensifier tubes not specified	Not specified
16	Photosensitivity filmed non-autogating	Not specified	1 800 µA/lm
17	Photosensitivity filmless autogating		800 µA/lm
18	Tube Resolution	Not specified	64 line pairs per millimetre (lp/mm)
19	Signal to Noise Ratio Filmed non-autogating	Not specified	21:1
20	Signal to Noise Ratio Filmless Autogating		25:1

26.78 Maintenance of the NVIS and its components

(1) For an NVIS flight, the NVIS equipment must be maintained, stored, and checked for serviceability, in accordance with the manufacturer's requirements and procedures.

(2) NVIS equipment must have a documented maintenance program to ensure that:

(a) maintenance, inspection, and serviceability standards for the NVIS are met; and

(b) a biennial assessment is made to identify and rectify any degradation in the compatibility of the aircraft lighting systems with the NVIS.

Note RTCA/DO-275 (as in force from time to time) provides guidance for the ongoing maintenance of installed NVIS compatible systems.

(3) The maintenance program must include a method for assessing NVIS compatibility with any subsequent aircraft modification, equipment introduction or repair that may have an effect on the aircraft's NVIS compatibility.

(4) Any item of equipment other than NVIS equipment, that is fitted to, or carried on, the aircraft must not at any time adversely affect the safe operation of the aircraft in an NVIS flight.

(5) Maintenance of NVIS must be carried out by an organisation that:

(a) complies with regulation 30 of CAR or Part 145 of CASR as if the regulation or the Part applied to the organisation for the maintenance of NVIS and its related equipment; and

(b) is endorsed in writing by the manufacturer of the NVIS as an appropriate organisation to carry out maintenance on the NVIS.

(6) To avoid doubt, for subsection (5), maintenance includes routine scheduled servicing of NVIS.

(7) An organisation endorsed by a manufacturer under paragraph (5) (b) for any particular NVIS manufactured in the United States (the ***US***) that complies with the specification mentioned in paragraph 26.77 (1) (a) is taken to be endorsed for any other NVIS that:

(a) is manufactured in the US and is available in Australia; and

(b) complies with the specification mentioned in paragraph 26.77 (1) (a).

Note This provision is to ensure that an endorsement given to an organisation by an original US manufacturer of paragraph 26.77 (1) (a)-compliant NVIS, is taken to be an endorsement for any other US manufactured NVIS available in Australia that complies with paragraph 26.77 (1) (a).

(8) If:

(a) 1 or more image intensification tubes (***tubes***) fail for any reason during an NVIS flight; or

(b) 1 or more tubes fail at any time as a result of a suspected error in maintenance;

then the operator must, within 28 days of the failure, report the failure to CASA through the Service Difficulty Reporting System using ATA Code 2590.

(9) For paragraph (5) (b):

manufacturer means the person who is:

(a) the original manufacturer of the NVIS; or

(b) the original manufacturer of the NVG image intensification tubes fitted to the NVIS; or

(c) if parts of the NVIS are manufactured by different persons — the person who makes the final assembly of the parts into the NVIS.

26.79 Minimum aircraft equipment for NVIS flight

(1) Subject to subsection (2), before an NVIS flight, the aircraft must be fitted with a serviceable radio altimeter that:

(a) conforms to the following requirements:

(i) it must have a display presentation that requires minimal interpretation for both an instantaneous impression of absolute height and rate of change of height;

(ii) subject to subsection (2), it must be positioned to be instantly visible and discernible to each NVIS crew member from the person's station in the cockpit;

(iii) it must have an integral audio and visual low height warning that operates at a height selectable by the pilot;

(iv) it must provide unambiguous warning to each NVIS crew member of radio altimeter failure; and

(b) has a visual warning system that provides clear visual warning at each cockpit crew station of height below the pilot-selectable height; and

(c) has an audio warning system that:

(i) is unambiguous and readily cancellable; and

(ii) when cancelled — does not extinguish any visual low height warnings; and

(iii) operates at the same pilot-selectable height as the visual warning.

(2) Subparagraph (1) (a) (ii) does not take effect until 2 December 2023.

(3) A rotorcraft for an NVIS operation must be fitted with a serviceable pilot-steerable searchlight, adjustable in both pitch and azimuth from the flight controls.

(4) Before an NVIS operation, the operator and the pilot in command must be satisfied that:

(a) in an NVIS operation below 500 ft AGL; or

(b) in an NVIS operation from an HLS-NVIS basic using a searchlight with an NVIS compatible IR filter;

the risk of an adverse event as a result of NVIS failure below 500 ft AGL is controlled by:

(c) the aircraft's capacity to revert immediately to a non-filtered search or landing light; or

(d) the presence of 2 pilots, each of whom:

(i) is NVIS qualified and NVIS equipped; and

(ii) has access to dual flight controls.