Civil Aviation Order 20.2

as amended

made under subregulation 244 (2) of the

Civil Aviation Regulations 1988

This compilation was prepared on 15 May 2006
taking into account amendments up to *Civil Aviation Order 20.2 Amendment Order (No. 1) 2006*

Prepared by the Legislative Drafting Branch, Legal Services Group,
Civil Aviation Safety Authority, Canberra

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2 Removal of locking and safety devices

2.2 Where external control surface locks, undercarriage pins and locks, or other external locking or restricting devices have been fitted, they must, except where otherwise approved by CASA, be removed prior to commencement of taxiing for the purpose of taking off. They must be removed only by the pilot in command or the co-pilot, or by a person instructed in this function and authorised to perform it by the owner, hirer, operator or pilot in command.

2.3 Where external control surface locks, undercarriage pins and locks, or other external locking or restricting devices are removed by a person other than the pilot in command or co-pilot:

2.3.1 Removal must only be effected as directed by the pilot in command.

2.3.2 The locks, pins and other external devices must be exhibited to the pilot in command or co-pilot from a position which will enable him or her to readily determine that all pins, locks and devices are being displayed.

2.3.3 During the hours of darkness the owner, hirer, operator or pilot in command must ensure that adequate lighting is provided to enable the pilot in command or co-pilot (as the case may be) to see the articles displayed.

2.3.4 When the pilot in command or co-pilot is satisfied that all locking devices have been removed and displayed he or she must give an agreed form of acknowledgement to the person effecting removal.

2.3A If any external control surface lock, undercarriage pin or lock, or other external locking or restricting device, fitted to an aircraft:

(a) has been removed by a person other than the pilot in command of the aircraft; and

(b) has not been exhibited to him or her under subparagraph 2.3.2;

the pilot in command of the aircraft must not start taxiing the aircraft, or allow the aircraft to be taxied, for the purposes of taking-off unless the co-pilot has told him or her that the lock, pin or other device has been removed:

(c) by the co-pilot; or

(d) by a person other than the co-pilot in accordance with paragraph 2.3.

2.4 When an aircraft has been parked, taxied or towed in winds exceeding 35 knots and the control systems and surfaces have not been effectively restrained either by a person in the cockpit or by approved control surface gust locks, the pilot in command or an appropriately licensed maintenance engineer must, before flight, inspect the control systems and control surface attachments for damage.

2.5 Where external control surface locks or restricting devices have been removed as prescribed by paragraphs 2.2 and 2.3 of this section, or where an aircraft is to be flown for the first time following maintenance work involving the aircraft's control surfaces or control surface systems, the pilot in command must, immediately before taxiing for the purpose of taking off, test the flight

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controls to the full limit of their travel and make such other tests as are necessary to ensure that those controls are functioning correctly.

Note Paragraph 244 (1) (a) of the *Civil Aviation Regulations 1988* requires that immediately before taking-off on any flight, the pilot in command of an aircraft must test the flight controls on the ground to the full limit of their travel and make such other tests as are necessary to ensure that those controls are functioning correctly.

3 Security of doors and hatches

Immediately before taxiing for the purpose of taking off on any flight, the pilot in command must ensure that all doors, escape hatches and loading hatches are properly secured.

4 Precautions before solo flight in aircraft fitted with dual controls

The pilot in command of an aircraft fitted with dual controls, which is to be flown solo, must ensure that safety harness and any other articles or equipment which may foul the controls are safely secured; if the second control column is readily detachable, it must be removed.

5 Fuel system inspection

5.1 The operator and pilot in command must ensure that the following inspections and tests for the presence of water in the fuel system of the aircraft are made:

(a) either:

(i) if:

(A) the aircraft manufacturer's data specifies the manner in which inspections and tests for the presence of water in the aircraft's fuel system are to be made; and

(B) the data has been approved under regulation 42M of the *Civil Aviation Regulations 1988* as part of the aircraft's system of maintenance;

an inspection and test in accordance with the approved data; or

(ii) in any other case — before the start of each day's flying, and after each refuelling, with the aircraft standing on a reasonably level surface, drain a small quantity of fuel from each fuel tank into a clear transparent container and check by an approved method for the presence of water;

(b) on such aircraft types which may be specified by CASA, extend the foregoing inspection to fuel system filters and collector boxes. It is recommended that all aircraft fuel system filters and collector boxes be checked for water contamination at frequent intervals.

Note It is important that checks for water contamination of fuel drainage samples be positive in nature and do not rely solely on sensory perceptions of colour and smell, both of which can be highly deceptive. The following methods are acceptable:

1. Place a small quantity of fuel into the container before taking samples from tank or filter drain points. The presence of water will then be revealed by a visible surface of demarcation between the two fluids in the container.
2. Check the drainage samples by chemical means such as water detecting paper or paste, where a change in colour of the detecting medium will give clear indication of the presence of water.

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3. In the case of turbine fuel samples, tests should also include inspection for persistent cloudiness or other evidence of the presence of suspended water droplets, which will not necessarily be detected by methods mentioned in notes 1 and 2. Should any doubt exist of the suitability of the fuel, the checks specified in the aircraft Operators Maintenance Manual should be followed. It is advisable to allow turbine fuel a reasonable period of stagnation before drawing test samples from fuel drain points; this allows settling of suspended water which is a slower process in turbine fuel than in aviation gasoline.

5.1A In relation to a refuelling that is a hot refuelling in accordance with section 20.10 or section 20.10.1, the operator and pilot in command of an aircraft are not required to carry out inspections and tests in accordance with paragraph 5.1. This does not effect the requirement to do so before the start of each day's flying.

5.2 If, at any time, a significant quantity of water is found to be present in an aircraft fuel system, the operator and pilot in command must ensure that all traces of it are removed from the fuel system, including the fuel filters, before further flight.

Note In eliminating water from an aircraft fuel system, it is important that consideration be given to the possibility of water lying in portions of the tanks or fuel lines where, because of the design of the system or the existing attitude of the aircraft, it is not immediately accessible to a drain point.

5.3 The operator and pilot in command must ensure that, before the commencement of each day's flying, all external fuel tank vents are inspected for freedom from obstruction.

6 Fuel quantity measurement

6.1 The operator of an aircraft having a maximum take-off weight of more than 5 700 kg and engaged in commercial operations must ensure that the operations manual contains instructions and procedures for the pilot in command of the aircraft to verify the quantity of fuel on board the aircraft before flight.

Note See Airworthiness Bulletin 28-002 for advice on instructions and procedures that may be adopted to verify the quantity of fuel on board an aircraft before flight.

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Notes to Civil Aviation Order 20.2

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 20.2 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R1	8 December 2004	8 December 2004 (*see* s. 2)	
CAO 20.2 2006 No. 1	FRLI 15 May 2006	16 May 2006 (*see* s. 2)	

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Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 20.2	rs. CAO 2004 No. R1
subs. 6	am. CAO 20.2 2006 No. 1

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Civil Aviation Amendment Order (No. R2) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 92 (2) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R2) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 20.3 of the Civil Aviation Orders

Section 20.3 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 20.3 of the Civil Aviation Orders

SECTION 20.3 AIR SERVICE OPERATIONS

MARSHALLING AND PARKING OF AIRCRAFT

1 APPLICATION

1.1 This section applies to all aircraft operating at aerodromes established under the *Air Navigation Regulations 1947*, aerodromes licensed or authorised under the *Civil Aviation Regulations 1988*, and Department of Defence aerodromes in respect of which an arrangement under section 20 of the *Civil Aviation Act 1988* is in force.

2 RESPONSIBILITY FOR MARSHALLING AND PARKING AIRCRAFT

2.1 An operator is responsible for marshalling and parking of the operator's aircraft on an aerodrome.

2.2 An operator must ensure that any person designated for marshalling and parking duties uses the standard hand signals set out in Appendix I.

3 PARKING AREAS

3.1 The aerodrome licence-holder or proprietor, as the case requires, is responsible for designating parking areas on an aerodrome.

3.2 A person must not park an aircraft outside the areas designated in accordance with subparagraph 3.1 without permission of the aerodrome licence-holder or proprietor, as the case may be.

4 STANDARD HAND SIGNALS

4.1 The hand signals set out in Appendix I have the meanings indicated in that Appendix.

4.2 These signals are to be given as required by persons involved in the parking of aircraft.

4.3 Pilots in command of aircraft are to comply with all signals so given except where a pilot in command of an aircraft considers that to do so would jeopardise the safety of the aircraft or of its passengers or of persons or property on the ground.

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APPENDIX I

STANDARD HAND SIGNALS TO BE USED BY GROUND PERSONNEL MARSHALLING AIRCRAFT

Note 1: These signals are designed for use by the signalman, using lights where necessary, to facilitate observation by the pilot, and facing the aircraft in a position:

(a) for fixed wing aircraft — forward of the left wing tip within view of the pilot; and

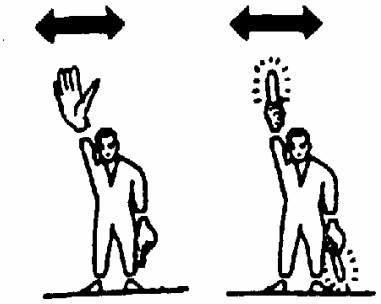
(b) for helicopters — where the signalman can best be seen by the pilot.

Note 2: The meaning of the relevant signals remains the same if bats, illuminated wands or torchlights are held.

Note 3: The aircraft engines are numbered, for the signalman facing the aircraft, from right to left (i.e. No. 1 engine being the port outer engine).

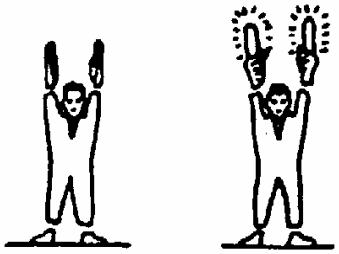
1. To proceed under further guidance by signalman

Signalman directs pilot if traffic conditions on aerodrome require this action.



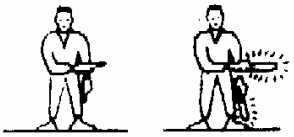
2. This bay

Arms above head in vertical position with palms facing inward.



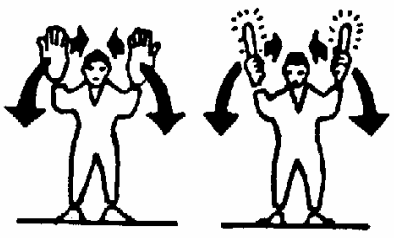
3. Proceed to next signalman

Right or left arm down, other arm moved across the body and extended to indicate the direction of the next signalman.



4. Move ahead

Arms a little aside, palms facing backward and repeatedly moved upward-backward from shoulder height.



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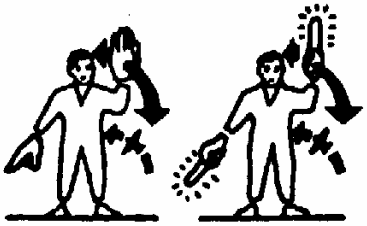
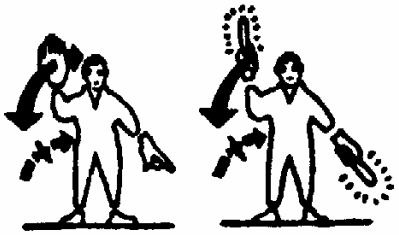
5. (a) Turn to your left

Right arm downward, left arm repeatedly moved upward-backward. Speed of arm movement indicates rate of turn.



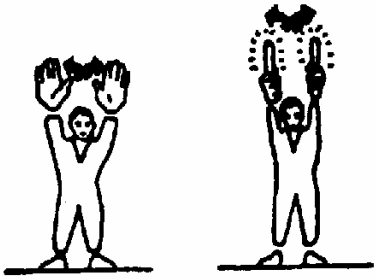
(b) Turn to your right

Left arm downward, right arm repeatedly moved upward-backward. Speed of arm movement indicates rate of turn.



6. Stop

Arms repeatedly crossed above head (the rapidity of the arm movement should be related to the urgency of the stop, i.e. the faster the movement the quicker the stop).

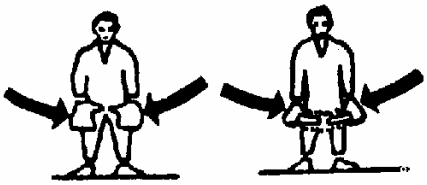


7. Start engine

Left hand overhead with appropriate number of fingers extended to indicate the number of the engine to be started, and circular motion of the right hand at head level.

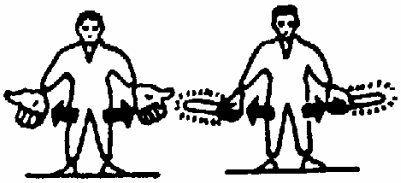
8. (a) Insert chocks

Arms down palms facing inwards, swing arms from extended position inwards.



(b) Chocks away

Arms down palms facing outwards, swing arms outwards.



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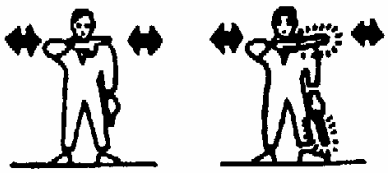
9. Cut engines

Either arm and hand level with the shoulder, hand across throat, palm downward. The hand is moved sideways with the arm remaining bent.



10. Slow down

Arms down with palms toward ground, then moved up and down several times.

11. (a) Engage brakes

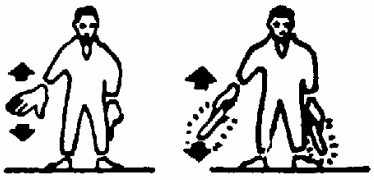
Raise arm and hand, with fingers extended, horizontally in front of body, then clench fist.

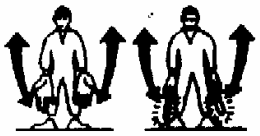
(b) Release brakes

Raise arm, with fist clenched, horizontally in front of body, then extend fingers.

12. Slow down engine(s) on indicated side

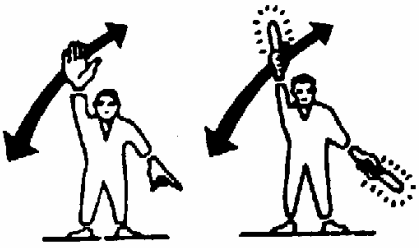
Arms down with palms toward ground, then either right or left hand waved up and down indicating that the left or right side engine(s) respectively should be slowed down.





13. Move back

Arms by sides, palms facing forward, swept forward and upward repeatedly to shoulder height.



14. Turns while backing

For tail to starboard: point left arm down, and right arm brought from overhead, vertical position to horizontal forward position, repeating right arm movement.

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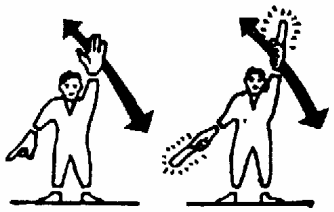
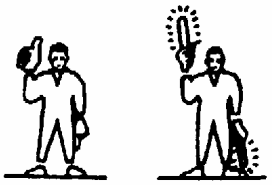
For tail to port: point right arm down, and left arm brought from overhead, vertical position to horizontal forward position, repeating left arm movement.



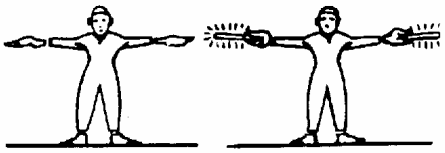
15. All clear

Right arm raised at elbow with thumb erect.



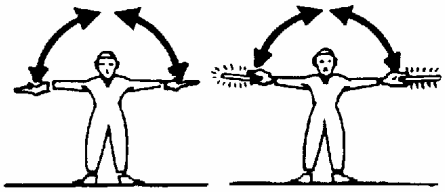
16. Hover

Arms extended horizontally sideways.



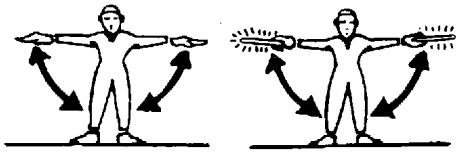
17. Move upwards

Arms extended horizontally to the side beckoning upwards, with palms turned up. Speed of movement indicates rate of ascent.



18. Move downwards

Arms extended horizontally to the side beckoning downwards, with palms turned down. Speed of movement indicates rate of descent.



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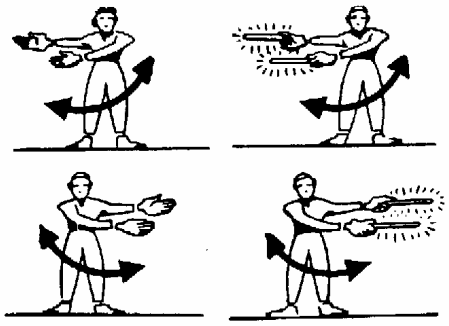
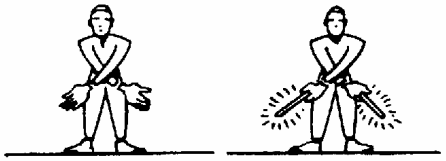
19. Move horizontally

Appropriate arm extended horizontally sideways in direction of movement and other arm moved in front of body in same direction, in a repeating movement.



20. Land

Arms crossed and extended downwards in front of the body.

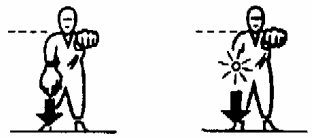


21. Winch up

Left arm horizontal in front of body, fist clenched, right hand with palm turned upwards making upwards motions.

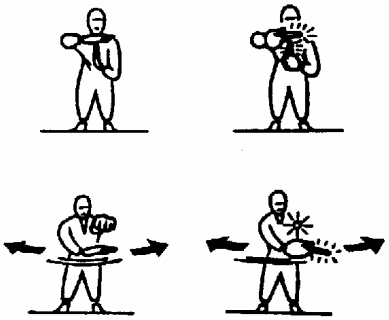
22. Winch down

Left arm horizontal in front of body, fist clenched, right hand with palm turned downwards making downward motions.



23. Your load has not released

Right arm held across chest, palm facing down. Left hand pointing up to form 'T'.



24. Release sling load — release winch load

Left arm extended forward horizontally, fist clenched, right hand making horizontal slicing movement below the left fist, palm downward.

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Civil Aviation Amendment Order (No. R3) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 207 (2) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R3) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 20.4 of the Civil Aviation Orders

Section 20.4 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 20.4 of the Civil Aviation Orders

SECTION 20.4

PROVISION AND USE OF OXYGEN AND PROTECTIVE BREATHING EQUIPMENT

1 APPLICATION

1.1 This section applies to all Australian aircraft.

2 INTERPRETATION

2.1 In this section:

cabin attendant means a crew member, other than a flight crew member, who is qualified in the execution of emergency procedures in accordance with section 20.11 of the Civil Aviation Orders.

cabin pressure altitude, in relation to aircraft with pressurised cabins, means the pressure altitude corresponding to the pressure in the cabin of the aircraft.

emergency descent safety period, in relation to an aircraft, means the period determined by doubling the time specified by its manufacturer as the time required for the aircraft to descend from its maximum operating altitude to 10 000 feet.

first aid oxygen means oxygen provided for emergency medical care from an aircraft storage system.

high-capacity aircraft means an aircraft with a passenger seating capacity exceeding 38 passenger seats or a payload capacity exceeding 4 200 kgs.

maximum operating altitude, in relation to an aircraft, means the highest altitude, according to its manufacturer, at which the aircraft may be operated.

protective breathing equipment means equipment used to protect crew members from the effects of smoke and toxic fumes and gases, being equipment that complies with the requirements of:

(a) section 108.26 of the Civil Aviation Orders; or
(b) TSO C116.

2.2 Where, in calculating the number of passengers for the purposes of subparagraphs 6.4 (a) and (b), 7.5 (a) and (b), 8.8 (a) and paragraph 9.1,

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the number calculated is, or includes, a fraction of a whole number, that fraction is to be disregarded and the number is to be taken to be, or is to be increased by, 1, as the case requires.

2.3 Where this section requires an amount of supplemental oxygen to be provided to flight crew members on flight deck duty, then for the purposes of determining that amount, the amount of oxygen provided at flight crew member duty stations for protective breathing purposes may be taken into account in determining that first-mentioned amount.

3 EQUIPMENT STANDARDS

3.1 Oxygen must be stored, and dispensing and control equipment must be installed, on an aircraft in accordance with section 108.26 of the Civil Aviation Orders.

3.2 The minimum rates of oxygen flow on an aircraft must be in accordance with the minimum rates specified in accordance with section 108.26 of the Civil Aviation Orders.

4 DUTIES OF CREW MEMBERS IN RELATION TO OXYGEN AND PROTECTIVE BREATHING EQUIPMENT

4.1 Where the provision of oxygen equipment or protective breathing equipment is required under this section in relation to the flight of an aircraft, a flight crew member must, before take-off of that aircraft, check that:

(a) the member's station oxygen equipment and protective breathing equipment is serviceable; and
(b) the communication systems associated with that equipment are serviceable; and
(c) the oxygen supply available is sufficient for the flight; and
(d) the member's oxygen mask is connected to the appropriate supply terminal; and
(e) where the oxygen mask is adjustable — the mask fits correctly.

4.2 Where the provision of protective breathing equipment for cabin attendants is required under this section in relation to the flight of an aircraft, a crew member nominated by the operator of the flight must, before take-off of that flight, check that the equipment is on board the aircraft and is serviceable.

4.3 Where a check has been conducted in accordance with paragraph 4.2 in respect of an aircraft and that aircraft has landed at any place, it is not necessary to conduct another such check before the aircraft takes-off from that place if a cabin attendant remains on board the aircraft while the aircraft is on the ground.

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4.4 Where an aircraft is to operate above Flight Level 250 a crew member must, before that Flight Level is reached, by means of oral instructions and, where necessary, practical demonstrations, inform the passengers on the aircraft of:

(a) the location of, and manner of operating, the oxygen dispensing equipment; and

(b) the necessity of using oxygen in the event of cabin depressurisation.

4.5 Where an aircraft is to operate above a cabin pressure altitude of Flight Level 140 a crew member must, before take-off of that aircraft, by means of oral instructions and, where necessary, practical demonstrations, inform the passengers on the aircraft of:

(a) the location of, and manner of operating, the oxygen dispensing equipment; and

(b) when it is necessary to use the oxygen dispensing equipment.

5 INFORMATION TO BE INCLUDED IN OPERATIONS MANUAL AND FLIGHT MANUAL

5.1 An operator must include in the operations manual required under regulation 215 of the *Civil Aviation Regulations 1988* to be provided by the operator, information relating to the following matters:

(a) the procedures to be followed in the operation of the oxygen systems in the aircraft to which the operations manual relates;

(b) the methods of administering oxygen to passengers;

(c) the methods of determining, by observation of the equipment, that oxygen is being supplied to dispensing units;

(d) the variation of the duration of the oxygen supply with varying cabin pressure altitude and numbers of passengers;

(e) the conditions of operation under which crew members must use oxygen;

(f) the procedures for demonstrating the donning and use of oxygen masks by passengers in accordance with paragraphs 4.4 and 4.5;

(g) schematic diagrams of the oxygen systems installed in the aircraft to which the operations manual relates.

5.2 Where a flight manual for an aircraft does not contain information and instructions relating to the matters referred to in subparagraphs 5.1 (a) and (c), the owner or operator, as the case may be, of the aircraft must alter the flight manual to include such information and instructions.

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6 SUPPLEMENTAL OXYGEN REQUIREMENTS FOR UNPRESSURISED AIRCRAFT

Supplemental oxygen for flight crew members

6.1 A flight crew member who is on flight deck duty in an unpressurised aircraft must be provided with, and continuously use, supplemental oxygen at all times during which the aircraft flies above 10 000 feet altitude.

6.2 A flight crew member must, in respect of any period during which the member is not on flight deck duty, be provided with the amount of supplemental oxygen that is provided to a crew member in accordance with paragraph 6.3.

Supplemental oxygen for other crew members

6.3 A crew member (not being a flight crew member on flight deck duty) in an unpressurised aircraft must be provided with supplemental oxygen:

(a) in respect of any period exceeding 30 minutes during which the aircraft flies between 10 000 feet altitude and Flight Level 120 (both inclusive); and

(b) at all times during which the aircraft flies above Flight Level 120;

and must use supplemental oxygen at all times during which the aircraft flies above Flight Level 140.

Supplemental oxygen for passengers

6.4 Where an unpressurised aircraft carrying passengers flies for more than 30 minutes above 10 000 feet altitude and up to and including Flight Level 140, the aircraft must carry sufficient supplemental oxygen to supply:

(a) 10% of the passengers with oxygen for 30 minutes; or

(b) 20% of the passengers with oxygen for 15 minutes.

6.5 Where an unpressurised aircraft carrying passengers flies above Flight Level 140, the aircraft must carry sufficient supplemental oxygen to supply each passenger with oxygen during all periods that the aircraft flies above Flight Level 140.

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7 SUPPLEMENTAL OXYGEN REQUIREMENTS FOR PRESSURISED AIRCRAFT ENGAGED IN FLIGHTS NOT ABOVE FLIGHT LEVEL 250

Application

7.1 This subsection applies to pressurised aircraft that do not fly above Flight Level 250.

Manner of calculating supplemental oxygen supply

7.2 In determining the amount of oxygen required to be carried on a pressurised aircraft for the purposes of paragraphs 7.3, 7.4 and 7.5, an operator is to determine that amount on the basis that:

(a) a cabin pressurisation failure will occur at a point on the planned route which is most critical from the standpoint of oxygen need; and

(b) after the failure, the aircraft will descend in accordance with the emergency procedures specified in the aircraft's flight manual (without exceeding its normal operating limitations) to a flight altitude or a Flight Level, as the case may be, that will allow the safe termination of the flight.

Supplemental oxygen for flight crew members

7.3 A flight crew member who is on flight deck duty in a pressurised aircraft to which this subsection applies must:

(a) be provided with at least a 15 minute supply of supplemental oxygen whenever the aircraft is to be operated above 10 000 feet flight altitude; and

(b) use supplemental oxygen at all times during which the cabin altitude exceeds 10 000 feet.

Supplemental oxygen for other crew members

7.4 A crew member (not being a flight crew member on flight deck duty) in a pressurised aircraft to which this subsection applies must:

(a) be provided with supplemental oxygen at all times during which the cabin altitude exceeds 10 000 feet; and

(b) use supplemental oxygen at all times during which the cabin pressure altitude exceeds Flight Level 140.

Supplemental oxygen for passengers

7.5 A pressurised aircraft to which this subsection applies that is to be operated above 10 000 feet flight altitude must carry sufficient supplemental oxygen:

(a) where the aircraft can safely descend to Flight Level 140 or a lower level within 4 minutes at all points along the planned route and maintain Flight Level 140 or a lower level for the remainder of the flight — to provide 10% of the passengers with supplemental

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oxygen for 30 minutes or 20% of the passengers with supplemental oxygen for 15 minutes; and

(b) where the aircraft cannot safely descend to, or maintain, Flight Level 140 or a lower level in accordance with subparagraph (a) — to provide each passenger with supplemental oxygen for so much of the flight time above Flight Level 140 that exceeds 4 minutes duration and to provide 10% of the passengers with supplemental oxygen for 30 minutes or 20% of the passengers with supplemental oxygen for 15 minutes.

8 SUPPLEMENTAL OXYGEN REQUIREMENTS FOR PRESSURISED AIRCRAFT ENGAGED IN FLIGHTS ABOVE FLIGHT LEVEL 250

Application

8.1 This subsection applies to pressurised aircraft that fly above Flight Level 250.

Manner of calculating supplemental oxygen supply

8.2 In determining the amount of oxygen required to be carried on a pressurised aircraft for the purposes of paragraphs 8.3, 8.6, and 8.8, an operator is to determine that amount on the basis that:

(a) a cabin pressurisation failure will occur at a point on the planned flight route which is most critical from the standpoint of oxygen need; and

(b) after the failure, the aircraft will descend in accordance with the emergency procedures specified in the aircraft's flight manual (without exceeding its normal operating limitations) to a flight altitude or a Flight Level, as the case may be, that will allow the safe termination of the flight.

Supplemental oxygen for flight crew members

8.3 A flight crew member who is on flight deck duty in a pressurised aircraft to which this subsection applies:

(a) must be provided with, and must use, supplemental oxygen at all times during which the cabin altitude exceeds 10 000 feet; and

(b) must be provided with at least:

(i) in the case of a high capacity aircraft that is to be operated above Flight Level 250 but not above Flight Level 450 — a 45 minute supply of oxygen; or

(ii) in the case of a high capacity aircraft that is to be operated above Flight Level 450 — a supply of oxygen for the period determined by adding 30 minutes to the aircraft's emergency descent safety period; or

(iii) in the case of an aircraft, other than a high capacity aircraft, that is to be operated above Flight Level 250 but not above

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Flight Level 450 — the supply of oxygen set out in paragraph 8.3.1; or

(iv) in the case of an aircraft, other than a high capacity aircraft, that is to be operated above Flight Level 450 — a supply of oxygen for the aircraft's emergency descent safety period.

8.3.1 For the purposes of sub-subparagraph 8.3 (b) (iii), the supply of oxygen that must be provided in an aircraft is:

(a) if the aircraft's flight manual sets out the time specified by its manufacturer as the time required for it to descend from its maximum operating altitude to 10, 000 feet:

(i) a supply for the aircraft's emergency descent safety period; or

(ii) a 10 minute supply;

whichever is more; or

(b) in any other case — a 15 minute supply.

8.4 Unless paragraph 8.5 applies, where a pressurised aircraft to which this subsection applies is operated above Flight Level 250, then at least 1 pilot seated at the controls of the aircraft must use supplemental oxygen at all times during which the aircraft is operated above Flight Level 250.

8.5 Paragraph 8.4 does not apply if an aircraft is equipped with a quick-donning type oxygen mask for the pilot or, if more than 1 pilot is required for the flight, each pilot. However, whenever the aircraft is operating above flight level 450, the pilot, or one of the pilots, seated at the controls of the aircraft must wear an oxygen mask that is properly fitted and supplying oxygen.

Supplemental oxygen for other crew members

8.6 A crew member (not being a flight crew member on flight deck duty) in a pressurised aircraft to which this subsection applies must:

(a) be provided with supplemental oxygen at all times during which the cabin altitude exceeds 10 000 feet; and

(b) use supplemental oxygen at all times during which the cabin pressure altitude exceeds Flight Level 140.

Use of portable oxygen equipment by cabin attendants

8.7 During flight in a pressurised aircraft above Flight Level 250, each cabin attendant must carry portable oxygen equipment containing at least a 15 minute oxygen supply, unless CASA is satisfied that sufficient portable oxygen units with masks, or spare oxygen outlets and masks, are distributed throughout the cabin so as to ensure the immediate availability of oxygen to each cabin attendant regardless of the attendant's location in the cabin.

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Supplemental oxygen for passengers

8.8 A pressurised aircraft that is to be operated above Flight Level 250 must carry an amount of supplemental oxygen that is sufficient:

(a) to provide:

(i) 10% of the passengers with oxygen during all periods when the cabin altitude is above 10 000 feet and up to and including Flight Level 140; and

(ii) each passenger with oxygen during all periods when the cabin pressure altitude exceeds Flight Level 140; or

(b) to provide each passenger with a 10 minute supply of oxygen;

whichever amount is the greater.

9 FIRST AID OXYGEN

9.1 Where:

(a) a pressurised aircraft operates above Flight Level 250; and

(b) a flight crew of more than 1 pilot is, under the aircraft's flight manual, required to fly the aircraft;

then the aircraft must carry sufficient first aid oxygen to supply 1% of the passengers with such oxygen for the entire planned duration of the flight.

10 PROTECTIVE BREATHING EQUIPMENT

Protective breathing equipment for flight crew members

10.1 A pressurised aircraft that, under the aircraft's flight manual, requires a flight crew of more than 1 pilot to fly the aircraft, must be equipped with:

(a) protective breathing equipment at each flight crew member duty station, being equipment that is capable of providing a 15 minute supply of protective oxygen for each flight crew member in accordance with subsection 7 of section 108.26 of the Civil Aviation Orders; and

(b) a portable protective breathing equipment unit on, or immediately adjacent to, the flight deck, being a unit that complies with subsection 7 of section 108.26 of the Civil Aviation Orders or with TSO C116.

10.2 In the case of an aircraft that is engaged in cargo only operations, the portable protective breathing equipment unit referred to in subparagraph 10.1 (b) must comply with subsection 7 of section 108.26 of the Civil Aviation Orders.

Protective breathing equipment for cabin attendants

10.3 On and after 1 January 1991, a pressurised aircraft engaged in passenger transport services must, as part of its equipment, be equipped

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with not less than the prescribed number of protective breathing equipment units for use by cabin attendants, being units that comply with TSO C116.

10.4 The prescribed number of units that, for the purposes of paragraph 10.3, must be carried on an aircraft is the number equal to:

(a) the number of hand-held fire extinguishers required to be carried on the aircraft under section 105 of the Civil Aviation Orders; or

(b) the number of cabin attendants that, under section 20.16.3 of the Civil Aviation Orders, must be carried as crew members;

whichever is the less.

10.5 The units referred to in paragraph 10.3:

(a) where it is practicable to do so — must be located adjacent to the hand held fire extinguishers carried on board the aircraft; and

(b) where it is not practicable to do so — must be located so that they are readily accessible to cabin attendants during flight; and

(c) must be installed in accordance with the equipment installation requirements specified in the certification standards that apply to the aircraft.

10.6 The unit required to be carried on an aircraft under subparagraph 10.1 (b) may be included in the number determined under paragraph 10.4.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 20.6 (as amended)

made under subregulations 5.11 (2) and 303 (1) of the *Civil Aviation Regulations 1988.*

This compilation was prepared on 9 August 2010 taking into account amendments up to *Civil Aviation Order 20.6 Amendment Order (No. 1) 2010.*

Prepared by the Legislative Drafting Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

Contents

Section 20.6 (Continuation of flight with 1 or more engines inoperative)

Section 20.6

Continuation of flight with 1 or more engines inoperative

1 Name of Order

This Order is Civil Aviation Order 20.6.

2 Application

This Order applies as a condition on the flight crew licence of the pilot in command of an Australian aircraft.

3 Requirements

3.1 When an engine of an aircraft fails in flight or where the rotation of an engine of an aircraft is stopped in flight as a precautionary measure to prevent possible damage, the pilot in command must notify the nearest Air Traffic Services Unit immediately, giving all relevant information and stating the action he or she intends to take in regard to the conduct of the flight.

3.2 The pilot in command of a multi-engine aircraft in which 1 engine fails or its rotation is stopped, may proceed to an aerodrome of his or her selection instead of the nearest suitable aerodrome if, upon consideration of all relevant factors, he or she deems such action to be safe and operationally acceptable. Relevant factors must include the following:

(a) nature of the malfunctioning and the possible mechanical difficulties which may be encountered if the flight is continued;

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(aa) the nature and extent of any city, town or populous area over which the aircraft is likely to fly;

(b) availability of the inoperative engine to be used;

(c) altitude, aircraft weight, and usable fuel at the time of engine stoppage;

(d) distance to be flown coupled with the performance availability should another engine fail;

(e) relative characteristics of aerodromes available for landing;

(f) weather conditions en route and at possible landing points;

(g) air traffic congestion;

(h) type of terrain, including whether the flight is likely to be over water;

(i) familiarity of the pilot with the aerodrome to be used.

Notes to Civil Aviation Order 20.6

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 20.6 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R4	8 December 2004	8 December 2004 (*see* s. 2)	
CAO 20.6 2010 No. 1	FRLI 6 August 2010	7 August 2010 (*see* s. 2)	

Table of Amendments

ad. = added or inserted am. = amended rep.= repealed rs. = repealed and substituted

Provision affected	How affected
s. 20.6	rs. 2004 No. R4
CAO title	am. CAO 20.6 2010 No. 1
subs. 1	ad. CAO 20.6 2010 No. 1
subs. 2	rs. CAO 20.6 2010 No. 1
subs. 3	am. CAO 20.6 2010 No. 1

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Civil Aviation Amendment Order (No. R6) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 235 (2) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R6) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 20.7.1 of the Civil Aviation Orders

Section 20.7.1 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 20.7.1 of the Civil Aviation Orders

SECTION 20.7.1

AEROPLANE WEIGHT LIMITATIONS — AEROPLANES ABOVE 5 700 KG — ALL OPERATIONS (PISTON-ENGINED)

1 APPLICATION

This section applies to piston-engined aeroplane types having a maximum permissible all-up weight in excess of 5 700 kg and which were registered in Australia prior to 1 June 1963.

2 TAKE-OFF WEIGHT LIMITATIONS

2.1 An aeroplane shall not take-off at a weight in excess of the weights determined in accordance with subparagraphs 2.1.1 to 2.1.4 of these Orders:

2.1.1 The permissible all-up weight as specified in its Certificate of Airworthiness.

2.1.2 The maximum take-off weight specified in the relevant Aeroplane Flight Manual for the altitude above sea level of the aerodrome concerned.

2.1.3 The lesser weight of either:

(a) the permissible landing weight at the destination aerodrome calculated in accordance with paragraph 3 of these Orders plus the weight of fuel that would normally be consumed in flying from the departure aerodrome to the destination aerodrome; or

(b) the permissible landing weight at the alternate aerodrome calculated in accordance with paragraph 3 of these Orders plus the weight of fuel that would normally be consumed in flying from the departure aerodrome to the alternate aerodrome.

Note: Subparagraph (b) will apply only when the flight plan includes an alternate aerodrome.

2.1.4 The weight calculated from the relevant current CASA Take-off Weight Chart or approved Company Take-off Weight Chart for the aerodrome type concerned in conjunction with either:

(a) the corrected effective operational length of the runway to be used for take-off under ambient conditions; or

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(b) the appropriate seasonal declared density altitude taken in conjunction with either:

(i) the corrected effective operational length of the runway for take-off under no wind conditions; or

(ii) the corrected effective operational length of any subsidiary runway for take-off under the minimum head-wind component that may result when the main runway cannot be used due to excessive cross-wind component, whichever gives the lesser weight.

Note: The weight calculated in accordance with subparagraph (b) (ii) above shall not apply to a subsidiary runway which is listed in the Operations Manual as being unsuited for take-off by the type of aeroplane concerned when using declared weight. When it is desired to use a subsidiary runway which has been so listed in the Operations Manual the take-off weight shall be calculated using the methods specified in subparagraph (a) of this paragraph.

2.2 Where, prior to the take-off, a significant change occurs in the value of any factor used in computing the permissible take-off weight which would have the effect of requiring a reduced all-up weight from that already computed, then a new all-up weight shall be calculated using the new value for the factor(s) concerned and the weight so determined shall be the maximum weight to be used for take-off.

2.3 Take-off weight charts which enable compliance with this Order are available on application to CASA. Instructions for the use of these charts are provided at Appendix 1.

3 LANDING WEIGHT LIMITATIONS

3.1 Except in an emergency, an aeroplane shall not land at a weight in excess of the least of the weights determined in accordance with subparagraphs 3.1.1 to 3.1.3 of these Orders.

3.1.1 The maximum permissible landing weight as specified in its Certificate of Airworthiness.

3.1.2 The maximum landing weight specified in the relevant Aeroplane Flight Manual for the altitude above sea level of the aerodrome concerned.

3.1.3 The weight calculated from the relevant CASA Landing Weight Chart or the approved Company Landing Weight Chart for the aeroplane type concerned in conjunction with the forecast pressure and temperature or the appropriate seasonal declared density altitude with either:

(a) the corrected effective operational length of the main runway for landing under no wind conditions; or

(b) the corrected effective operational length of a subsidiary runway for landing under the minimum head-wind component that may result when the main runway cannot be used due to excessive cross-wind component, whichever give the lesser weight.

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Note: The weight limitation calculated in accordance with subparagraph (b) above shall not apply to a subsidiary runway which is listed in the Operations Manual as being unsuited for landings for the type of aeroplane concerned.

3.2 Landing weight charts which enable compliance with this Order are available on application to CASA. Instructions for the use of these charts are provided at Appendix 2.

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APPENDIX 1
CASA TAKE-OFF WEIGHT CHARTS — P SERIES —
INSTRUCTIONS FOR USE

1 Under Ambient Conditions:

1.1 Set altimeter on 29.92 inches Hg or 1013.2 millibars and read the pressure altitude of the aerodrome.

1.2 Apply this altitude to the pressure altitude in feet co-ordinate on the relevant take-off weight chart. Move vertically to intersect the temperature line representing the ambient temperature. This temperature shall be obtained from the aerodrome meteorological station.

Note: When there is no aerodrome meteorological station the reading of the aeroplane outside air temperature indicator may be used.

1.3 From this point move horizontally to intersect the corrected effective operational length available for take-off.

1.4 Move vertically downwards to intersect the head-wind component line at a point corresponding to the ambient head-wind component.

1.5 Move horizontally and read take-off weight. Record the weight thus obtained.

1.6 Ascertain the elevation of the aerodrome.

1.7 Apply this elevation to the elevation of aerodrome co-ordinate. Move vertically to intersect the take-off climb limitation line.

1.8 From this point move horizontally and read the take-off weight. Record the weight thus obtained.

1.9 The maximum permissible take-off weight shall be the lesser of the 2 weights as determined in paragraphs 1.5 and 1.8 above.

1.10 The take-off weight as obtained by the foregoing method shall apply only where the aeroplane is to be flown in the configuration specified in the relevant Take-off Weight Chart and with the engine power specified therein. The use of any other configuration or engine power is prohibited except where an application to use some other condition has been made to CASA and it has approved such condition.

1.11 For purpose of take-off weight computations, head-wind components in excess of 20 knots shall be deemed to be 20 knots.

2 Under Declared Conditions:

2.1 Use the appropriate seasonal Declared Density Altitude Chart, and add the elevation of the aerodrome concerned to the value read from the chart and thus obtain the declared seasonal density altitude.

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2.2 Apply the declared seasonal density altitude to the density altitude co-ordinate of the take-off weight chart. Move horizontally to intersect the corrected effective operational length line corresponding to the corrected effective operational length available for take-off.

2.3 Move vertically downwards to intersect the zero head-wind component line.

2.4 From this point move horizontally read the take-off weight. Record the weight thus obtained.

2.5 Apply the valuation of the elevation of the aerodrome to the aerodrome elevation co-ordinate. Move vertically to intersect the take-off climb limitation line.

2.6 From this point move horizontally and read the all-up weight. Record the weight thus obtained.

2.7 The maximum permissible take-off weight shall be the lesser of the 2 weights as determined in paragraphs 2.4 and 2.6 above.

2.8 The take-off weight as obtained by the foregoing method shall apply only where the aeroplane is to be flown in the configuration specified in the relevant Take-off Weight Chart and with the engine power specified therein. The use of any other configuration or engine power is prohibited except where an application to use some other condition has been made to CASA and it has approved such condition.

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APPENDIX 2
CASA LANDING WEIGHT CHARTS — P SERIES —
INSTRUCTIONS FOR USE

1 Under Ambient Conditions:

1.1 Obtain the forecast temperature and pressure altitude for the destination aerodrome.

1.2 Apply the pressure altitude to the pressure altitude in feet co-ordinate on the chart. Move vertically to intersect the temperature line representing the forecast temperature.

1.3 From this point move horizontally to intersect the corrected effective operational length to the corrected effective operational length available for landing.

1.4 Move vertically downwards and read take-off weight. Record the weight thus obtained.

1.5 Ascertain the elevation of the aerodrome.

1.6 Apply this elevation to the aerodrome elevation co-ordinate. Move vertically to intersect the landing climb limitation line.

1.7 From this point move horizontally and read the landing weight. Record the weight thus obtained.

1.8 The maximum permissible landing weight is the lesser of the 2 weights as determined in paragraphs 1.4 and 1.7 above.

1.9 The landing weight as obtained by the foregoing method shall apply only when the aeroplane is to be flown in the configuration specified in the relevant Landing Chart. The use of any other configuration is prohibited except where an application to use some other condition has been made to CASA and it has approved such condition.

1.10 When it is necessary to specify an alternate aerodrome, the above procedure shall be repeated for that aerodrome.

2 Under Declared Conditions:

2.1 Use the appropriate seasonal Declared Density Altitude Chart, and add the elevation of the destination aerodrome to the value(s) read from the chart and thus obtain the declared seasonal density altitude.

2.2 Apply the declared seasonal density altitude to the density altitude co-ordinate of the landing weight chart. Move horizontally to intersect the corrected effective operational length line corresponding to the corrected effective operational length available for landing.

2.3 Move vertically downwards and obtain the landing weight. Record the weight thus obtained.

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2.4 Ascertain the elevation of the destination aerodrome.

2.5 Apply this elevation to the aerodrome elevation co-ordinate. Move vertically to intersect the landing climb limitation line.

2.6 From this point move horizontally and read the landing weight. Record the weight thus obtained.

2.7 The maximum permissible landing weight shall be the lesser of the 2 weights as determined in paragraphs 2.3 and 2.6 above.

2.8 The landing weight as obtained by the foregoing method shall apply only where the aeroplane is to be flown in the configuration specified in the relevant Landing Chart. The use of any other configuration is prohibited except where an application to use some other condition has been made to CASA and it has approved such condition.

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Australian Government

Civil Aviation Safety Authority

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

made under subregulation 235 (2) of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 28 May 2014 taking into account amendments up to *Civil Aviation Order 20.7.1B Amendment Instrument 2014 (No. 1)*.

Prepared by the Legislative Drafting Section, Legal Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

Contents

Section 20.7.1B

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

2 Application

2.1 Subject to paragraph 2.2, this section applies to:

(a) all aeroplanes driven by 2 or more jet engines having a maximum take-off weight in excess of 2 722 kg; and

(b) all aeroplanes driven by 2 or more turbine propeller engines having a maximum take-off weight in excess of 5 700 kg; and

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(c) all new types of aeroplanes first registered in Australia after 1 June 1963, driven by 2 or more piston engines and having a maximum take-off weight in excess of 5 700 kg.

Note Aeroplanes of maximum take-off weight exceeding 2 722 kg and not subject to Civil Aviation Order 20.7.1, 20.7.1B or 20.7.4 remain subject to subregulation 235 (2) of the *Civil Aviation Regulations 1988*.

2.2 For paragraph 2.1:

(a) a certificate of airworthiness for the aircraft must be in force; and

(b) the certificate must include a statement to the effect that the certificate is issued in the transport, commuter or normal category.

Note 1 The only normal category aeroplanes with maximum take-off weights exceeding 5 700 kg are SFAR 41 aeroplanes. See paragraph 7.6.
Note 2 Aeroplanes of maximum take-off weight exceeding 5 700 kg and not subject to sections 20.7.1 or 20.7.1B of the Civil Aviation Orders remain subject to subregulation 235 (2) of the Regulations.

3 Definitions

3.1 In this section:

accelerate-stop distance available means the sum of:

(a) the length of the take-off run available; and

(b) if stopway is provided — the length of the stopway.

actual landing distance means the landing distance required for the actual conditions, using the deceleration devices planned to be used for the landing.

Note Actual landing distance required is explained in *Safety Alert for Operators, SAFO 06012* published by the USA Federal Aviation Administration.

approved foreign flight manual, in relation to an aeroplane, means a flight manual for the aeroplane approved by the relevant regulatory aviation authority of the country where the aeroplane is, or was, manufactured.

Arinc 424 RF path terminator means a segment of a flight path known as radius-to-fix, terminating as specified in *Aeronautical Radio Incorporated Specification 424-17*.

clearway means a defined rectangular area at the end of a strip centrally located about the extended centre-line of its associated runway and declared to be available as a suitable area over which an aircraft taking off can continue to climb to the minimum height required to establish obstacle clearance.

contaminated runway means a runway that has more than 25% of the runway surface area within the required length and width being used covered by:

(a) water, or slush, more than 3 mm deep; or

(b) loose snow more than 20 mm deep; or

(c) compacted snow or ice, including wet ice.

FMS means the flight management system of an aeroplane.

gross flight path means the flight path it is assumed an aeroplane will follow when flown in a particular configuration in accordance with specified procedures in ambient conditions and that is established from the aeroplane's certification performance data representing the average fleet performance of the aeroplane type.

landing distance available means the length of the runway declared to be available and suitable for the ground run of an aeroplane landing.

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manufacturer's data manual, in relation to an aeroplane, means a publication (however described) produced by the manufacturer of the aeroplane as a guide for the flight crew in the operation of the aeroplane.

net flight path means the gross flight path of an aeroplane reduced in elevation or extended in length by margins specified in this section. The margins are to allow for factors such as deterioration in aeroplane performance and variations in pilot techniques in relating aeroplane performance to obstacle clearance.

RF leg means a radius-to-fix leg encoded in the navigation database for an approved RNP operation.

RNP means required navigation performance as displayed to the flight crew by the FMS.

RNP type means a level of navigation performance capability expressed in nautical miles and specified in the aeroplane's flight manual to indicate the minimum navigation system requirements needed to operate in an area, on a route or on a procedure.

RNP-capable aeroplane means an aeroplane:

(a) that is approved for area navigation (RNAV); and

(b) that meets the RNP capability necessary for an approved RNP operation in accordance with the aeroplane's flight manual; and

(c) whose FMS permits the RNP type to be selected and displayed to the flight crew.

speeds:

V_1 means the take-off decision speed;

V_1 (wet) means a reduced V_1 established for use on a wet or contaminated runway;

V_2 means the initial climb out speed which is not less than the take-off safety speed;

V_R means the speed at which aeroplane rotation is initiated by the pilot during take-off;

V_S means the minimum speed in a stall or the minimum steady flight speed.

stopway means a defined rectangular area at the end of a runway, centrally located about the extended centre-line of its associated runway, declared to be available as a suitable area in which an aeroplane may be stopped after an interrupted take-off.

suitable aerodrome means an aerodrome approved for normal operations and which is forecast not to require an alternate during the period nominated for possible use. Operational requirements for suitable aerodromes are as promulgated by CASA.

take-off distance available means the sum of:

(a) the length of the take-off run available; and

(b) if clearway is provided — the length of the clearway.

take-off run available means the length of runway declared to be available and suitable for the ground run of an aeroplane taking off.

Note If any part of the take-off run available is lost due to the alignment of the aircraft at the start of the take-off run, account must be taken of the loss.

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the Regulations means the *Civil Aviation Regulations 1988*.

wet runway means a runway that:

(a) is covered by surface water not more than 3 mm deep; or

(b) is covered by slush or loose snow equivalent to surface water not more than 3 mm deep; or

(c) has sufficient moisture on the surface to cause it to appear reflective, but without significant areas of standing water.

Note The distances and areas mentioned in the above definitions are normally declared to be available by the national aviation authority. In Australia, they are specified in Aeronautical Information Publications but may be the subject of a separate approval from CASA.

4 Take-off weight limitations

4.1 For the purposes of paragraph 235 (2) (a) of the Regulations, the maximum weight that an aeroplane to which this section applies may not exceed at take-off is the least of the weights determined in accordance with subparagraphs (a) to (d):

(a) a weight at which the take-off distance and accelerate-stop distance required under subsection 6 for the aerodrome elevation, ambient temperature, wind component along the runway, runway slope and runway surface conditions at the time of take-off are equal to or less than the take-off distance and accelerate-stop distance available in the direction of take-off. Approved declared conditions may be used instead of the ambient temperature and aerodrome elevation;

(b) a weight that will permit compliance with the take-off climb requirements mentioned in subsection 7 taking into account either ambient temperature and aerodrome elevation, or approved declared conditions;

(ba) for aeroplanes with maximum take-off weight in excess of 5 700 kg, a weight that will permit compliance with the obstacle clearance requirements mentioned in paragraph 7.5 and subsection 12 for take-off from a dry runway (whether it is dry or not) and taking into account either wind conditions, ambient temperature and aerodrome elevation, or wind conditions and approved declared conditions;

(c) a weight which will permit compliance with the en-route obstacle clearance requirements specified in subsection 12;

(d) a weight which, allowing for normal consumption of fuel and oil in flight to the destination and alternate aerodrome, will permit compliance with the landing weight limitations mentioned in subsection 5.

5 Landing weight limitations

5.1 For the purposes of paragraph 235 (2) (b) of the Regulations, the maximum weight which an aeroplane to which this section applies may not exceed at landing is the least of the weights determined in accordance with subparagraphs (a) to (c):

(a) a weight at which the landing distance required in accordance with subsection 11 for the aerodrome elevation, wind component along the runway, runway slope (when exceeding 1%) and runway surface conditions at the time of landing, is equal to or less than the landing distance available in the direction of landing;

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(b) a weight which will permit compliance with the approach climb requirements specified in subsection 9, taking into account forecast or ambient temperature and aerodrome elevation or approved declared conditions;

(c) a weight which will permit compliance with the landing climb requirements specified in subsection 10 taking into account forecast or ambient temperature and aerodrome elevation or approved declared conditions.

6 Accelerate-stop and take-off distance required

6.1 For subparagraph 4.1 (a), and subject to paragraphs 6.3.4 and 6.4, the accelerate-stop distance required is the distance set out in the flight manual.

6.2.1 For subparagraph 4.1 (a), and subject to paragraphs 6.3.4 and 6.4, the take-off distance required is the distance set out in the flight manual.

6.2.2 Subject to paragraph 6.4, if the take-off distance required at the take-off weight selected by the pilot in command is greater than the take-off run available, the pilot in command must ensure that:

(a) if the flight manual sets out information about take-off run required — the take-off run required does not exceed the take-off run available; or

(b) if the flight manual does not set out information about take-off run required — the take-off distance required does not exceed the take-off run available by more than the lesser of 60 metres or the length of clearway included in the take-off distance available.

6.3.1 For a take-off from a wet or contaminated runway, V_1 may be less than V_1 appropriate to a dry runway but not less than V_1 (wet).

6.3.2 V_1 (wet) must:

(a) allow the aeroplane to reach a height at least 15 feet above the runway after the aeroplane has:

(i) suffered an engine failure that is recognised by the pilot at V_1 (wet); and

(ii) travelled a distance along the runway equal to the take-off distance required; and

(b) subject to paragraph 6.4, be determined from the flight manual or the operations manual for the aircraft; and

(c) not be less than the minimum control speed on the ground (Vmcg).

6.3.3 For a take-off from a wet runway:

(a) the take-off weight must not exceed that permitted for take-off from the runway when dry under the same conditions of ambient temperature and wind component along the runway; and

(b) either:

(i) if the flight manual or the operations manual allows the take-off distance available to include clearway — the take-off run required must not exceed the take-off run available; or

(ii) in any other case — the take-off distance available must not include clearway.

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6.3.4 Subject to paragraph 6.4, for a take-off from a contaminated runway:

(a) the accelerate-stop distance required and the take-off distance required must be:

(i) the distances set out in the flight manual or the operations manual for operations conducted on contaminated runways; or

(ii) the distances approved by CASA for operations conducted on runways covered by slush, snow or a depth of water; and

(b) the take-off weight must not exceed that permitted for take-off from the runway when wet under the same conditions of ambient temperature and wind component along the runway; and

(c) either:

(i) if the flight manual or the operations manual allows the take-off distance available to include clearway — the take-off run required must not exceed the take-off run available; or

(ii) in any other case — the take-off distance available must not include clearway.

6.4 For subparagraph 4.1 (a), paragraph 6.2.2 and paragraph 6.3.1, an aeroplane engaged in private operations must be operated so that compliance with the runway length requirements is demonstrated using data set out in:

(a) the flight manual; or

(b) the manufacturer's data manual; or

(c) the approved foreign flight manual.

Note The data contained in some manufacturers' data manuals is unfactored and makes no allowance for degraded aircraft performance.

6.5 Nothing in paragraph 6.4 affects subsections 7 and 12.

7 Take-off climb performance

7.1 In the take-off configuration assuming failure of the critical engine so that it is recognised at V_1, an aeroplane must be able to climb without ground effect at the speed established as the speed at which the aeroplane becomes airborne and in this configuration, without landing gear retraction, achieve a gross gradient of climb which is positive for two-engined aeroplanes, 0.3% for three-engined aeroplanes and 0.5% for four-engined aeroplanes.

7.2 In the take-off configuration that exists with the critical engine inoperative and the landing gear fully retracted, the aeroplane at speed V_2 must be able to achieve a gross gradient of climb of at least:

(a) if the aeroplane is a commuter type aeroplane — 2%; and

(b) if the aeroplane is not a commuter type aeroplane:

(i) if it has 2 engines — 2.4%; and

(ii) if it has 3 engines — 2.7%; and

(iii) if it has 4 engines — 3%.

7.3.1 An aeroplane may be accelerated in level flight from V_2 speed to final take-off climb speed at a height above the take-off surface that is the greater of:

(a) 400 feet; or

(b) the height necessary to achieve obstacle clearance in accordance with paragraphs 12.1 and 12.2.

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7.3.2 During any such level flight acceleration manoeuvre, an aeroplane with the critical engine inoperative must have an available gross gradient of climb of at least:

(a) for a twin-engined aeroplane — 1.2%; or

(b) for a 3-engined aeroplane — 1.4%; or

(c) for a 4-engined aeroplane — 1.5%.

7.4.1 In the en-route configuration existing at the end of the level flight acceleration manoeuvre, an aeroplane must be able to achieve a gross gradient of climb of at least:

(a) for a twin-engined aeroplane — 1.2%; or

(b) for a 3-engined aeroplane — 1.4%; or

(c) for a 4-engined aeroplane — 1.5%.

7.4.2 The gradient of climb must be achievable at final take-off climb speed with the critical engine inoperative and the remaining engines at maximum continuous power or thrust.

7.5 In determining the net flight path of an aeroplane to show compliance with subsection 12, the gross gradients of climb achieved in paragraphs 7.2 and 7.4.1 must be reduced by 0.8% for twin-engined aeroplanes, 0.9% for three-engined aeroplanes and 1.0% for four-engined aeroplanes. Similarly the horizontal distance to accelerate in compliance with paragraph 7.3.1 must be increased due to the acceleration reduction equivalent to the climb gradient reductions specified in this paragraph.

Note The net flight path and the gross flight path may be considered identical when the aeroplane is in the take-off configuration described in paragraph 7.1.

7.6 In this section:

commuter type aeroplane means:

(a) a SFAR 41 aeroplane; or

(b) an aeroplane that is certificated as a commuter category aircraft.

SFAR 41 aeroplane means an aeroplane that:

(a) is certificated as a normal category aircraft; and

(b) is such that an applicant under part 4 (c) of SFAR No. 41 would be entitled to a type certificate amendment or a supplemental type certificate that shows compliance with Annex 8 to the Chicago Convention in relation to the aeroplane; and

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

SFAR No. 41 means Special Federal Aviation Regulation No. 41 of the United States of America.

8 En-route climb performance

8.1 The en-route climb performance of an aeroplane with the critical engine inoperative is to be determined taking into account all normal operating altitudes, operating weights, and anticipated temperatures.

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8.2 The en-route climb performance of a three- or four-engined aeroplane with the 2 most critical engines inoperative is to be determined taking into account all normal operating altitudes, operating weights, and anticipated temperatures.

8.3 In determining the net flight path of an aeroplane to show compliance with subsection 12, the gross climb gradients established in accordance with paragraph 8.1 must be reduced by 1.1% for twin-engined aeroplanes, 1.3% for three-engined aeroplanes and 1.4% for four-engined aeroplanes. Similarly the gross climb gradients established in accordance with paragraph 8.2 must be reduced by 0.3% for three-engined aeroplanes and 0.5% for four-engined aeroplanes.

9 Approach climb performance

9.1 For paragraph 5.1 (b), the approach climb requirements are met if, in the approach configuration with the critical engine inoperative at a speed not more than 1.5 V_S, an aeroplane has a gross gradient of climb of at least:

(a) for a twin-engined aeroplane — 2.1%; or

(b) for a 3 engined aeroplane — 2.3% or

(c) for a 4 engined aeroplane — 2.4%.

10 Landing climb performance

10.1 For the purposes of subparagraph 5.1 (c), the landing climb requirements are met if, in the landing configuration an aeroplane has a gross gradient of climb of not less than 3.2% at a climbing speed not in excess of 1.3 V_S with all engines operating.

11 Landing distance required

11.1 When determining the maximum weight for take-off of a jet-engined aeroplane of maximum take-off weight greater than 5 700 kg for the purpose of subparagraph 4.1 (d), the landing distance required is:

(a) for an aeroplane engaged in regular public transport operations when the appropriate weather reports and forecasts, or a combination, indicate that the runways will be dry at the estimated time of arrival, or in charter operations — 1.67 times the distance required to bring the aeroplane to a stop on a dry runway; or

(b) for an aeroplane engaged in regular public transport operations when the appropriate weather reports and forecasts, or a combination, indicate that the runways may be wet at the estimated time of arrival:

(i) 1.92 times the distance required to bring the aeroplane to a stop on a dry runway; or

(ii) the distance set out in the flight manual or operations manual for operations conducted on wet runways.

11.2 When determining the maximum weight for landing of a jet-engined aeroplane of maximum take-off weight greater than 5 700 kg for the purpose of subparagraph 5.1 (a), the landing distance required is 1.67 times the distance required to bring the aeroplane to a stop on a dry runway or, if actual landing distance data is supplied by the aircraft's type certificate holder, 1.15 times the actual landing distance.

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Note Subparagraph 4.1 (d) refers to determining the permissible landing weight before take-off and subparagraph 5.1 (a) refers to re-assessing the permissible landing weight after take-off.

11.3 For subparagraphs 4.1 (d) and 5.1 (a), when determining the maximum weight for take-off and landing, respectively, of a jet-engined aeroplane of maximum take-off weight not greater than 5 700 kg engaged in regular public transport operations, the landing distance required is 1.43 times the distance required to bring the aeroplane to a stop on a dry runway.

11.4 When determining the maximum weight for take-off of a propeller-driven aeroplane for the purpose of subparagraph 4.1 (d), the landing distance required in regular public transport operations and charter operations is:

(a) when the appropriate weather reports and forecasts, or a combination, indicate that the runways will be dry at the estimated time of arrival — 1.43 times the distance required to bring the aeroplane to a stop on a dry runway; or

(b) when the appropriate weather reports and forecasts, or a combination, indicate that the runways may be wet at the estimated time of arrival:

(i) for a landing at a destination aerodrome — 1.67 times the distance required to bring the aeroplane to a stop on a dry runway; or

(ii) for a landing at an alternate aerodrome — 1.43 times the distance required to bring the aeroplane to a stop on a dry runway.

11.5 When determining the maximum weight for landing of a propeller-driven aeroplane for subparagraph 5.1 (a), the landing distance required in regular public transport operations and charter operations is 1.43 times the distance required to bring the aeroplane to a stop on a dry runway.

11.6 Subject to paragraph 11.8, the distance required to bring the aeroplane to a stop on a dry runway must be the horizontal distance necessary to land and come to a complete stop from a point 50 feet above the landing surface using information set out in the flight manual.

11.7 Subject to paragraph 11.8, for a landing on a contaminated runway, the landing distance required is:

(a) the distance set out in the flight manual or the operations manual for operations conducted on contaminated runways; or

(b) the distance approved by CASA for operations conducted on runways covered by slush, snow or a depth of water; or

(c) if actual landing distance data is supplied by the holder of the aircraft's type certificate — 1.15 times the actual landing distance.

11.8 For subparagraph 4.1 (d) and paragraph 5.1, an aeroplane engaged in private operations or aerial work operations, or a jet-engined aeroplane of maximum take-off weight not greater than 5 700 kg engaged in charter operations, must be operated so that compliance with the landing requirements is demonstrated using data set out in the flight manual or the manufacturer's data manual.

Note The data contained in some manufacturers' data manuals is unfactored and makes no allowance for degraded aircraft performance.

11.9 Paragraphs 11.2, 11.3, 11.5, 11.7 and 11.8 do not apply in the case of an emergency.

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12 Obstacle clearance requirements

12.1 For the purposes of subparagraph 4.1 (ba), the take-off obstacle clearance requirements are met if the net flight path of the aeroplane, following failure of the critical engine so that it is recognised at V_1 appropriate to a dry runway, would clear by at least 35 feet vertically all obstacles in the take-off area. For the purpose of meeting this requirement, the planned departure procedure may include a change of heading but, in that event, the change of heading must not be initiated before a point where the net flight path clears all obstacles by at least 50 feet and, for the duration of the turn, the net flight path must clear by at least 50 feet vertically all obstacles in the take-off area. The planned angle of bank must not exceed 15°, except that in an approved RNP operation the planned angle of bank must not exceed 25° subject to the aeroplane's flight manual containing data that supports the planned angle of bank. The data must provide an increased take-off safety speed V_2 when planning an angle of bank greater than 15°. It must also contain data to allow construction of the net flight path when using an increased take-off safety speed V_2 and when planning to use an angle of bank greater than 15°.

Note If an engine failure is recognised at or after V_1 (wet) during take-off from a wet or contaminated runway, the net flight path may clear obstacles by less than 35 feet, or, during a turn, by less than 50 feet.

12.1A In paragraph 12.1, take-off area means the area calculated by the operator in accordance with paragraph 12.1.1 or subsection 12A, at the operator's discretion.

12.1B However, the operator is not required to calculate the area beyond the point on the planned flight path at which the net flight path complies with paragraph 12.4.

12.1.1 Unless determined in accordance with subsection 12A, the take-off area is:

(a) in the case of V.M.C. operations by aeroplanes below 22 700 kg maximum take-off weight — the area on either side of the planned flight path within a lateral distance of 150 feet plus 0.125D where D is distance measured horizontally along the planned flight path and commencing at the end of the take-off distance available. Despite this requirement, the area more than 1 000 feet either side of the planned flight path need not be considered unless the planned flight path involves a change of heading in excess of 15^{o}. In this latter event the lateral area will continue to expand throughout the turn and the limiting lateral distance shall become the greater of 1 000 feet or the distance represented by 150 feet plus 0.125D where D is measured to the point of completion of the turn;

(b) in the case of V.M.C. operations by aeroplanes at or above 22 700 kg maximum take-off weight and all I.M.C. operations — the area on either side of the planned flight path within a lateral distance of 250 feet plus 0.125D where D is distance measured horizontally along the planned flight path and commencing at the end of the take-off distance available. If the aircraft is equipped and approved to conduct RF legs and any turns, and the departure procedures are constructed using ARINC 424 RF path terminators, then the lateral expansion of the take-off area may be discontinued when the perimeter of the take-off area reaches:

(i) RNP set equal to, or greater than, 0.5 — 900 metres either side of the defined flight path; or

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(ii) RNP set equal to, or less than, 0.2 — 370 metres either side of the defined flight path; or

(iii) RNP set to more than 0.2 but less than 0.5 — a distance either side of the defined flight path derived by linear interpolation between 370 metres and 900 metres according to the RNP.

12.2 In the application of paragraph 12.1, it is to be assumed that the point on the net flight path where a horizontal flight segment commences is the same horizontal distance from the end of the runway as the point where the gross flight path intersects the height selected for the level flight acceleration manoeuvre.

Note This paragraph requires the height selected by the operator for the level flight acceleration manoeuvre to be more than 35 feet higher than the height of the highest obstacle in the take-off area.

12.3.1 For paragraph 12.1, an obstacle-clear take-off gradient, for a runway and a direction, published in Aeronautical Information Publications, may be used for the part of the take-off area commencing at the end of the take-off distance available and extending for the length of the surveyed area on which the gradient is based, despite the fact that the rate of divergence of the surveyed area may be less than 0.125D and that the length of the inner edge of the surveyed area may be less than 300 feet.

12.3.2 The requirements mentioned in paragraph 12.1 are met for a part of the take-off area if the gradient of the net flight path in that part is not less than the obstacle-clear take-off gradient.

12.3.3 The obstacle-clear take-off gradient is taken to be zero at the height of the highest obstacle within the take-off area.

12.4 For the purposes of subparagraph 4.1 (c), and subject to paragraph 12.5, the en-route obstacle clearance requirements are met if, in the en-route configuration with the critical engine inoperative the net flight path of an aeroplane under V.M.C. clears by 1 000 feet vertically all obstacles within 5 nautical miles of the aeroplane's track or, under I.M.C., by such greater distance as is determined by the accuracy of the navigation aid(s) used. At the pressure altitude required to achieve this clearance of the critical en-route obstacles the net flight path must have a positive slope.

12.5 If compliance with paragraph 12.4 is not possible, a "drift down" procedure may be planned. For this purpose it must be established that, following failure of the critical engine at any point during climb or cruise, a net flight path from that point to a suitable aerodrome will clear, by 2 000 feet vertically, all obstacles within 5 miles laterally of the aeroplane's track under V.M.C. or, in the case of I.M.C., obstacles within such greater lateral distance from the aeroplane's track as is determined by the accuracy of the navigation aid(s) used.

12.6 The net flight path in the en-route configuration must have a positive slope at 1 500 feet above the aerodrome where a landing is assumed to be made following engine failure. If the aeroplane is to be landed at other than the destination or alternate aerodrome following an engine failure that aerodrome must be specified in the operational flight plan and be suitable for landing.

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12.7 The following factors must be taken into account when determining the net flight path in the en-route configuration:

(a) the effect of wind;

(b) temperature (forecast temperature may be used in the determination of en-route net flight paths);

(c) pressure altitude;

(d) fuel and oil consumption;

(e) fuel jettisoning — in accordance with an approved procedure, consistent with reaching an aerodrome;

(f) the effect of ice protection systems when anticipated weather conditions along the route indicate possibility of icing conditions.

12A Alternative take-off area requirements

12A.2 Subject to paragraphs 12A.3, 12A.4 and 12A.5, the take-off area consists of the area on either side of the planned flight path within a lateral distance calculated using the formula:

90 metres + 0.125D

where **D** is the distance measured horizontally along the planned flight path and commencing from the end of the take-off distance available.

12A.3 Obstacles at a distance greater than 600 metres on either side of the planned flight path need not be cleared:

(a) if the planned flight path does not include a change of heading of more than 15^{o}; or

(b) in the case of operations conducted in V.M.C. by day.

12A.4 If paragraph 12A.3 does not apply, obstacles at a distance greater than 900 metres on either side of the planned flight path need not be cleared.

12A.5 Despite paragraphs 12A.3 and 12A.4, for an RNP-capable aeroplane engaged in an approved RNP operation, the expansion of the take-off area may be discontinued when the perimeter of the take-off area reaches:

(a) if RNP is set equal to or greater than 0.5 — 900 metres on either side of the defined flight path; or

(b) if RNP set to or less than 0.2 — 370 metres on either side of the defined flight path; or

(c) if RNP is set to more than 0.2 but less than 0.5 — a distance on either of the defined flight path, derived by linear interpolation, between 370 metres and 900 metres according to RNP.

14 Aeroplane configuration and procedures

14.1 Paragraph 14.1A applies if:

(a) the manufacturer of, or the holder of the type certificate for, an aeroplane has published advice, recommendations or guidance (the ***information***) about the performance of the aeroplane in an emergency, unusual operating conditions or an abnormal configuration; and

(b) the aeroplane is in the emergency, conditions or configuration.

14.1A The pilot in command of the aeroplane must take the information into account when planning the take-off or landing of the aeroplane.

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14.1B In subparagraph 14.1 (a), ***type certificate*** includes foreign type certificate within the meaning of paragraph 21.041 (1) of the *Civil Aviation Safety Regulations 1998*.

14.2 Procedures to be followed consistent with this Order, including procedures anticipating engine failure at any time between the commencement of take-off and completion of landing, must be specified in the Operator's Operation Manual. The procedures so specified must be such that they can be consistently executed in service by flight crews of average skill and they must also be such that the take-off flight path with all engines operating is above the one-engine inoperative take-off flight path.

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Notes to Civil Aviation Order 20.7.1B

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 20.7.1B amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
2004 No. R7	8 December 2004	8 December 2004 (*see* s. 2)	
2005 No. 1	FRLI 10 June 2005	11 June 2005 (*see* s. 2)	
CAO 20.7.1B 2014 No. 1	FRLI 23 May 2014	24 May 2014 (*see* s. 2)	

Table of Amendments

ad. = added or inserted am. = amended rep.= repealed rs. = repealed and substituted

Provision affected	How affected
s. 20.7.1B	rs. 2004 No. R7
title	rs. 2005 No. 1
	am. CAO 20.7.1B 2014 No. 1
subs. 2	am. 2005 No. 1, CAO 20.7.1B 2014 No. 1
subs. 3	am. 2005 No. 1, CAO 20.7.1B 2014 No. 1
subs. 4	am. 2005 No. 1, CAO 20.7.1B 2014 No. 1
subs. 5	am. 2005 No. 1
subs. 6	rs. 2005 No. 1
subs. 7	am. 2005 No. 1
subs. 8	am. 2005 No. 1
subs. 9	rs. 2005 No. 1
subs. 11	am. 2005 No. 1
	rs. CAO 20.7.1B 2014 No. 1
subs. 12	am. 2005 No. 1, CAO 20.7.1B 2014 No. 1
subs. 12A	am. 2005 No. 1, CAO 20.7.1B 2014 No. 1
subs. 14	am. 2005 No. 1

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Note 2

Transitional and savings provisions

Clause 5 of Civil Aviation Amendment Order (No. 2) 2002 reads as follows:

5 Transitional

5.1 An approval given under paragraph 13.3 of section 20.7.1B of the Civil Aviation Orders (the Orders) to operate a twin-engined aeroplane on passenger carrying regular public transport operations that was in force immediately before the commencement of subsection 3B of section 82.0 of the Orders is taken to continue in force as if subsection 13 of section 20.7.1B and Appendixes I and II to that section were still in force.

5.2 A twin-engined aeroplane that was being operated in accordance with paragraph 13.4 of section 20.7.1B, but not in accordance with an approval given under paragraph 13.6, immediately before the commencement of subsection 3B of section 82.0, may continue to be operated in accordance with paragraph 13.4 as if subsection 13 of section 20.7.1B and Appendixes I and II to that section were still in force.

5.3 A twin-engined aeroplane that was being operated in accordance with an approval given under paragraph 13.6 of section 20.7.1B, that was in force immediately before the commencement of subsection 3B of section 82.0, may continue to be operated in accordance with that approval as if subsection 13 of section 20.7.1B and Appendixes I and II to that section were still in force together with the airworthiness directive issued by CASA and known as AD/General/69.

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Civil Aviation Amendment Order (No. R8) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 235 (2) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R8) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 20.7.2 of the Civil Aviation Orders

Section 20.7.2 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 20.7.2 of the Civil Aviation Orders

SECTION 20.7.2

AEROPLANE WEIGHT AND PERFORMANCE LIMITATIONS — AEROPLANES NOT ABOVE 5700 KG — REGULAR PUBLIC TRANSPORT OPERATIONS

1 APPLICATION

Unless CASA otherwise directs, this section applies to all multi-engine aeroplanes having a maximum take-off weight not in excess of 5 700kg engaged in regular public transport operations.

2 DEFINITIONS

In this section, terms and abbreviations have the meanings defined in section 20.7.1B, and in Part 101 except that:

take-off distance available means the length of take-off run available plus, where clearway is provided, a maximum of 60 metres of clearway.

3 TAKE-OFF PERFORMANCE LIMITATIONS

3.1 No aeroplane shall take off at a weight in excess of the take-off weight specified in the aeroplane flight manual for the take-off distance available. In determining this weight, account shall be taken of the aerodrome pressure altitude, ambient temperature, runway surface and slope, and the wind velocity at the time of take-off.

3.2 No aeroplane shall take off at a weight such that, allowing for normal consumption of fuel in flight to the destination and alternate aerodromes, the weight on arrival would exceed the weight specified in the aeroplane flight manual with respect to baulked landing climb performance. In determining this weight, account shall be taken of the aerodrome pressure altitude and, for aeroplanes having a maximum take-off weight exceeding 3 500 kg the ambient temperature forecast for the estimated time of landing.

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3.3 No aeroplane shall take off at a weight such that, allowing for normal consumption of fuel in flight to the destination and alternate aerodromes, the weight on arrival would require a landing distance, in accordance with the aeroplane flight manual, greater than the landing distance available:

(a) on the most favourable runway under zero wind conditions, unless that runway would be unusable due to an excessive crosswind forecast for the estimated time of landing then;

(b) on the most suitable available runway, using wind components derived from the minimum wind velocity which would make the runway in (a) above unusable due to cross wind limitations;

provided that if the weight derived from (b) above is greater than the weight derived from (a), the weight derived from (a) shall be the limiting weight. In determining these weights, account shall be taken of the aerodrome pressure altitude and forecast temperature for the time of landing.

4 TAKE-OFF OBSTACLE CLEARANCE LIMITATIONS

4.1 No aeroplane shall take off at a weight which exceeds any weight limitation in the aeroplane flight manual with respect to take-off climb with all engines operating. In determining this weight, account shall be taken of the aerodrome pressure altitude and the ambient temperature.

4.1.1 Additionally, no aeroplane having a maximum take-off weight exceeding 3 500 kg shall take off at a weight such that the take-off climb gradient with the critical engine inoperative is less than the obstacle-free gradient specified for the take-off distance available. Where the obstacle-free gradient specified for the take-off distance available is less than 1.9%, the take-off weight shall be determined on the basis of a 1.9% gradient. The gradient shall be established for a distance of 3 000 metres from the end of the take-off distance available. In determining this weight, account shall be taken of the aerodrome pressure altitude and ambient temperature.

5 EN-ROUTE LIMITATIONS

5.1 No aeroplane shall take off at a weight in excess of that which, in accordance with approved one engine inoperative en-route performance data permits the aeroplane to comply with the requirements of paragraphs 5.2 or 5.3 under the prevailing meteorological conditions.

5.2 An aeroplane shall be capable of climbing to, and maintaining, a flight altitude which provides at least 1 000 feet vertical clearance from all terrain and obstructions along the route within:

(a) 5 nautical miles on either side of track, for V.F.R. procedures flights; and

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(b) such greater distances as required by the accuracy of the navigation aids used for I.F.R. procedures flights.

Note: Lowest Safe Altitudes (LSALT) published in the Aeronautical Information Publication satisfy the terrain and obstacle clearance requirements for I.F.R. procedure flights.

5.3 If compliance with paragraph 5.2 is not possible a "drift down" procedure may be planned such that with one engine inoperative:

(a) a return to the aerodrome of departure is possible clear of all terrain and obstructions if one engine fails before the aeroplane reaches the planned cruising altitude; and

(b) after reaching the planned cruising altitude, the resultant flight path will be such as to permit the aeroplane to continue flight to an aerodrome where a landing can be made and will provide at least 2000 feet vertical clearance from all terrain and obstructions within the distance specified in paragraph 5.2.

5.4 Conditions

In determining take-off weight required by paragraph 5.1 of this section:

(a) engine failure shall be assumed to occur at the most critical point along the route; and

(b) forecast atmospheric pressures and temperatures shall be used; and

(c) the effect of forecast wind velocities shall be applied to the flight path; and

(d) in meteorological conditions where the use of aeroplane icing protection systems is likely to be required, the effect of their use on the flight path shall be taken into account; and

(e) fuel jettisoning shall be permitted in accordance with the aeroplane flight manual procedures, to the extent consistent with reaching the intended aerodrome of landing with the required fuel reserves; and

(f) the aerodrome where the aeroplane is assumed to land after engine failure shall be specified in the flight plan and shall meet the requirements for an alternate aerodrome; and

(g) consumption of fuel after engine failure shall be calculated to meet the consumptions required in following the planned flight path.

6 LANDING LIMITATIONS

Except in an emergency, an aeroplane shall not land at an aerodrome unless the landing distance available on the runway of intended landing is equal to, or greater than, the landing distance required in the aeroplane flight manual for the landing weight of the aeroplane. In deriving the landing distance required, account shall be taken of the aerodrome pressure altitude and ambient temperature, the runway slope and surface, and the wind velocity existing at the time of landing.

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7 UNSERVICEABLE EQUIPMENT

7.1 When any item of equipment, which will invalidate any performance assumption on which the aeroplane flight manual data is established, is a permissible unserviceability, then the operations manual shall contain information to permit such adjustments to take-off weights, landing weights or distances required, as are necessary to maintain the intended level of safety of operations.

7.2 The information required by paragraph 7.1 shall be subject to approval by CASA before being used in operations.

8 COMPLIANCE

8.1 Procedures to show compliance with this section shall be determined by the operator to the satisfaction of CASA and shall be included in the operations manual.

8.2 A pilot in command shall be considered to have complied with this section if the aeroplane he commands is operated in accordance with the relevant procedures and at the weights permitted by an operations manual provided in pursuance of the *Civil Aviation Regulations 1988* for the particular operation.

Note: Documents which are required to be carried in an aircraft, such as the flight manual for the aircraft, may form part of an operations manual.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 20.9 (as amended)

made under subregulation 235 (7) of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 11 November 2011 taking into account amendments up to *Civil Aviation Order 20.9 Amendment Instrument 2011 (No. 2).*

Prepared by the Legislative Drafting Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

Contents

Section 20.9 (Air service operations — precautions in refuelling, engine and ground radar operations)

Section 20.9

Air service operations — precautions in refuelling, engine and ground radar operations

2 Application

2.1 Subject to paragraph 2.2, this section applies to:

(a) all Australian aircraft operating on aerodromes in Australian territory; and

(b) as far as practicable — all Australian aircraft operating outside Australian territory.

2.2 This section does not apply to an aircraft that is being refuelled in accordance with:

(a) section 20.10, except as set out in subparagraph 1A.1 (a) of section 20.10; and

(b) section 20.10.1, except as set out in subparagraph 2.2 (a) of section 20.10.1.

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3 Fuel and oils

3.1 The pilot in command of an aircraft shall ensure that the aircraft is not flown unless the aviation fuel, aircraft engine lubricating oil, aircraft engine power augmentation fluid and aircraft hydraulic system fluid used in connection with the servicing or operation of the aircraft complies with the specification and grade required or approved for the purpose by CASA.

Note 1 In respect of aircraft engine power augmentation fluid and aircraft hydraulic system fluid the specification and grade specified for a particular purpose in a manual or manuals promulgated by the aircraft or aircraft engine manufacturer may be considered as having been approved by CASA.

Note 2 The pilot in command may assume that:

(a) aviation fuel; and

(b) aircraft engine lubricating oil; and

(c) aircraft engine power augmentation fluid; and

(d) aircraft hydraulic system fluid in the aircraft, other than that which he has caused to be delivered into the aircraft, complies with the required specification and grade.

3.3 All ground fuel stock shall be carefully checked for the presence of undissolved water before the fuelling operation is commenced.

Note 1 This precaution is particularly important when handling fuel from drum stocks.

Note 2 Attention is drawn to the necessity of using a positive method, such as suitable water-detecting paste or paper, in testing for the presence of free water since sensory perceptions of colour and smell, if used alone, can be quite misleading.

Note 3 In the case of turbine fuels, attention is also drawn to the necessity of watching for signs of cloudiness or other indication of the presence of suspended water droplets which will not necessarily be detected by the means mentioned in Note 2.

3.4 All fuel shall be strained or filtered for the removal of free or suspended water and other contaminating matter before entering the aircraft tanks.

Note Attention is drawn to the special standards of filtration which may be specified by the manufacturers of certain types of engines. e.g. turbine engines and direct-injection piston engines.

4 Fuelling of aircraft

4.1 Location of aircraft

4.1.1 During fuelling operations, the aircraft and ground fuelling equipment shall be so located that no fuel tank filling points or vent outlets lie:

(a) within 5 metres (17 ft) of any sealed building; and

(b) within 6 metres (20 ft) of other stationary aircraft; and

(c) within 15 metres (50 ft) of any exposed public area; and

(d) within 15 metres (50 ft) of any unsealed building in the case of aircraft with a maximum take-off weight in excess of 5 700 kg (12 566 lb) and

(e) within 9 metres (30 ft) of any unsealed building in the case of aircraft with a maximum take-off weight not exceeding 5 700 kg (12 566 lb).

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4.1.1.1 Notwithstanding the contents of paragraph 4.1.1 limited fuelling operations for maintenance purposes may be carried out in certain hangars under the following conditions:

(a) refuelling or defuelling of gasoline or wide-cut gasoline type turbine fuel is not permitted;

(b) overwing fuelling is not permitted;

(c) these operations shall not be permitted in hangars occupied by 2 or more tenants;

(d) the operator shall obtain approval from CASA for the detailed procedures under which these operations may be performed. These procedures shall be described in the maintenance manual and shall include the circumstances under which refuelling or defuelling in hangars or maintenance area is permitted, and the maximum volume of fuel involved.

4.1.1.2 For the purpose of this Order, a sealed building is one which all the external part within 15 metres (50 ft) of an aircraft's fuel tank filling points or vent outlets or ground fuelling equipment is of non-flammable materials and has no openings or all openings are closed.

4.1.2 Where the fuelling equipment is not mobile, the aircraft shall be so placed that it can be rapidly moved to a place of safety, and a means of ensuring that this can be done shall be readily available.

Note The following operations are not deemed to constitute fuelling operations:

(a) the drainage of a small quantity of fuel from a fuel system drain point;

(b) the transfer of fuel from tank to tank within an aircraft making use exclusively of lines and equipment permanently installed in the aircraft.

4.2 Fuelling with passengers on board

4.2.1 The operator of an aircraft must ensure that avgas is not loaded onto an aircraft while passengers are on board, or entering or leaving, the aircraft.

4.2.2 The operator of an aircraft that has an underwing fuelling system must ensure that fuel is not loaded onto the aircraft using this system while passengers are on board, or entering or leaving, the aircraft unless the fuel is aviation grade turbine fuel that contains anti-static additive or is loaded in the USA and meets the ASTM D 1655 standard and the following conditions are satisfied:

(a) before the fuel is loaded, all persons who may be on board, or entering or leaving, the aircraft while the fuel is loaded are told that:

(i) fuel is to be loaded; and

(ii) their seat-belts must not be fastened while the fuel is loaded; and

(iii) they must not smoke, use any electrical equipment (other than medical equipment used for treating a patient, the operation of which will not affect the safety of any person on board the aircraft) or do anything else that might cause fuel vapours to ignite during the loading;

(b) all persons on board, or entering or leaving, the aircraft obey the instructions given under sub-subparagraphs (a) (ii) and (iii);

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(c) a cabin crew or flight crew member is appointed to perform the following tasks while the fuel is loaded:

(i) ensure the safety of the passengers;

(ii) maintain discipline inside the aircraft;

(iii) supervise any necessary evacuation of the aircraft;

(d) while the fuel is loaded:

(i) the aircraft's "fasten seat belt" signs are turned off; and

(ii) the aircraft's "no smoking" signs are turned on; and

(iii) the aircraft's emergency lights (if any) are armed;

(e) while the fuel is loaded, there is at least 1 cabin crew or flight crew member on duty in the aircraft:

(i) for every 72 passengers on board the aircraft; or

(ii) for every passenger zone in the aircraft in which there are passengers;

whichever is more;

(f) while the fuel is loaded, there is at least 1 cabin crew or flight crew member on duty by at least 1 exit door of each of the aircraft's passenger zones in which there are passengers;

(g) all cabin crew or flight crew members who are on duty in the aircraft while the fuel is loaded:

(i) are prepared for an immediate evacuation; and

(ii) supervise the passengers during the loading; and

(iii) ensure that the aisles and exits are unobstructed during the loading;

(h) the areas outside the aircraft that would be used if the aircraft were evacuated are kept clear while the fuel is loaded;

(k) if the aircraft's engine is running — a member of the aircraft's flight crew is on duty on its flight deck;

(l) the operator's operations manual sets out:

(i) the responsibilities of members of the operating crew who are on duty in the aircraft while fuel is loaded; and

(ii) procedures for complying with the requirements of this paragraph.

Note An underwing fuelling system is any system that forms part of the aircraft and that allows delivery of fuel to the aircraft without exposing the fuel to the atmosphere during delivery.

4.2.3 Subject to paragraph 4.2.4, the operator of an aircraft without an underwing fuelling system must ensure that fuel is not loaded on to the aircraft while passengers are on board, or entering or leaving, the aircraft.

4.2.4 The operator of an aircraft that cannot be underwing fuelled may allow fuel to be loaded onto the aircraft while a passenger is on board if:

(a) the passenger's medical condition is such that he or she cannot leave the aircraft without assistance; and

(b) the aircraft's cabin door is open; and

(c) the equipment used for loading or unloading passengers (if any) is in position at the door; and

(d) the requirements and conditions set out in paragraph 4.2.2 are satisfied.

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4.2.5 If:

(a) fuel is being loaded onto an aircraft in accordance with paragraph 4.2.2 or 4.2.4; and

(b) either:

(i) fuel vapour is found inside the aircraft; or

(ii) for any other reason it is not safe to continue loading the fuel;

the aircraft's operator must ensure that the loading of the fuel stops immediately.

4.3 Aircraft safety precautions during fuelling operations

4.3.1 All engines in the aircraft, including any auxiliary power units, must be shut down, except where CASA is satisfied that the operation of such an engine or auxiliary power unit will not present a hazard and where a statement to that effect, together with any special conditions for operation, is included in the operator's operations manual if such a manual is required.

Note For this paragraph, CASA is satisfied if the aircraft flight manual permits operation of such an engine or auxiliary power unit.

4.3.2 When an external electrical supply is used, the connections between that supply and the aircraft electrical system shall be made and securely locked before the fuelling operation is connected and shall not be disconnected until the operation has been completed, except that connectors, which provide control to ensure effective engagement before external power can be supplied to the aircraft, need not be locked.

4.3.3 A person shall not, and the pilot in command and the operator shall take reasonable steps to ensure that a person does not, during fuelling operations:

(a) operate or perform maintenance work on the aircraft's radar equipment except that where the fuel is kerosene, operation or maintenance may be carried out provided the radar transmitter is de-activated; or

(b) except where the fuel involved is kerosene, carry out maintenance on any electrical, electronic or radio systems within the aircraft or operate such equipment other than the aircraft's interior lighting or electrical apparatus necessary for the fuelling process.

4.3.4 For fuelling an aircraft, the following requirements apply:

(a) before a fuel tank cap is removed, the aircraft and all fuelling equipment must be bonded;

(b) if bonding is lost, fuel transfer must be stopped immediately and not resumed until the bond is restored.

Note Care must be taken before reconnecting the bonding wire to allow for dissipation of static electricity that may have built up.

4.3.4A For paragraph 4.3.4:

bonded means the aircraft and the fuelling equipment have the same electrical potential.

fuelling includes refuelling and defuelling.

fuelling equipment includes mobile fuel tankers, in-ground refuel ports, fuel bowsers, hand pumps, drums, funnels and other loose items of equipment if these are used in the fuelling operation.

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4.3.5 All footwear worn by aircraft servicing personnel and persons operating fuelling equipment shall be of a non-sparking type and such persons shall not carry any matches, cigarette lighters or other objects which could represent an ignition hazard.

4.3.6 Except where automatic shut-off devices limit the capacity of an aircraft fuel tank, the operator and the pilot in command shall ensure that sufficient airspace remains in each fuel tank to allow for anticipated fuel expansion.

4.3.7 When a fuelling operation on an aircraft has been completed, the pilot in command and the operator of the aircraft shall ensure that all fuel and oil tank caps are securely refitted.

4.3.8 Aircraft oil tanks shall not be drained or filled when the aircraft is inside a hangar or other building unless the oiling equipment used complies with the provisions of Appendix I to this Order.

4.4 Safety precautions external to an aircraft during fuelling operations

4.4.1 The area in which fuelling operations are carried out shall be clearly placarded as a 'No Smoking' area and the limits of this area shall be a sealed building or at least 15 metres (50 ft) from the aircraft or ground fuelling equipment.

4.4.2 Where mobile fuelling equipment is used, the equipment shall be so placed that it can be rapidly moved in the event of fire.

4.4.3 A person shall not, and the pilot in command and the operator shall take reasonable steps to ensure that a person does not, during fuelling operations:

(a) smoke or use a naked flame within 15 metres (50 ft) of the aircraft and ground fuelling equipment; or

(b) except in the case of aircraft, operate an internal combustion engine or any electrical switch, battery, generator, motor or other electrical apparatus within 15 metres (50 ft) of the aircraft's fuel tank filling points or vent outlets, and ground fuelling equipment unless the engine, switch, generator, motor or apparatus complies with the provisions of Appendix I to this Order and has been inspected.

4.4.4 At least 2 fire extinguishers of approved type and capacity must be positioned:

(a) within 15 metres, but not less than 6 metres, from the aircraft and the fuelling equipment; or

(b) carried on the fuelling equipment.

4.4.5 If the fire extinguishers are carried on the fuelling equipment, they must:

(a) be fitted with quick release brackets; and

(b) be readily available from either side of the equipment; and

(c) be located as far as practicable from the vehicle fuel tanks and fuelling points.

4.4.6 For paragraph 4.4.4 and 4.4.5, the fire extinguishers may be:

(a) 60B dry powder fire extinguishers; or

(b) an 80B dry powder fire extinguisher and a 20B foam extinguisher; or

(c) other fire extinguishers approved by CASA.

Note The use of 2 carbon dioxide extinguishers, each with a minimum capacity of 4.5 kg (10 lb), is acceptable for this purpose. Extinguishers of other types and capacities may be approved on application to CASA.

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4.5 Action in the event of a fire hazard

4.5.1 A fuelling operation shall be suspended and the Airport Fire Service notified when any fuel of a quantity likely to create a fire hazard is spilled on or within 15 metres (50 feet) of the aircraft or ground fuelling equipment, including the bilge of a fuelling barge, and the operation shall not recommence until the fire hazard is removed.

4.5.2 A fuelling operation shall be stopped as soon as it becomes apparent that an infringement exists of any of the relevant requirements of this Order.

4.5.3 When any fuel of a quantity likely to create a fire hazard is spilled on or within 15 metres (50 ft) of the aircraft or ground fuelling equipment, the pilot in command or, in his absence, the operator shall ensure that:

(a) passengers remaining on board or in the process of embarking or disembarking are removed to a point at least 15 metres (50 ft) from the spilled fuel; and

(b) mobile power units, vehicles and power operated loading devices operating within 15 metres (50 ft) of the spilled fuel are shut down; and

(c) maintenance work of any nature on or within the aircraft is suspended and not recommenced until the spilled fuel has been removed.

4.7 In this subsection:

cabin crew member means a person who:

(a) is a member of the operating crew, but not the flight crew, of an aircraft; and

(b) may be assigned to emergency duties in the aircraft under subsection 12 of section 20.11 of the Civil Aviation Orders.

passenger zone in relation to an aircraft, means an area within the aircraft which has:

(a) seats for 72 or less passengers; and

(b) an exit.

5 Starting and ground operations of engines

5.1 The pilot in command or in his absence any other person responsible for starting or ground operation of an aircraft shall ensure that:

5.1.1 In the case of land aircraft, passenger loading equipment to permit rapid evacuation of passengers and crew is kept immediately available during the starting of engines.

5.1.2 In the case of seaplanes, water transport of a capacity sufficient to enable rapid evacuation of passengers and crew is immediately available during the starting of engines.

5.1.3 Where any fuel or other flammable material is spilled within 15 metres (50 ft) of an aircraft, the aircraft engines shall not be started or operated until the fire hazard has been removed.

5.1.4 An aircraft engine shall not be started or operated:

(a) within 5 metres (17 ft) of any sealed building; or

(b) within 8 metres (25 ft) of other aircraft; or

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(c) within 15 metres (50 ft) of any exposed public area; or

(d) within 15 metres (50 ft) of any unsealed building in the case of an aircraft with a maximum take-off weight exceeding 5 700 kg (12 566 lb); or

(e) within 8 metres (25 ft) of any unsealed building in the case of an aircraft with a maximum take-off weight not exceeding 5 700 kg (12 566 lb);

and turbine engines, in addition, shall not be operated within the appropriate distance specified below of any other aircraft, fuelling equipment or exposed public areas which lie to the rear of and within a 15 degree arc either side of the exhaust outlet axis of that engine:

Engine type	**Power condition**	**Minimum distance metres**
Turbo-prop	At or below normal slow taxiing power	15 (50 ft)
	At power used to initiate movement of a stationary aircraft	23 (75 ft)
Turbo-jet	At or below normal slow taxiing thrust	30 (100 ft)
	At thrust used to initiate movement of a stationary aircraft	46 (150 ft)

Note Fuelling equipment does not include equipment and outlet points of an installation located below ground level when the equipment is stowed and covering hatches are in place.

5.2 The operator of an aircraft shall ensure that all persons who may be required to start the engine of the aircraft are familiar with the method of operation of any installed engine nacelle fire extinguishing equipment.

5.3 The pilot in command and the operator shall ensure that passengers do not embark or disembark or that freight is not loaded or unloaded from the aircraft whilst an engine of the aircraft is operating unless the passengers and/or the loading personnel have been given instruction and guidance to protect them from injury as a consequence of engine operation.

6 Ground operation of aircraft radar equipment

6.1 The requirement of this subsection shall apply to all radar equipment with a nominal peak power output rating in excess of 25 kW.

6.2 During all ground operation, including testing and maintenance of aircraft radar equipment, the operator and person in charge of such equipment shall ensure that:

6.2.1 The equipment is not energised in its normal mode (antenna rotating) unless the sector area scanned by the radar beam is clear of the following objects to a distance of 37 metres (120 ft) from the antenna:

(a) aircraft being refuelled or defuelled;

(b) fuel tankers, fuel tanks or fuel storage areas;

(c) persons or cargo;

(d) any other aircraft or aircraft hangar.

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Note For each radar installation the sector area should be defined in terms of readily distinguishable dimensions preferably related to some feature of the aircraft and should appear in the Aircraft Maintenance Manual.

6.2.2 The equipment is not energised with the antenna stationary and the beam directed towards any of the objects specified in paragraph 6.2.1 unless the distance separating them from the antenna is in excess of 60 metres (200 ft).

6.2.3 The distance specified in paragraphs 6.2.1 and 6.2.2 may be reduced by 75 per cent when an approved beam attenuating device is used between the antenna and any object specified in paragraph 6.2.1.

6.2.4 The equipment is not energised in any radiating mode of operation when the aircraft in which the equipment is fitted is in a hangar or other enclosure unless a suitable microwave energy absorbing shield is fitted over the antenna.

6.2.5 The equipment is not to be operated in any aircraft which is being refuelled or defuelled.

Note During all testing of aircraft radar equipment the beam should, whenever possible, be directed with maximum upward tilt toward a clear area.

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Appendix I

Fire safety requirements to be met by mechanical and electrical equipment within 15 metres (50 ft) of an aircraft's fuel tank filling points and vent outlets during fuelling operations

1 Application

1.1 The requirements of this Appendix are applicable to all mechanical and electrical equipment used within 15 metres (50 ft) of an aircraft's fuel tank filling points and vent outlets during fuelling operations.

1.2 Compliance with these requirements is the responsibility of the operator of the equipment.

2 Vehicles and plant

Note Because a higher standard of safety can be more readily achieved on diesel engines than petrol engines, it is recommended that diesel engines be used on all vehicles, pumping plants, etc., used within 15 metres (50 ft) of an aircraft's fuel tank filling points and outlet vents during fuelling operations.

2.1 All equipment shall be of good automotive design, and shall receive proper maintenance to ensure that it is kept in good state of repair. All reasonable means shall be taken to limit the hazard from fire. Particular attention shall be given to possible sources of ignition such as:

(a) incandescent carbon or naked flame which could be emitted from the engine or associated equipment; and

(b) arcing between metallic parts of electrical circuits and components caused by:

(i) operation of switch contacts; and

(ii) faulty cable terminations; and

(iii) breakdown of electrical insulation; and

(iv) moving contacts or rotary electrical equipment; and

(v) accidental short circuiting or open circuiting; and

(c) exposure of hot parts to combustible matter; and

(d) overheating of working parts to the ignition temperature of any combustible matter in the vicinity of the engines.

2.2 Parts of the equipment requiring attention are:

(a) fuel system; and

(b) exhaust system; and

(c) electrical system.

2.2.1 Fuel system

The carburettor air intake shall be fitted with a flame arrestor, such as a backfire non-return valve, or an efficient baffled and screened air cleaner.

The fuel tank shall be securely mounted, and the tank and its filler shall be positioned so that fuel cannot be inadvertently spilled on the engine, its exhaust, electrical and ignition system.

Fuel tank filling openings shall be fitted with well fitting caps.

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Liquefied petroleum gas systems shall comply with Australian Standard 1425 and Australian Standard CB20, but excess flow valves and non-return valves shall be fitted irrespective of size of tank.

2.2.2 Exhaust System

The exhaust system shall be provided with means to prevent hazardous emission of incandescent carbon or naked flame. Baffled standard vehicle mufflers, of good automotive design, and in good condition are acceptable.

2.2.3 Electrical System

Standard vehicle wiring shall be maintained in good condition. All additional equipment such as obstruction lights, shall have wires and cables well supported, with insulating grommets fitted wherever they pass through metal panels. Equipment shall be suitably insulated and mechanically protected to prevent breakdown during use.

Batteries shall be suitably covered to prevent accidental shorting of cells and shall be provided with adequate means of natural ventilation.

3 Fuelling vehicles and plant

Aircraft fuelling vehicles and plant shall comply with the following:

(a) be fitted with an isolation switch between the battery and electrical services;

(b) the engine exhaust outlet to be remote from the fuelling equipment;

(c) all electrical wiring to the rear of the vehicle cab shall be mechanically protected;

(d) exposed electrical terminals shall be protected by insulating boots or covers;

(e) generators, motors, switches and relays shall be of a type which will prevent emission of hazardous sparks.

4 Electrical equipment

4.1 Equipment above ground level

All fixed and portable electrical equipment (other than vehicular) shall be of the same requirements as the SAA requirements as for equipment operated in Class 1, Division 2 locations, as specified in the SAA Wiring Rules, Part 1, except that arc-producing devices such as switches, contactors, etc., which are not operated during fuelling or defuelling operations need not to conform to the requirements for this class of equipment. The controls of all arc-producing devices which do not meet the requirements for Class 1, Division 2 locations shall be clearly labelled so that there is no doubt that they are not to be operated during fuelling operations.

4.2 Equipment below ground level

Electrical equipment located below the general ground level of the apron (such as apron power outlets, pump control switches, etc.) shall comply with the SAA requirements for equipment operated in Class 1, Division 1 locations.

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4.3 Cables

(a) All cables carrying electrical current at potentials up to 250 volts with respect to earth shall be required to have 250 volt grade insulation and shall be protected by a plastic sheath resistant to attack by fuel and oil.

(b) All cables situated in areas traversed by vehicles, hand-carts and the like shall be suitably protected against mechanical damage. In no case shall this protection be of a lower standard than that provided by hardwood troughing with the dimensions by 2W and 3D where W and D are respectively width and depth of the cable space where W is not less than D.

(c) Where the use of trailing cables is permitted as a temporary measure, The appropriate placement of wooden or other suitable portable barriers may be used as an alternative to wooden troughing described in paragraph 4.3 (b) to guard against damage by vehicles and to ensure the safety of pedestrians.

4.4 Protective devices

All fuses and overload protective devices shall be hermetically sealed and protected by a general purpose enclosure.

4.5 Batteries

All batteries shall be suitably covered to prevent accidental shorting of cells and shall be provided with adequate means of natural ventilation.

4.6 Protection from breakdown in service

(a) All electrical equipment shall be suitably insulated and mechanically protected to prevent breakdown whilst in use.

(b) All connections shall be secured with spring or lock washers to prevent accidental loosening of connections whilst in use.

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Notes to Civil Aviation Order 20.9

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 20.9 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R10	8 December 2004 (*see* F2005B00787)	8 December 2004 (*see* s. 2)	
CAO 20.9 2005 No. 1	FRLI 6 January 2006 (*see* F2006L00094)	7 January 2006 (*see* s. 2)	
CAO 20.9 2010 No. 1	FRLI 2 March 2010 (*see* F2010L00542)	3 March 2010 (*see* s. 2)	
CAO 20.9 2011 No. 1	FRLI 15 July 2011 (*see* F2011L01503)	16 July 2011 (*see* s. 2)	
CAO 20.9 2011 No. 2	FRLI 9 November 2011 (*see* F2011L02289)	10 November 2011 (*see* s. 2)	

Table of Amendments

ad. = added or inserted am. = amended rep.= repealed rs. = repealed and substituted

Provision affected	How affected
s. 20.9	rs. 2004 No. R10
subs. 3	am. CAO 20.9 2011 No. 2
subs. 4	am. CAO 20.09 2005 No. 1; CAO 20.9 2010 No. 1; CAO 20.9 2011 No. 1

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Civil Aviation Amendment Order (No. R11) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 235 (7) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R11) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 20.10 of the Civil Aviation Orders

Section 20.10 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 20.10 of the Civil Aviation Orders

SECTION 20.10

HOT REFUELLING — HELICOPTERS

1 MEANING OF *HOT REFUELLING*

1.1 In this section, ***hot refuelling*** means the refuelling of a helicopter with its engine or engines running.

1.2 Hot refuelling of a helicopter may take place with its rotor or rotors rotating.

1A APPLICATION

1A.1 The hot refuelling of helicopters must be carried out in accordance with:

(a) the requirements set out in section 20.9 other than the requirements set out in paragraphs 4.1.1.1, 4.3.1, 4.3.8, 4.4.1, 4.5.1 and 5.1.4; and

(b) this section.

Note: Operators and pilots should note that the provisions of paragraph 5.1 of section 20.2 of the Civil Aviation Orders relating to the inspections and tests for the presence of water in an aircraft's fuel system before the start of each day's flying are applicable to helicopters to which this section applies.

2 OPERATOR'S RESPONSIBILITIES

2.1 Hot refuelling of a helicopter must not be carried out unless authorised by its operator.

2.2 Before authorising the hot refuelling of a helicopter, the operator must be satisfied that the refuelling can be carried out safely and, in particular, must have regard to:

(a) the configuration of the helicopter and its engine or engines; and

(b) the location of the components of the helicopter's fuel system; and

(c) the refuelling system or systems to be used and its or their components; and

(d) the helicopter's flight manual.

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2.3 The operator of a helicopter who authorises hot refuelling of that helicopter must include in the operations manual:

(a) the operational circumstances in which hot refuelling may take place; and

(b) the procedures to be followed during hot refuelling; and

(c) the requirements and instructions, if any, set out in the helicopter's flight manual that relate to hot refuelling; and

(d) if applicable, the instructions to ensure fuel quality as required for the purposes of subparagraph 7.2 (b).

2.4 The operator must set out the matters referred to in paragraph 2.3 separately in relation to each type of helicopter to which the operations manual applies.

3 RESPONSIBILITIES OF PILOT IN COMMAND

3.1 Before allowing the hot refuelling of a helicopter to commence, the pilot in command must ensure that the refuelling can be carried out safely in accordance with this section and the procedures included in the operations manual.

3.2 The pilot in command must ensure that passengers are not on board during hot refuelling, except in the case of a passenger who cannot, in the opinion of the pilot or on medical advice, be safely disembarked.

3.3 Unless subsection 7 of Civil Aviation Order section 95.7 applies, a pilot with a licence that is valid for the helicopter must, at all times, be at the controls of the helicopter while refuelling is carried out.

3.4 While a pilot is at the controls of a helicopter, communication between the pilot and the person on the ground in charge of the refuelling system must be maintained by means of an electronic intercommunication system or by visual contact and an agreed system of signals.

4 PROCEDURES AND EQUIPMENT

4.1 All persons engaged in hot refuelling must be trained in, and familiar with, the procedures to be followed during hot refuelling or any emergency that may occur in relation to the refuelling.

4.2 Suitable and properly maintained fire fighting equipment must be readily available for use if an emergency occurs during the refuelling.

4.3 Before carrying out hot refuelling on an off-shore oil rig, gas rig or platform, a drilling ship or any other vessel, the approval of the operator or master of that installation or vessel must be obtained.

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5 FUEL LOADING

5.1 The quantity of fuel to be loaded must be decided before hot refuelling is commenced.

5.2 A closed or open refuelling system may be used for hot refuelling.

5.3 If an open system of refuelling is used, there must be a means of quickly cutting off the fuel supply at the point of entry into the fuel tank of the helicopter.

5.4 Before the helicopter's fuel filler cap is removed, the refuelling equipment and the helicopter must be earthed and connected so as to ensure they are of the same electrical potential.

6 RADIO TRANSMISSIONS

6.1 While hot refuelling is taking place, radio transmissions from the helicopter must be restricted to the greatest extent practicable.

6.2 While hot refuelling is taking place, an HF transmitter or radar equipment on the helicopter must not be operated.

7 INSPECTION AND TESTING OF FUEL SYSTEM

7.1 The operator of a helicopter that has been hot refuelled must ensure that, on completion of each hot refuelling of the helicopter, the pilot in command inspects and tests the helicopter's fuel system for the presence of water.

7.2 Paragraph 7.1 does not apply:

(a) if the helicopter has, for a continuous period of not more than 5 hours' time in service, been engaged in operations during which hot refuelling has taken place; and

(b) if:

(i) the fuel used by the helicopter is supplied by a person:

(A) who has a fuel quality audit program; and

(B) whose regular audit reports are checked by the operator; or

(ii) in a case where the fuel used by the helicopter is supplied by a person who does not have a fuel quality audit program — the operator has a system for monitoring the quality of the fuel used by the helicopter.

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Civil Aviation Amendment Order (No. R12) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 235 (7) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R12) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 20.10.1 of the Civil Aviation Orders

Section 20.10.1 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 20.10.1 of the Civil Aviation Orders

SECTION 20.10.1

HOT REFUELLING — TURBINE ENGINE AEROPLANE ENGAGED IN AERIAL WORK OR PRIVATE OPERATIONS

1 INTERPRETATION

1.1 In this section:

hot refuelling means the refuelling of an aeroplane with its engine or engines running.

equivalent data means the information and instructions that would otherwise be contained in an aeroplane's flight manual but, in the absence of a flight manual, are instead displayed either wholly on a placard or partly on a placard and partly in another document.

1.2 Hot refuelling of an aeroplane may take place with its propeller or propellers rotating.

2 APPLICATION

2.1 This section applies only to turbine engine aeroplanes engaged in aerial work or private operations.

2.2 The hot refuelling of aeroplanes at an aerodrome or a place used as an aerodrome must be carried out in accordance with:

(a) the requirements set out in section 20.9 other than the requirements set out in paragraphs 4.1.1.1, 4.3.1, 4.3.8, 4.4.1, 4.5.1 and 5.1.4; and

(b) this section.

Note: Operators and pilots should note that the provisions of paragraph 5.1 of section 20.2 of the Civil Aviation Orders relating to the inspections and tests for the presence of water in an aircraft's fuel system before the start of each day's flying are applicable to aeroplanes to which this section applies.

3 OPERATOR'S OR OWNER'S RESPONSIBILITIES

3.1 Hot refuelling of an aeroplane must not be carried out unless authorised by:

(a) if the operation is not a private operation — the operator of the aeroplane; or

(b) in the case of a private operation — the owner of the aeroplane.

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3.2 Hot refuelling may only be carried out:
(a) at an aerodrome — with the consent of the aerodrome operator; or
(b) at a place used as an aerodrome — with the consent of the owner or occupier of the place.

3.3 Before authorising the hot refuelling of an aeroplane, the operator or owner must be satisfied that the refuelling can be carried out safely and, in particular, must have regard to:
(a) the configuration of the aeroplane and its engine or engines; and
(b) the location of the components of the aeroplane's fuel system; and
(c) the refuelling system or systems to be used and its or their components; and
(d) the aeroplane's flight manual or equivalent data.

3.4 The operator or owner of an aeroplane who authorises hot refuelling of that aeroplane in accordance with paragraph 3.1 must include in the aeroplane's operations manual or, in the case of private operations, its flight manual or equivalent data:
(a) the operational circumstances in which hot refuelling may take place; and
(b) the procedures to be followed during hot refuelling; and
(c) in the case of an operations manual — the requirements and instructions, if any, that relate to hot refuelling and are set out in the aeroplane's flight manual or equivalent data; and
(d) if applicable, the instructions to ensure fuel quality as required for the purposes of subparagraph 8.3 (b).

3.5 In an operations manual, the operator must set out the matters referred to in paragraph 3.4 separately in relation to each type of aeroplane to which the operations manual applies.

4 RESPONSIBILITIES OF PILOT IN COMMAND

4.1 Before allowing the hot refuelling of an aeroplane to commence, the pilot in command must ensure that the refuelling can be carried out safely in accordance with this section and the procedures included in the operations manual or the aeroplane's flight manual or equivalent data.

4.2 The pilot in command must ensure that passengers are not on board during hot refuelling, except in the case of a passenger who cannot, in the opinion of the pilot or on medical advice, be safely disembarked.

4.3 Unless subsection 7 of section 95.7 of the Civil Aviation Orders applies, a pilot with a licence that is valid for the aeroplane must, at all times, be at the controls of the aeroplane while refuelling is carried out.

4.4 While a pilot is at the controls of an aeroplane, communication between the pilot and the person on the ground in charge of the refuelling system

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must be maintained by means of an electronic intercommunication system or by visual contact and an agreed system of signals.

4.5 While hot refuelling is taking place, the pilot in command must ensure that:

(a) the door or doors on the refuelling side of the aircraft remain closed; and
(b) the door or doors on the non-refuelling side remain open; and
(c) a person nominated by the pilot in command is stationed at the open door or doors to assist with evacuation in the event of an emergency; and
(d) the area outside the aircraft that would be used in event of evacuation is kept clear of obstacles; and
(e) if the presence of fuel vapour is detected inside the aircraft, or any other hazard arises during refuelling, refuelling is stopped immediately.

5 PROCEDURES AND EQUIPMENT

5.1 All persons engaged in hot refuelling must be trained in, and familiar with, the procedures to be followed during hot refuelling or any emergency that may occur in relation to the refuelling.

5.2 Suitable and properly maintained fire fighting equipment must be readily available for use if an emergency occurs during the refuelling.

6 FUEL LOADING

6.1 The quantity of fuel to be loaded must be decided before hot refuelling is commenced.

6.2 A closed or open refuelling system may be used for hot refuelling.

6.3 If an open system of refuelling is used, there must be a means of quickly cutting off the fuel supply at the point of entry into the fuel tank of the aeroplane.

6.4 Before the aeroplane's fuel filler cap is removed, the refuelling equipment and the aeroplane must be earthed and connected so as to ensure they are of the same electrical potential.

7 RADIO TRANSMISSIONS

7.1 While hot refuelling is taking place, radio transmissions from the aeroplane must be restricted to the greatest extent practicable.

7.2 While hot refuelling is taking place, an HF transmitter or radar equipment on the aeroplane must not be operated.

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8 INSPECTION AND TESTING OF FUEL SYSTEM

8.1 The operator of an aeroplane engaged in aerial work operations must ensure to the greatest extent practicable that, on completion of each hot refuelling of the aeroplane, the pilot in command inspects and tests the aeroplane's fuel system for the presence of water.

8.2 The pilot in command of an aeroplane, engaged in aerial work operations or private operations, that has been hot refuelled must, on completion of each hot refuelling of the aeroplane, inspect and test the aeroplane's fuel system for the presence of water.

8.3 Paragraphs 8.1 and 8.2 do not apply to an aeroplane engaged in aerial work operations:

(a) if the aeroplane has, for a continuous period of not more than 5 hours time in service, been engaged in operations during which hot refuelling has taken place; and

(b) if:

(i) the fuel used by the aeroplane is supplied by a person:

(A) who has a fuel quality audit program; and

(B) whose regular audit reports are checked by the operator; or

(ii) in the case where the fuel used by the aeroplane is supplied by a person who does not have a fuel quality audit program — the operator has a system for monitoring the quality of the fuel used by the aeroplane.

8.4 Paragraph 8.2 does not apply to an aeroplane engaged in private operations if the requirements set out in subparagraphs 8.3 (a) and (b) are satisfied and approval in writing is given by CASA.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 20.11 (as amended)

made under subregulations 207 (2), 252 (1) and 253 (5) of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 2 February 2009 taking into account amendments up to *Civil Aviation Order 20.11 Amendment Order (No. 1) 2008*.

Prepared by the Legislative Drafting Branch, Legal Services Group, Civil Aviation Safety Authority, Canberra.

Contents

Section 20.11 (Emergency and life saving equipment and passenger control in emergencies)

Section 20.11

Emergency and life saving equipment and passenger control in emergencies

1 Application

This section applies to all Australian registered aircraft, except where otherwise specified in these Orders.

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2 Definitions

In this section, unless a contrary intention appears:

handicapped person means a person requiring special attention because illness, injury, age, congenital malfunction, or other temporary or permanent incapacity or disability makes that person unable without special facilities or assistance to utilise air transport facilities and services as effectively as persons who are not so affected.

land aircraft means all aircraft other than amphibious aircraft when operating on water, helicopters equipped with fixed flotation equipment when operating on water, seaplanes and flying boats.

portable megaphone means a portable battery-powered megaphone that meets the performance standards set out in paragraph 6A.5.

3 Maintenance of emergency and lifesaving equipment

An operator must ensure that emergency and lifesaving equipment, carried or installed in an aircraft to meet the requirements of this section, is maintained in such condition that it will satisfactorily perform its design function.

5 Flotation equipment for overwater flights

5.1 Life jackets

5.1.1 Aircraft shall be equipped with 1 life jacket for each occupant when the aircraft is over water and at a distance from land:

(a) in the case of a single engine aircraft — greater than that which would allow the aircraft to reach land with the engine inoperative; and

(b) in the case of multi-engine aircraft — greater than 50 miles.

Note 1 For the purposes of this paragraph, ***land*** shall mean land suitable for an emergency landing.

Note 2 Except as specified in paragraph 5.1.2 below, the provisions of this paragraph need not apply to land aircraft departing from or landing at an aerodrome in accordance with a normal navigational procedure for departing from or landing at that aerodrome.

5.1.2 Land aircraft that carry passengers and are engaged in:

(a) regular public transport operations; or

(b) charter operations;

shall be equipped with a life jacket or flotation device for each occupant on all flights where the take-off or approach path is so disposed over water that in the event of a mishap occurring during the departure or the arrival it is reasonably possible that the aircraft would be forced to land onto water.

5.1.3 Where required by paragraph 5.1.1 or paragraph 5.1.2, a life jacket or individual flotation device shall be stowed at or immediately adjacent to each seat. In addition, sufficient additional life jackets or individual flotation devices shall be carried in easily accessible positions for use by infants or children for whom a life jacket or individual flotation device is not available at or adjacent to their seated position.

5.1.4 Amphibious aircraft when operating on water, helicopters equipped with fixed flotation equipment when operating on water, and all seaplanes and flying boats on all flights shall be equipped with:

(a) 1 life jacket for each occupant; and

(a) an additional number of life jackets (equal to at least one-fifth of the total number of occupants) in a readily accessible position near the exits.

5.1.5 Life jackets shall be so stowed in the aircraft that 1 life jacket is readily accessible to each occupant and, in the case of passengers, within easy reach of their seats.

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5.1.6 Life jackets must:

(a) comply with a standard approved by CASA; and

(b) be of an inflatable type; and

(c) except for an infant life jacket — have a whistle fitted in a suitable stowage.

5.1.7 Where life jackets are required to be carried in accordance with subparagraph 5.1.1 (a) each occupant shall wear a life jacket during flight over water. However, occupants of aeroplanes need not wear life jackets during flight above 2 000 feet above the water.

5.1.8 Where life jackets are required to be carried in accordance with paragraph 5.1.4 each occupant of a single engine aircraft shall wear a life jacket during flight over water when the aircraft is operated beyond gliding distance from land or water, as appropriate, suitable for an emergency landing. However, occupants need not wear life jackets when the aircraft is taking-off or landing at an aerodrome in accordance with a normal navigational procedure for departing from or arriving at that aerodrome, and occupants of aeroplanes need not wear life jackets during flight above 2 000 feet above the water.

5.1.9 Notwithstanding paragraph 5.1.8 above each occupant of a helicopter operating to or from an off-shore landing site located on a fixed platform or vessel shall wear a life jacket during the entire flight over water regardless of the class of operation or the one-engine-inoperative performance capability of the helicopter.

5.2 Life rafts

5.2.1 An aircraft that is flown over water at a distance from land greater than the permitted distance must carry, as part of its emergency and lifesaving equipment, sufficient life rafts to provide a place in a life raft for each person on board the aircraft.

5.2.1.1 For the purposes of paragraph 5.2.1, the permitted distance is:

(a) in the case of an aircraft that has:

(i) 4 engines; or

(ii) 3 turbine engines; or

(iii) 2 turbine engines and complies with section 20.7.1B;

a distance equal to 120 minutes at normal cruising speed, or 400 miles, whichever is the less; or

(b) in any other case — a distance equal to 30 minutes at normal cruising speed, or 100 miles, whichever is the less.

5.2.2 Notwithstanding the requirements of paragraph 5.2.1, CASA may require the carriage of life rafts on such other overwater flights as CASA considers necessary.

5.2.3 Life rafts carried in accordance with paragraph 5.2.1 shall be in addition to life jackets carried in accordance with paragraphs 5.1.1 and 5.1.2.

5.2.4 Life rafts carried in accordance with this section shall be stowed so as to be readily accessible in the event of a ditching without appreciable time for preparatory procedures. When life rafts are stowed in compartments or containers, such compartments or containers shall be appropriately and conspicuously marked. Where life raft stowages have to be installed in aircraft to meet the requirements of this section, such stowages shall comply with the requirements of Part 101 appropriate to the certification of the aircraft concerned.

5.2.5 Life rafts must comply with a standard approved by CASA.

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5.3 Helicopter flotation systems

5.3.1 A single engine helicopter engaged in passenger carrying charter operations shall be equipped with an approved flotation system whenever the helicopter is operated beyond autorotative gliding distance from land. However, when following a helicopter access lane prescribed in AIP-ERSA, or when departing from or landing at a helicopter landing site in accordance with a normal navigational procedure for departing from or landing at that site, an approved flotation system is not required.

5.3.2 A single engine helicopter engaged in regular public transport operations shall be equipped with an approved flotation system whenever the helicopter is operated beyond autorotative gliding distance from land.

5.3.3 A multi-engine helicopter engaged in passenger carrying charter or regular public transport operations over water and which is not operated in accordance with one-engine-inoperative accountability procedures shall be equipped with an approved flotation system.

6 Emergency signalling equipment

6.1 An aircraft required to carry life rafts under paragraph 5.2.1 or 5.2.2 must be fitted with, or carry, the following emergency signalling equipment:

(a) when 1 life raft is carried — at least 1 approved ELT or 1 approved portable ELT;

(b) when more than 1 life raft is carried — at least:

(i) 1 approved ELT and 1 approved portable ELT; or

(ii) 2 approved portable ELTs;

(c) a supply of pyrotechnic distress signals.

Note If carrying an approved portable ELT to comply with this paragraph, CASA ***recommends*** an emergency position indicating radio beacon (an EPIRB).

6.2 A single engine aircraft must be fitted with, or carry, at least 1 approved ELT or 1 approved portable ELT if it is:

(a) on a flight over water; and

(b) not required to carry a life raft under paragraph 5.2.1 or 5.2.2; and

(c) either:

(i) not equipped with radio communication equipment; or

(ii) not capable of continuous air-ground communication.

Note If carrying an approved portable ELT to comply with this paragraph, CASA ***recommends*** an emergency position indicating radio beacon (an EPIRB).

6.3 If an approved portable ELT that is carried is an emergency position indicating radio beacon (an EPIRB), it must be carried:

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

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

6.4 If an approved portable ELT that is carried is a personal locator beacon (a PLB), it must be carried:

(a) on the person of a member of the operating crew; 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.

6.5 The pilot in command of an aircraft must not begin a flight, and the operator must ensure that the flight is not begun, if an approved ELT or approved portable ELT on

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board the aircraft for this subsection has not successfully undergone the periodic inspection and testing recommended for it by its manufacturer.

Note For the maintenance requirements for emergency locator transmitters see also Part 4A of the *Civil Aviation Regulations 1988*.

6.6 Before an approved ELT or approved portable ELT may be used in an aircraft for this subsection, it must be registered with the Australian Maritime Safety Authority.

6.7 In this subsection:

approved ELT has the same meaning as in subregulation 252A (7) of the *Civil Aviation Regulations 1988* (***CAR 1988***).

approved portable ELT has the same meaning as in subregulation 252A (7) of CAR 1988.

6A Portable megaphones

6A.1 This subsection applies to an aircraft that:

(a) is engaged in:

(i) regular public transport operations; or

(ii) charter operations for the purpose of carrying passengers; and

(b) has a passenger seating capacity of more than 60 seats; and

(c) is carrying at least 1 passenger.

6A.2 An aircraft to which this subsection applies must carry:

(a) if it has a passenger seating capacity of less than 100 seats — 1 portable megaphone; or

(b) otherwise — 2 portable megaphones.

6A.3 If 1 megaphone is carried in an aircraft under this subsection, it must be kept in a place where it is readily accessible from a crew member's seat.

6A.4 If 2 megaphones are carried in an aircraft under this subsection, they must be distributed through the passenger cabin or cabins so as to be readily accessible to crew members.

6A.5 Each portable megaphone must meet the following performance standards:

(a) it must be able to perform its function throughout any flight on which it is carried; and

(b) it must be designed for ease of handling and use with 1 hand; and

(c) it must have a volume control or adequate acoustic feedback suppression.

7 Survival equipment

7.1 An aircraft shall carry survival equipment for sustaining life appropriate to the area being overflown on the following flights:

(a) where the carriage of life rafts are required by paragraphs 5.2.1 and 5.2.2;

(b) during operations within or through the remote areas specified in Appendix III;

(c) on such other flights as may be directed by CASA.

8 Accessories for water operations

8.1 Amphibious aircraft when operating over water and all seaplanes and flying boats shall carry at least 1 sea anchor (drogue) and appropriate fittings shall be provided for the attachment of the sea anchor to the aircraft.

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9 Illumination of emergency exits

9.1 Where an aircraft, which is equipped with an emergency lighting system in compliance with airworthiness directive Part 39-105 AD/General/4, is in flight and less than 1 000 feet above the terrain or on the ground with passengers on board, then either:

(a) the emergency lighting system shall be switched on; or

(b) the normal cabin lights shall be switched on and the emergency lighting system shall be armed.

10 Emergency procedures

10.1 The operator of an aircraft engaged on charter or regular public transport operations shall specify in the aircraft's operations manual the procedures for handling:

(a) emergency decompression, where appropriate; and

(b) fire on the ground or in the air; and

(c) flight crew compartment impact drill; and

(d) emergency evacuation; and

(e) ditching, where appropriate.

11 Assignment of emergency duties

11.1 The operator and, where appropriate, the pilot in command, of an aircraft engaged on charter or regular public transport operations shall assign to each category of required crew member, as appropriate, the necessary functions to be performed in an emergency or situation requiring emergency evacuation. These functions shall be realistic, practicable and such as to ensure that any reasonably anticipated emergency can be adequately handled and shall take into consideration the possible incapacitation of individual crew members.

12 Crew member proficiency in the execution of emergency procedures

12.1 A crew member shall not be assigned or accept assignment to emergency duties in an aircraft engaged in a charter or a regular public transport operation unless he has undertaken and passed the proficiency test specified in Appendix IV of this section on that type of aircraft.

12.2 Subject to paragraph 12.6, the proficiency test shall be taken and passed annually.

12.3 Subject to paragraph 12.3.1, the proficiency test to be undertaken by a crew member of an aircraft is to be conducted by:

(a) CASA; or

(b) a person approved by CASA for the purpose; or

(c) the person appointed as Chief Pilot by the operator of the aircraft.

12.3.1 To remove any doubt, it is stated that a Chief Pilot who is a crew member of an aircraft cannot conduct the proficiency test that, as a crew member, he or she is required to undertake.

12.4 Upon satisfactory completion of the proficiency test a certificate to the effect that the crew member has passed the test shall be issued to the operator by the person who conducted the test. A certificate issued under this paragraph shall be current for a period of twelve months after the date of issue thereof.

12.5 An operator shall retain all certificates issued to him in accordance with paragraph 12.4 and shall keep and maintain a record containing the following particulars:

(a) the names of crew members who have undertaken the proficiency test;

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(b) the dates on which a member has undertaken the proficiency test;

(c) the results of all proficiency tests undertaken by any crew member.

12.6 A proficiency test undertaken within a period of ninety days immediately preceding the expiry date of a certificate issued under paragraph 12.4 shall be deemed to have been undertaken on the expiry date of that certificate.

13 Cabin attendants

13.1 Number of attendants

Aircraft engaged in the carriage of passengers on regular public transport operations shall contain at least the number of cabin attendants specified in section 20.16.3.

13.2 Seating position

At all times when they are required to wear seat belts cabin attendants shall be distributed uniformly throughout the passenger compartment or compartments, seated as near as practicable to emergency exits and each section of the aisle(s) shall be under the surveillance of at least 1 cabin attendant.

13.3 Training

Cabin attendants shall not be assigned to emergency duties on an aircraft unless in addition to the requirements of subsection 12 they have been given instruction in the following on that aircraft:

(a) a general description of the aircraft;

(b) a knowledge of all crew member's assignment, functions and responsibilities during an evacuation or ditching;

(c) briefing of passengers;

(d) use of public address system, where fitted, and means of communicating with the cockpit; and

(e) location and use of first aid equipment.

14 Briefing of passengers

14.1 General

14.1.1 The operator of an aircraft shall ensure that all passengers are orally briefed before each take-off on:

(a) smoking, including the prohibition of smoking in toilets; and

(b) the use and adjustment of seat belts; and

(c) the location of emergency exits; and

(d) the use of oxygen where applicable; and

(e) the use of flotation devices where applicable; and

(f) stowage of hand luggage; and

(g) the presence on board of special survival equipment where applicable.

14.1.2 The operator of an aircraft shall ensure that a handicapped person, and the person assisting the handicapped person, if any, is given individual briefing appropriate to the needs of that person in the procedures to be followed in the event of emergency evacuation of the aircraft. The briefing should include which emergency exit to use and when to move to the exit. The person giving the briefing should also enquire as to the most appropriate manner of assisting the handicapped person so as to prevent pain or injury to that person.

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14.1.3 The operator of a charter or regular public transport aircraft with a seating capacity of more than 6, including crew, shall supplement the oral briefing required by paragraph 14.1.1 with printed matter carried in convenient locations for the use of passengers and containing:

(a) diagrams of the emergency exits and methods of operating; and

(b) other instructions necessary for the use of emergency equipment; and

(c) the brace position for emergency landing or ditching.

14.1.4 Each card required by paragraph 14.1.3 shall contain only information that is pertinent to the type and model aircraft being used for the flight. Different seating configuration for a particular aircraft may be included on 1 card providing the oral briefing includes advice of the configuration in use.

14.1.5 In the case of aircraft engaged on charter or regular public transport operations, the procedures to be followed in the briefing required by paragraph 14.1.1 shall be specified in the aircraft's operations manual or in another document specified in the operations manual.

14.1.6 Aircraft engaged on regular public transport operations with a passenger seating capacity of 10 seats or more shall be equipped with an approved and serviceable electronic public address system for the purpose of making announcements relative to emergency procedures. The system shall be an integral part of the aircraft and shall be accessible and capable of immediate operation by the pilot in command, the co-pilot or an appropriately trained crew member. The transmission shall be audible throughout the passenger cabin.

14.2 Overwater operations

14.2.1 In addition to the oral briefing required by paragraph 14.1.1, the operator of an aircraft required to carry life jackets or other individual flotation devices, and where appropriate life rafts, in accordance with paragraphs 5.1.1, 5.1.2, 5.1.4, 5.2.1 and 5.2.2 shall ensure that all passengers are orally briefed by a crew member on the location and use of any individual flotation devices, including the method of donning and inflating a life jacket, and the location of life rafts. In the case of aircraft engaged on charter or regular public transport operations required to carry life jackets in accordance with paragraphs 5.1.1 or 5.1.4, this briefing shall include a demonstration of the method of donning and inflating a life jacket.

14.2.2 In the case of aircraft engaged on charter or regular public transport operations, the procedure to be followed in the briefing required by paragraph 14.2.1 shall be specified in the aircraft's operations manual or in another document called up by the operations manual.

14.2.3 Where an aircraft proceeds directly overwater after take-off, the briefing required by paragraph 14.2.1 shall be done before take-off.

14.2.4 Where the aircraft does not proceed directly overwater after take-off, no part of the briefing required by paragraph 14.2.1 need be given before take-off, but the complete briefing must be given before the aircraft reaches the overwater part of the flight.

Rectified 19/02/2009 Federal Register of Legislative Instruments F2009C00093

15 Demonstration of emergency evacuation procedures

15.1 Emergency evacuation requirements

15.1.1 This subsection applies to an operator of a type and model of aircraft having a seating capacity of more than 44 passengers that is to be used in passenger carrying operations:

(a) upon the initial introduction by the operator of that type and model of aircraft into passenger carrying operations; or

(b) if the operator's emergency evacuation procedures for that type and model have previously been accepted by CASA as satisfactory — upon increasing by more than 5% the passenger seating capacity of that type and model; or

(c) upon a major change in the passenger cabin interior configuration that will affect the emergency evacuation of passengers.

15.1.2 The type and model of aircraft must be shown to have satisfied the requirements of the United States Federal Aviation Regulations 25.803 (or any other requirements that CASA accepts as being of an equivalent standard) at the time it was granted its type certificate.

15.1.3 The operator must not operate that type and model of aircraft unless the operator has satisfied CASA that the evacuation procedures and training introduced by the operator will enable crew members to achieve an evacuation capability equivalent to that achieved when the type and model of aircraft satisfied the requirements of FAR 25.803 or other requirements accepted by CASA in accordance with paragraph 15.1.2.

15.1.4 For the purposes of paragraph 15.1.3, CASA may require the operator, under simulated emergency conditions, to carry out an evacuation of all or part of the full seating capacity, including the number of crew members required for the aircraft, in accordance with any conditions that it considers necessary.

15.2 Ditching demonstration

15.2.1 Before each type and model of aircraft with a seating capacity of more than 44 passengers is used for the carriage of passengers on charter or regular public transport operations where life rafts are required by subsection 5 the operator shall unless specifically exempted by CASA, show by demonstration in accordance with Appendix II of this section that the ditching procedures allow for the removal of the rafts and the evacuation of the occupants from the aircraft in an orderly and expeditious manner. The exits selected for the demonstration shall be approved by CASA.

15.2.1.1 When considering whether to grant an exemption against the requirement for a ditching demonstration, CASA shall take into account the availability and realism of training equipment, ditching demonstrations carried out by the operator on similar aircraft types, and such other factors as he may consider relevant.

15.2.2 Where a significant re-arrangement is made in the location of the life rafts or in the passenger cabin interior configuration for which a successful demonstration has been conducted, the need for further demonstration shall be referred to CASA for consideration.

Rectified 19/02/2009 Federal Register of Legislative Instruments F2009C00093

Appendix II

Criteria for ditching demonstration

1 The demonstration may be done under daylight conditions.

2 The aircraft's normal electrical power sources shall be de-energised at the commencement of the evacuation.

3 The demonstration shall include the pre-ditching procedures prescribed in the relevant aircraft operations manual and full use shall be made of the emergency equipment normally available. Where rafts and accessories are relocated in accordance with these procedures, they shall be restrained so as to prevent them moving under the maximum accelerations to be expected in a ditching.

4 Not more than 50 per cent of the aircraft's emergency exits shall be used for the demonstration and they shall be representative of all the emergency exits on the aircraft. At least 1 exit used shall be a floor level exit. Exits not nominated for use in the demonstration shall be so indicated by red lights, red tape, or other acceptable means, placed outside the exits to indicate fire or other reason that the exits are unusable.

5 Platforms or stairs shall be placed at each emergency exit and adjacent to the wings for escape from overwing exits with the top of the platforms or stairs at a height simulating the water level following a ditching.

6 A crew complement not exceeding the number normally carried shall be on board the aircraft and each crew member shall be a member of a regularly scheduled line crew.

7 The seating density and arrangement of the aircraft shall be representative of the highest passenger version of that aircraft the operator operates or proposes to operate.

8 A representative passenger load of persons in normal health, none of them crew members, training personnel, aircraft engineers or traffic officers, shall be used. At least 10 per cent of the passengers shall be above 50 years of age, at least 30 per cent shall be above 40 years of age and at least 60 per cent shall be above 30 years of age. At least 30 per cent of the passengers shall be females prorated through the age group 18 years to 60 years and at least 5 per cent but no more than 10 per cent shall be children under 12 years of age, prorated through that age group. Three life-size dolls, in addition to the total passenger load, shall be carried by passengers to simulate infants 2 years old or younger. The clothing worn by the passengers shall be as normally worn when travelling by air.

9 No crew member or passenger shall have participated in an emergency evacuation demonstration within the preceding 6 months.

10 No crew member or passenger shall be given prior knowledge of the emergency exits available for the demonstration.

11 To prevent disclosure of the emergency exits to be used, either all passenger and cockpit windows shall be blacked out, or mats on the ground or the wings, or ramps or stands with stairs (or similar devices) at the wings, shall be placed at emergency exit positions in equal number on each side of the aircraft.

12 The operator shall not rehearse the demonstration for the participants, nor inform the passengers of the nature of the exercise except that they may be advised that they will be participating in an evaluation of safety procedures.

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13 Passengers shall not be assigned to specified seats but CASA may require that passengers be assigned to different seats.

14 All emergency equipment must be installed as for normal flight.

15 Each external door and exit, and each internal door or curtain, shall be in position as for normal flight.

16 Each crew member shall be in his/her seat normally assigned for a ditching prior to the commencement of the evacuation and shall remain seated until the signal to evacuate is given.

17 Each occupant shall don a life jacket before the commencement of the evacuation and shall wear the jacket when leaving the aircraft.

18 All the occupants shall have their safety belts and shoulder harnesses (where fitted) fastened at the time of the simulated ditching.

19 The demonstration shall include the removal of the rafts and accessories from the aircraft but the rafts and accessory packs need not be opened.

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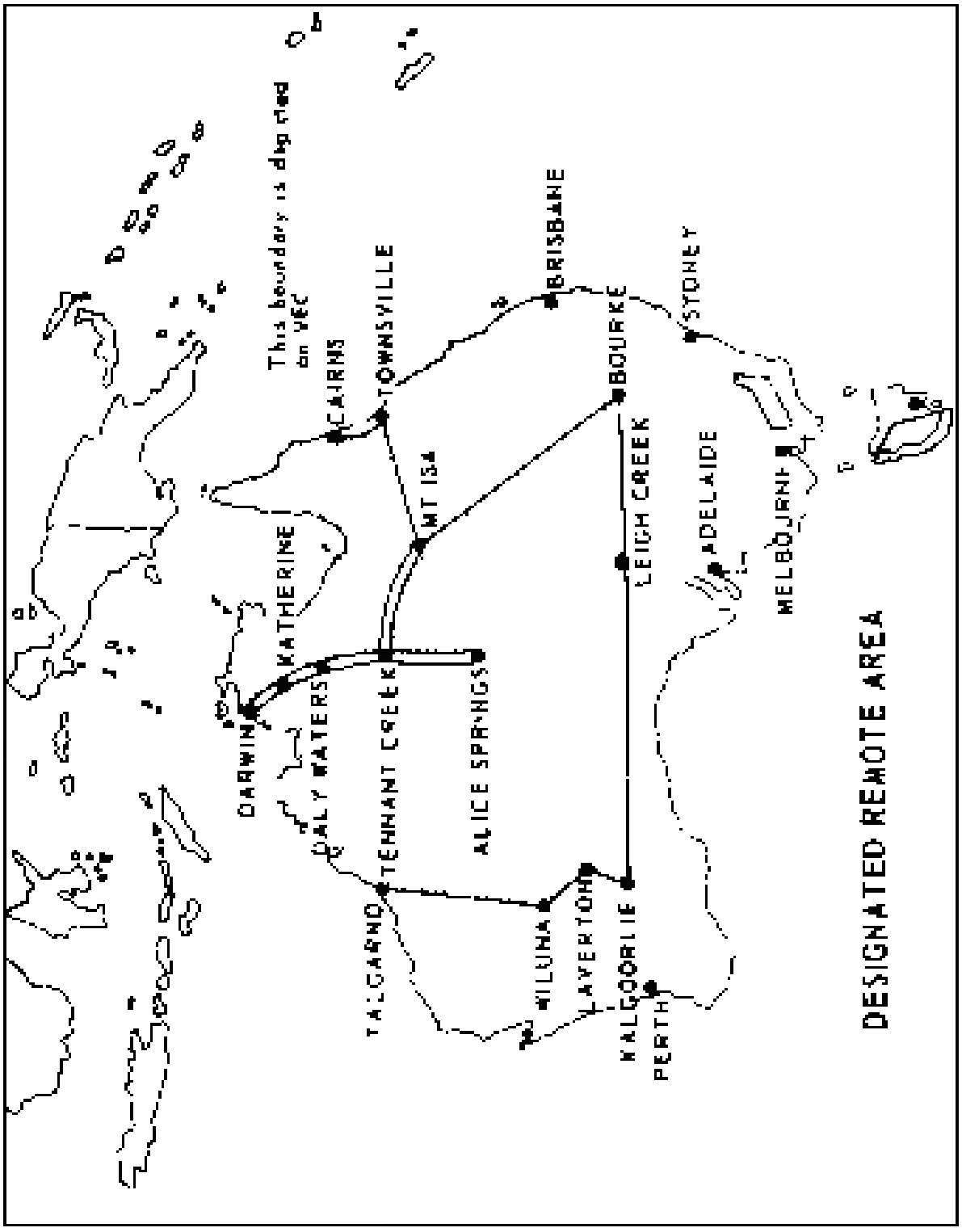
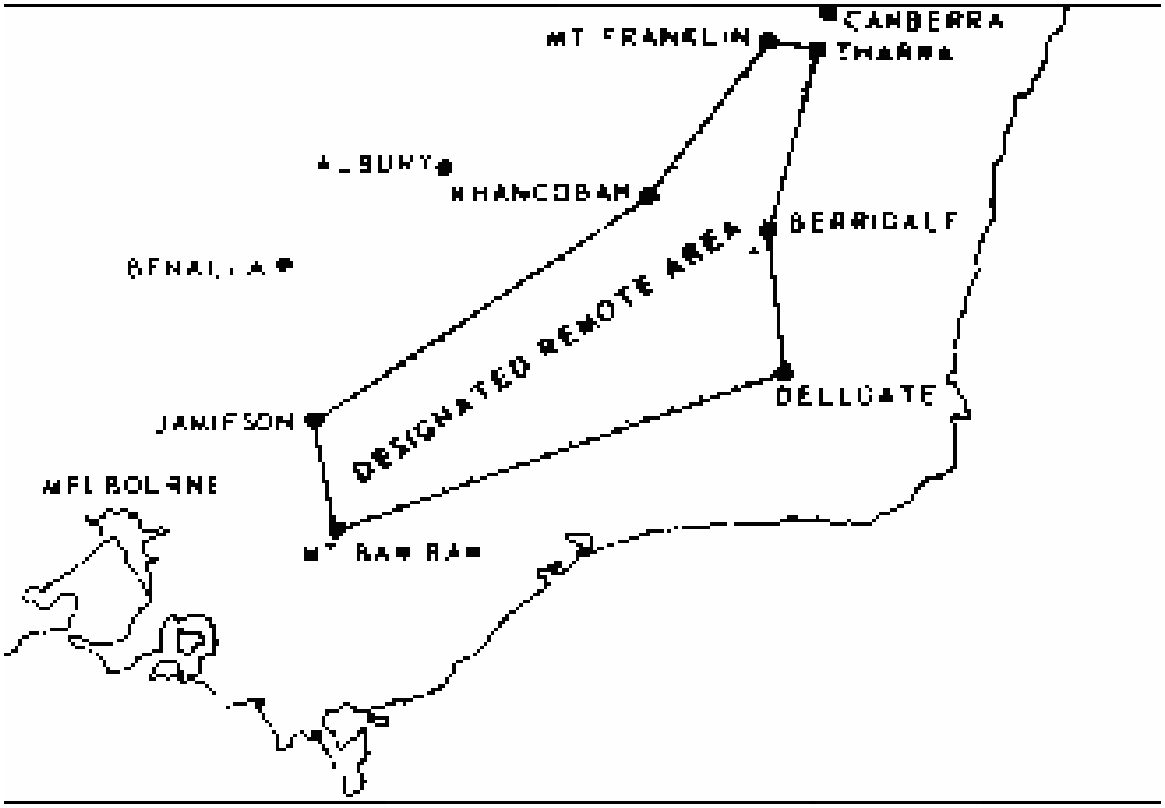
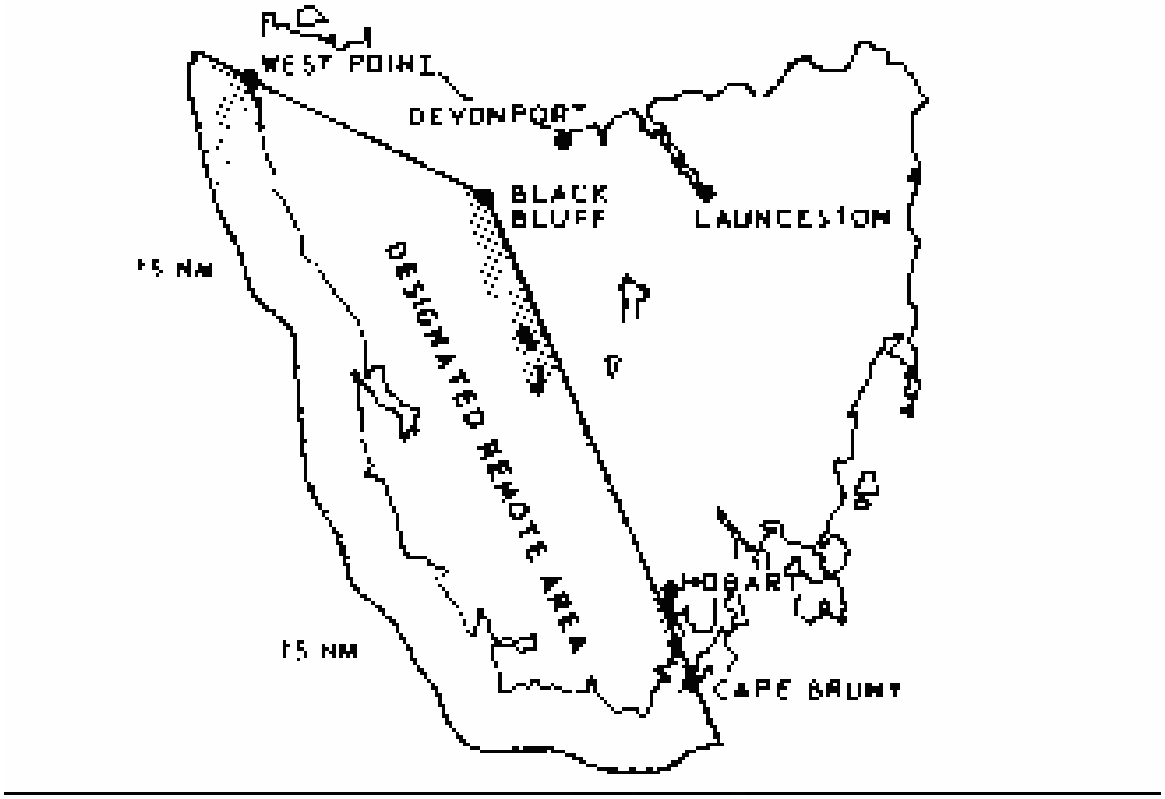
Appendix III



Note 3 Mainland within 50 n.m. of Darwin excluded from Designated Remote Area.

Rectified 19/02/2009 Federal Register of Legislative Instruments F2009C00093





Rectified 19/02/2009 Federal Register of Legislative Instruments F2009C00093

Appendix IV

Crew member emergency procedures proficiency test

The proficiency test shall cover all of those emergency procedures that the crew member may be called upon to perform. It shall include at least the following.

1 Practical operation

1.1 **Emergency evacuation procedures**. Operation and use of each type of normal and emergency exit, evacuation slide and escape rope and procedures for evacuation.

1.2 **Fire extinguishing**. Method of operation of each type of portable fire extinguisher.

1.3 **Oxygen**. Methods of use of fixed and portable oxygen equipment.

1.3A **Portable megaphones**. Method of operation of each type of portable megaphone.

1.4 **Ditching procedures**, where applicable:

(a) fitting and inflation of life jackets and location and use of equipment stowed as part of the life jacket. Additionally, for initial qualification each crew member shall demonstrate competency in the use of the life jacket in the water; and

(b) removal from stowage, launching and inflation of life rafts. For initial qualification each crew member shall demonstrate proficiency in his or her assigned duties. Thereafter all crew members shall be given an annual demonstration of launching and inflation and shall demonstrate competency in boarding procedures and the use of the life raft and its equipment; and

(c) use of signalling equipment; and

(d) use of first aid kits.

1.5 Subject to the approval of CASA, realistic mock-ups of emergency equipment may be used. Where the replacing of a particular item of equipment such as rafts, exits, slides, etc., would involve an excessive amount of maintenance action an operator may, subject to the approval of CASA, provide a group demonstration of the operation of the equipment. In this event the group demonstration must be supported by an approved pictorial presentation. Each crew member must satisfy the person certifying to competency that he has an adequate knowledge of the emergency operation of equipment and, if necessary, that he has physically assessed the difficulty involved in operating it.

1.6 When operation or use of the emergency mechanism may cause damage to the aircraft or equipment or be a hazard to personnel an approved pictorial or simulated presentation may be used. For the proficiency test the crew member must satisfy the person certifying to competency that he has an adequate knowledge of the emergency operation of the mechanism.

2 Theoretical knowledge

2.1 Fire extinguishing:

(a) a knowledge of the location and types of extinguishers carried and of fires for which each type of extinguisher should be used; and

(b) a knowledge of whether the contents of the fire extinguishers and the products of extinguishing fires are toxic or likely to adversely affect breathing; and

(c) any precautions to be observed in the operation of fire extinguishers.

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2.2 Oxygen. Applicable to operations on pressurised aircraft and where the provision of oxygen is required.

(a) A knowledge of the effects of altitude on:

(i) respiration; and

(ii) hypoxia; and

(iii) duration of consciousness at various altitudes without supplemental oxygen; and

(iv) gas expansion; and

(v) gas bubble formation.

(b) A knowledge of:

(i) the physical phenomena of decompression; and

(ii) precautions in use of oxygen; and

(iii) location of oxygen equipment carried.

2.3 Survival. Knowledge of survival methods on land and water, including stowage location of survival beacons, etc.

2.4 Control of passengers during emergencies including emergency evacuation:

(a) methods of control, e.g. psychological, physical; and

(b) stowage location and correct use of restraint equipment; and

(c) handling of disabled passengers; and

(d) handling of deranged passengers and others whose conduct might jeopardise the safety of the aircraft; and

(e) action to be taken in the event of a hijack or attempted hijack.

Rectified 19/02/2009 Federal Register of Legislative Instruments F2009C00093

Notes to Civil Aviation Order 20.11

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Act 1988*) as shown in this compilation comprises Civil Aviation Order 20.11 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R13	8 December 2004	8 December 2004 (*see* s. 2)	
CAO 20.11 2007 No. 1	FRLI 23 July 2007	24 July 2007 (*see* s. 2)	
CAO 20.11 2007 No. 2	FRLI 31 October 2007	1 November 2007 (*see* s. 2)	
CAO 20.11 2008 No. 1	FRLI 20 January 2009	1 February 2009 (*see* s. 2)	

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 20.11	rs. 2004 No. R13
subs. 5	am. CAO 20.11 2007 No. 1; CAO 20.11 2007 No. 2
subs. 6	rs. CAO 20.11 2008 No. 1

Rectified 19/02/2009 Federal Register of Legislative Instruments F2009C00093

Civil Aviation Amendment Order (No. R14) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 244 (2) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R14) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 20.13 of the Civil Aviation Orders

Section 20.13 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Federal Register of Legislative Instruments F2005B00792

Schedule 1 Substitution of section 20.13 of the Civil Aviation Orders

SECTION 20.13

AIR SERVICE OPERATIONS — COCKPIT CHECK SYSTEMS

1 APPLICATION

This section applies to all Australian registered aircraft having a maximum take-off weight of 5 700 kg or higher, to all aircraft conducting regular public transport operations regardless of weight, and to such other aircraft as CASA may prescribe.

3 COCKPIT CHECK SYSTEM REQUIRED

An operator of aircraft shall establish a cockpit check system for each type of aircraft operated by him, setting out:

(a) the procedure to be followed by the pilot in command and other flight crew members before take-off, before landing and in emergency situations; and

(b) any other procedures necessary for the efficient handling of the aircraft.

4 APPROVAL OF COCKPIT CHECK SYSTEMS

Cockpit check systems shall be approved by CASA.

5 CARRIAGE AND USE OF COCKPIT CHECK SYSTEMS

5.1 The cockpit check system shall be in the form of check lists, separate from manuals or other documents and shall be of a permanent nature such as the ‘roller blind’ type or stiff leaf booklets.

5.2 The cockpit check system shall be kept in the appropriate crew compartment and shall be used by the flight crew as part of the flight crew procedures.

5.3 When 2 or more members are carried in the flight crew, 1 member shall read off each item of the particular procedure from the cockpit check system and check that the required action has been carried out by another member.

Federal Register of Legislative Instruments F2005B00792

Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 20.16.1 – Air service operations – loading – general as amended

made under regulation 5 and subregulation 235 (7) of the *Civil Aviation Regulations 1988.*

This compilation was prepared on 12 July 2018 taking into account amendments up to *Civil Aviation Order 20.16.1 Amendment Instrument 2018 (No. 1).* It is a compilation of *Civil Aviation Order 20.16.1 – Air service operations – loading – general* as amended and in force on 30 June 2018.

Prepared by the Advisory & Drafting Branch, Legal & Regulatory Affairs Division, Civil Aviation Safety Authority, Canberra.

Compilation No. 3.

Contents

Page

Section 20.16.1

Air service operations – loading – general

1 Application

This Order applies to all Australian aircraft except balloons.

2 Definitions

In this Order:

aerial application operation has the meaning given by regulation 61.010 of the *Civil Aviation Safety Regulations 1998*.

Approved Loading System means a system prepared by an operator in accordance with the requirements of Civil Aviation Order 100.7, and approved by CASA or the holder of an appropriate and valid Weight Control Authority for ensuring that an aircraft is loaded within approved limits at all times during flight.

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

Authorised Version F2018C00462 registered 16/07/2018

Load Sheet means a form for recording the weight and disposition of the disposable load together with other pertinent loading information.

Approved Load Controller means a person nominated by an operator and approved by CASA to carry out all or any of the duties involved in the control and supervision of aircraft loading in a particular aircraft. The pilot in command or the co-pilot of an aircraft may undertake the duties and assume the responsibilities of an approved load controller without special authorisation by CASA.

3 Loading system

Where an aircraft has an approved loading system, the operator and the pilot in command shall ensure that the aircraft is loaded at all times in accordance with that system.

Note 1 Civil Aviation Order 100.7 requires all aircraft, except balloons, to have a loading system unless it can be shown that the aircraft cannot possibly be loaded so that its centre of the gravity falls outside the approved range, observing all limitations on compartment loads.

Note 2 Some acceptable types of loading systems are given in the CASA publication titled 'Weight Control of Aircraft'. Where the necessary limitations can be presented in placard form, such placards prominently displayed in the aircraft may be an acceptable type of loading system.

5 Load sheets

5.1 Subject to paragraph 5.1.1, the requirements of this paragraph are applicable to aircraft having a maximum take-off weight exceeding 5 700 kg and all aircraft engaged in regular public transport operations.

5.1.1 Paragraph 5.1 does not apply to an aircraft having a maximum take-off weight exceeding 5 700 kg while it is engaged in an aerial application operation.

5.2 Except as provided in paragraph 5.2.1 and 5.2.2, the operator and the pilot in command shall ensure that a load sheet is completed prior to departure of the aircraft on each stage of every flight.

5.2.1 Where the flight involves a number of stages, a supplementary load sheet based on the loading at the initial stage and accounting for all changes in the load may be used for each subsequent stage on the same day.

5.2.2 Where a standard load is carried on a number of consecutive flights on the same day from the same aerodrome, a load sheet completed for the first flight will meet the requirements of paragraph 5.1 for the subsequent flights if there is no change in any condition which could adversely affect the performance of the aircraft.

5.3 A load sheet shall contain the following and shall be signed by the pilot in command, the co-pilot or an approved load controller:

(a) name of pilot in command;

(b) date;

(c) aircraft type and registration marking;

(d) aerodromes of departure and destination;

(e) the aircraft's empty weight;

(f) weights of:

(i) occupants;

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(ii) cargo;

(iii) removable equipment;

(iv) fuel and consumables (e.g. water methanol);

(g) the loaded aircraft weight with evidence that the centre of gravity is within the approved limits;

(h) the maximum allowable weight for the flight having regard to the requirements of section 20.7.0.

5.4 The operator and pilot shall ensure that the load sheet is carried in the aircraft and, in the case of aircraft engaged in regular public transport services, that a copy is retained on the ground at the aerodrome of departure.

5.4.1 The operator shall retain a copy of each load sheet for a period of 3 months after the relevant flight.

7 Passenger lists

When passengers are carried on a charter or regular public transport flight, the operator or the operator's representative shall compile a passenger list and leave it for retention at the aerodrome of departure. The list shall contain the aircraft registration, the names of passengers carried, the date and estimated time of departure, and the places of embarkation and destination.

Note to Civil Aviation Order 20.16.1

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 20.16.1 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R15	8 December 2004	8 December 2004 (*see* s. 2)	
CAO 20.16.1 2007 No. 1	FRLI 20 December 2007 (see F2007L04938)	21 December 2007 (*see* s. 2)	
CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)	FRLI 29 August 2014 (see F2015L01177)	1 September 2014 (*see* s. 2)	Sections 3 and 31 (see Table A)
CAO 20.16.1 Amendment Instrument 2018 (No. 1)	FRL 29 June 2018 (see F2018L00962)	30 June 2018 (*see* s. 2)	

Authorised Version F2018C00462 registered 16/07/2018

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 20.16.1	rs. CAO 2004 No. R15
subs. 1	rs. CAO 20.16.1 2007 No. 1
subs. 2	am. CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1), CAO 20.16.1 Amendment Instrument 2018 (No. 1)
subs. 3, Note 1	am. CAO 20.16.1 2007 No. 1, CAO 20.16.1 Amendment Instrument 2018 (No. 1)
subs. 5	am. CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1), CAO 20.16.1 Amendment Instrument 2018 (No. 1)
subs. 6	rep. CAO 20.16.1 Amendment Instrument 2018 (No. 1)
subs. 7	am. CAO 20.16.1 Amendment Instrument 2018 (No. 1)

Table A Application, saving or transitional provisions

Sections 3 and 31 of Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1) read as follows:

3 Definitions

(1) In this instrument:

continued authorisation has the meaning given by regulation 202.261 of the *Civil Aviation Safety Regulations 1998* (***CASR 1998***).

new authorisation has the meaning given by regulation 202.261 of CASR 1998.

(2) A reference in this instrument to a Civil Aviation Order identified by a specified number is taken to include a reference to the section of the Civil Aviation Orders with that number.

Note Some existing legislative instruments are referred to as a Civil Aviation Order followed by a number. Other instruments are referred to as a section of the Civil Aviation Orders. For consistency, in this instrument, all such instruments are referred to as a Civil Aviation Order followed by a number. For example, a reference to Civil Aviation Order 40.2.2 is taken to include a reference to section 40.2.2 of the Civil Aviation Orders.

31 Transitional — application of Civil Aviation Orders

The Civil Aviation Orders apply to a continued authorisation as if it were the equivalent new authorisation.

Authorised Version F2018C00462 registered 16/07/2018

Civil Aviation Amendment Order (No. R16) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 244 (2) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R16) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 20.16.2 of the Civil Aviation Orders

Section 20.16.2 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Federal Register of Legislative Instruments F2005B00989

Schedule 1 Substitution of section 20.16.2 of the Civil Aviation Orders

SECTION 20.16.2

AIR SERVICE OPERATIONS — LOADING — GENERAL

1 APPLICATION

This section applies to all Australian aircraft.

2 DEFINITIONS

Cargo means things other than persons carried in an aircraft.

3 RESTRAINT

3.1 Cargo stowed on or above the floor line of compartments occupied by persons and behind any person shall be restrained so as to prevent any article from moving under the maximum accelerations to be expected in flight and in an emergency alighting such as a ditching.

3.2 Cargo stowed in areas other than those covered by paragraph 3.1 shall be restrained so as to prevent any article from moving under the maximum accelerations to be expected in flight, in a heavy landing, and in a ground loop.

3.3 The strength of the restraint provisions for compliance with paragraphs 3.1 and 3.2 shall be not less than that approved or accepted by CASA for a particular type of aircraft.

3.4 Cargo restraint equipment shall be flame resistant.

4 STOWAGE

4.1 Cargo shall not be carried in any place where it may damage, obstruct or cause failure of controls, electrical wiring, pipe lines and items of aircraft equipment, essential to the safe operation of the aircraft, unless such items are adequately protected during loading and handling of cargo and during the operation of the aircraft.

4.2 Cargo may obstruct an emergency exit where sufficient other emergency exits are available for the number of occupants carried in accordance with the tables in Part 105 and any cargo aft of these exits is restrained in accordance with paragraph 3.1.

4.2.1 Whenever an emergency exit is obstructed, the emergency exit sign for that exit shall be covered or otherwise made ineffective.

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4.2.1 Whenever an emergency exit is obstructed, the emergency exit sign for that exit shall be covered or otherwise made ineffective.

4.3 Cargo shall not obstruct an aisle in accordance with subsection 7 of section 20.16.3.

4.4 Where cargo is carried in an aircraft (other than a single pilot aircraft) in which an aisle is not required by subsection 7 of section 20.16.3, the cargo shall be stowed:

(a) so as to ensure that crew members are able to move freely through the aircraft in a substantially upright position; or

(b) so as to provide access through the aircraft for the crew members in such other manner as may be approved by CASA.

5 CARGO ON A PASSENGER SEAT

5.1 Cargo may be carried on an unoccupied passenger seat. The weight of such cargo shall be evenly distributed over the squab, and shall not exceed 77 kg, except where a seat loading scheme permitting a greater weight is specifically approved by CASA.

5.2 Cargo carried on a passenger seat shall be restrained in accordance with the requirements of paragraph 3.

6 CARGO IN PILOT COMPARTMENT

6.1 Carriage of cargo in pilot compartments is prohibited except that in aircraft having a maximum take-off weight not more than 5 700 kg, cargo may be carried on an unoccupied control seat.

6.2 Cargo carried on a control seat shall not exceed 77 kg in weight unless a seat loading scheme which would permit a greater weight is specifically approved by CASA.

6.3 Cargo shall not be carried on a control seat if the cargo or means of restraint would interfere with the operation of the aircraft.

6.3.1 When cargo is carried on a control seat, the flight controls relevant to that seat shall be removed where they have been designed for easy removal and the remaining fittings protected so as to prevent interference by the cargo to the operation of the aircraft.

6.4 Cargo carried on a control seat shall be restrained in accordance with the requirements of subsection 3.

7 PLACARDING

Cargo shall only be carried in a place or compartment placarded with loading instructions.

Federal Register of Legislative Instruments F2005B00989

Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 20.16.3 (as amended)

made under regulations 208 and 235 of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 27 July 2021 taking into account amendments up to *Civil Aviation Order 20.16.3 Amendment Instrument 2021 (No. 1)*.

Prepared by the Advisory & Drafting Branch, Legal, International & Regulatory Affairs Division, Civil Aviation Safety Authority, Canberra.

Compilation No. 4

Contents

Air service operations — carriage of persons

Section 20.16.3

Air service operations — carriage of persons

1 Application

This section applies to all Australian registered aircraft.

2 Definitions

In this section, unless a contrary intention appears:

An ***aisle*** is a longitudinal passageway between seats.

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A ***cabin attendant*** is a crew member, other than a flight crew member, who is qualified in the execution of emergency procedures in accordance with the requirements of section 20.11.

A ***child*** is a passenger who has reached his or her third but not his or her thirteenth birthday.

An ***infant*** is a passenger who has not reached his or her third birthday.

A ***passenger*** is a person who is not a crew member.

3 Seats

3.1 Each crew member and each passenger shall occupy a seat of an approved type:

(a) during take-off and landing; and

(b) during an instrument approach; and

(c) when the aircraft is flying at a height less than 1000 feet above the terrain; and

(d) in turbulent conditions:

except:

(i) infants, children and stretcher cases carried in accordance with subsections 13 and 14 respectively; and

(ii) package dispatchers carried in accordance with section 29.5; and

(iii) parachutists carried in accordance with subsection 15.

3.2 Each crew member and passenger shall occupy a seat of an approved type during agricultural operations and during acrobatic manoeuvres.

3.3 The operator of the aircraft must ensure that exit rows in the aircraft are occupied only by persons who are, subject to subsection 14, fully able and willing to assist with access to the emergency exits in the event of an emergency.

4 Seat belts and safety harnesses

4.1 Except as provided in subsections 14 and 15 safety harnesses, or seat belts where safety harnesses are not fitted, shall be worn by all persons at the times listed in paragraph 3.1. Seat belts and safety harnesses shall be adjusted to fit the wearer without slack.

4.2 At least 1 pilot crew member shall wear a seat belt or harness at all times during flight.

4.3 When a cabin attendant is not required to be carried in an aircraft, and the passenger seating capacity is 10 seats or more, an approved and serviceable electronic public address system shall be provided to enable the pilot in command to notify passengers when a seat belt or safety harness is to be worn.

5 Adjustment of seats

5.1 All seats (with the exception of those specified in paragraph 5.2) shall be adjusted to their upright position for take-off and landing.

5.2 When it is desirable through illness or other incapacity that a passenger's seat remains in the reclined position during take-off or landing, that seat,

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notwithstanding the provision of paragraph 5.1, may be left reclined during take-off or landing if it is forward facing, there is no person occupying the seat immediately behind, and it will not impede the egress of any person in an emergency evacuation.

6 Cabin attendants

6.1 Subject to subsection 6A, aircraft engaged in charter or regular public transport operations shall carry cabin attendants appropriate to their passenger complement as follows:

(a) aircraft carrying more than 15 but not more than 36 passengers shall carry a cabin attendant, except that aircraft:

(i) carrying not more than 22 passengers, at least 3 of whom are infants or children; and

(ii) crewed by 2 pilots;

need not carry a cabin attendant if the duties and responsibilities of the flight crew concerning the briefing and control of passengers in normal and emergency operations are specified in the operations manual;

(b) aircraft carrying more than 36 but not more than 216 passengers shall carry at least 1 cabin attendant for each unit of 36 passengers or part thereof;

(c) aircraft carrying more than 216 passengers shall carry the number of cabin attendants as prescribed by CASA which shall not be less than 1 cabin attendant for each floor level exit in any cabin with 2 aisles;

(d) notwithstanding the specifications of (a), (b) and (c) above, in an aircraft in which cabin attendants are required to be carried, there shall be not less than 1 cabin attendant in each separate compartment occupied by passengers, and, where the number of cabin attendants used in the emergency evacuation demonstration required by section 20.11 was in excess of the numbers required by (a), (b) or (c) above, the number of cabin attendants on an aircraft shall be not less than the numbers required by (a), (b) or (c) as applicable plus the excess number of attendants used in the demonstration.

6.2 When cabin attendants must be carried in accordance with paragraph 6.1, the number of cabin attendants need not be increased when infants or children are carried and the total number of passengers exceeds that permitted by the number of cabin attendants provided that:

(a) the number of excess passengers does not exceed 5% (to the next highest whole number); and

(b) the excess passengers are infants or children.

6.3 When parachutists are carried on aircraft engaged in parachuting operations they shall not be regarded as passengers for the purpose of determining the number of cabin attendants required.

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6A Manned balloons and hot air airships

A manned balloon or hot air airship engaged in charter operations need not carry a cabin attendant if:

(a) the operator's operations manual (the ***manual***) mentions the duties and responsibilities of the pilot in command for the briefing and control of passengers in normal and emergency situations; and

(b) for a manned balloon or hot air airship that has more that 2 passenger compartments — the pilot in command has a separate compartment centrally located among the passenger compartments; and

(c) during the operations:

(i) the number of passengers does not exceed 24; and

(ii) an approximately equal weight of passengers is located in each of the passenger compartments; and

(iii) not more than 6 passengers are located in each passenger compartment; and

(iv) the passengers are always in a position to hear any instructions given by the pilot in command; and

(d) during passenger loading and launching operations, and as far as possible during landing and passenger unloading operations, at least the following are available to help the pilot with loading or unloading passengers:

(i) if not more than 16 passengers are carried — 1 ground crew member trained in accordance with the manual (a ***trained ground crew member***); and

(ii) if more than 16 passengers are carried — 2 trained ground crew members, with 1 at either end of the basket or as directed by the pilot in command of the balloon; and

(e) the manual contains a detailed statement of ground crew training and duties, including a system to record for each trained ground crew member when and how he or she successfully completed training; and

(f) the operations are conducted in accordance with all other relevant requirements of this Order.

Note Subject to compliance with certain conditions, Civil Aviation Order 95.53 exempts a manned balloon or hot air airship, engaged in aerial work or charter operations, from the requirements of regulation 251 of the *Civil Aviation Regulations 1988* concerning seat belts and safety harnesses. Therefore, subsections 3, 4, 7 and 15 of Civil Aviation Order 20.16.3 do not apply to such a manned balloon or hot air airship.

7 Aisles

7.1 An aircraft which is engaged in charter or regular public transport operations and which is required by subsection 6 to carry 1 or more cabin attendants shall be provided with an aisle, which shall at all times enable the cabin attendants to have unobstructed passage through the compartment from front to rear.

7.2 An aircraft which is engaged in charter or regular public transport operations and which:

(a) carries 15 passengers or fewer; or

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(b) satisfies the requirements of subparagraph 6.1 (a)

need not be provided with an aisle, provided that the relevant requirements of section 20.11 can be complied with.

8 Smoking

Pursuant to paragraph 255 (2) (a) of the *Civil Aviation Regulations* 1988, a notice(s) specifying the periods during which smoking is prohibited may be permanently displayed in the crew compartment and toilets of all aircraft and in the passenger compartment of aircraft which have only 1 passenger compartment and a maximum take-off weight of 5 700 kg or less.

9 Stowage of loose articles

9.1 Loose articles in the cabin of an aircraft, including items of equipment and crew members and passengers' personal effects, shall be stowed so as to avoid the possibility of injury to persons or damage to the aircraft through the movement of such articles caused by in-flight turbulence or by unusual accelerations or manoeuvres.

9.2 Except as provided for in paragraph 4.2 of section 20.16.2 all aisles, passageways and exits shall be kept clear of obstructions when the aircraft has passengers on board and is in flight below 1 000 feet above terrain or, except when embarking or disembarking passengers, is on the ground.

9.3 All solid articles shall be placed in approved stowage at all times when seat belts are required to be worn in accordance with paragraph 4.1.

9.4 Approved stowage for solid articles means:

(a) under a passenger seat, where the stowage compartment has an approved means of preventing solid articles from shifting forwards; or

(b) in an overhead locker in accordance with the design weight limitation of the locker; or

(c) in any other locker or rack, excluding overhead racks, which have been designed to contain solid articles in flight.

Note Underseat stowage compartments which comply with the forward restraint provisions of section 103.10 are approved for the purposes of this section.

10 Passenger service

Except when in use, all items provided for passenger service, such as food containers, vacuum flasks and serving trays, shall be carried in their respective stowages and secured against movement likely to cause injury to persons or damage to the aircraft. In any case, all such items shall be stowed during take-off and landing.

11 Carriage of passengers in seats at which dual controls are fitted

11.1 Except as provided in paragraph 11.2, in all aircraft for which the Certificate of Airworthiness specifies a minimum crew of 1 pilot, a person may occupy a seat at which fully or partially functioning dual controls are fitted if the pilot gives adequate instruction to that person to ensure that the controls are not interfered with in flight and there is satisfactory communication available at all times between the pilot and that person.

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11.2 In respect of aircraft engaged in regular public transport operations, the seat referred to in paragraph 11.1 shall not be occupied by a person other than a licensed pilot or an employee of the operator of the aircraft unless approved by CASA. Details of such an approval shall be included in the Operations Manual.

11.3 The provisions of these paragraphs shall not be construed as limiting the exercise of the authority of CASA in accordance with regulation 226 of the *Civil Aviation Regulations 1988*.

12 Passenger capacity

12.1 The number of passengers carried in an aircraft for which an emergency evacuation demonstration is required by subsection 15 of section 20.11 shall not exceed the number demonstrated or the number otherwise approved by CASA, except that when infants are carried the number may be increased by 5% (to the nearest whole number), provided the excess passengers are infants.

12.2 The number of passengers carried in an aircraft for which an emergency evacuation demonstration is not required may exceed the number of approved passenger seats fitted in the aircraft only if the excess number of passengers:

(a) has been approved by CASA; or

(b) does not exceed the number specified in column 2 of the following table opposite the number of passenger seats specified in column 1;

and the excess passengers are infants or children:

Table

Column 1 **No. of passenger seats**	**Column 2** **No. of excess passengers**
2-6	1
7-13	2
14-20	3
21-26	4
27-39	5
40-44	6

13 Carriage of infants and children

13.1 Where their combined weight does not exceed 77 kg, 2 children may occupy 1 seat if:

(a) seated side by side; and

(b) restrained by a lapstrap only; and

(c) the seat-belt is adjusted to secure both children at all times when a seat belt is required to be worn.

13.2 (1) An infant may be carried in the arms or on the lap of an adult passenger, in a bassinet or in an infant seat in accordance with paragraphs 13.3, 13.4, 13.5 and 13.6 providing the bassinet or infant seat is restrained so as to prevent it from moving under the maximum accelerations to be expected

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in flight and in an emergency alighting, and precautions are taken to ensure that, at the times seat belts are required to be worn, the infant will not be thrown from the bassinet or infant seat under these accelerations.

(2) When an infant is carried in the arms or on the lap of a passenger in accordance with subparagraph 13.2 (1) the seat belt, when required to be worn, shall be fastened around the passengers carrying or nursing the infant, but not around the infant.

(3) When an infant is carried in the arms or on the lap of a passenger in accordance with subparagraph 13.2 (1) on an aircraft engaged in charter or regular public transport operations, the name of the infant shall be bracketed on the passenger list with the name of the person carrying or nursing the infant.

(4) An infant must not be carried in an exit seat during take-off or landing unless the pilot in command is satisfied that the infant's presence in the seat will not obstruct or hinder the escape of other persons from the aircraft.

(5) In subparagraph (4), ***exit seat*** means a seat that is in a row of seats adjoining an exit.

13.3 An infant seat, being a seat designed for the seating and restraint of infants, must not be used on an aircraft unless CASA or a recognised authority has approved the seat in writing as being of a type that is suitable for use by infants in an aircraft.

13.4 In paragraph 13.3, ***recognised authority*** means the Civil Aviation Authority of the United Kingdom, the Federal Aviation Administration of the United States of America or the authority of another country that is responsible for the safety of air navigation and that CASA declares in writing to be a recognised authority for the purposes of paragraph 13.3.

13.5 An infant seat must not be used on an aircraft:

(a) if it is secured to a side-facing seat; or

(b) unless it is secured at all times during the flight, by means of a seat belt or as otherwise approved, to a seat ordinarily used by an adult passenger.

13.6 The use of an infant seat on an aircraft is subject to such conditions (if any) of which CASA notifies the operator of the aircraft in writing.

14 Persons or passengers who require assistance due to sickness, injury or disability

14.1 The operator of an aircraft must, as much as possible, identify any person on the aircraft who requires assistance due to sickness, injury or disability.

14.2 Subject to paragraph 14.5, the operator and pilot in command of an aircraft must ensure that any person who requires assistance due to sickness, injury or disability is not seated where he or she could obstruct or hinder access to any emergency exits.

14.3 If a person who requires assistance due to sickness, injury or disability is carried on an aircraft, the operator and pilot in command must:

(a) take all reasonable precautions to prevent hazards to other persons on the aircraft; and

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(b) ensure that there are procedures in place to enable particular attention to be given to any such passenger in an emergency; and

(c) ensure that individual briefings on emergency procedures are given to any such person in accordance with Civil Aviation Order 20.11.

14.4 The carriage of stretcher patients on any aircraft must be in accordance with the following requirements:

(a) the stretcher must be secured in the aircraft so as to prevent it from moving under the maximum acceleration likely to be experienced in flight and in an emergency alighting such as ditching;

(b) the patient must be secured by an approved harness to the stretcher or aircraft structure.

Note Psychiatric restraint equipment is not an approved harness for this purpose.

14.5 Paragraph 14.2 does not apply in relation to a rotorcraft or a smaller aeroplane if:

(a) the person who requires assistance is accompanied, or assisted, for the flight by a suitable person who is seated adjacent to the emergency exit; and

(b) the suitable person is accompanying or assisting only that person for the flight; and

(c) the suitable person has agreed to assist the crew with the evacuation of the aircraft in an emergency.

14.6 For the purposes of paragraph 14.5:

rotorcraft means:

(a) a helicopter; or

(b) a gyroplane; or

(c) a powered-lift aircraft.

smaller aeroplane means an aeroplane that has:

(a) a maximum passenger seating capacity of not more than 9; and

(b) a maximum take-off weight of not more than 8 618 kg.

suitable person: a person is a ***suitable person*** if the person:

(a) is reasonably fit, strong, and able to assist with the rapid evacuation of the aircraft in an emergency; and

(b) would not, because of a condition or disability, including an inability to understand oral instructions, hinder:

(i) other passengers during an evacuation of the aircraft in an emergency; or

(ii) the aircraft's crew in carrying out their duties in an emergency.

15 Carriage of parachutists

15.1 Where a parachutist is not provided with a seat of an approved type, he or she shall be provided with a position where he or she can be safely seated.

15.2 During the times specified in paragraph 3.1, he or she shall, except when he or she is about to jump:

(a) occupy a seat or a seating position;

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(b) wear, adjusted to ensure adequate restraint;

(i) a seat belt; or

(ii) a safety harness; or

(iii) a parachute connected to an approved single point restraint.

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Notes to Civil Aviation Order 20.16.3

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 20.16.3 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R17	8 December 2004	8 December 2004 (*see* s. 2)	
CAO 20.16.3 2006 No. 1	FRLI 30 June 2006	1 July 2006 (*see* s. 2)	
CAO 20.16.3 2006 No. 2	FRLI 17 October 2006	18 October 2006 (*see* s. 2)	
CAO 20.16.3 2009 No. 1	FRLI 31 July 2009	1 August 2009 (*see* s. 2)	
CAO 20.16.3 2021 No. 1	26 July 2021 (F2021L01026)	27 July 2021 (*see* s. 2)	

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 20.16.3	rs. CAO 2004 No. R17
subs. 2	am. CAO 20.16.3 2006 No. 1, CAO 20.16.3 2009 No. 1
subs. 3	am. CAO 20.16.3 2009 No. 1, CAO 20.16.3 2021 No. 1
subs. 4	am. CAO 20.16.3 2009 No. 1
subs. 6	am. CAO 20.16.3 2006 No. 1
subs. 6A	ad. CAO 20.16.3 2006 No. 1
	am. CAO 20.16.3 2006 No. 2, CAO 20.16.3 2009 No. 1
subs. 14	rs. CAO 20.16.3 2009 No. 1
	am. CAO 20.16.3 2021 No. 1
subs. 15	rep. CAO 20.16.3 2009 No. 1
subs. 16	am. CAO 20.16.3 2009 No. 1

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Civil Aviation Amendment Order (No. R18) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 92 (2) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R18) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 20.17 of the Civil Aviation Orders

Section 20.17 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 20.17 of the Civil Aviation Orders

SECTION 20.17

AIR SERVICE OPERATIONS — USE OF MILITARY AERODROMES BY CIVIL AIRCRAFT

2 GENERAL

Aircraft shall not use a Military aerodrome except in accordance with the provisions specified in this Section.

3 MILITARY AERODROMES APPROVED FOR GENERAL USE

The following Military aerodromes are approved for use by aircraft engaged in all classes of Air Service Operations:

Royal Australian Air Force Aerodromes:

Canberra
Darwin
Townsville
Wagga

4 OTHER MILITARY AERODROMES

A Military aerodrome other than those specified in paragraph 3 may be used under the following conditions:

4.1 When the operation has been authorised by CASA and specified in an Airline Licence; or

4.2 When an Aerial Work or Charter operation at a particular Military aerodrome has been authorised by CASA; or

4.3 When permission has been granted by the appropriate Military Authority.

5 OPERATING CONDITIONS

5.1 Operations at Military aerodromes shall be conducted in accordance with the *Civil Aviation Regulations 1988* except that:

(a) when any conditions, rules or instructions issued by the appropriate Military Authority differ from the provisions of the *Civil Aviation Regulations 1988*; or

(b) when any additional conditions, rules or instructions have been issued by the appropriate Military Authority;

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operations shall be conducted in accordance with such conditions, rules or instructions issued by the Military Authority.

5.2 A pilot in command shall comply with instructions issued by the Airport Control Unit at a Military Aerodrome.

5.3 Notwithstanding the requirements specified in paragraph 5.1, when the weather minima prescribed by CASA are more restrictive than the minima prescribed by the Military Authority for a particular aerodrome, operations at that aerodrome shall be conducted in accordance with the minima prescribed by CASA.

Note: When the minima prescribed for a particular aerodrome by the appropriate Military Authority are more restrictive than those prescribed by CASA, the Military Authority may, in special circumstances, permit Civil aircraft operations in accordance with the minima prescribed by CASA

Federal Register of Legislative Instruments F2005B00799

Civil Aviation Order 20.18 (Aircraft equipment — basic operational requirements) Instrument 2014 (as *amended*)

made under regulations 207 and 232A of the *Civil Aviation Regulations 1988* and subsection 33 (3) of the *Acts Interpretation Act 1901*.

This compilation was prepared on 15 June 2020 taking into account amendments up to *Civil Aviation Order 20.18 Amendment Instrument 2020 (No. 1)*. It is a compilation of the *Civil Aviation Order 20.18 (Aircraft equipment — basic operational requirements) Instrument 2014* as amended and in force on 11 June 2020.

Prepared by the Advisory and Drafting Branch, Legal, International & Regulatory Affairs Division, Civil Aviation Safety Authority, Canberra.

Compilation No. 5.

1A Name of instrument

1A.1 This instrument is the *Civil Aviation Order 20.18* (*Aircraft equipment — basic operational requirements) Instrument 2014*.

1A.2 This instrument may be cited as *Civil Aviation Order 20.18*.

1A.3 A reference in an instrument to section 20.18 of the Civil Aviation Orders is taken to be a reference to this instrument.

1 Application

This Order applies to all Australian registered aircraft.

Note Particular attention is drawn to the fact that this Order does not include requirements for oxygen equipment, radio apparatus or emergency equipment which are specified in Civil Aviation Orders 20.4 and 20.11, respectively.

2 Definitions

2.1 In this Order, unless a contrary intention appears:

aerial work includes flight training conducted by a Part 141 operator or a Part 142 operator.

CAR 1988 means the *Civil Aviation Regulations 1988*.

CASR 1998 means the *Civil Aviation Safety Regulations 1998*.

minimum equipment list means a list that provides for the operation of aircraft with permissible unserviceabilities, subject to compliance with such conditions, if any, as CASA directs under subregulation 37 (2) of CAR 1988.

permissible unserviceability means any defect or damage that CASA has approved under subregulation 37 (1) of CAR 1988 as a permissible unserviceability.

TAWS-B+ system means a terrain awareness and warning system that is equipped with a visual display and complies with the requirements for Class B equipment expressed in (E)TSO-C151, (E)TSO-C151a or (E)TSO-C151b.

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2.2 In this Order, a reference to an (E)TSO, a TSO or an ETSO, as defined in subsections 9B and 9D, with an empty bracket at the end of the reference, includes the (E)TSO, TSO or ETSO in a version that contains a number within the bracket.

3 Instrumentation for flight under the Visual Flight Rules (the V.F.R.)

RPT aeroplanes and large charter aeroplanes

3.1 An aeroplane engaged in:

(a) a regular public transport (***RPT***) operation; or

(b) a charter operation that has maximum take-off weight exceeding 5 700 kg — a charter operation;

may only be operated under the V.F.R. if it is equipped with the following:

(c) the instruments specified in Appendix II;

(d) any other instruments and indicators specified in the aeroplane's flight manual.

Note ***V.F.R.*** and ***flight manual*** are defined in subregulation 2 (1) of CAR 1988.

Helicopters

3.2 Subject to paragraph 3A.1, a helicopter may only be operated under the V.F.R. by day if it is equipped with the following:

(a) the instruments specified in Appendix VI;

(b) any other instruments and indicators specified in the helicopter's flight manual.

3.2A A helicopter may only be operated under the V.F.R. at night if:

(a) it is equipped with the instruments specified in Appendix VIII; and

(b) it is equipped with any other instruments and indicators specified in the helicopter's flight manual;

(c) for flights under V.F.R. at night which involve flights over land or water where the helicopter's attitude cannot be maintained by the use of visual external surface cues as a result of lights on the ground or celestial illumination:

(i) the helicopter is equipped in accordance with subparagraph 4.2 (d) of this Order; or

(ii) the helicopter is operated by a qualified 2 pilot crew, each with access to flight controls.

Hot air balloons and hot air airships

3.3 Subject to paragraph 3A.2, a hot air balloon and a hot air airship may only be operated under the V.F.R. if the balloon or airship is equipped with the following:

(a) the instruments specified in Appendix X;

(b) any other instruments and indicators specified in the flight manual of the balloon or airship.

Other aircraft in private, aerial work or charter operations

3.4 Subject to paragraph 3A.3, an aircraft:

(a) engaged in a private, aerial work or charter operation; and

(b) not mentioned in paragraphs 3.1 to 3.3;

may only be operated under the V.F.R. if it is equipped with the following:

(c) the instruments specified in Appendix I;

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(d) any other instruments and indicators specified in the aircraft's flight manual.

3A Operations to which flight and navigation equipment requirements do not apply

3A.1 Paragraph 3.2 does not apply to a helicopter that operates under the V.F.R., and for which an experimental certificate has been issued under paragraph 21.191 (g) or (h) of CASR 1998, if equipment is carried that provides a pilot with the same information that would be obtained by compliance with the requirements of Appendix VI for operations by day, or Appendix VIII if approved for operations by night.

3A.2 Paragraph 3.3 does not apply to a balloon that operates by day under the V.F.R.:

(a) being an aircraft for which a current certificate of airworthiness as a light sport aircraft (***LSA***) has been issued; or

(b) being an aircraft for which an experimental certificate has been issued under paragraph 21.191 (g), (h) or (j), or an LSA for which an experimental certificate has been issued under paragraph 21.191 (k), of CASR 1998;

if equipment is carried that provides a pilot with the same information that would be obtained by compliance with the requirements of Appendix X.

3A.3 Paragraph 3.4 does not apply to any other aircraft that operates under the V.F.R.:

(a) being an aircraft for which a current certificate of airworthiness as an LSA has been issued; or

(b) being an aircraft for which an experimental certificate has been issued under paragraph 21.191 (g), (h) or (j) or an LSA for which an experimental certificate has been issued under paragraph 21.191 (k), of CASR 1998;

if equipment is carried that provides a pilot with the same information that would be obtained by compliance with the requirements of Appendix I for operations by day, or Appendix IV if approved for operations by night.

3A.4 An aircraft referred to in paragraphs 3A.1 to 3A.3 that is approved to operate at night and is equipped with an Electronic Flight Information System (***EFIS***), or other means of electronically displaying the required information, must be provided with a battery-powered back-up, or another form of instrumentation independent of the aircraft electrical system, that is approved by an authorised person as suitable, in the case of a failure of the aircraft electrical system, for the purpose of enabling the pilot to divert to and use a safe landing site.

3A.5 If an aircraft equipped as required under paragraph 3A.4 has a battery-powered back-up to an EFIS, the back-up must be of sufficient capacity to power the EFIS panel or other display for 90 minutes and must be fully charged before the commencement of a flight at night.

3A.6 Subject to paragraph 3A.7, an Australian registered aircraft may be operated without compliance with the flight and navigation equipment requirements in subsections 3 and 4 of this Order if it can show compliance with an equivalent level of safety, as determined by the type certificating authority for the aircraft, taking into consideration its intended operation.

3A.7 The type certificating authority for the aircraft must be a recognised authority.

3A.8 In paragraph 3A.7:

recognised authority means an authority of a country listed in regulation 21.012 of CASR 1998.

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4 Equipment for flight under the Instrument Flight Rules (the *I.F.R.*)

4.1 Subject to subsection 3A, an aeroplane must not be operated under the I.F.R. unless it is equipped with:

(a) the flight and navigation instruments specified in Appendixes II, III and IV to this Order, as applicable; and

(b) any other instruments or indicators specified in the aeroplane flight manual; and

(c) the minimum lighting equipment specified in Appendix V to this Order; and

(e) in the case of single pilot RPT operations, earphones for the pilot with boom or throat microphone and a press to transmit control on the control column. The earphones and microphone must be compatible with the radio installation in the aeroplane and must be used by the pilot during flight.

4.1A Subject to paragraphs 4.1B and 4.1C, an aeroplane engaged:

(a) in RPT operations; or

(b) in charter operations; or

(c) in aerial work operations as an air ambulance or for a flying doctor service;

must not be operated under the I.F.R. unless it is equipped with a serviceable automatic pilot approved by CASA that has the following capabilities:

(d) a capability of operating the flight controls to maintain flight and manoeuvre the aeroplane about the roll and pitch axis;

(e) an automatic heading capability;

(f) an altitude hold capability.

Note For the purpose of meeting the requirements of subparagraph 4.1A (d), an automatic pilot is taken to have the capability of manoeuvring the aeroplane about the pitch axis if it does so solely to restore the selected altitude after a disturbance.

4.1B In spite of paragraph 4.1A, an aeroplane referred to in that paragraph that is not equipped with an automatic pilot in accordance with that paragraph may be operated under the I.F.R., if the aeroplane:

(a) is equipped with fully functioning dual controls; and

(b) has 2 control seats, with 1 control seat occupied by the pilot in command of the aeroplane and the other by a pilot who is authorised under Part 61 of CASR 1998 to conduct the flight.

4.1C If the automatic pilot fitted to an aeroplane engaged:

(a) in charter operations; or

(b) in aerial work operations as an air ambulance or for a flying doctor service;

loses a capability referred to in paragraph 4.1A, the aeroplane may, if the pilot is satisfied that it is safe to do so, be operated under the I.F.R. by a single pilot at any time within the period of 3 days commencing on the day on which the automatic pilot loses the capability.

4.1D Paragraphs 4.1A, 4.1B and 4.1C apply in addition to, and not in derogation of, paragraph 4.1.

4.2 Subject to subsection 3A, a helicopter must not be operated under the I.F.R. unless it is equipped with:

(a) the flight and navigation instruments specified in Appendixes VII, VIII or IX to this Order, as applicable; and

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(b) any other instruments, indicators or equipment specified in the helicopter flight manual; and

(c) the minimum lighting equipment specified in Appendix V to this section; and

(d) an approved automatic pilot or automatic stabilisation system.

Note Because of considerable variation in the individual stability characteristics of different helicopter types and in the associated automatic pilot and automatic stabilisation systems approved by the certification authority in the country of certification, it is not possible to detail precise specifications for this equipment. This consideration also applies to the flight crew complement. Accordingly, each application for approval to conduct I.F.R. category operations will be individually assessed on the basis of the specific helicopter type and its associated automatic pilot or autostabilisation equipment and the proposed operating environment.

5 Windshield clear vision equipment

5.1 An aircraft with a flight compartment windshield may only be operated under the V.F.R. or the I.F.R. if it has a means of clearing heavy outside precipitation from the windshield at a rate which ensures an unobstructed view for each pilot.

Note ***I.F.R.*** is defined in subregulation 2 (1) of CAR 1988.

5.2 Paragraph 5.1 does not apply for:

(a) an aeroplane with an MTOW less than 5 700 kg; or

(b) a helicopter with an MTOW less than 2 750 kg maximum;

if the windshield design satisfies CASA that moderate rain will not impair the pilot's view for take-off, landing or normal flight.

6 Recording equipment

6.1 An aircraft of maximum take-off weight:

(a) in excess of 5 700 kg and which is:

(i) turbine-powered; or

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

must not be flown (except in agricultural operations) unless it is equipped with an approved flight data recorder and an approved cockpit voice recorder system;

(b) less than, or equal to, 5 700 kg and which is:

(i) pressurised; and

(ii) turbine-powered by more than 1 engine; and

(iii) of a type certificated in its country of manufacture for operation with more than 11 places; and

(iv) issued with its initial Australian Certificate of airworthiness after 1 January 1988;

must not be flown unless it is equipped with an approved cockpit voice recorder system.

6.1A Paragraph 6.1 does not apply to an aircraft for which there is in force an airworthiness certificate in the agricultural category or the restricted category.

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6.2 The flight data recorder and cockpit voice recorder systems installed in an aircraft under this Order:

(a) must comply with the requirements of Civil Aviation Orders 103.19 and 103.20, respectively; and

(b) will be considered for approval when CASA has equipment available allowing replay of the recordings.

6.3 Where an aircraft is required to be so equipped by this Order, the flight data recorder system must be operated continuously from the moment when the aircraft commences to taxi under its own power for the purpose of flight until the conclusion of taxiing after landing.

6.4 Where an aircraft is required to be so equipped by this Order, the cockpit voice recorder system must be operated continuously from the start of the use of the check list before starting engines for the purpose of flight until completion of the final check list at the termination of the flight.

6.5 Where an aircraft is required to be so equipped by this Order, the operator must ensure that:

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

(b) the cockpit voice recorder retains its last 30 minutes of recording; and

(c) data from the last 2 occasions on which the flight data recorder system was calibrated from which the accuracy of the system can be determined are preserved.

6.6 The operator of an aircraft which is required by this Order to be equipped with recorders must take action to ensure that during ground maintenance periods the recorders are not activated unless the maintenance is associated with the flight data recording equipment or with the aircraft engines.

6.7 An aircraft required to be fitted with a flight data recorder system and/or a cockpit voice recorder system may operate with an unserviceable recorder system for a period of 21 days commencing on the day on which the system was determined to be unserviceable providing that:

(a) the aircraft does not depart from an aerodrome where staff and equipment are available to replace the unserviceable units; and

(b) where the aircraft is required to be fitted with both a flight data recorder and cockpit voice recorder system, 1 system is serviceable; and

(c) the aircraft is not operating training or test flights.

7 Assigned altitude indicator and altitude alerting system

7.1 Piston-engined aircraft and unpressurised turbine-engined aircraft operating above 15 000 feet in controlled airspace under the I.F.R. (except night V.M.C.) must be equipped with an altitude alerting system.

7.2 Pressurised turbine-engined aircraft operating in controlled airspace under the I.F.R. (except night V.M.C.) must be equipped with an altitude alerting system.

7.3 Unless equipped with an altitude alerting system, an aircraft operating in controlled airspace under the I.F.R. (except night V.M.C.) must be equipped with an assigned altitude indicator.

7.4 An altitude alerting system or an assigned altitude indicator must be so designed and located that:

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(a) it can be readily adjusted for setting from each pilot seat; and

(b) the assigned altitude/flight level display is clearly discernible by day and night to all operating flight crew members whose duties involve altitude/flight level assignment monitoring; and

(c) altitude/flight levels may be pre-selected unambiguously in increments commensurate with levels at which the aircraft may be operated.

7.5 The assigned altitude indicator must be demonstrated to the satisfaction of CASA.

7.6 The altitude alerting system must be demonstrated to the satisfaction of CASA and be capable of:

(a) alerting the pilot upon approaching or departing from a pre-selected level in both climb and descent by aural and/or visual signals in sufficient time to establish level flight at the pre-selected level, except that altitude alerting systems in aircraft first registered in Australia before 1 January 1983 need not alert the pilot when departing from a pre-selected altitude; and

(b) providing the required signals from sea level to the highest operating altitude approved for the aircraft in which it is installed; and

(c) being tested without separate equipment to determine proper operation of the alerting signals; and

(d) accepting necessary barometric pressure settings in millibars if the system or device operates on barometric pressure.

8 Radiation indicator

All aeroplanes intended to be operated above 49 000 feet must carry equipment to measure and indicate continuously the dose rate of total cosmic radiation being received (i.e. the total of ionizing and neutron radiation of galactic and solar origin) and the cumulative dose on each flight. The display unit must be readily visible to a flight crew member.

9 Ground proximity warning system

9.1C A turbine-engined aeroplane that:

(a) has a maximum take-off weight of more than 15 000 kg or is carrying 10 or more passengers; and

(b) is engaged in RPT, or charter, operations;

must not be operated under the I.F.R. unless it is fitted with:

(c) an approved GPWS that has a predictive terrain hazard warning function; or

(d) if paragraph 9.1CA applies — a GPWS that meets the requirements of Civil Aviation Order 108.36 (a **CAO 108.36 GPWS**); or

(e) if the aeroplane has a maximum take-off weight of 5 700 kg or less, but is carrying 10 or more passengers — a TAWS-B+ system.

9.1CA Up to the end of June 2005, an aeroplane may be fitted with a CAO 108.36 GPWS:

(a) if, immediately before 1 January 2001, paragraph 9.1 applied to the aeroplane; or

(b) if the aeroplane first becomes an Australian aeroplane on or after 1 January 2001 (unless it is an aircraft in respect of which an undertaking has been given under paragraph 5.3 of Civil Aviation Order 82.1 or paragraph 10.3 of Civil Aviation Order 82.3 or 82.5, as in force immediately before 1 January 2001); or

(c) if:

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(i) immediately before 1 January 2001, paragraph 9.1 did not apply to the aeroplane because of paragraph 9.1A; and

(ii) the holder of the AOC authorising the operation of the aeroplane (the AOC holder) provides satisfactory evidence to CASA, in accordance with paragraph 9.1CB, that it is not possible to fit the aeroplane with an approved GPWS that has a predictive terrain hazard warning function.

9.1CB For the purposes of sub-subparagraph 9.1CA (c) (ii), evidence is taken to be satisfactory only if it is:

(a) a statement, in writing, to the AOC holder from the manufacturer of an approved GPWS that has a predictive terrain hazard warning function; or

(b) a statutory declaration by the AOC holder;

to the effect that the FAA's list of supplemental type certificates does not include any reference to a supplemental type certificate relating to the fitting of an aeroplane of the same type with an approved GPWS that has that function.

9.1D For the purposes of this subsection:

(a) a GPWS has a ***predictive terrain hazard warning function*** if it employs an aircraft navigation system and a terrain database to compute a display of terrain along, and in the vicinity of, the flight path of an airborne aeroplane in order to provide the flight crew of the aeroplane with a warning of any terrain that may endanger the aeroplane if its flight path were to remain unchanged; and

(b) the GPWS is taken to be approved only if it meets:

(i) the requirements set out in FAA notice N 8110.64 as in force on 15 August 1999; or

(ii) the standard for the Class A Terrain Awareness Warning System specified in TSO C-151, TSO C-151a or TSO C-151b.

9.2 A GPWS must be demonstrated to the satisfaction of CASA to be capable of providing automatically a timely and distinctive warning to the flight crew when the aeroplane is in potentially hazardous proximity to the earth's surface.

9.3 Except as provided in paragraph 9.4, an aeroplane required to be fitted with a GPWS must not commence a flight with that equipment unserviceable.

9.4 An aeroplane required to be fitted with a GPWS must not depart with that equipment unserviceable from an aerodrome where facilities are available to repair or replace the GPWS and in no case must an aeroplane be operated with its GPWS unserviceable for a period exceeding 24 hours from the time the equipment was determined to be unserviceable.

9B Directions relating to carriage and use of automatic dependent surveillance – broadcast equipment

9B.1 This subsection applies to aircraft engaged in private, aerial work, charter or RPT operations in Australian territory.

9B.2 In subsections 9B, 9BA, 9C and 9E, and in Appendices XI, XII, XIII and XIV:

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,* as in force from time to time.

ADS-B means automatic dependent surveillance – broadcast.

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

aircraft address means a unique code of 24 binary bits assigned to an aircraft by:

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

(b) the relevant RAAO for the aircraft when the aircraft is placed on its aircraft register.

AMSL means above mean sea level.

approved equipment configuration for ADS-B transmitting equipment means an equipment configuration that:

(a) meets the conditions for approval set out in Appendix XI, XII, XIII or XIV, as applicable under the Application provisions of the Appendix; or

(b) is approved in writing by CASA.

ATC means air traffic control.

CASR means the *Civil Aviation Safety Regulations 1998.*

certain light sport, experimental and other 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;

(d) an aircraft for which an experimental certificate has been issued and is in force under subregulation 21.190 (1) of CASR;

(e) an aircraft to which any of the following Civil Aviation Orders (CAOs) applies: CAO 95.4, 95.4.1, 95.8, 95.10, 95.12, 95.12.1, 95.32, 95.53, 95.54 or 95.55;

(f) a Part 103 aircraft within the meaning of regulation 103.005 of CASR.

Note Part 103 of CASR commences on 25 March 2021 (see regulation 2 of the *Civil Aviation Legislation Amendment (Parts 103, 105 and 131) Regulations 2019)*. Paragraph (f) is permitted by subsection 98 (5D) of the *Civil Aviation Act 1998*.

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

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

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

EASA means the European Aviation Safety Agency.

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, or a later version as in force from time to time.

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

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EHS DAPs means enhanced surveillance downlink of aircraft parameters.

(E)TSO means FAA Technical Standard Order and/or European Technical Standard Order.

ETSO means European Technical Standard Order of the EASA.

FAA means the Federal Aviation Administration of the United States.

FDE means Fault Detection and Exclusion, a feature of a GNSS receiver that excludes faulty satellites from position computation.

FL 290 means flight level 290.

Note Flight level 290 is defined in subregulation 2 (1) of CAR 1988.

GNSS means the Global Navigation Satellite System installed in an aircraft to continually compute the position of the aircraft by use of the GPS.

GPS means the 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.

IFR has the same meaning as I.F.R. and stands for instrument flight rules.

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 when interrogated by an SSR, the code having been assigned to the aircraft by ATC for the relevant flight sector.

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

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

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

Mode S is a monopulse radar interrogation technique that improves the accuracy of the azimuth and range information of an aircraft, and uses a unique aircraft address to selectively call individual aircraft.

NAA has the same meaning as in regulation 1.4 of CASR 1998.

Note "***NAA***, for a country other than Australia, means:

(a) the national airworthiness authority of the country; or

(b) EASA, in relation to any function or task that EASA carries out on behalf of the country.".

NACp means Navigation Accuracy Category for 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 2.2.3.2.3.3 of RTCA/DO-260B.

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

RAAO means a recreational aviation administration organisation that is recognised by CASA.

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.***).

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

RTCA/DO-260B means RTCA Inc. document RTCA DO-260B titled *Minimum Operational Performance Standards for 1090 MHz 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 means a secondary surveillance radar system that is used by ATC to detect an aircraft equipped with a radar transponder.

TABS means traffic awareness beacon system.

TSO means Technical Standard Order of the FAA.

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 a later edition as in force from time to time.

VFR has the same meaning as V.F.R. and stands for visual flight rules.

9B.3 Subject to paragraph 9B.12, if an aircraft carries ADS-B transmitting equipment for operational use in Australian territory:

(a) the equipment must comply with an approved equipment configuration under Appendix XI, XII, XIII or XIV in accordance with the Application provisions of the Appendix; and

(b) for Appendix XIV, any administrative standard included in the Appendix must be complied with.

9B.4 When serviceable ADS-B transmitting equipment is operated in Australian territory, the equipment must transmit:

(a) the current aircraft address; and

(b) a flight identification that:

(i) corresponds exactly to the aircraft identification mentioned on the flight notification filed with ATC for the flight; or

(ii) if a flight notification is not filed for the flight — is:

(A) for an aircraft registered on the Australian Civil Aircraft Register and operating wholly within Australian territory — the aircraft's registration mark; or

(B) for an Australian aircraft registered by a RAAO — in accordance with the organisation's operations manual; or

(iii) is directed or approved by ATC.

9B.5 If an aircraft in flight carries serviceable ADS-B transmitting equipment, the equipment must be operated:

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(a) for equipment that complies with an approved equipment configuration set out in Appendix XI — continuously during the flight in all airspace and at all altitudes, unless the pilot is directed or approved otherwise by ATC; and

(b) for equipment that complies with the approved equipment configuration set out in Appendix XII, XIII, or XIV — continuously during the flight, within the airspace and within the altitude limits specified for the flight in the applicable Appendix, unless the pilot is directed or approved otherwise by ATC.

9B.6 Subject to paragraph 9B.7, if an aircraft carries ADS-B transmitting equipment which does not comply with an approved equipment configuration, the aircraft 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.

9B.7 The ADS-B transmitting equipment need not be deactivated for paragraph 9B.6 if the aircraft is undertaking an ADS-B test flight in VMC in airspace below FL290.

9B.8 An aircraft that is operated:

(a) in an IFR operation; or

(a) in any operation at or above FL290;

must carry serviceable ADS-B transmitting equipment that complies with the approved equipment configuration set out in Appendix XI.

9B.9 If an aircraft is operated in a VFR operation below FL290:

(a) it may carry serviceable ADS-B transmitting equipment (the ***equipment***); and

(b) if it carries the equipment — the equipment must comply with the approved equipment configuration set out in Appendix XI, XII, XIII or XIV.

9B.10 Paragraph 9B.8 does not apply to an aircraft if:

(a) the aircraft owner, operator or pilot has written authorisation from CASA for the operation of the aircraft without the ADS-B transmitting equipment; or

(b) the equipment is unserviceable for a flight, and each of the following applies:

(i) the flight takes place within 3 days of the discovery of the unserviceability;

(ii) at least 1 of the following applies for the flight:

(A) flight with unserviceable equipment has been approved by CASA, in writing, subject to such conditions as CASA specifies;

(B) the unserviceability is a permissible unserviceability set out in the minimum equipment list for the aircraft and any applicable conditions of a direction under subregulation 37 (2) of CAR 1988 have been complied with;

(iii) before it commences, ATC clears the flight despite the unserviceability.

9B.11 Unless otherwise approved in writing by CASA, ADS-B transmitting equipment carried on an aircraft must allow the pilot to activate and deactivate transmission during flight.

Note This requirement is met if the ADS-B transmitting equipment has a cockpit control that enables the pilot to turn ADS-B transmissions on and off.

9B.12 A requirement under Appendix XI, XII, or XIII that an approved equipment configuration for ADS-B transmitting equipment be authorised in accordance with a

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specific TSO or ETSO does not apply to the ADS-B transmitting equipment carried on certain light sport, experimental and other aircraft provided that:

(a) the equipment configuration that is carried provides the pilot, other aircraft and ATC with the same transponder and surveillance capability as would be provided if the equipment were expressly authorised in accordance with the specific 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.

9BA Instructions — SSR transponder equipment

9BA.1 For subregulation 174A (1) of CAR, this subsection specifies the SSR transponder equipment that must be carried on certain aircraft before they undertake a VFR flight.

9BA.2 Unless this subsection provides otherwise, an aircraft must carry serviceable SSR transponder equipment in accordance with subsection 9E.

9BA.3 A serviceable Mode A and Mode C SSR transponder must be carried on an aircraft that:

(a) was manufactured before 6 February 2014; and

(b) has not been modified by having its transponder installation replaced on or after that date; and

(c) operates under the VFR and within ATC radar coverage, in Class A airspace below FL290, in Class B airspace, or in Class C airspace.

Note Carriage of a Mode A and Mode C transponder does not remove the requirement to obtain CASA approval to operate in Class A airspace: see subregulation 99AA (3) of CAR.

9BA.4 Paragraph 9BA.3 does not apply if the aircraft carries serviceable Mode S transponder that meets the standards set out in subparagraph 9E.2 (c)

9BA.5 A serviceable Mode A and Mode C SSR transponder must be carried on an aircraft that:

(a) was manufactured before 6 February 2014; and

(b) has not been modified by having its transponder installation replaced on or after that date; and

(c) has an engine-driven electrical system capable of continuously powering a transponder; and

(d) operates under the VFR in Class E airspace, or above 10 000 ft AMSL in Class G airspace.

9BA.6 Paragraph 9BA.5 does not apply if the aircraft carries:

(a) a serviceable Mode S transponder that meets the standards set out in subparagraph 9E.2 (c); or

(b) a serviceable integrated TABS device that meets the standards set out in Appendix XIII.

9BA.7 This paragraph repeals instrument CASA 316/98.

9C Standards for Mode S transponder equipment

9C.1 This subsection applies to an aircraft engaged in private, aerial work, charter or RPT operations.

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9C.2 If the aircraft carries Mode S transponder equipment (the ***equipment***), the equipment must meet the standards set out in this subsection.

9C.3 The equipment must be of a type that is authorised by:

(a) the FAA, in accordance with TSO-C112( ) as in force on 5 February 1986, or a later version as in force from time to time; or

(b) EASA, in accordance with ETSO-C112a as in force on 24 October 2003, or a later version as in force from time to time; or

(c) CASA, in accordance with an instrument of approval of the type.

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

9C.4 The aircraft address entered into the equipment must exactly correspond to the aircraft address assigned to the aircraft by CASA or the relevant RAAO.

9C.5 The equipment must transmit each of the following when interrogated on the manoeuvring area of an aerodrome or in flight:

(a) the aircraft address;

(b) the Mode A code;

(c) the Mode C code;

(d) subject to paragraph 9C.7, the aircraft flight identification in accordance with paragraph 9C.6.

9C.6 The aircraft flight identification must:

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

(b) if no flight notification is filed with ATC for the flight:

(i) for an aircraft registered on the Australian Civil Aircraft Register — be the aircraft registration mark; or

(ii) for an Australian aircraft registered by a RAAO — be in accordance with the RAAO's operations manual; or

(c) be another flight identification directed or approved for use by ATC.

9C.7 Mode S transponder transmission of the aircraft flight identification is optional for any aircraft that was manufactured before 9 February 2012 (an ***older aircraft***). However, if an older aircraft is equipped to transmit, and transmits, an aircraft flight identification then that aircraft flight identification must be in accordance with paragraph 9C.6.

9C.8 If the equipment 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 Annex 10 of the Chicago Convention.

Note 1 Paragraph 3.1.2.10.5.2.3 includes 3.1.2.10.5.2.3.1, 3.1.2.10.5.2.3.2 and 3.1.2.10.5.2.3.3.

Note 2 Australian Mode S SSR are EHS DAPs-capable, and operational use of EHS DAPs is to be introduced in Australia. Implementation of Mode S EHS DAPs transmissions that are not in accordance with the ICAO standards may be misleading to ATC. Operators need to ensure that correct parameters are being transmitted.

9C.9 If the equipment is carried in an aircraft manufactured on or after 9 February 2012:

(a) having a certificated maximum take-off weight above 5 700 kg; or

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

the equipment's receiving and transmitting antennae must:

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(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 Annex 10 of the Chicago Convention.

Note Paragraph 3.1.2.10.4.2.1 is recommendatory only.

9C.10 Subject to paragraph 9C.11, if Mode S transponder equipment incorporates ADS-B functionality, the equipment must comply with the applicable approved equipment configuration required under subsection 9B for ADS-B transmitting equipment.

9C.11 For paragraphs 9C.3 and 9C.10, a requirement that the equipment be authorised in accordance with a specific TSO or ETSO does not apply to Mode S transponder equipment carried on certain light sport, experimental and other aircraft provided that:

(a) the equipment configuration that is carried provides the pilot, other aircraft and ATC with the same transponder and surveillance capability as would be provided if the equipment were expressly authorised in accordance with the specific 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.

9D Directions for mandatory GNSS equipment for I.F.R. flight

Note This subsection provides for minimum equipage for GNSS navigation. Some operations under RNP may require additional equipment under CAO 20.91.

Definitions

9D.1 In this subsection:

ADF equipment means automatic direction finding equipment.

CAO means Civil Aviation Order.

EASA means the European Aviation Safety Agency.

(E)TSO means FAA Technical Standard Order and/or European Technical Standard Order.

ETSO means European Technical Standard Order of EASA.

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

GNSS means the Global Navigation Satellite System.

paragraph 9D.9 standards means the standard set out in paragraph 9D.9 for GNSS navigation equipment.

paragraph 9D.10 standards means the standard set out in paragraph 9D.10 for GNSS navigation equipment.

paragraph 9D.11 standards means the standard set out in paragraph 9.11 for GNSS navigation equipment.

paragraph 9D.12 standards means the standard set out in paragraph 9D.12 for ADF and VOR equipment.

recognised country means a country listed in the Table in Appendix 1 of CAO 100.16.

RNP means required navigation performance.

TSO means Technical Standard Order of the FAA.

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VOR navigation receiver means very high frequency (VHF) omni-range navigation receiver.

9D.2 Subject to paragraph 9D.1, in this subsection words and phrases have the same meaning as in subsection 9B.

GNSS navigation for RPT operations and charter operations under the I.F.R.

9D.3 An aircraft:

(a) that is manufactured on or after 6 February 2014; and

(b) that is engaged in RPT operations or charter operations under the I.F.R.;

must carry at least all of the serviceable equipment mentioned in 1 of the following subparagraphs:

(c) at least 2 independent GNSS navigation equipments that meet paragraph 9D.9 standards;

(d) at least:

(i) a single GNSS equipment that meets paragraph 9D.9 standards; and

(ii) an ADF or a VOR navigation receiver that meets paragraph 9D.12 standards;

(e) a multi-sensor navigation system that includes GNSS and inertial integration and is approved by CASA as providing an alternate means of compliance to the requirements of paragraph 9D.9.

9D.4 An aircraft:

(a) that is manufactured before 6 February 2014; and

(b) that is engaged in RPT operations or charter operations under the I.F.R.;

must carry at least all of the serviceable equipment mentioned in subparagraph 9D.3 (c), (d) or (e) if GNSS equipment is installed on the aircraft on or after 6 February 2014.

9D.5 On and after 4 February 2016, an aircraft:

(a) that is manufactured before 6 February 2014; and

(b) that is engaged in RPT operations or charter operations under the I.F.R.;

must carry at least all of the serviceable equipment mentioned in 1 of the following subparagraphs:

(c) at least 2 independent GNSS navigation equipments that meet paragraph 9D.9 standards;

(d) at least:

(i) a single GNSS equipment that meets paragraph 9D.10 standards; and

(ii) an ADF or a VOR navigation receiver that meets paragraph 9D.12 standards;

(e) a multi-sensor navigation system that includes GNSS and inertial integration and is approved by CASA as providing an alternate means of compliance to the requirements of paragraph 9D.9.

GNSS navigation for aerial work operations and private operations under the I.F.R.

9D.6 An aircraft:

(a) that is manufactured on or after 6 February 2014; and

(b) that is engaged in aerial work operations or private operations under the I.F.R.;

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must carry at least 1 serviceable GNSS navigation equipment that meets paragraph 9D.9 standards.

9D.7 An aircraft:

(a) that is manufactured before 6 February 2014; and

(b) that is engaged in aerial work operations or private operations under the I.F.R.;

must carry at least 1 serviceable GNSS navigation equipment that meets paragraph 9D.9 standards, if GNSS equipment is installed on the aircraft on or after 6 February 2014.

9D.8 On and after 4 February 2016, an aircraft:

(a) that is manufactured before 6 February 2014; and

(b) that is engaged in aerial work operations or private operations under the I.F.R.;

must carry at least all of the serviceable equipment mentioned in 1 of the following subparagraphs:

(c) at least 1 serviceable GNSS navigation equipment that meets paragraph 9D.9 standards;

(d) at least:

(i) a single GNSS equipment that meets paragraph 9D.11 standards; and

(ii) an ADF or a VOR navigation receiver that meets paragraph 9D.12 standards;

(e) a multi-sensor navigation system that includes GNSS and inertial integration and is approved by CASA as providing an alternate means of compliance to the requirements of paragraph 9D.9.

Standards for GNSS navigation equipment, and ADF and VOR equipment

Paragraph 9D.9 standards

9D.9 For the paragraph 9D.9 standards, GNSS equipment must be of a type that is authorised in accordance with 1 of the following (E)TSOs, or a later version of the (E)TSO as in force from time to time:

(a) (E)TSO-C145( );

(b) (E)TSO-C146( );

(c) (E)TSO-C196a.

Paragraph 9D.10 standards

9D.10 For the paragraph 9D.10 standards, GNSS equipment must be of a type that is authorised in accordance with 1 of the following (E)TSOs, or a later version of the (E)TSO as in force from time to time:

(a) (E)TSO-C129( );

(b) (E)TSO-C145( );

(c) (E)TSO-C146( );

(d) (E)TSO-C196a.

Note 1 GNSS equipment in accordance with (E)TSO-C129( ) is unlikely to support ADS-B position source equipment requirements.

Note 2 If GNSS equipment in accordance with (E)TSO-C129( ) is used, the requirement for navigation to an alternate aerodrome must be met by using ADF or VOR navigation.

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Paragraph 9D.11 standards

9D.11 For the paragraph 9D.11 standards, GNSS equipment must be of a type that is authorised in accordance with (E)TSO-C129( ), or a later version of the (E)TSO as in force from time to time.

Note 1 GNSS equipment in accordance with (E)TSO-C129( ) is unlikely to support ADS-B position source equipment requirements.

Note 2 If GNSS equipment in accordance with (E)TSO-C129( ) is used, the requirement for navigation to an alternate aerodrome must be met by using ADF or VOR navigation.

Paragraph 9D.12 standards

9D.12 For the paragraph 9D.12 standards, ADF equipment and VOR navigation receivers must be of a type that is certified by 1 of the following:

(a) the FAA;

(b) EASA;

(c) NAA of a recognised country.

9E Carriage of Mode S transponder equipment

9E.1 This subsection applies to an aircraft engaged in private, aerial work, charter or RPT operations.

9E.2 Subject to paragraph 9E.3, an aircraft:

(a) that is:

(i) manufactured on or after 6 February 2014; or

(ii) modified by having its transponder installation replaced on or after 6 February 2014; and

(b) that is operated:

(i) in Class A, B, C or E airspace; or

(ii) above 10 000 feet above mean sea level in Class G airspace;

must carry:

(c) a serviceable Mode S transponder that meets the standards:

(i) for Mode S transponder equipment — in subsection 9C; and

(ii) for ADS-B transmission using an approved equipment configuration set out in Appendix XI — in a clause or clauses of Appendix XI as follows:

(A) clauses 2 and 5 of Part B; or

(B) clause 7 of Part C; or

(C) clause 8 of Part C; and

(iii) for ADS-B transmission using an approved equipment configuration set out in Appendix XII — in clauses 1 and 4 in Part B of Appendix XII; or

Note The requirement is for aircraft to be fitted with a Mode S transponder with ADS-B OUT capability. That does not mean that ADS-B OUT transmission is also required under this paragraph. It means that, with the later connection of compatible GNSS position source equipment, ADS-B OUT can be transmitted as well as Mode S SSR responses.

(d) for an aircraft that is operated under the VFR:

(i) in Class E airspace; or

(ii) above 10 000 feet AMSL in Class G airspace;

a serviceable integrated TABS device that meets the standards in Appendix XIII.

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Note An aircraft operated under the VFR in Class E airspace or above 10 000 ft AMSL in Class G airspace has the option of complying with either subparagraph (c) or (d).

An aircraft operated under the VFR or the IFR in Class A, B, or C airspace has no option but to comply with subparagraph (c).

An aircraft operated under the IFR in Class E airspace or above 10 000 ft AMSL in Class G airspace has no option but to comply with subparagraph (c).

9E.3 Paragraph 9E.2 does not apply to an aircraft:

(a) operating in Class E airspace; or

(b) operating above 10 000 feet above mean sea level in Class G airspace;

if the aircraft does not have:

(c) an engine; or

(d) sufficient engine-driven electrical power generation capacity to power a Mode S transponder.

9E.4 An aircraft operating at Brisbane, Sydney, Melbourne, or Perth aerodrome must carry a serviceable Mode S transponder that meets the standards of:

(a) subsection 9C; and

(b) the following clause or clauses of Appendix XI:

(i) clauses 2 and 5 of Part B; or

(ii) clause 7 of Part C; or

(iii) clause 8 of Part C.

Note 1 A Mode A/C transponder does not meet this requirement.

Note 2 ADS-B OUT transmission is not mandatory but the Mode S transponder must be ADS-B capable.

9E.5 Paragraphs 9E.2 and 9E.4 do not apply to an aircraft for a flight if the Mode S transponder equipment is unserviceable for the flight, and each of the following applies:

(a) the flight takes place within 3 days of the discovery of the unserviceability;

(b) at least 1 of the following applies for the flight:

(i) flight with unserviceable equipment has been approved by CASA, in writing, subject to such conditions as CASA specifies;

(ii) the unserviceability is a permissible unserviceability set out in the minimum equipment list for the aircraft, and any applicable conditions under subregulation 37 (2) of CAR 1988 have been complied with;

(c) ATC clears the flight despite the unserviceability.

10 Serviceability

10.1 In the case of a charter or RPT aircraft, all instruments and equipment that it carries, or is fitted with, under subregulation 207 (2) of CAR 1988 must be serviceable before take-off, unless:

(a) flight with unserviceable instruments or equipment has been approved by CASA, subject to such conditions as CASA specifies; or

(b) the unserviceability is a permissible unserviceability set out in the minimum equipment list for the aircraft and any applicable conditions under subregulation 37 (2) of CAR 1988 have been complied with; or

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(c) CASA has approved the flight with the unserviceable instrument or equipment and any applicable conditions that CASA has specified, in writing, have been complied with; or

(d) the unserviceable instrument or equipment is a passenger convenience item only and does not affect the airworthiness of the aircraft.

Note Equipment referred to in paragraph 10.1 includes oxygen and protective breathing equipment, emergency lifesaving equipment, seats, seat belts and safety equipment that are required to meet an applicable standard, and other instruments and equipment required to be carried or fitted under this Order.

10.1A A private or aerial work aircraft must not be operated:

(a) under the V.F.R., unless:

(i) all instruments and equipment required to be fitted to the aircraft under subsection 3 are serviceable before take-off; or

(ii) CASA has approved the flight with the unserviceable instrument or equipment and any applicable conditions that CASA has specified, in writing, have been complied with; or

(b) under the I.F.R., unless:

(i) all instruments and equipment required to be fitted to the aircraft under subsection 4 are serviceable before take-off; or

(ii) CASA has approved the flight with the unserviceable instrument or equipment and any applicable conditions that CASA has specified, in writing, have been complied with.

10.2 Where flight is conducted with unserviceable instruments or equipment under the provisions of paragraph 10.1 or 10.1A, the unserviceable instruments or equipment must be prominently placarded "UNSERVICEABLE" or removed from the aircraft.

Note Where an instrument or piece of equipment performs more than 1 function, it is permissible to placard as unserviceable only the function(s) which are unserviceable.

10.3 The holder of an AOC authorising an RPT operation must:

(a) have a minimum equipment list or lists for the aircraft used to conduct those operations; and

(b) include each list in the operations manual for the aircraft to which that list applies.

10.4 The holder of an AOC authorising charter operations:

(a) may have a minimum equipment list or lists for the aircraft used to conduct those operations; and

(b) must include each list in the operations manual for the aircraft to which that list applies.

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Appendix I

Instruments required for flight under the V.F.R.

(Limited to aircraft specified in subsection 3, paragraph 3.1)

1 The flight and navigational instruments required for flights under the V.F.R. are:

(a) an airspeed indicating system; and

(b) an altimeter, with a readily adjustable pressure datum setting scale graduated in millibars; and

(c) (i) a direct reading magnetic compass; or

(ii) a remote indicating compass and a standby direct reading magnetic compass; and

(d) an accurate timepiece indicating the time in hours, minutes and seconds. This may be carried on the person of the pilot or navigator.

2 In addition to the instruments required under clause 1, aircraft, other than helicopters, engaged in charter, or aerial work, operations and operating under the V.F.R., must be equipped with:

(a) a turn and slip indicator (agricultural aeroplanes may be equipped with a slip indicator only); and

(b) an outside air temperature indicator when operating from an aerodrome at which ambient air temperature is not available from ground-based instruments.

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Appendix II

Instruments required for:

(i) aeroplanes engaged in RPT operations; and

(ii) aeroplanes engaged in charter operations which have a maximum take-off weight greater than 5 700 kg

1 The flight and navigation instruments required are:

(a) an airspeed indicating system with means of preventing malfunctioning due to either condensation or icing; and

(b) 2 sensitive pressure altimeters; and

(c) (i) a direct reading magnetic compass; or

(ii) a remote indicating compass and a standby direct reading magnetic compass; and

(d) an accurate timepiece indicating the time in hours, minutes and seconds; and

(e) a rate of climb and descent indicator (vertical speed indicator); and

(f) an outside air temperature indicator; and

(g) 2 attitude indicators (artificial horizons); and

(h) a heading indicator (directional gyroscope or equivalent approved by CASA); and

(i) a turn and slip indicator except that only a slip indicator is required when a third attitude indicator usable through flight attitudes of 360 degrees of pitch and roll is installed in accordance with paragraph (k) of this Appendix; and

(j) a means of indicating whether the power supply to those instruments requiring power is working satisfactorily; and

(k) in turbo-jet aeroplanes having a maximum take-off weight greater than 5 700 kg and in turbo-prop aeroplanes having a maximum take-off weight greater than 18 000 kg a third attitude indicator which:

(i) is powered from a source independent of the electrical generating system; and

(ii) continues to provide reliable indications for a minimum of 30 minutes after total failure of the electrical generating system; and

(iii) is operative without selection after total failure of the electrical generating system; and

(iv) is located on the instrument panel in a position which will make it plainly visible to, and usable by, any pilot at his station; and

(v) is appropriately lighted during all phases of operation; and

(l) in turbo-jet aeroplanes with operating limitations expressed in terms of Mach number, a Mach number indicator (Machmeter).

2 (a) For aeroplanes above 5 700 kg maximum take-off weight, the instruments used by the pilot in command and which are specified in paragraphs 1 (a), (b), (e) and (l) of this Appendix must be capable of being connected either to a normal or an alternate static source but not both sources simultaneously. Alternatively, the aeroplane may be fitted with 2 independent static sources each consisting of a balanced pair of flush static ports of which 1 is used for the instruments specified

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above. Instruments and equipment other than flight instruments provided for use by the pilot in command, must not be connected to the normal static system that operates the instruments of the pilot in command;

(b) for aeroplanes not above 5 700 kg maximum take-off weight, the instruments specified in paragraphs 1 (a), (b), (e) and (l) of this Appendix must be capable of being connected to either a normal or alternate static source but not both sources simultaneously. Alternatively, the aeroplane may be fitted with a balanced pair of flush static ports.

3 The instruments specified in paragraphs 1 (g), (h) and (i) of this Appendix must have duplicated sources of power supply.

4 CASA may, having regard to the type of aeroplane, approve an attitude indicator incorporated in an automatic pilot system being 1 of the 2 attitude indicators required by paragraph 1 (g) of this Appendix.

5 A gyro-magnetic type of remote indicating compass installed to meet the requirements of paragraph 1 (c) (ii) of this Appendix may also be considered to meet the requirement for a heading indicator specified in paragraph 1 (h) of this Appendix, provided that it has a duplicated power supply.

6 For V.F.R. flight, the following instruments may be unserviceable:

(a) the attitude indicator required by paragraph 1 (k);

(b) 1 of the attitude indicators required by paragraph 1 (g) provided that the attitude indicator required by paragraph 1 (k) is serviceable or an attitude indicator has been provided to meet the requirements of paragraph 1 (i) and is serviceable;

(c) the turn and slip indicator or slip indicator and attitude indicator required by paragraph 1 (i).

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Appendix III

Instruments required for aeroplanes with a maximum take-off weight not greater than 5 700 kg engaged in charter operations under the I.F.R. (except night V.M.C.) excluding freight only charter operations

1 The flight and navigation instruments required are:

(a) an airspeed indicating system with means of preventing malfunctioning due to either condensation or icing; and

(b) 2 sensitive pressure altimeters; and

(c) (i) a direct reading magnetic compass; or

(ii) a remote indicating compass and a standby direct reading magnetic compass; and

(d) an accurate timepiece indicating the time in hours, minutes and seconds; and

(e) a rate of climb and descent indicator (vertical speed indicator); and

(f) an outside air temperature indicator; and

(g) 2 attitude indicators (artificial horizons); and

(h) a heading indicator (directional gyroscope or equivalent approved by CASA); and

(i) a turn and slip indicator except that only a slip indicator is required when a third attitude indicator usable through flight attitude of 360 degrees pitch and roll is installed; and

(j) a means of indicating whether the power supply to the gyroscopic instruments is working satisfactorily; and

(k) in turbo-jet aeroplanes with operating limitations expressed in terms of Mach number, a Mach number indicator (Machmeter).

2 The instruments specified in paragraphs 1 (a), (b), (e) and (k) of this Appendix must be capable of being connected to either a normal or alternate static source but not both sources simultaneously. Alternatively, they may be connected to a balanced pair of flush static ports.

3 The instruments specified in paragraphs 1 (g), (h) and (i) of this Appendix must have duplicated sources of power supply.

4 CASA may, having regard to the type of aeroplane, approve an attitude indicator incorporated in an automatic pilot system as being 1 of the 2 attitude indicators required by paragraph 1 (g) of this Appendix.

5 A gyro-magnetic type of remote indicating compass installed to meet the requirements of subparagraph 1 (c) (ii) of this Appendix may also be considered to meet the requirement for a heading indicator specified in paragraph 1 (h) of this Appendix, provided it has a duplicated power supply.

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Appendix IV

Instruments required for aeroplanes engaged in:

(i) aerial work and private operations under the I.F.R. (including night V.M.C.); and

(ii) charter operations under night V.M.C; and

(iii) I.F.R. freight only charter operations in aeroplanes with maximum take-off weight not greater than 5 700 kg.

1 The flight and navigational instruments required are:

(a) an airspeed indicating system; and

(b) a sensitive pressure altimeter; and

(c) (i) direct reading magnetic compass; or

(ii) a remote indicating compass and a standby direct reading magnetic compass; and

(d) an accurate timepiece indicating the time in hours, minutes and seconds, except that this may be omitted if it is carried on the person of the pilot or navigator; and

(e) a rate of climb and descent indicator (vertical speed indicator) for other than night V.M.C. flights; and

(f) an outside air temperature indicator; and

(g) an attitude indicator (artificial horizon); and

(h) a heading indicator (directional gyroscope); and

(i) a turn and slip indicator except that only a slip indicator is required when a second attitude indicator usable through flight attitudes of 360 degrees of pitch and roll is installed; and

(j) means of indicating whether the power supply to the gyroscopic instruments is working satisfactorily; and

(k) except for aeroplanes engaged in night V.M.C. flights, means of preventing malfunctioning due to either condensation or icing of at least 1 airspeed indicating system.

2 The instruments specified in paragraphs 1 (a), (b), (e) and (k) of this Appendix must be capable of being connected to either a normal or an alternate static source but not both sources simultaneously. Alternatively, they may be connected to a balanced pair of flush static ports.

3 Except for aeroplanes engaged in night V.M.C. private and aerial work operations the instruments specified in paragraphs 1 (g), (h) and (i) of this Appendix must have duplicated sources of power supply unless the turn and slip indicator or the second attitude indicator specified in paragraph 1 (i) has a source of power independent of the power operating other gyroscopic instruments.

4 A gyro-magnetic type of remote indicating compass installed to meet the requirements of subparagraph 1 (c) (ii) of this Appendix may be considered also to meet the requirement for a heading indicator specified in paragraph 1 (h) of this Appendix, provided that such installation complies with the power supply requirements of clause 3 of this Appendix.

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Appendix V

Electric lighting equipment flight under the I.F.R. at night (including night V.M.C.)

The electric lighting equipment is:

1 Instrument illumination

Illumination for all instruments and equipment, used by the flight crew, that are essential for the safe operation of the aircraft. The illumination must be such that:

(a) all illuminated items are easily readable or discernible, as applicable; and

(b) its direct or reflected rays are shielded from the pilot's eyes; and

(c) its power supply is so arranged that in the event of the failure of the normal source of power, an alternative source is immediately available; and

(d) it emanates from fixed installations.

2 Intensity control

Means of controlling the intensity of the illumination of instrument lights, unless it can be demonstrated that non-dimmed instrument lights are satisfactory under all conditions of flight likely to be encountered.

3 Landing lights

2 landing lights except that, in accordance with the provisions of regulation 308 of CAR 1988, aircraft engaged in private and aerial work operations and charter operations not carrying passengers for hire and reward are exempted from this requirement provided that 1 landing light is fitted.

Note A single lamp having 2 separately energised filaments may be approved as meeting the requirement for 2 landing lights.

4 Passenger compartment lights

Lights in all passenger compartments.

5 Pilots' compartment lights

Means of lighting the pilots' compartment to provide illumination adequate for the study of maps and the reading of flight documents.

6 Position and anti-collision lights

Equipment for displaying the lights prescribed in regulation 196 of CAR 1988.

Note In accordance of the provision of subregulation 195 (1) of CAR 1988, position and anti-collision lights must be displayed at night and in conditions of poor visibility.

7 Emergency lighting

Emergency lighting and a shock-proof electric torch for each crew member at the crew member station.

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Appendix VI

Instruments required for V.F.R. operations — helicopters

1 The flight and navigational instruments required are:

(a) an airspeed indicating system; and

(b) a pressure altimeter with a readily adjustable pressure datum setting scale graduated in millibars; and

(c) (i) a direct reading magnetic compass; or

(ii) a remote indicating magnetic compass and a standby direct reading magnetic compass; and

(d) an accurate timepiece indicating hours, minutes and seconds. This may be carried on the person of the pilot or navigator.

2 In addition to the instruments required under clause 1, helicopters engaged in RPT, charter, or aerial work, operations and operating under the V.F.R. must be equipped with:

(a) a slip indicator; and

(b) an outside air temperature indicator when operating from or to a location at which ambient air temperature is not available from ground-based instruments.

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Appendix VII

Instruments required for I.F.R. operations in helicopters (except night V.M.C.)

1 The flight and navigational instruments required in a helicopter which is required to be operated by 2 pilots are:

(a) 2 airspeed indicators together with 1 airspeed indicating system with means of preventing malfunction due to either condensation or icing; and

(b) 2 sensitive pressure altimeters; and

(c) (i) a direct reading magnetic compass; or

(ii) a remote indicating compass and a standby direct reading magnetic compass; and

(d) an accurate timepiece indicating the time in hours, minutes and seconds; and

(e) 2 instantaneous vertical speed indicators; and

(f) an outside air temperature indicator; and

(g) 2 attitude indicators (artificial horizons) having a 5 inch dial presentation and a standby attitude indicator positioned so as to be usable by the pilot in command and plainly visible by both pilots by day and by night; and

(h) a heading indicator (directional gyroscope); and

(i) 2 slip indicators; and

(j) provision to indicate whether the power supply to the gyroscopic instruments is working satisfactorily.

2 The minimum flight and navigation instruments required in a helicopter which is operated by a single pilot are:

(a) an airspeed indicating system with means of preventing malfunction due to either condensation or icing; and

(b) 2 sensitive pressure altimeters; and

(c) (i) a direct reading magnetic compass; or

(ii) a remote indicating compass and a standby direct reading magnetic compass; and

(d) an accurate timepiece indicating the time in hours, minutes and seconds; and

(e) instantaneous vertical speed indicator; and

(f) an outside air temperature indicator; and

(g) an attitude indicator having a 5 inch dial presentation and a standby attitude indicator positioned so as to be usable by the pilot; and

(h) a heading indicator (directional gyroscope); and

(i) a slip indicator; and

(j) provision to indicate whether the power supply to the gyroscopic instruments is working satisfactorily.

3 The instruments specified in paragraphs 1 (a), (b) and (e) and 2 (a), (b) and (e) of this Appendix must be capable of being connected to more than 1 static source or must be connected to a balanced pair of flush static ports. Instruments and equipment other than mandatory flight instruments must not be connected to the static system that operates the instruments used by the pilot in command.

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4 The instruments specified in paragraphs 1 (h) and 2 (h) must have a duplicated source of power supply.

5 The 5 inch dial attitude indicators specified in paragraphs 1 (g) and 2 (g) must have duplicate sources of power supply. The standby attitude indicator must have a power source independent of the electrical generating system and must operate independent of any other attitude indicating system installed.

6 The standby attitude indicator installation specified in paragraphs 1 (g) and 2 (g) must be one in which:

(a) the indicator complies with US Technical Standard Order C4c or equivalent specification acceptable to CASA; and

(b) the indicator and its lighting will continue to operate for 30 minutes following the failure of the electrical power generating system without any action by the flight crew; and

(c) the position size and lighting of the instrument display allows its use from the pilot in command's operating station by day and by night; and

(d) the operation is independent of other attitude indicator installations.

7 CASA may, having regard to the type of helicopter, approve an attitude indicator incorporated in an automatic pilot system as being 1 of the 2 attitude indicators required by paragraph 1 (g) of this Appendix.

8 A gyro-magnetic type of remote indicating compass installed to meet the requirements of subparagraph 1 (c) (ii) and 2 (c) (ii) of this Appendix may be considered also to meet the requirement for a heading indicator specified in paragraph 1 (h) or 2 (h) of this Appendix, provided that such installation complies with the power supply requirements of clause 4 of this Appendix.

9 CASA may, having regard to the type of helicopter, and the flight presentation, response and acuity standard of the instrument concerned, approve the use of attitude indicators which have a dial presentation of less than 5 inches, in lieu of the indicators specified at paragraphs 1 (g), 2 (g) and 5 of this Appendix.

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Appendix VIII

Instruments required for night V.M.C. flight in helicopters except while engaged in agricultural operations

1 The flight and navigational instruments required are:

(a) an airspeed indicating system; and

(b) a sensitive pressure altimeter; and

(c) (i) a direct reading magnetic compass; or

(ii) a remote indicating compass and a standby direct reading magnetic compass; and

(d) an accurate timepiece indicating the time in hours, minutes and seconds. This may be carried on the person of the pilot or navigator; and

(e) an outside air temperature indicator; and

(f) an attitude indicator (artificial horizon); and

(i) standby attitude indicator; or

(ii) turn indicator; and

(g) a heading indicator (directional gyroscope); and

(h) a slip indicator; and

(i) a vertical speed indicator; and

(j) means of indicating whether the power supply to the gyroscopic instruments is working satisfactorily.

2 For operations onto vessels or platforms at sea by night an instantaneous vertical speed indicator is required in place of the vertical speed indicator specified at paragraph 1 (i) of this Appendix.

3 The attitude indicator and standby attitude indicator or turn indicator as specified in paragraph 1 (f) of this Appendix, must have separate and independent power sources.

4 A gyro-magnetic type of remote indicating compass installed to meet the requirements of subparagraph 1 (c) (ii) of this Appendix may be considered also to meet the requirement for a heading indicator specified in paragraph 1 (g) of this Appendix, provided that such installation complies with the power supply requirements of clause 3 of this Appendix.

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Appendix IX

Instruments required for helicopters engaged in night V.M.C. agricultural operations

The flight and navigational instruments required are:

(a) an airspeed indicating system; and

(b) a sensitive pressure altimeter; and

(c) (i) a direct reading magnetic compass; or

(ii) a remote indicating compass and a standby direct reading magnetic compass; and

(d) an accurate timepiece indicating the time in hours, minutes and seconds. This may be carried on the person of the pilot or navigator; and

(e) an outside air temperature indicator; and

(f) an attitude indicator (artificial horizon); and

(g) a vertical speed indicator; and

(h) a slip indicator; and

(i) a means of indicating whether the power supply to the gyroscopic instrument is working satisfactorily.

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Appendix X

Instruments required for manned free balloons and hot air airships for flight by day under the V.F.R.

The flight and navigational instruments required for flight under the V.F.R. by day are:

(a) an altimeter, with a readily adjustable pressure datum setting scale graduated in hectopascals; and

(b) a timepiece, which may be carried on the person of the pilot, that is accurate to, and readable to, the nearest minute for the duration of the flight; and

(c) a vertical speed indicator; and

(d) in the case of a hot air airship that has a maximum permissible forward airspeed less than that attainable with the engine(s) operating at full power, an instrument capable of indicating when the maximum speed is reached; and

(e) in the case of a hot manned free balloon or hot air airship, an envelope temperature indicator; and

(f) in the case of a hot air manned free balloon or a hot air airship, a free air temperature indicator or an air temperature indicator that provides readings convertible to free air temperature; and

(g) in the case of a pressurised hot air airship, an internal pressure indicator.

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Appendix XI — Approved equipment configuration — ADS-B transmitting equipment — IFR and VFR flight

Part A — ADS-B transmitting equipment — approval and application

Approved equipment configuration — IFR and VFR flight

1 Subject to this Part, an equipment configuration for ADS-B transmitting equipment is approved if it complies with the standards specified in Part B or Part C of this Appendix.

Application

2 ADS-B transmitting equipment carried on an aircraft in an IFR flight has an approved equipment configuration if, and only if, it complies with the standards in Part B or Part C of this Appendix.

Note No other Appendix applies to the equipment in an IFR flight.

3 ADS-B transmitting equipment carried on an aircraft in any operation at or above FL290 has an approved equipment configuration if, and only if, it complies with the standards in Part B or Part C of this Appendix.

Note No other Appendix applies to the equipment in an operation above FL290.

4 ADS-B transmitting equipment carried on an aircraft, in a flight that is not an IFR flight or any flight at or above FL290, has an approved equipment configuration if it complies with the standards in Part B or Part C of this Appendix.

Note For example, ADS-B transmitting equipment carried on an aircraft in a VFR flight below FL290 would have an approved equipment configuration if it complied with the standards in Part B or Part C of this Appendix. However, another Appendix may apply to the equipment in the VFR flight.

Part B

ADS-B transmitting equipment — standard for approval

2 ADS-B transmitting equipment must be of a type that:

(a) is authorised in accordance with (E)TSO-C166, or a later version as in force from time to time; or

(b) meets the following requirements:

(i) the type must be accepted by CASA as meeting the specifications in RTCA/DO-260 dated 13 September 2000, or a later version as in force from time to time; and

(ii) the type must utilise HPL at all times HPL is available; or

(c) is otherwise authorised, in writing, by CASA for the purposes of subsection 9B of this Civil Aviation Order as being equivalent to one of the foregoing types.

GNSS position source equipment — standard for aircraft manufactured on or after 8 December 2016

3 For an aircraft manufactured on or after 8 December 2016, the geographical position transmitted by the ADS-B transmitting equipment must be determined by:

(a) a GNSS receiver of a type that is authorised in accordance with (E)TSO-C145a or (E)TSO-C146a, or a later version as in force from time to time; or

(b) a GNSS receiver of a type that is authorised in accordance with (E)TSO-C196a, or a later version as in force from time to time; or

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(c) a GNSS receiver or system which meets the following requirements:

(i) is certified by an NAA for use in flight under the I.F.R.;

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

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

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

(C) 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; or

(d) another equivalent system authorised in writing by CASA.

Note The following GNSS receivers meet the requirements of clause 3, namely, those certified to (E)TSO-C145a or (E)TSO-C146a, or later versions, or those manufactured to comply with (E)TSO-C196a.

GNSS position source equipment — standard for aircraft manufactured before 8 December 2016

4 For an aircraft manufactured before 8 December 2016, the geographical position transmitted by the ADS-B transmitting equipment must be determined by:

(a) a GNSS receiver or system that complies with the requirements of clause 3, other than sub-subparagraph 3 (c) (ii) (C) which is optional; or

(b) an equivalent GNSS receiver or system that has been approved in writing by CASA.

Note The following GNSS receivers meet the requirements of clause 4, namely, those certified to (E)TSO-C145a or (E)TSO-C146a, or later versions, or those manufactured to comply with (E)TSO-C196a. Some later versions of GNSS receivers certified to (E)TSO-C129 may also meet the requirements, i.e. those having FDE and HPL features incorporated.

Altitude source equipment — standard

5 The pressure altitude transmitted by the ADS-B transmitting equipment must be determined by:

(a) a barometric encoder of a type that is authorised in accordance with (E)TSO-C88a, or a later version as in force from time to time; or

(b) another equivalent system authorised in writing by CASA.

Part C

Alternative approved equipment configuration — standard for aircraft manufactured on or after 8 December 2016

7 For an aircraft manufactured on or after 8 December 2016, an equipment configuration is approved if:

(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 aircraft flight manual attests to the approval or acceptance; and

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(c) the GNSS receiver or system complies with the requirements of clause 3 in Part B.

Alternative approved equipment configuration — standard for aircraft manufactured before 8 December 2016

8 For an aircraft manufactured before 8 December 2016, an equipment configuration is approved if:

(a) it has been approved or accepted by:

(i) EASA as meeting the standards of EASA AMC 20-24; or

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

(b) the aircraft flight manual attests to the approval or acceptance; and

(c) the GNSS receiver or system complies with the requirements of clause 4 in Part B.

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Appendix XII — Approved equipment configuration — Mode S transponder with Class B TABS position source device — VFR flight below FL290 only

Part A — ADS-B transmitting equipment — approval and application

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

1 Subject to this Part, an equipment configuration for ADS-B transmitting equipment is approved if it is a Mode S transponder with Class B TABS position source device that complies with the standards specified in Part B of this Appendix.

Application

2 A Mode S transponder with Class B TABS position source device carried on an aircraft has an approved equipment configuration if it complies with:

(a) the standards in Part B of this Appendix; and

(b) the conditions set out in clauses 3 and 4.

Note Another Appendix may apply to the equipment in a VFR flight.

3 For paragraph 2 (b), a Mode S transponder with Class B TABS position source device may only be operated in VFR flight below FL290.

4 For paragraph 2 (b), 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 controlled airspace in which:

(a) aircraft are required to carry serviceable ADS-B transmitting equipment that complies with an approved equipment configuration in accordance with Appendix XI; or

(b) VFR aircraft are required to carry ADS-B transmitting equipment.

Note Carriage of a Mode S transponder with Class B TABS position source device does not remove the requirement to obtain ATC clearance to operate in Class B or C airspace. Nor does it remove the requirement to obtain CASA approval to operate in Class A airspace – see subregulation 99AA (3) of CAR.

Part B — Standards for a Mode S transponder with Class B TABS position source device

Mode S transponder — standard

1 The Mode S transponder must be of a type that:

(a) is authorised in accordance with (E)TSO-C166B, as in force from time to time; or

(b) approved in writing by CASA as meeting the specifications in RTCA/DO-260B, whether dated 2 December 2009, or a later version as in force from time to time; or

(c) is authorised in writing by CASA as being equivalent to a device mentioned in paragraph (a) or (b).

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.

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GNSS position source equipment

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, as in force from time to time; or

(b) another source that is authorised in writing by CASA as being equivalent to a source mentioned in paragraph (a).

Altitude source equipment — standard

4 The pressure altitude transmitted by the Mode S transponder must be determined by:

(a) a barometric encoder of a type that is authorised in accordance with (E)TSO-C88a, as in force from time to time; or

(b) another system that is authorised in writing by CASA as being equivalent to a barometric encoder mentioned in paragraph (a).

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Appendix XIII — Approved equipment configuration — Integrated TABS device — VFR flight below FL290 only

Part A — ADS-B transmitting equipment — approval and application

Approved equipment configuration — integrated TABS device

1 Subject to this Part, an equipment configuration for ADS-B transmitting equipment is approved if it is an integrated TABS device that complies with the standards specified in Part B of this Appendix.

Application

2 An integrated TABS device carried on an aircraft has an approved equipment configuration if it complies with:

(a) the standards in Part B of this Appendix; and

(b) the conditions set out in clause 3.

Note Another Appendix may apply to the equipment in a VFR flight.

3 For paragraph 2 (b) an integrated TABS device may only be operated in transmitting mode:

(a) in VFR flight below FL290; and

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

Note An integrated TABS device is not a substitute for mandatory carriage of a transponder in relevant airspace, except in Class E airspace, or in Class G airspace above 10 000 ft: see subparagraph 9E.2 (d); see also subparagraph 9BA.6 (b).

Part B — Standards for an integrated TABS device

1 An integrated TABS device must meet the technical specifications in (E)TSO-C199, as in force from time to time, that are for a device with integrated Class A TABS and Class B TABS functionality.

2 An integrated TABS device must transmit a SIL value of 1.

3 Subject to clause 4, an integrated TABS device must be authorised by the relevant NAA of the equipment manufacturer as meeting the standards mentioned in clauses 1 and 2.

4 Clause 3 does not apply to an integrated TABS device carried on certain light sport, experimental and other aircraft provided that the TABS device that is carried:

(a) provides the pilot, other aircraft and ATC with the same transponder and surveillance capability as would be provided if an integrated TABS device were expressly authorised by the relevant NAA; and

(b) the pilot has a statement of compliance (or however described) from the equipment manufacturer certifying that the equipment otherwise meets the standards mentioned in clauses 1 and 2.

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Appendix XIV — Approved equipment configuration — EC device — VFR flight below FL290 only

Part A — ADS-B transmitting equipment — approval and application

Approved equipment configuration — EC device

1 Subject to this Part, an equipment configuration for ADS-B transmitting equipment is approved if it is an electronic conspicuity device (an ***EC device***) that complies with the standards specified in Part B of this Appendix.

Note Only EC devices that meet all of the requirements of this Appendix are EC devices for the purposes of this Appendix.

Application

2 An EC device carried on an aircraft has an approved equipment configuration if it complies with:

(a) the standards in Part B of this Appendix; and

(b) the conditions set out in clause 3.

Note Another Appendix may apply to the equipment in a VFR flight.

3 For paragraph 2 (b), an EC device must not be operated in transmitting mode:

(a) in VFR flight at or above FL290; or

(b) 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.

Part B — Standards for an EC device

1 Subject to clauses 3 and 4, an EC device must meet the technical specifications in UK CAP 1391.

2 An EC device must use a Class B TABS position source that complies with the performance standards specified in (E)TSO-C199, as in force from time to time.

3 An 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.

4 Despite the standards in UK CAP 1391, an 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.

5 An EC device must use a barometric encoder for altitude information.

6 An EC device must be mounted in accordance with the manufacturer's instructions.

7 An 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.

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8 The following administrative standards for an EC device must be complied with:

Note See Subparagraph 9B.3 (b).

(a) an EC device must have a statement of compliance (however described) from the EC device manufacturer certifying that the device meets the requirements mentioned in clauses 1 to 5 (***a declaration of capability and conformance to the requirements in clauses 1 to 5*** or ***a declaration***);

(b) the pilot in command of an aircraft that uses an 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 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 clauses 1 to 5 of Part B of Appendix XIV of Civil Aviation Order 20.18; 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.

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Notes to *Civil Aviation Order 20.18 (Aircraft equipment — basic operational requirements) Instrument 2014*

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises *Civil Aviation Order 20.18 (Aircraft equipment — basic operational requirements) Instrument 2014* amended as indicated in the Tables below.

Table of Orders

Year and number	Date of registration on FRLI/FRL	Date of commencement	Application, saving or transitional provisions
CAO 20.18 Instrument 2014	17 December 2014 (F2014L01743)	17 December 2014 (s. 1B)	—
CAO 20.18 Am Instrument 2015 (No. 1)	FRLI 17 March 2015 (F2015L00311)	18 March 2015 (s. 2).	s. 4 (see Table A)
CAO 20.18 Am Instrument 2015 (No. 2)	FRLI 29 April 2015 (F2015L00605)	S. 2: 29 April 2015 Remainder: 1 January 2016	—
CAO 20.18 Am Instrument 2016 (No. 2)	FRL 15 December 2016 (F2016L01961)	16 December 2016 (s. 2).	—
Civil Aviation Legislation Amdt & Repeal (ATSOs) Instrument 2017	FRL 30 November 2017 (F2017L01553)	30 November 2017 (s. 2)	—
CAO 20.18 Am Instrument 2020 (No. 1)	FRL 11 June 2018 (F2020L00693)	11 June 2020 (s. 2)	—

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
subs. 1B	rep. *Legislation Act 2003*, s. 48D
subs. 1C	rep. *Legislation Act 2003*, s. 48C
subs.3	am. F2015L00605
subs. 4	am. F2015L00605
subs. 9	am. F2020L00693
subs. 9B	am. F2016L01961, F2017L01553, F2020L00693
subs. 9BA	ad. F2020L00693
subs. 9C	am. F2016L01961, F2020L00693
subs. 9D	am. F2016L01961
subs. 9E	am. F2016L01961, F2020L00693
Appendix XI	am. F2017L01553, F2020L00693
Appendix XII	ad. F2020L00693
Appendix XIII	ad. F2020L00693

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Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
Appendix XIV	ad. F2020L00693

Table A

Civil Aviation Order 20.18 Amendment Instrument 2015 (No. 1) (F2015L00311)

4 Transitional application — helicopter V.F.R. operations at night

The amendments to Civil Aviation Order 20.18 in Schedule 1 of this instrument do not apply until 1 January 2016.

The amendments referred to in the **Transitional application — helicopter V.F.R. operations at night** provision are set out below:

Amendments

[1] Paragraph 3.2

after

the V.F.R.

insert

by day

[2] After paragraph 3.2

Insert

3.2A A helicopter may only be operated under the V.F.R. at night if:

(a) it is equipped with the instruments specified in Appendix VIII; and

(b) it is equipped with any other instruments and indicators specified in the helicopter's flight manual;

(c) for flights under V.F.R. at night which involve flights over land or water where the helicopter's attitude cannot be maintained by the use of visual external surface cues as a result of lights on the ground or celestial illumination:

(i) the helicopter is equipped in accordance with subparagraph 4.2 (d) of this Order; or

(ii) the helicopter is operated by a qualified 2 pilot crew, each with access to flight controls.

[3] Subparagraph 4.2 (d)

substitute

(d) an approved automatic pilot or automatic stabilisation system.

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Australian Government

Civil Aviation Safety Authority

I, MARK ALAN SKIDMORE, Director of Aviation Safety, on behalf of CASA, make this instrument under subsection 98 (4A) of the *Civil Aviation Act 1988*, subregulation 5 (1), paragraph 157 (4) (b) and subregulation 235 (7) of the *Civil Aviation Regulations 1988*, regulation 11.160 of the *Civil Aviation Safety Regulations 1998*, and subsection 33 (3) of the *Acts Interpretation Act 1901*.

[Signed M. Skidmore]
Mark Skidmore AM
Director of Aviation Safety

5 May 2015

Civil Aviation Order 20.21 Instrument 2015

1A Name of instrument

(1) This instrument is the *Civil Aviation Order 20.21 Instrument 2015*.

(2) This instrument may be cited as Civil Aviation Order 20.21.

(3) A reference in an instrument to section 20.21 of the Civil Aviation Orders is a reference to this instrument.

1B Commencement

This instrument commences on the day of registration.

1C Repeal

Civil Aviation Amendment Order (No. R20) 2004, also known as F2005B00804, including section 20.21 of the Civil Aviation Orders as set out in Schedule 1 of that instrument, as amended, is repealed.

2 Application

This Order applies to rotorcraft engaged in agricultural operations and related inspection flights.

2A Definitions

In this Order:

agricultural operations has the same meaning given by subregulation 2 (1) of the *Civil Aviation Regulations 1988* (***CAR 1988***).

3 Low flying permission

3.1 Under paragraph 157 (4) (b) of CAR 1988, permission is granted for the flight of rotorcraft at a lower height than 500 feet over any area other than a city, town or populous area while the rotorcraft is engaged in:

(a) agricultural operations authorised by an AOC; and

(b) inspection flying related to such agricultural operations; and

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(c) transit flights to a treatment area up to a maximum radius of 5 nautical miles from the aerodrome or agricultural landing area in use when carrying an agricultural payload.

3.2 Despite the permission granted in paragraph 3.1, a rotorcraft engaged in agricultural operations and related inspection flights must not be flown over, or in proximity to, a building occupied by persons unless it is operated in a pattern and at such an altitude that in the event of an emergency it can avoid endangering persons or property on the ground. The rotorcraft must not in any event be flown within 100 metres horizontally of an occupied building which forms part of a city, town or populous area, or below 350 feet above terrain within 100 metres horizontally of an occupied building which is situated in any other area, unless:

(a) a notice in writing of such flight has been given to the occupier of the building not less than 48 hours before the proposed flights and no objection to the flight is made; or

(b) if it is not reasonably practical to give a written notice under the preceding subparagraph, a verbal notice of such flights is given to the occupier before the flight and no objection to the flight is made.

Note 1 The distance limits mentioned above are based on operational safety and aircraft noise considerations and do not take into account the possible environmental and health hazards from handling, storage, application or jettisoning of agricultural chemicals. In this respect, operators should ensure that relevant State requirements, particularly those associated with health and welfare, are adhered to. Such requirements may impose stricter limitations than those in this Order.

Note 2 Attention is directed to the fact that the permission granted in this subsection does not confer on an operator any rights, as against the owner of any land over which the operations may be conducted, or prejudice in any way the rights and remedies which any person may have in common law in respect of any injury to persons or damage to property caused directly or indirectly by the operator.

4 Loading area

An operator engaged in agricultural operations must ensure that:

(a) loading equipment is not located; and

(b) loading operations are not carried out;

at a distance of less than 30 metres from the manoeuvring area.

5 Operations during scheduled aircraft movements

5.1 Subject to paragraph 5.2, a rotorcraft engaged in agricultural operations from an aerodrome used for regular public transport operations must not undertake those operations at a distance of less than 5 nautical miles from the aerodrome during the following periods:

(a) the period starting 15 minutes before the scheduled arrival of a regular public transport aircraft at the aerodrome and ending when the aircraft has landed at the aerodrome;

(b) the period starting when a regular public transport aircraft on the aerodrome starts its engines preparatory to take-off and ending 10 minutes after the aircraft has taken off.

5.2 Paragraph 5.1 does not apply:

(a) to rotorcraft under the control of Air Traffic Control; or

(b) if the rotorcraft that is engaged in agricultural operations is in two-way radio contact with the regular public transport aircraft.

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6 Exemption

6.1 For regulation 11.160 of the *Civil Aviation Safety Regulations 1998* (***CASR 1998***), if the conditions set out in this subsection are complied with, a rotorcraft that is engaged in agricultural operations is exempt from compliance with paragraphs 166A (2) (e) and (f) of CAR 1988.

6.2 The exemption given by paragraph 6.1, in relation to a rotorcraft, is subject to the following conditions:

(a) after take-off, the rotorcraft must not turn at a height that is less than 100 feet above ground level;

(b) during take-off, the rotorcraft must not be operated in a manner that causes a danger to persons or livestock;

(c) the pilot in command must, before conducting an operation under this exemption, broadcast his or her intention to do so on the local area frequency.

6.3 The exemption in paragraph 6.1 expires at the end of August 2017, as if subsection 6 had been repealed by another instrument.

7 Circuit requirements

7.1 A rotorcraft that is carrying out agricultural operations from:

(a) a military aerodrome; or

(b) an aerodrome established under CASR 1998; or

(c) a licensed aerodrome;

must, before landing, join the traffic pattern at a height of not less than 500 feet above the elevation of the aerodrome.

7.2 The requirement in paragraph 7.1 is in addition to any other requirement specified in CASR 1998 or AIP relating to the operation of rotorcraft within the vicinity of aerodromes.

8 Pilot qualifications

8.1 Subject to paragraph 8.2, a pilot in command of a rotorcraft conducting agricultural operations must hold an aerial application rating and an aerial application endorsement in accordance with Part 61 of CASR 1998.

8.2 A person may conduct agricultural operations in a rotorcraft when undergoing training in accordance with Part 61 of CASR 1998 and this Order.

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Civil Aviation Amendment Order (No. R21) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 229 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R21) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 20.22 of the Civil Aviation Orders

Section 20.22 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 20.22 of the Civil Aviation Orders

SECTION 20.22

TAXIING OF AIRCRAFT BY PERSONS OTHER THAN LICENSED PILOTS

3 CERTIFICATE OF APPROVAL REQUIREMENTS

3.1 A Certificate of Approval may be issued for an applicant in the form set out in Appendix II of this Order.

3.2 When making an application for a Certificate of Approval the applicant shall furnish a Certificate of Competency to CASA. The Certificate of Competency shall be issued by an appropriate person, or a pilot approved for this purpose by CASA, when the person or approved pilot is satisfied that the applicant has received practical training and has displayed adequate knowledge and skill with regard to safety and the provisions of this Order. A sample Certificate of Competency is shown at Appendix I.

3.3 CASA may at any time suspend or cancel a Certificate of Approval for reasons of public safety or non-compliance with this Order.

3.4 In this subsection:

appropriate person means a person who holds:

(a) a flight instructor (aeroplane) rating of one of the following grades:

(i) grade 1; or

(ii) grade 2; and

(b) an aircraft endorsement for the type of aircraft involved.

4 TRAINING REQUIREMENTS

4.1 An applicant shall receive practical training in taxiing the type of aircraft concerned. This shall include all normal precautions associated with engine start and action in the event of engine fire after start from a person meeting the requirements of paragraph 3.2. Such training shall include all normal taxiing manoeuvres, taxiing in confined spaces and in conditions of crosswind and tailwind.

4.2 The applicant shall be orally examined by the flight instructor or approved person in accordance with Appendix III.

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5 AIRCRAFT MOVEMENT

5.1 An aircraft which is required to be fitted with radio communications equipment and is operated at a controlled aerodrome shall not be taxied by an approved person unless he or she is, in addition, the holder of an Aircraft Radio Telephone Operator Certificate of Proficiency.

5.2 Before an aircraft is taxied by an approved person he or she shall ensure that Air Traffic Control is fully aware of his or her intention and shall conform to any instructions and signals given by Air Traffic Control.

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APPENDIX I

CERTIFICATE OF COMPETENCY AND APPLICATION ISSUED IN PURSUANCE OF SECTION 22 OF THE CIVIL AVIATION ORDERS

This is to certify that ..... has completed the relevant requirements of Civil Aviation Orders and I consider him/her competent to taxi the ..... type(s) of aircraft.

Signed .....

Licence Class ..... No.....

..... Date.....

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APPENDIX II

CERTIFICATE OF COMPETENCY AND APPLICATION ISSUED IN PURSUANCE OF SECTION 20.22 OF THE CIVIL AVIATION ORDERS

This is to certify that ……..... is authorised to taxi

the ..... type(s) of aircraft.

Signed .....

Delegate of CASA

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APPENDIX III

TAXIING OF AIRCRAFT — APPROVED PERSONS SYLLABUS OF EXAMINATION

1 Air Traffic Control requirements

(a) Meanings of all light signals used for the control of aircraft on the movement area.
(b) Significance of all aerodrome surface markings.
(c) Rules of right of way between taxiing aircraft and aircraft taking off and landing.
(d) Use and meaning of signals used to marshal and to park aircraft.

REFERENCES: Regulations 187 and 189 of the *Civil Aviation Regulations 1988;* section 20.3 of the Civil Aviation Orders.

2 Aircraft and engine systems

(a) Braking System — normal and emergency management.
(b) Nose or tailwheel steering system — normal management limitation.
(c) Fuel system — layout and management — use of booster pumps. Any peculiarities of the system.
(d) Engine handling procedures — Limiting temperatures and pressures cooling system.
(e) Action in event of an engine fire after start.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 20.91 (Instructions and directions for performance-based navigation) Instrument 2014

as amended

made under regulation 179A of the *Civil Aviation Regulations 1988,* regulation 11.245 of the *Civil Aviation Safety Regulations 1998* and subsection 33 (3) of the *Acts Interpretation Act 1901*.

This compilation was prepared on 30 November 2018 taking into account amendments up to *Civil Aviation Order 20.91 Amendment Instrument 2018 (No. 1)*. It is a compilation of *Civil Aviation Order 20.91 (Instructions and directions for performance-based navigation) Instrument 2014* as amended and in force on 2 November 2018.

Prepared by the Advisory & Drafting Branch, Legal & Regulatory Affairs Division, Civil Aviation Safety Authority, Canberra.

Compilation No. 2.

1 Name of instrument

This instrument is the *Civil Aviation Order 20.91 (Instructions and directions for performance-based navigation) Instrument 2014*.

2 Repeal

Civil Aviation Order 20.91 (Instructions and directions for performance-based navigation) 2012 is repealed.

3 Commencement and duration

3.1 This Order commences on the day of registration.

3.2 For paragraph 11.250 (a) of CASR, anything in this Order that is a direction under regulation 11.245 of CASR, ceases to be in force on 30 November 2024.

Note To support this Order, CASA is using both the power to issue instructions under regulation 179A of CAR, and the power to issue directions under regulation 11.245 of CASR. For paragraph 11.250 (a) of CASR, an expiry date must be included for a direction which is to endure for longer than 1 year.

4 Definitions

Note In this Civil Aviation Order terms and expressions have the same meaning as they have in the *Civil Aviation Act 1988* and the regulations.

4.1 The acronyms and abbreviations used in this Order have the following meanings:

Acronym	Explanation
14 CFR	Title 14 Code of Federal Regulations *Note* 14 CFR is used instead of FAR and is consistent with the current practice in FAA documentation. Example: a reference to 14 CFR, Part 23 is a reference to Part 23 of the FAR.
ABAS	Aircraft Based Augmentation System

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Acronym	Explanation
AFM	Aircraft Flight Manual
AFMS	Aircraft Flight Manual Supplement
AMM	Aircraft Maintenance Manual
AP	Autopilot
AP/FD	Autopilot/Flight Director
APCH	Approach
APV	Approach with Vertical Guidance
AR	Authorisation Required
ARINC 424	Aeronautical Radio Incorporated Specification 424
A-RNP	Advanced Required Navigation Performance
ASE	Altimetry System Error
BARO	Barometric
Baro-VNAV	Barometric Vertical Navigation
B-RNAV	Basic RNAV
CBT	Computer-based Training
CDI	Course Deviation Indicator
CPDLC	Controller-Pilot Data Link Communications
CS	EASA Certification Specification
DA	Decision Altitude
EADI	Electronic Attitude Director Indicator
(E)TSO	FAA Technical Standard Order and/or European Technical Standard Order
ETSO	European Technical Standard Order
FAF	Final Approach Fix
FAP	Final Approach Point
FAS	Final Approach Segment
FD	Fault Detection or Flight Director
FDE	Fault Detection and Exclusion
FM	Path Terminator: Course from Fix to Manual Termination
FMC	Flight Management Computer
FMS	Flight Management System

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Acronym	Explanation
FOSA	Flight Operational Safety Assessment
FRT	Fixed Radius Transition
FTE	Flight Technical Error
GBAS	Ground-based Augmentation System
GNSS/FMS	An FMS area navigation system that has GNSS capability but does not have IRU or IRS inputs
HPL	Horizontal Protection Limit
HSI	Horizontal Situation Indicator
IAF	Initial Approach Fix
IF	Path Terminator: Initial Fix
INS	Inertial Navigation System
IRS	Inertial Reference System
IRU	Inertial Reference Unit
JAA	Joint Aviation Authorities
LNAV	Lateral Navigation
LNAV/VNAV	Lateral Navigation with Vertical Navigation
LOA	Letter of Acceptance or Letter of Authorisation
LOC	ILS Localizer
LP	Localiser Performance
LPV	Localiser Performance with Vertical Guidance
LRNS	Long-range Navigation System
MAP	Map Display
MMR	Multi-mode Receiver
MNPS	Minimum Navigation Performance Specifications
NM	nautical mile
NNDP	Non-normal Decision Point
NPA	Non-precision Approach
NPS	Navigation Performance Scales
NSE	Navigation System Error
OEI	One Engine Inoperative
OEM	Original Equipment Manufacturer

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Acronym	Explanation
PBN	Performance-based Navigation
PF	Pilot flying
PNF/PM	Pilot not flying/pilot monitoring
P-RNAV	Precision Area Navigation
QRH	Quick Reference Handbook
RADALT	Radio Altimeter.
RAIM	Receiver Autonomous Integrity Monitor
RF Leg	Path Terminator: Radius to Fix Path Terminator
RNAV	Area Navigation
RNP	Required Navigation Performance
RNP APCH	RNP Approach
RNP AR APCH	RNP AR Approach
RNP AR DEP	RNP AR Departure
RTCA	Radio Technical Commission for Aeronautics
SBAS	Space-based Augmentation System
SIS	Signal-in-space
TSE	Total System Error
VDEV	Vertical Deviation
VI	Path Terminator: Heading Vector to Intercept
VIP	Vertical Intercept Point
VNAV	Vertical Navigation
VPA	Vertical Path Angle
VSD	Vertical Situation Display
XTK	Cross-track Error/Deviation

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4.2 Terms defined for this Order:

Term	Definition (meaning)
AIRAC cycle	The Aeronautical Information Regulation and Control cycle. *Note* In accordance with Annex 15, Aeronautical Information Services (AIS), of the Chicago Convention, the AIRAC cycle documents and defines a series of common dates, and an associated standard aeronautical information publication procedure, for each Convention State.
Airspace	An area, route or procedure (the ***designated environment***) in respect of which all or any of the following requirements must be satisfied, before an aircraft to which this Order applies is able to use it: (a) navigation specifications (RNAV or RNP) applicable in the designated environment, for which the aircraft must hold an authorisation or approval; (b) aircraft navigation equipment requirements that the aircraft must satisfy; (c) aircraft navigation system functional and performance requirements that the aircraft must satisfy; (d) aircraft navigation equipment installation requirements that the aircraft must satisfy.
Alternate Means of Navigation	The use of information from an area navigation system in lieu of that from conventional navigation aids and navigation equipment that is installed, operational and compatible with conventional navigation aids.
ARINC 424 Path Terminator	Aeronautical Radio Incorporated Specification 424 format for coding airborne navigation databases.
Augmentation Systems	Augmentation systems are GNSS supplemental systems used to augment core satellite constellation signals to meet safety and reliability requirements. These systems may include ranging, integrity or differential elements in any combination. There are 3 categories of augmentation systems: Aircraft-based Augmentation Systems (***ABAS***); Ground-based Augmentation Systems (***GBAS***); Space-based Augmentation Systems (***SBAS***). Within each category there are multiple independent systems.
Cross-track Error/Deviation	The perpendicular distance between the planned flight path of an aircraft and the computed aircraft position as displayed by the aircraft's navigation instruments. *Note* This term is also referred to as "lateral deviation".
(E)TSO	European Technical Standard Order and/or FAA Technical Standard Order. *Note* Both will have the same reference number.

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Term	Definition (meaning)
Flight Day	A 24 hour period (from midnight to midnight) either Universal Coordinated Time (UCT) or local time, as established by the operator, during which at least 1 flight is initiated for the affected aircraft.
Letter of Acceptance (LOA)	A letter of acceptance issued by a regulatory authority to a data supplier that has demonstrated compliance with the requirements of RTCA DO-200A/EUROCAE ED-76 Standards for Processing Aeronautical Data. A LOA may be a Type 1 LOA or a Type 2 LOA.
Type 1 LOA	Provides recognition of a data supplier's compliance with RTCA DO-200A/EUROCAE ED-76 Standards for Processing Aeronautical Data with no identified compatibility with an aircraft system.
Type 2 LOA	Provides recognition of a data supplier's compliance with RTCA DO-200A/EUROCAE ED-76 Standards for Processing Aeronautical Data and identifies the compatibility of its delivered data with a particular avionic system or avionic systems.
Long range navigation system	A navigation system comprising an INS, an IRS or a GNSS capable of use in oceanic or remote airspace.
Navigation specification	A set of aircraft and aircrew requirements needed to support PBN operations within a defined airspace. *Note* There are 2 kinds of navigation specification: RNAV and RNP (see Definitions).
Operator	The individual or entity responsible for flight operation of the aircraft. This might or might not be the registered operator for maintenance purposes.
Path Terminator	A specific type of flight path along a segment of a route or procedure along with a specific type of termination of that flight path, as assigned to all area navigation routes, SID, STAR and approach procedure segments in an aircraft navigation database, and defined in ICAO Doc. 8168, Volume II, Part III, Section 2, Chapter 5.
Performance-based Navigation	Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.
Receiver Autonomous Integrity Monitor	A form of ABAS whereby a GNSS receiver processor determines the integrity of the GNSS navigation signals using only GPS signals or GPS signals augmented with altitude (baro-aiding). This determination is achieved by a consistency check among redundant pseudo-range measurements. For the receiver to perform the RAIM function, at least 1 additional satellite needs to be available with the correct geometry, over and above the requisite GNSS satellites needed for the position estimation.

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Term	Definition (meaning)
Requisite GNSS satellites	Not less than the number of serviceable GNSS satellites specified in writing by the manufacturer of an RNP system to provide a particular level of RNP capability.
Restricted aerodrome	An aerodrome for which an operator restricts operations to aircraft with certain equipment, or flight crew with a certain combination of training, qualifications and experience, as set out in the operations manual.
RNAV Specification	A navigation specification based on area navigation that does not include the requirement for on-board performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.
RNP Specification	A navigation specification based on area navigation that includes the requirement for on-board performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.
State of the Operator	In relation to an aircraft, means the country in which the principal place of business of the aircraft operator is situated or, if the aircraft operator has no place of business, the country in which the principal place of residence of the aircraft operator is situated.
Substitute Means of Navigation	The use of information from an area navigation system in lieu of that from out-of-service conventional navigation aids and/or inoperative or not-installed navigation equipment compatible with conventional navigation aids.

4.3 In this Order, unless the contrary intention appears, a reference to a TSO standard, an ETSO standard, an (E)TSO standard, an ICAO document, an FAA document, an EASA document, an AC or other CASA document is taken to include a later version of the standard or document as in force or existing from time to time.

Note Subsection 98 (5D) of the *Civil Aviation Act 1988* permits the Order to apply, adopt or incorporate matter contained in any instruments or other writing as in force or existing from time to time.

4.4 Without affecting paragraph 4.3, in this Order, a reference to an (E)TSO, a TSO or an ETSO with an empty bracket at the end of the reference includes the (E)TSO, TSO or ETSO in a version that contains a number within the bracket.

4.5 In this Order, a reference to the PBN Manual means ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, 4th edition or later revised version.

5 Transitional — MNPS (Reserved)

Note MNPS will be retained until the North Atlantic Program Coordination Office publishes a navigation specification alternative procedure. It is anticipated that RNP 2, used in an Oceanic application, may provide this alternative. In the interim, CASA MNPS approvals will remain in force according to their terms.

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6 Scope of Order

The instructions and directions in this Order apply to the operation of an Australian aircraft that uses PBN in I.F.R. flight, and to foreign registered aircraft, where expressed to do so, and contain:

(a) instructions to pilots in command for I.F.R. flights, specifying the method by which an aircraft engaged in PBN is to be navigated; and

(b) directions to pilots in command and operators in relation to the conduct of I.F.R. flight using a PBN navigation specification mentioned in subsection 7.

7 Application — navigation specifications

7.1 The instructions and directions in this Order apply to the operation of an Australian aircraft that uses 1 or more of the following navigation specifications in I.F.R. flight:

(a) RNAV 5;

Note See Appendix 1.

(b) RNAV 1 and RNAV 2;

Note See Appendix 2.

(c) RNP 2;

Note See Appendix 3.

(d) RNP 1;

Note See Appendix 4.

(e) RNP 0.3;

Note See Appendix 5.

(f) RNP APCH, including:

(i) LNAV; and

(ii) LNAV/VNAV (Baro-VNAV); and

(iii) LP; and

(iv) LPV;

Note See Appendix 6.

(g) RNP AR, including:

(i) RNP AR APCH; and

(ii) RNP AR DEP.

Note 1 See Appendix 7.

Note 2 RNP AR APCH and RNP AR DEP operations may include OEI procedures.

(h) Baro-VNAV;

Note 1 See Appendix 8.

Note 2 Navigation specification RNAV 10 and RNP 4 are each dealt with in Part 91 of CASR, as RNP 10 and RNP 4, respectively.

(i) Advanced RNP;

Note See Appendix 9.

(j) Radius to Fix Path Terminator;

Note See Appendix 10.

(k) Fixed Radius Transition;

Note See Appendix 11.

(l) Time of Arrival Control;

Note See Appendix 12 (reserved pending technical development by ICAO).

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(m) Use of suitable area navigation systems on conventional routes and procedures.

Note See Appendix 13.

7.2 Foreign registered aircraft operating into or out of, and within, the Brisbane or Melbourne Flight Information Regions (***FIR***) are directed to have authorisations equivalent to those for Australian registered aircraft under this Order issued by the National Aviation Authority of their State of Registration or State of the Operator, as applicable.

8 Instructions and directions for authorised use of PBN navigation specifications

8.1 An Australian aircraft using a navigation specification mentioned in subsection 7 (the ***particular navigation specification***) may be navigated in I.F.R. flight in any airspace for which that PBN is required only in accordance with the requirements set out in this Order and in any Appendix to this Order that apply for the use of the specification.

8.2 The pilot in command of an I.F.R. flight must not use the particular navigation specification unless:

(a) he or she satisfies each requirement to be satisfied by the pilot under this Order for the use of the particular navigation specification; and

(b) for RNP 0.3 and RNP AR, the operator of the aircraft holds a navigation authorisation under this Order for the particular navigation specification; and

(c) the flight is conducted in accordance with the particular navigation specification; and

(d) the operating instructions for the area navigation system(s) installed in the aircraft are carried in the aircraft and are easily accessible to the pilot(s). The operating instructions may be:

(i) the operating instructions provided by the navigation system manufacturer; or

(ii) the AFM, provided the instructions are complete and not an abbreviated version; or

(iii) an applicable AFMS, provided the instructions are complete and not an abbreviated version; or

(iv) other operating instructions specified by the AFM or an applicable AFMS; or

(v) other operating instructions acceptable to CASA.

8.3 The operator of an aircraft engaged in an I.F.R. flight using a navigation specification mentioned in subparagraph 8.2 (b) is directed not to permit the flight to commence unless the operator:

(a) holds a navigation authorisation under the Appendix of this Order which applies for the use of the RNP 0.3 or RNP AR navigation specification (the ***relevant Appendix***); and

(b) complies with each requirement for the flight set out in the relevant Appendix; and

(c) ensures that each member of the flight crew of the aircraft:

(i) satisfies each flight crew requirement for the flight set out in the relevant Appendix; and

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(ii) conducts the flight in accordance with the navigation authorisation.

8.4 Operators of foreign registered aircraft holding an RNP AR navigation authorisation must not navigate in accordance with RNP AR procedures in Australia without prior CASA acceptance of that navigation authorisation.

9 Certain aircraft are deemed to be approved for navigation specifications in Appendices 1, 2, 3 and 4

9.1 Subject to compliance with paragraphs 9.2 and 9.3, an Australian aircraft is deemed to be approved for navigation in accordance with any of the following navigation specifications:

(a) RNAV 5;

(b) RNAV 1 and RNAV 2;

(c) RNP 2;

(d) RNP 1.

9.2 The aircraft must be equipped with a GNSS stand-alone system with en route and terminal navigation capability having:

(a) (E)TSO-C129 ( ) authorisation for Class A1 or A2; or

(b) (E)TSO-C146 ( ) authorisation for Class Gamma and operational Class 1, 2 or 3; or

(c) an integrated avionics system using GNSS sensors with (E)TSO-C129 ( ) Class B1, B2, C1 or C2 authorisation, or (E)TSO-C145 ( ) Class Beta and operational Class 1, 2 or 3 authorisation as the only primary sensor input to the area navigation function, that is accepted as a stand-alone system for this subsection.

Note The integrated avionics systems referred to are those systems typically installed in US 14 CFR/EASA CS Part 23 or Part 27 aircraft that combine flight displays, communications, radio navigation (VOR and ILS) and area navigation into a single integrated system. (E)TSO C115 multi-sensor systems that utilise independent discrete sensor inputs are not addressed under this subsection.

9.3 The aircraft is approved for navigation during a flight in accordance with a navigation specification mentioned in paragraph 9.1 if the AFM or AFMS for the aircraft, as published at the time of the flight, states that the aircraft:

(a) is capable of the navigation specification; or

(b) has the GPS capability mentioned in an item of the Table that corresponds to the navigation specification.

Table

	GPS capability (Column 1)	**Navigation specification (Column 2)**
1	GPS RNAV EN ROUTE	RNAV 5; RNAV 2 or RNP 2
2	GPS RNAV TERMINAL	RNAV 1 or RNP 1

Note For example, for the purposes of subparagraph 9.3 (b), if the AFM or AFMS for an aircraft states that the aircraft is capable of GPS RNAV TERMINAL (a "GPS capability"), then the aircraft would be approved to navigate in accordance with RNAV 1 (the corresponding "navigation specification").

9.5 If the AFM or AFMS for an aircraft states that the aircraft is approved for RF Legs and the aircraft:

(a) meets the requirements of paragraph 9.3; and

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(b) is equipped with a map display depicting the computed flight path of the aircraft;

the aircraft is taken to be approved for RF Legs in conjunction with RNP 1 operations.

9.6 If the AFM or AFMS for an aircraft states that the aircraft is approved for Radius to FRT, and the aircraft:

(a) meets the requirements in paragraph 9.3 above; and

(b) is equipped with a map display depicting the computed flight path of the aircraft;

the aircraft is taken to be approved for FRT in conjunction with RNP 2 operations.

10 Certain aircraft are deemed to be approved for navigation specifications in Appendices 1, 2, 3, 4 and 6

10.1 Subject to compliance with paragraphs 10.2 and 10.3, an Australian aircraft is deemed to be approved for navigation in accordance with any of the following navigation specifications:

(a) RNAV 5;

(b) RNAV 1 and RNAV 2;

(c) RNP 2;

(d) RNP 1;

(e) RNP APCH-LNAV;

(f) RNP APCH-LNAV/VNAV;

(g) RNP APCH-LP or RNP APCH-LPV.

10.2 The aircraft must be equipped with:

(a) a GNSS stand-alone system with en route, terminal and NPA capability having (E)TSO-C129a authorisation for Class A1; or

(b) a GNSS stand-alone system with en route, terminal and NPA capability having (E)TSO-C146 Class Gamma and operational Class 1, 2 or 3; or

(c) an integrated avionics system using a GNSS sensor with (E)TSO-C129a Class B1 or C1 or (E)TSO-C145 Class Beta and operational Class 1, 2 or 3 authorisation as the only primary sensor input to the area navigation function that is accepted as a stand-alone system for this subsection.

Note The integrated avionics systems referred to in subparagraph 10.2 (b) are those systems typically installed in US 14 CFR/EASA CS Part 23 or Part 27 aircraft that combine flight displays, communications, radio navigation (VOR and ILS) and area navigation into a single integrated system. (E)TSO C115 multi-sensor systems that utilise independent discrete sensor inputs are not addressed under this subsection.

10.3 The aircraft is approved for navigation during a flight in accordance with a navigation specification mentioned in paragraph 10.1 if the AFM or AFMS for the aircraft, as published at the time of the flight, states that the aircraft:

(a) is capable of the navigation specification; or

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(b) has the GPS capability mentioned in an item of the Table that corresponds to the navigation specification.

Table

	GPS capability (Column 1)	**Navigation specification (Column 2)**
1	GPS RNAV EN ROUTE	RNAV 5; RNAV 2 or RNP 2
2	GPS RNAV TERMINAL	RNAV 1 or RNP 1
3	GPS RNAV NON-PRECISION APPROACH	RNP APCH-LNAV
4	GPS RNAV LP	RNP APCH-LP
5	GPS RNAV LPV	RNP APCH-LPV

Note For example, for the purposes of subparagraph 10.3 (b), if the AFM or AFMS for an aircraft states that the aircraft is capable of GPS RNAV NON-PRECISION APPROACH (a "GPS capability"), then the aircraft would be approved to navigate in accordance with RNP APCH-LNAV (the corresponding "navigation specification").

10.4 If the AFM or an AFMS for an aircraft states that the aircraft is approved for Baro-VNAV and the aircraft meets the requirements in paragraph 10.3, then the aircraft is deemed to be approved for Baro-VNAV in conjunction with RNP APCH-LNAV/VNAV.

10.5 In addition, if the aircraft is equipped with GNSS equipment authorised for:

(a) (E)TSO-C129a Class A1, B1or C1; or

(b) (E)TSO-C146 ( ) Class Gamma and operational Class 2 or 3; or

(c) (E)TSO-C145 Class Beta and operational Class 2 or 3;

the aircraft is deemed to be approved for RNP APCH – LNAV/VNAV operations.

10.6 If the AFM or an AFMS for an aircraft states that the aircraft is approved for RF Legs and the aircraft:

(a) meets the requirements of paragraph 10.3 above; and

(b) is equipped with a map display depicting the computed flight path of the aircraft;

the aircraft is deemed to be approved for RF Legs in conjunction with RNP 1 and RNP APCH – LNAV operations.

10.7 If the AFM or an AFMS for an aircraft states that the aircraft is approved for Radius to FRT and the aircraft:

(a) meets the requirements in paragraph 10.3 above; and

(b) is equipped with a map display depicting the computed flight path of the aircraft;

the aircraft is deemed to be approved for Radius to FRT in conjunction with RNP 2 operations.

11 Certain other aircraft deemed to be approved for navigation authorisations in Appendices 1, 2, 3, 4 and 6

11.1 Subject to compliance with paragraphs 11.2 and 11.3, an Australian aircraft is deemed to be approved for navigation in accordance with any of the following navigation specifications:

(a) RNAV 5;

(b) RNAV 1 and RNAV 2;

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(c) RNP 2;

(d) RNP 1;

(e) RNP APCH-LNAV;

(f) RNP APCH-LNAV/VNAV;

(g) RNP APCH-LP or RNP APCH-LPV.

11.2 The aircraft must be equipped with:

(a) a GNSS stand-alone system with en route, terminal, NPA and LPV capability having (E)TSO-C146 ( ) authorisation for Class Gamma and operational Class 3; or

(b) an integrated avionics system using GNSS sensors with (E)TSO-C145 ( ) Class Beta and operational Class 3 authorisation as the only primary sensor input to the area navigation function is deemed to be a stand-alone system for this subsection.

Note The integrated avionics systems referred to are those systems typically installed in US 14 CFR/EASA CS Part 23 or Part 27 aircraft that combine flight displays, communications, radio navigation (VOR and ILS) and area navigation into a single integrated system. (E)TSO C115 multi-sensor systems that utilise independent discrete sensor inputs are not addressed under this subsection.

11.3 The aircraft is approved for navigation during a flight in accordance with a navigation specification mentioned in paragraph 11.1 if the AFM or AFMS for the aircraft, as published at the time of the flight, states that the aircraft:

(a) is capable of the navigation specification; or

(b) has the GPS capability mentioned in an item in the Table that corresponds to the navigation specification.

Table

	GPS capability (Column 1)	**Navigation specification (Column 2)**
1	GPS RNAV EN ROUTE	RNAV 5; RNAV 2 or RNP 2
2	GPS RNAV TERMINAL	RNAV 1 or RNP 1
3	GPS RNAV NON-PRECISION APPROACH	RNP APCH-LNAV
4	GPS RNAV LP	RNP APCH-LP
5	GPS RNAV LPV	RNP APCH-LPV

Note For example, for the purposes of subparagraph 11.3 (b), if the AFM or AFMS for an aircraft states that the aircraft is capable of GPS RNAV NON-PRECISION APPROACH (a "GPS capability"), then the aircraft would be approved to navigate in accordance with RNP APCH-LNAV (the corresponding "navigation specification").

11.4 If the AFM or an AFMS for an aircraft states that the aircraft meets the requirements in subsection 11.3, then it is deemed to be approved for Baro-VNAV in conjunction with RNP APCH-LNAV/VNAV operations.

11.5 If an aircraft:

(a) meets the requirements of paragraph 11.3 above; and

(b) is equipped with a map display depicting the computed flight path of the aircraft; and

(c) the AFM or AFMS states that the aircraft is approved for RF Legs;

it is deemed to be approved for RF Legs in conjunction with RNP 1, RNP APCH – LNAV, RNP APCH – LP, and RNP APCH – LPV operations.

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11.6 If an aircraft:

(a) meets the requirements in paragraph 11.3 above; and

(b) is equipped with a map display depicting the computed flight path of the aircraft; and

(c) the AFM or AFMS states that the aircraft is approved for Radius to FRT;

it is deemed to be approved for FRT in conjunction with RNP 2 operations.

12 Pilot qualifications

12.1 To operate to a performance-based navigation specification, the pilot must hold:

(a) a current instrument endorsement valid for the navigation specification:

(i) in accordance with CASR Subpart 61.M.2; or

(ii) in accordance with Civil Aviation Order (***CAO***) 40.2.1; or

(b) the pilot must hold a current private instrument rating and flight procedure approvals or endorsements valid for the navigation specification:

(i) in accordance with CASR Subpart 61.N.2; or

(ii) in accordance with CAO 40.2.3.

12.2 The pilot must also comply with any requirements in the Order or an Appendix stating additional qualifications or conditions for use of the navigation specification.

13 Navigation database — standards and discrepancies

13.1 This subsection applies in relation to all area navigation systems in an aircraft used for PBN operations and sets out CASA's directions for the purposes of regulation 232A of CAR.

13.2 If particulars of way points and navigation aids that are published in maps and charts required to be carried in the aircraft under paragraph 233 (1) (h) of CAR are included in a navigation computer's database, then those particulars must be in a form that cannot be modified by the aircraft operator or flight crew members.

13.3 A navigation database for PBN operations must be valid. To be valid, a navigation database must be:

(a) obtained from a supplier who complies with:

(i) Radio Technical Commission for Aeronautics (RTCA) DO 200A; or

(ii) European Organisation for Civil Aviation Equipment (EUROCAE) document ED-76, Standards for Processing Aeronautical Data; and

(b) compatible with the intended function of the equipment in accordance with ICAO Annex 6, Part 1, Chapter 7.

Note 1 Annex 6, Part 1, Chapter 7 states that an operator shall not employ electronic navigation data products that have been processed for application in the air and on the ground unless the State regulatory authority has approved the operator's procedures for ensuring that the process applied and the products delivered have met acceptable standards of integrity and that the products are compatible with the intended function of the equipment that will use them. The State regulatory authority shall ensure that the operator continues to monitor both process and products.

Note 2 An LOA, issued by an appropriate regulatory authority to each of the participants in the data chain, demonstrates compliance with this requirement, for example, FAA LOA issued in accordance with FAA AC 20-153 or EASA LOA issued in accordance with EASA Agency Opinion 01/2005 and the associated "Conditions for the issuance of Letters of Acceptance for Navigation Database Suppliers by the Agency".

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Note 3 A Type 1 LOA provides recognition of a data supplier's compliance with RTCA/DO-200A/EUROCAE ED-76 with no identified compatibility with an aircraft system. A Type 1 LOA ensures the processes for producing the aeronautical data comply with the documents identified in Note 1 and the documented data quality requirements (DQRs).

Note 4 A Type 2 LOA provides recognition of a data supplier's compliance with RTCA/DO-200A/EUROCAE ED-76 and the compatibility of its delivered data with particular avionic systems that are identified in the LOA letter.

Note 5 A CASR Part 175 approval equates to an EASA or FAA Type 1 LOA.

(c) current for the present AIRAC cycle.

13.4 Operators carrying out RNP APCH, Baro-VNAV, Advanced RNP, RNP 0.3 or RNP AR approach operations must obtain their navigation databases from suppliers holding a Type 2 LOA.

13.5 An operator who has a navigation authorisation from CASA must periodically check the navigation database for database integrity.

Note While an LOA provides assurance of minimum standards for the supply of a navigation database, errors may still occur. All operators must conduct periodic checks to ensure database integrity against a current navigation data source.

13.6 Any discrepancy in data in the operator's navigation database must be:

(a) reported as soon as practicable to the navigation database supplier; and

(b) resolved, before further operational use, by:

(i) reissue of the database; or

(ii) prohibition of the route; or

(iii) instructions to the flight crew.

13.7 Without affecting the operator's obligation under paragraph 13.6, any discrepancy in the operator's navigation database that is likely to lead to a hazardous condition arising through either loss of separation between the aircraft and terrain, or obstacles or loss of separation between aircraft, must be reported in accordance with the *Transport Safety Investigation Regulations 2003*.

13.8 If an event occurs in relation to a navigation database that is referred to in subregulation 2.3 (3) or regulation 2.4 of the *Transport Safety Investigation Regulations 2003*, it must be reported in accordance with that subregulation.

13.9 If the current AIRAC cycle of a navigation database changes to the next AIRAC cycle while an aircraft is in flight, the aircraft should continue to use the original AIRAC cycle navigation database for the remainder of the flight.

13.10 Subject to the limitations in paragraphs 13.7 and 13.8, a navigation database that is not current, or will not be current for the duration of a flight, may be used for navigation provided any data used for navigation is verified before use from a current navigation data source. A navigation database that is not current must not be used for radio updating of a navigation system.

Note 1 A current navigation data source can be either current maps, charts or other sources of navigation information provided by supplier meeting the requirements of subparagraph 13.3 (a). An Electronic Flight Bag that is current is an acceptable reference source for navigation database verification.

Note 2 Inertial systems (INS or IRS) may be used without radio updating provided that the conditions and limitations for inertial only operations are complied with.

13.11 An aircraft that is not operated with an MEL may operate for a period of not more than 72 hours from the time that the database expires.

13.12 An aircraft that is operated with an MEL may operate for up to 3 Flight Days from the time that the database expires.

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13.13 Manually entered data in a navigation system must be checked for accuracy by 2 flight crew members.

13.14 In the case of a single-pilot operation, manually entered data in a navigation system must be checked against other aeronautical information, such as current maps and charts carried in the aircraft (see Note 1 to paragraph 13.10).

14 Operating standards – flight planning – GNSS integrity availability

14.1 When an RNP APCH is planned at the intended destination or designated alternate as part of flight planning, a prediction for GNSS integrity availability must be obtained from a ground-based source.

14.2 If a continuous loss of the GNSS integrity function for more than 5 minutes is predicted for any part of the RNP APCH operation, the flight plan must be revised, for example, by delaying the departure time or planning a different route.

14.3 When an aircraft is operating in oceanic airspace and navigation is based on GNSS, as part of flight planning a prediction for GNSS Fault Detection and Exclusion (FDE) availability for the intended route must be obtained.

14.4 For oceanic/remote operations, the maximum FDE outage duration cannot exceed 25 minutes for RNP-4 operation, 34 minutes for RNP-10 operation and 51 minutes for minimum navigation performance standards (MNPS) operation.

14.5 For continental en route operations a prediction for GNSS integrity availability is not required. If a continuous loss of the GNSS integrity function for more than 5 minutes occurs during PBN operations, Air Traffic Control must be advised.

14.6 For a PBN operation navigating with SBAS receivers, a check must be made for GNSS integrity availability in areas where SBAS is unavailable.

14.7 Paragraphs 14.1, 14.2, 14.3 and 14.4 do not apply to an aircraft whose RNP system can achieve LNAV accuracy less than 0.3 NM using requisite GNSS satellites.

Note ***Requisite GNSS satellites*** is defined in subsection 4 of this Order.

15 Navigation errors

15.1 The operator must take immediate action to remedy any condition that led to, or is likely to lead to, navigation error in the course of an RNAV or RNP operation.

15.2 Without affecting the obligation in paragraphs 13.7, 13.8 and 15.1, each of the following navigation errors or events must be reported in accordance with paragraph 2.4 (i) of the *Transport Safety Investigation Regulations 2003*:

(a) a lateral or longitudinal navigational error that exceeds the required accuracy value i.e. the RNAV or RNP value, for other than a transient duration during a turn; or

(b) an aircraft system failure that results in the aircraft losing the currently active navigation capability i.e. there is a loss of the navigation function.

Note Loss of the RNAV or RNP capability in use in the aircraft must be reported but the failure of 1 navigation system in a dual installation need not be reported since the capability to meet the navigation specification requirements has not been lost.

15.3 If an event occurs in relation to a navigation system that is referred to in subregulation 2.3 (3) of the *Transport Safety Investigation Regulations 2003*, it must be reported in accordance with that subregulation.

15.4 Each report mentioned in paragraph 15.2 or 15.3 must:

(a) contain a preliminary analysis of the cause of the error; and

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(b) include a statement of the remedial action taken, and to be taken, to prevent a recurrence of the error.

15.5 Unless paragraph 15.6 applies, the operator must take the remedial action mentioned in paragraph 15.4 as soon as practicable.

15.6 Without affecting paragraphs 15.1 to 15.4, for this subsection CASA may:

(a) determine the cause of the error; and

(b) notify the operator of the cause of the error and of the remedial action to be taken to prevent a recurrence of the error.

15.7 If paragraph 15.6 applies, the operator must take the remedial action notified by CASA to prevent a recurrence of the error.

16 Oceanic/remote continental region operations

16.1 Aircraft operating in oceanic/remote continental airspace, where the routes or airspace being used are designated as RNP 10, RNP 4, RNP 2 or other navigation specification, must comply with all requirements for those respective navigation specifications and authorisations.

16.2 Aircraft operating in oceanic/remote continental airspace must be equipped in accordance with either paragraph 16.3 or 16.4 if:

(a) the routes or airspace being used are not designated as RNP 10, RNP 4, RNP 2 or other navigation specification; and

(b) GNSS is the primary means of navigation.

16.3 An aircraft is eligible for oceanic/remote continental airspace operations where the routes or airspace being used are not designated as RNP 10, RNP 4, RNP 2 or other navigation specification if the aircraft is equipped with dual independent stand-alone GNSS that are certified by the State of Manufacture for en route operations, installed in accordance with AC 21-36( ) or FAA AC 20-138D, and compliant with:

(a) (E)TSO-C129 Class A1 or A2 and the equipment is certified as complying with the requirements of FAA Notice 8110.60; or

(b) (E)TSO-C129 Class A1 or A2 and the equipment is certified as complying with the requirements of FAA Advisory Circular 20-138D, Appendix 1; or

(c) (E)TSO-C146 Class Gamma and operational Class 1, 2 or 3; or

(d) standards that CASA considers are equivalent to the standards mentioned in subparagraph (a), (b) or (c).

16.4 An aircraft is eligible for oceanic/remote continental airspace operations where the routes or airspace being used are not designated as RNP 10, RNP 4, RNP 2 or other navigation specification if the aircraft is equipped with dual independent multi-sensor systems (for example, FMS) with GNSS equipment that is certified by the State of Manufacture for en route operations, installed in accordance with FAA AC 20-138D, and meets:

(a) the requirements of (E)TSO-C115b FMS and 1 of the following:

(i) (E)TSO-C129 ( ) sensor Class B or C and the equipment is certified as complying with the requirements of FAA Notice 8110.60;

(ii) (E)TSO-C129 ( ) sensor Class B or C and the equipment is certified as complying with the requirements of FAA Advisory Circular 20-138D Appendix 1;

(iii) (E)TSO-C145 ( ) Class Beta and operational class 1, 2 or 3;

(iv) (E)TSO-C196 ( ); or

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(b) standards that CASA considers are equivalent to the standards mentioned in subparagraph (a).

16.5 If the GNSS receiver has the capability for barometric aiding, this capability must be connected and operative.

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

17.1 While operating on, or transitioning to, conventional routes and procedures (not RNAV or RNP), provided that the requirements in Appendix 13 are complied with, operators may use a suitable GNSS-based area navigation system as either:

(a) a substitute means of navigation when a conventional navigation aid is not available, or the aircraft is not equipped with an ADF, VOR or DME or the installed ADF, VOR or DME is inoperative; or

(b) as an alternate means of navigation when a conventional navigation aid is operative and the aircraft is equipped with operative equipment that is compatible with the conventional navigation aids.

17.2 A suitable GNSS-based area navigation system may be used as a substitute or alternate to the following conventional navigation aids:

(a) VOR; or

(b) DME; or

(c) VOR/DME; or

(d) NDB; or

(e) Outer Marker; or

(f) Middle Marker.

17.3 Appendix 13 details the requirements for a suitable GNSS-based area navigation system to be used as a substitute or alternate to the conventional navigation aids listed above when an aircraft is operating in the en route, terminal operations (***SID*** or ***STAR***) or approach operations phases of flight.

17.4 Before using a GNSS-based area navigation system as a substitute or alternate to the conventional navigation aids for terminal operations (***SID*** or ***STAR***) or approach operations phases of flight, the operator or pilot must verify that:

(a) the intended waypoints or procedure(s) can be loaded from the navigation database by name in accordance with Appendix 13; and

(b) the navigation system will fly the procedure as published in the relevant State AIP.

18 MEL

The operator's MEL must identify any unserviceability that affects the conduct of any PBN operation for which the aircraft is authorised.

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Appendix 1 — Requirements for use of RNAV 5

1 RNAV 5 navigation eligibility for I.F.R. flights

1.1 RNAV 5 may only be used for PBN by an aircraft if the aircraft meets the eligibility requirements for RNAV 5 as set out in this Appendix.

Note Air routes may be designed to support RNAV 5 depending on the supporting navaid infrastructure. In Australia, as the navaid infrastructure is limited, RNAV 5 operations are typically dependent on self-contained navigation systems.

1.2 RNAV 5 may be used by an aircraft if the operator has been issued with, or is deemed to hold, an RNAV 5 navigation authorisation under Civil Aviation Order 20.91 as in force immediately before the commencement of this Order.

1.3 An aircraft to which subclause 2.1 of this Appendix applies may be considered eligible for RNAV 5 operations subject to conditions that CASA considers necessary in the interests of safety.

1.4 An aircraft using RNAV 5 must comply with the operational requirements of this Appendix.

1.5 Where an operational check, consideration, procedure or task (however described) is required under this Appendix, the operator must ensure that it is performed, given, followed or carried out, as the case may be.

Note The check, consideration, procedure or task may in practice be performed by the pilot in command, other members of the flight crew, the despatch officer or other operational personnel. However, legal responsibility for compliance is placed on the operator who must ensure that the performance occurs in accordance with his or her established procedures.

2 Application — documents

2.1 If the aircraft is not covered by subclause 1.1 or 1.2 of this Appendix, approval of an aircraft for RNAV 5 operations is required.

2.2 If subclause 2.1 applies, an operator must be able to supply to CASA at its request, in order to establish eligibility, aircraft airworthiness documents that satisfy CASA the aircraft is equipped for RNAV 5 operations, for example, the AFM, the AFMS or OEM service letters.

3 RNAV 5 system performance

3.1 For RNAV 5 eligibility, an aircraft's navigation system (the ***system***) must meet the performance, monitoring and alerting requirements for RNAV 5 operations as stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part B, Chapter 2, *Implementing RNAV 5*.

3.2 If GNSS is used for an RNAV 5 operation, positioning data from non-GNSS navigation sensors may be integrated with GNSS data if:

(a) the non-GNSS data does not cause position errors exceeding the TSE limit; or

(b) if paragraph (a) cannot be complied with — there is a means to deselect the non-GNSS inputs.

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4 RNAV 5 system functionality

4.1 For RNAV 5 eligibility, the system must meet the following minimum standards of functionality:

(a) the aircraft position relative to track must be continuously displayed on a navigation display situated in the primary field of view of the pilot flying the aircraft;

(b) where the minimum flight crew is 2 pilots, the aircraft position relative to track must also be continuously displayed on a navigation display situated in the primary field of view of the pilot not flying the aircraft;

(c) the system must display distance and bearing to the active (to) waypoint;

(d) the system must display ground-speed or time to the active (to) waypoint;

(e) the system must store at least 4 waypoints;

(f) the system must indicate failure of the system, including the sensors.

4.2 The following standards apply to navigation displays:

(a) navigation data must be available on:

(i) a display forming part of the RNAV equipment; or

(ii) a lateral deviation display, for example, CDI, (E)HSI, or a navigation map display;

(b) the display must be suitable for use:

(i) as the primary flight instrument for navigation of the aircraft; and

(ii) for manoeuvre anticipation; and

(iii) for failure, status or integrity indication;

(c) the display must be visible to the pilot when looking forward along the flight path;

(d) where a lateral deviation display is implemented, the lateral deviation display must have:

(i) scaling compatible with any alerting and annunciation limits; and

(ii) scaling and full-scale deflection suitable for RNAV 5 operations.

5 RNAV 5 equipment

5.1 For RNAV 5 eligibility, an aircraft's navigation equipment must:

(a) enable the aircraft to establish and follow a desired flight path; and

(b) automatically determine the aircraft's position in the horizontal plane using inputs from 1 or more of the following types or combinations of position sensors:

(i) VOR/DME;

(ii) DME/DME;

(iii) INS or IRS;

(iv) GNSS.

5.2 If an aircraft is not equipped with GNSS, it must, nevertheless, have the capability to satisfy the RNAV 5 inertial only time limits for any relevant route on which it is flown.

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6 Operating standards – flight planning – general

6.1 Before an RNAV 5 operation commences, proper consideration must be given to matters that may affect the safety of the operation, including the following:

(a) whether the aircraft and the flight crew have relevant authorisations for RNAV 5;

(b) whether the aircraft can be operated in accordance with the RNAV 5 requirements for:

(i) the planned route, including the route to any alternate aerodromes; and

(ii) minimum equipment requirements for the flight;

(c) whether the navaids required for the planned route are available and adequate for the period of the operation, including any non-RNAV contingencies;

(d) whether, if a navigation database is used, it is current and appropriate for the region of operation and includes the navaids and waypoints required for the route;

(e) whether operating restrictions, including time limits, apply to the operation.

6.2 If the aircraft's essential RNAV 5 equipment is functioning properly, the PBN capability of the aircraft must be indicated in the flight plan.

7 Operating standards – flight procedures – general

7.1 An RNAV 5 operation must comply with the following:

(a) the instructions and procedures of the OEM in relation to the performance requirements of RNAV 5;

(b) any AFM limitations or operating procedures required to maintain the navigation accuracy specified for RNAV 5.

7.2 The following checks and cross-checks must be made:

(a) a check that the navigation database is valid;

(b) a cross-check of the flight plan by comparing charts or other applicable resources with the navigation system flight plan and the aircraft map display (if applicable) and, if necessary, excluding specific navaids.

7.3 Flight progress must be monitored for navigational reasonableness by periodic cross-checks with conventional navaids, where available.

7.4 Subject to subclause 7.5, the aircraft must be flown to maintain the route centreline as close as practicable.

Note Piloting standards usually require the aircraft to be flown to maintain lateral deviation not exceeding half the current accuracy requirement (RNP value) or half the lateral deviation scale. Whilst this standard should be observed, pilots must also be aware that Navigation System Error + Flight Technical Error (lateral deviation) may not exceed the specified navigation accuracy.

7.5 Brief deviations from the standard mentioned in subclause 8.4 are acceptable during and immediately after turns, but only to the minimal extent that accurate cross-track information may not be provided during the turn. Unless emergency conditions exist, any other intentional deviation from the route centreline requires prior clearance from ATC.

Note Flight crew procedures and training should emphasise observance of turn anticipation commands and management of rate of turn.

7.6 If ATC issues a heading assignment taking the aircraft off a route, the navigation system flight plan may only be modified when:

(a) ATC clearance is received to rejoin the route; or

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(b) ATC confirms a new clearance.

8 Contingency procedures for performance failure

8.1 If the system performance ceases to meet RNAV 5 requirements during an RNAV 5 operation in controlled airspace, ATC must be notified immediately.

8.2 Where stand-alone GNSS or GNSS/FMS equipment is used for an RNAV 5 operation and a loss of the integrity monitoring function occurs, the following checks and procedures must be followed:

(a) while continuing to navigate using GNSS — cross-check the aircraft position with other sources of position information, for example, VOR, DME and NDB information, to confirm an acceptable level of navigation performance;

(b) if unable to confirm navigation accuracy — revert to an alternative means of navigation and advise ATC accordingly.

8.3 If:

(a) stand-alone GNSS or GNSS/FMS equipment is used for an RNAV 5 operation; and

(b) a navigation display is flagged invalid due to an integrity alert;

the aircraft must:

(c) revert to an alternative means of navigation; and

(d) ATC must be advised accordingly.

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Appendix 2 – Requirements for use of RNAV 1 and RNAV 2

1 RNAV 1 and RNAV 2 eligibility for I.F.R. flights

1.1 RNAV 1 and RNAV 2 may only be used for PBN by an aircraft if the aircraft meets the requirements for RNAV 1 and RNAV 2 as set out in this Appendix.

Note Air routes may be designed to support RNAV 1 or RNAV 2 depending on the supporting navaid infrastructure. In Australia, as the navaid infrastructure is limited, RNAV 1 and RNAV 2 operations are dependent on self-contained navigation systems.

1.2 RNAV 1 and RNAV 2 requirements are identical, however, some operating procedures may be different.

Note In Australian airspace, RNAV 1 will be used only in terminal area operations and RNAV 2 routes or procedures will not be used.

1.3 RNAV 1 and RNAV 2 may be used by an aircraft:

(a) if it meets the aircraft eligibility requirements for use of RNP 1 or RNP 2; or

(b) the operator has been issued with, or is deemed to hold, an RNAV 1 and RNAV 2 navigation authorisation under Civil Aviation Order 20.91 as in force immediately before the commencement of this Order.

1.4 An aircraft to which subclause 3.3 of this Appendix applies may be considered eligible for RNAV 1 and RNAV 2 operations subject to conditions that CASA considers necessary in the interests of safety.

1.5 An aircraft using RNAV 1 and RNAV 2 must comply with the operational requirements of this Appendix.

1.6 Where an operational check, consideration, procedure or task (however described) is required under this Appendix, the operator must ensure that it is performed, given, followed or carried out, as the case may be.

Note The check, consideration, procedure or task may in practice be performed by the pilot in command, other members of the flight crew, the despatch officer or other operational personnel. However, legal responsibility for compliance is placed on the operator who must ensure that the performance occurs in accordance with his or her established procedures.

2 Application — documents

If the aircraft is not covered by subclause 1.3 of this Appendix, approval of the aircraft for RNAV 1 and RNAV 2 operations is required. In that case, an operator must be able to supply to CASA at its request:

(a) aircraft airworthiness documents which satisfy CASA that the aircraft is equipped for RNAV 1 and RNAV 2 operations, for example, the AFM, the AFMS or OEM service letters; and

(b) a detailed description of relevant aircraft equipment for RNAV 1 and RNAV 2 operations, including a configuration list of the components and equipment; and

(c) a detailed description of the operating procedures to be used for RNAV 1 and RNAV 2 operations (including flight planning and flight procedures) supported by relevant copies of, or extracts from, the following:

(i) the checklists;

(ii) the contingency procedures;

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(iii) the QRH; and

(d) copies of the sections of the MEL applicable to RNAV 1 and RNAV 2 operations; and

(e) a detailed description of the maintenance program used to ensure the continuing airworthiness of the aircraft for RNAV 1 and RNAV 2 operations; and

(f) a detailed description of the method used to ensure the validity and continuing integrity of the airborne navigation database; and

(g) if requested in writing by CASA — a copy of any relevant document referred to in any of the documents mentioned in clauses (a) to (f).

3 Aircraft eligibility

3.1 An aircraft is eligible for RNAV 1 and RNAV 2 operations if the requirements of either subclause 3.2 or 3.3 of this Appendix are satisfied.

3.2 Subject to subclause 3.3, an aircraft is eligible for RNAV 1 and RNAV 2 operations if the operator has demonstrated to CASA that the aircraft meets the requirements of ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part B, Chapter 3, *Implementing RNAV 1 and RNAV 2*.

3.3 At least 1 of the following must apply:

(a) the aircraft's AFM, an AFMS or an OEM service letter states that the aircraft navigation system is approved for RNAV 1 and RNAV 2 operations;

(b) the aircraft's AFM, an AFMS or an OEM service letter states that the aircraft navigation system is approved for P-RNAV in accordance with JAA TGL-10, and the additional requirements for RNAV 1 and RNAV 2 are met as set out in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part B, Chapter 3, *Implementing RNAV 1 and RNAV 2* (see Table 1 below);

(c) the aircraft's AFM, an AFMS or an OEM service letter states that the aircraft navigation system is approved for US-RNAV in accordance with FAA AC 90-100A, and the additional requirements for RNAV 1 and RNAV 2 are met as set out in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part B, Chapter 3, *Implementing RNAV 1 and RNAV 2* (see Table 2 below).

3.4 The additional requirements to obtain an RNAV 1 and RNAV 2 aircraft eligibility under clause 3.3 of this Appendix beginning with either a TGL-10 or AC 90-100 approval are listed in Tables 1 and 2 below.

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Table 1 Additional requirements for obtaining an RNAV 1 and RNAV 2 approval from a TGL-10 approval

Operator has TGL-10	**Needs to confirm these performance capabilities for ICAO RNAV 1 and RNAV 2**	**Note**
If approval includes use of DME/VOR (DME/VOR may be used as the only positioning input where this is explicitly allowed.)	RNAV 1 does not accommodate any routes based on DME/VOR RNAV	RNAV system performance must be based on GNSS, DME/DME, or DME/DME/IRU. However, DME/VOR input does not have to be inhibited or deselected
If approval includes use of DME/DME	No action required if RNAV system performance meets specific navigation service criteria in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Vol II, Part B, Chapter 3, clause 3.3.3.2.2 (DME/DME only) or 3.3.3.2.3 (DME/DME/IRU)	Operator can ask manufacturer or check FAA website for list of compliant systems (see the Note below this Table)
RNAV SID specific requirement with DME/DME aircraft	RNAV guidance available no later than 500 ft above field elevation (AFE)	Operator should add these operational procedures
If approval includes use of GNSS	No action required	

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Table 2 Additional requirements for obtaining RNAV 1 and RNAV 2 approval from an AC 90-100 approval

Operator has AC 90-100	Needs to confirm these performance capabilities to ICAO RNAV 1/RNAV 2	Note
If approval is based on GNSS (TSO-C129 OR ETSO-C129)	GPS pseudo-range step detector and GPS health word checking is required in accordance with TSO C129a/ETSO C129a	The operator should check if pseudo-range step detector and health word checking is supported by the installed GPS receiver or check if GPS receiver is approved in accordance with TSO C129a/ETSO C129a
No navigation database updating process required under AC 90-100	Data suppliers and avionics data suppliers must have Letter of Acceptance (LOA) in accordance with ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Vol II, Part B, Chapter 3, clause 3.3.3.3 m)	The operator should ask the data supplier for the status of the RNAV equipment

4 RNAV 1 and RNAV 2 system performance

4.1 To establish RNAV 1 and RNAV 2 aircraft eligibility, the navigation system must meet the system performance, monitoring and alerting requirements for RNAV 1 and RNAV 2 operations as stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part B, Chapter 3, *Implementing RNAV 1 and RNAV 2*.

4.2 If GNSS is used for an RNAV 1 and RNAV 2 operation, positioning data from non-GNSS navigation sensors may be integrated with GNSS data if:

(a) the non-GNSS data does not cause position errors exceeding the TSE budget; or

(b) if paragraph (a) cannot be complied with — there is a means to deselect the non-GNSS inputs.

5 RNAV 1 and RNAV 2 system functionality

5.1 To establish RNAV 1 and RNAV 2 aircraft eligibility, the navigation system must as a minimum meet the functional requirements for navigation displays and standards stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part B, Chapter 3, *Implementing RNAV 1 and RNAV 2*.

5.2 Baro-VNAV authorised in accordance with Appendix 8 may be used in conjunction with RNAV 1 under this Appendix.

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6 Operating standards – flight planning – general

6.1 Before an RNAV 1 and RNAV 2 operation commences, consideration must be given to matters that may affect the safety of the RNAV 1 and RNAV 2 operation, including the following:

(a) whether the aircraft and the flight crew have relevant authorisations for RNAV 1 and RNAV 2;

(b) whether the aircraft can be operated in accordance with the RNAV 1 and RNAV 2 requirements for:

(i) the planned route, including the route to any alternate aerodromes; and

(ii) minimum equipment requirements for the flight;

(c) whether the navaids (if any) required for the planned route are available and adequate for the period of the operation, including any non-RNAV contingencies;

(d) whether the navigation database is current and appropriate for the region of operation and includes the navaids and waypoints required for the route;

(e) for navigation relying on DME — whether operating procedures properly require the pilot in command:

(i) to check NOTAMs to verify the condition of critical DMEs; and

(ii) to consider his or her capability to navigate (including to an alternate destination) in the case of a failure of a critical DME while airborne;

(f) whether operating restrictions, including time limits, apply to the operation.

6.2 If the aircraft's essential RNAV 1 and RNAV 2 equipment is functioning properly, the PBN capability of the aircraft must be indicated in the flight plan.

7 Operating standards – flight procedures – general

7.1 An RNAV 1 and RNAV 2 operation must comply with the instructions and procedures of the OEM in relation to the performance requirements of RNAV 1 and RNAV 2.

7.2 At system initialisation, the following must occur:

(a) confirmation that the navigation database is current;

(b) verification that the aircraft position has been entered correctly;

(c) verification of proper entry of the ATC-assigned route immediately after initial clearance from ATC to conduct the relevant RNAV route;

(d) action to ensure the waypoints sequence, depicted by the navigation system, matches the route depicted on the appropriate charts and the assigned route.

7.3 The following steps must occur:

(a) selection of an RNAV 1 or RNAV 2 SID or STAR by route name from the on-board navigation database;

(b) confirmation that the selected route conforms to the charted route, or the route as modified through the insertion or deletion of specific waypoints in response to ATC clearances.

7.4 Except in response to ATC clearances, the following must not occur:

(a) creation of new waypoints by manual entry; or

(b) making manual entry of latitude, longitude or rho/theta values; or

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(c) changing an RNAV SID or STAR database waypoint type from a fly-by to a flyover or vice versa.

Note Wherever possible, the pilot in command should extract RNAV 1 and RNAV 2 routes in the en route domain from the database in their entirety rather than load individual waypoints from the database into the navigation system flight plan. The pilot in command may, however, select and insert individual, named fixes and waypoints from the navigation database, provided all fixes along the published route to be flown are inserted.

7.5 The following checks and cross-checks must be made:

(a) a cross-check of the flight plan by comparing charts or other applicable resources with the navigation system flight plan and the aircraft map display (if applicable);

(b) if required, confirm the exclusion of specific navaids.

Note Small differences between charted navigation information and displayed navigation data may be noted. Differences of 3 degrees or less due to the equipment manufacturer's application of magnetic variation or leg track averaging are operationally acceptable.

7.6 Flight progress must be monitored for navigational reasonableness by periodic cross-checks with available data from ground-based aids, if available.

7.7 For RNAV 1 routes, a lateral deviation indicator, flight director or autopilot in LNAV mode must be used.

Note For RNAV 2 routes, a lateral deviation indicator, flight director or autopilot in the LNAV mode is recommended. In lieu of a lateral deviation indicator, a navigation map display with equivalent functionality to a lateral deviation indicator is recommended.

7.8 Where a lateral deviation indicator is used, scaling must be selected suitable for the navigation accuracy associated with the route or procedure, for example, full scale deflection ±1 NM for RNAV 1, ±2 NM for RNAV 2, or ±5 NM for (E)TSO-C129 ( ) equipment on RNAV 2 routes.

7.9 Route centrelines must be maintained as close as practicable, as depicted by lateral deviation indicators or flight guidance, unless authorised to deviate by ATC or under emergency conditions. Navigation System Error + Flight Technical Error (lateral deviation) must not exceed the specified navigation accuracy.

7.10 Brief deviations from the standard mentioned in subclause 7.9 of this Appendix are acceptable during and immediately after turns, but only to the minimal extent that accurate cross-track information may not be provided during the turn.

7.11 If ATC issues a heading assignment taking the aircraft off a route, the navigation system flight plan may only be modified when:

(a) ATC clearance is received to rejoin the route; or

(b) ATC confirms a new clearance.

8 Operating standards – flight procedures – RNAV SID requirements

8.1 Before an eligible aircraft takes-off, the following RNAV SID requirements must be verified:

(a) that the aircraft's RNAV system is available, is operating correctly and the correct aerodrome and runway data is loaded;

(b) that the correct runway and departure procedure (including any applicable en route transition) is entered in the navigation system flight plan and properly depicted;

8.2 RNAV guidance must be selected and available to provide flight guidance for lateral RNAV at no later than 153 m (or 500 ft) above the aerodrome field elevation.

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8.3 For an RNAV 1 operation, an authorised method must be used to achieve an appropriate level of performance, for example, lateral deviation indicator, flight director or autopilot.

8.4 For operations without GNSS using DME/DME/IRU, the aircraft navigation system position must be confirmed within 304 m (or 1 000 ft) of a known position, at the starting point of the take-off roll.

8.5 When the aircraft is using GNSS, the signal must be acquired before the take-off roll commences.

9 Operating standards – flight procedures – RNAV STAR requirements

9.1 The following must be checked and confirmed for RNAV STAR:

(a) that the aircraft navigation system is operating correctly;

(b) that the correct arrival procedure and runway (including any applicable transition) are entered in the navigation system flight plan and properly depicted.

9.2 A route is not to be used if doubt exists as to its validity in the navigation database.

9.3 No member of the flight crew may create a new waypoint by manual entry into the RNAV system.

9.4 If the operator's contingency procedures require reversion to a conventional arrival route, provision for that arrival route must be made before commencement of the RNAV STAR.

9.5 Route modifications in the terminal area may take the form of radar headings or "direct to" clearances and may require the insertion of tactical waypoints from the navigation database. However, no member of the flight crew may make a manual entry or modification of the loaded route using temporary waypoints or fixes not contained in the database.

9.6 All relevant published altitude and speed constraints must be observed.

10 Contingency procedures for performance failure

ATC must be notified immediately if the system performance ceases to meet RNAV 1 and RNAV 2 requirements (as applicable) during an RNAV 1 and RNAV 2 operation in controlled airspace.

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Appendix 3 — Requirements for use of RNP 2

1 Eligibility for RNP 2 I.F.R. flights

1.1 RNP 2 navigation may only be used for PBN by an aircraft that meets the requirements of this Appendix.

1.2 RNP 2 may only be used for PBN by an aircraft that has GNSS as the primary navigation sensor.

1.3 RNP 2 may be used by an aircraft:

(a) if it meets the aircraft eligibility requirements for use of RNP 1 or an RNP APCH or RNP AR navigation authorisation; or

(b) the operator has been issued with, or is deemed to hold, an RNP 2 navigation authorisation under Civil Aviation Order 20.91 as in force immediately before the commencement of this Order.

1.4 An aircraft to which subclause 3.3 of this Appendix applies may be considered eligible for RNP 2 operations subject to conditions that CASA considers necessary in the interests of safety.

1.5 The applicable operational requirements of this Appendix must be complied with by an aircraft using RNP 2.

1.6 It is a condition of the issue of a navigation authorisation that where an operational check, consideration, procedure or task (however described) is required under this Appendix, the operator must ensure that it is performed, given, followed or carried out, as the case may be.

Note The check, consideration, procedure or task may in practice be performed by the pilot in command, other members of the flight crew, the despatch officer or other operational personnel. However, legal responsibility for compliance is placed on the operator who must ensure that the performance occurs in accordance with his or her established procedures.

2 Application — documents

If the aircraft does not comply with subclauses 1.1 and 1.2 or subclause 1.3 of this Appendix, approval of the aircraft for RNP 2 operations is required. In that case, an operator must be able to supply to CASA at its request:

(a) aircraft airworthiness documents which satisfy CASA that the aircraft is equipped for RNP 2 operations, for example, the AFM, the AFMS or OEM service letters; and

(b) a detailed description of relevant aircraft equipment for RNP 2 operations, including a configuration list of the components and equipment; and

(c) a detailed description of the operating procedures to be used for RNP 2 operations (including flight planning and flight procedures) supported by relevant copies of, or extracts from, the following:

(i) the checklists;

(ii) the contingency procedures;

(iii) the QRH; and

(d) copies of the sections of the MEL applicable to RNP 2 operations; and

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(e) a detailed description of the maintenance program used to ensure the continuing airworthiness of the aircraft for RNP 2 operations; and

(f) a detailed description of the method used to ensure the validity and continuing integrity of the airborne navigation database; and

(g) if requested in writing by CASA — a copy of any relevant document referred to in any of the documents mentioned in paragraphs (a) to (f).

3 Aircraft eligibility

3.1 An aircraft is eligible for RNP 2 operations if subclause 3.2, 3.3, 3.4 or 3.5 of this Appendix is satisfied.

3.2 The aircraft's AFM, AFMS or OEM service letter must state that the aircraft navigation system is approved for RNP 2 operations.

3.3 An aircraft is eligible for RNP 2 operations if the aircraft is equipped with a stand-alone GNSS that is certified by the manufacturer for en route operations, installed in accordance with AC 21-36 ( ), and compliant with:

(a) (E)TSO-C129 ( ) Class A1 or A2; or

(b) (E)TSO-C146 Class Gamma and operational Class 1, 2 or 3; or

(c) standards that CASA considers are equivalent to the standards mentioned in paragraph (a) or (b).

3.4 An aircraft is eligible for RNP 2 operations if the aircraft is equipped with a multi-sensor system (for example, FMS) with GNSS equipment that is certified by the manufacturer for en route operations, installed in accordance with AC 21-37 (0), and meets:

(a) the requirements of TSO-C115b FMS or ETSO-C115b FMS, and 1 of the following:

(i) (E)TSO-C129 sensor Class B or C;

(ii) (E)TSO-C145 Class Beta and operational Class 1, 2 or 3;

(iii) (E)TSO-C196; or

(b) standards that CASA considers are equivalent to the standards mentioned in paragraph (a).

3.5 An aircraft is eligible for RNP 2 operations if the operator has demonstrated to CASA that the aircraft meets the requirements of ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 2, *Implementing RNP 2*.

4 RNP 2 system performance

4.1 To meet the requirements of clause 3 of this Appendix, the system must meet the performance, monitoring and alerting requirements for RNP 2 operations as stated in ICAO Doc. 9613, *Performance-based Navigation* (*PBN*) *Manual*, Volume II, Part C, Chapter 2, *Implementing RNP 2*.

4.2 Positioning data from non-GNSS navigation sensors may be integrated with GNSS data if:

(a) the non-GNSS data does not cause position errors exceeding the TSE limit; or

(b) if paragraph (a) does not apply — there is a means to deselect the non-GNSS inputs.

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5 RNP 2 system functionality

5.1 To meet the requirements of clause 3 of this Appendix, the system must as a minimum meet the standards of functionality stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual,* Volume II, Part C, Chapter 2, *Implementing RNP 2*.

5.2 An aircraft conducting RNP 2 operations in oceanic or remote airspace must be equipped with appropriate dual, independent, serviceable LRNS.

5.3 An aircraft conducting RNP 2 operations in continental en route airspace must be equipped with at least an appropriate single GNSS RNAV system, provided that an alternative means of navigation is available if required for the class of operation.

5.4 FRT authorised in accordance with Appendix 11 may be used in conjunction with this Appendix.

5.5 If FRT are authorised for use in conjunction with this Appendix, the aircraft must be equipped with a map display depicting the computed flight path of the aircraft.

6 Operating standards – flight planning – general

6.1 Before an RNP 2 operation commences, consideration must be given to matters that may affect the safety of the operation, including the following:

(a) whether the aircraft and the flight crew have relevant authorisations for RNP 2;

(b) whether the aircraft can be operated in accordance with the RNP 2 requirements for:

(i) the planned route, including the route to any alternate aerodromes; and

(ii) minimum equipment requirements for the flight;

(c) whether, the navigation database is current and appropriate for the region of operation and includes the navaids and waypoints required for the route;

(d) whether operating restrictions, including time limits, apply to the operation.

6.2 If the aircraft's essential RNP 2 equipment is functioning properly, the PBN capability of the aircraft must be indicated in the flight plan.

7 Operating standards – flight procedures – general

7.1 An RNP 2 operation must comply with the instructions and procedures of the OEM in relation to the performance requirements of RNP 2.

7.2 At system initialisation, the following must occur:

(a) confirmation that the navigation database is current;

(b) verification of proper entry of the ATC-assigned route immediately after initial clearance from ATC to conduct the relevant RNAV route;

(c) action to ensure the waypoints sequence, depicted by the navigation system, matches the route depicted on the appropriate charts and the assigned route.

7.3 The following checks and cross-checks must be made:

(a) a cross-check of the flight plan by comparing charts or other applicable resources with the navigation system flight plan and the aircraft map display (if applicable);

(b) if required, confirm the exclusion of specific navaids.

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Note Small differences between charted navigation information and displayed navigation data may be noted. Differences of 3 degrees or less due to the equipment manufacturer's application of magnetic variation or leg track averaging are operationally acceptable.

7.4 During flight, as far as practicable, navigation reasonableness must be periodically confirmed by cross-reference to available data from ground-based aids, if available.

7.5 For RNP 2 routes, 1 or more of the following must be used:

(a) subject to subclause 7.6 of this Appendix, a lateral deviation indicator;

(b) a flight director; or

(c) an autopilot in the lateral deviation mode.

7.6 A navigation map display may be used instead of a lateral deviation indicator, if the navigation map display has functionality equivalent to a lateral deviation indicator as described in ICAO Doc. 9613, *Performance-based Manual* (*PBN*), Volume II, Part C, Chapter 2, *Implementing RNP 2*.

7.7 Where a lateral deviation indicator is used, scaling must be selected suitable for the navigation accuracy associated with the route or procedure, for example:

(a) full scale deflection ±2 NM; or

(b) on an RNP 2 route using a lateral deviation indicator that complies with (E)TSO-C129 ( ) — full scale deflection ±5 NM.

7.8 Route centrelines must be maintained as close as practicable, as depicted by lateral deviation indicators or flight guidance, unless authorised to deviate by ATC or under emergency conditions. Navigation System Error + Flight Technical Error (lateral deviation) must not exceed the specified navigation accuracy

7.9 Brief deviations from the standard mentioned in subclause 7.8 of this Appendix are acceptable during and immediately after turns, but only to the minimal extent that accurate cross-track information may not be provided during the turn.

7.10 If ATC issues a heading assignment taking the aircraft off a route, the navigation system flight plan may only be modified when:

(a) ATC clearance is received to rejoin the route; or

(b) ATC confirms a new clearance.

8 Contingency procedures for performance failure

ATC must be notified immediately if the system performance ceases to meet RNP 2 requirements during an RNP 2 operation in controlled airspace.

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Appendix 4 — Requirements for use of RNP 1

1 Eligibility for RNP 1 I.F.R. flights

1.1 RNP 1 may only be used for PBN by an aircraft that meets the requirements of this Appendix.

1.2 RNP 1 may only be used for PBN by an aircraft that has GNSS as the primary navigation sensor.

1.3 RNP 1 may be used by an aircraft which meets the aircraft eligibility requirements for an RNP APCH or RNP AR navigation authorisation.

1.4 RNP 1 may be used by an aircraft if the operator has been issued with, or is deemed to hold, an RNP 1 navigation authorisation under Civil Aviation Order 20.91 as in force immediately before the commencement of this Order.

1.5 An aircraft to which clause 3.3 applies may be considered eligible for RNP 1 operations subject to conditions that CASA considers necessary in the interests of safety.

1.6 The applicable operational requirements of this Appendix must be complied with by an aircraft using RNP 1.

1.7 It is a condition of the issue of a navigation authorisation that where an operational check, consideration, procedure or task (however described) is required under this Appendix, the operator must ensure that it is performed, given, followed or carried out, as the case may be, by a person holding a relevant authorisation, if required.

Note The check, consideration, procedure or task may in practice be performed by the pilot in command, other members of the flight crew, the despatch officer or other operational personnel. However, legal responsibility for compliance is placed on the operator who must ensure that the performance occurs in accordance with his or her established procedures.

2 Application — documents

If the aircraft does not comply with subclauses 1.1 and 1.2 or subclause 1.3 or 1.4 of this Appendix, approval of the aircraft for RNP 1 operations is required. In that case, an operator must be able to supply to CASA at its request:

(a) aircraft airworthiness documents which satisfy CASA that the aircraft is equipped for RNP 1 operations, for example, the AFM, the AFMS or OEM service letters; and

(b) a detailed description of relevant aircraft equipment for RNP 1 operations, including a configuration list of the components and equipment; and

(c) a detailed description of the operating procedures to be used for RNP 1 operations (including flight planning and flight procedures) supported by relevant copies of, or extracts from, the following:

(i) the checklists;

(ii) the contingency procedures;

(iii) the QRH; and

(d) copies of the sections of the MEL applicable to RNP 1 operations; and

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(e) a detailed description of the maintenance program used to ensure the continuing airworthiness of the aircraft for RNP 1 operations; and

(f) a detailed description of the method used to ensure the validity and continuing integrity of the airborne navigation database; and

(g) if requested in writing by CASA — a copy of any relevant document referred to in any of the documents mentioned in paragraphs (a) to (f).

3 Aircraft eligibility

3.1 An aircraft is eligible for RNP 1 operations if the requirements of either subclause 3.2 or 3.3 of this Appendix are satisfied.

3.2 The aircraft's AFM, an AFMS or an OEM service letter states that the aircraft navigation system is approved for RNP 1 operations.

Note For subclause 3.2, an AFM or AFMS may state that the aircraft is approved for GPS RNAV TERMINAL operations.

3.3 An aircraft is eligible for RNP 1 operations if the operator has demonstrated to CASA that the aircraft meets the requirements of ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual,* Volume II, Part C, Chapter 3, *Implementing RNP 1*.

4 RNP 1 system performance

4.1 To meet the requirements of clause 3 of this Appendix, the system must meet the performance, monitoring and alerting requirements for RNP 1 operations as stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual,* Volume II, Part C, Chapter 3, *Implementing RNP 1*.

4.2 Positioning data from non-GNSS navigation sensors may be integrated with GNSS data if:

(a) the non-GNSS data does not cause position errors exceeding the TSE budget; or

(b) if paragraph (a) does not apply — there is a means to deselect the non-GNSS inputs.

5 RNP 1 system functionality

5.1 To meet the requirements of clause 3 of this Appendix, the system must as a minimum meet the standards of functionality stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual,* Volume II, Part C, Chapter 3, *Implementing RNP 1*.

5.2 Baro-VNAV authorised in accordance with Appendix 8 may be used in conjunction with [RNP 1 under] this Appendix.

5.3 Radius to Fix Path Terminators (***RF Legs***) authorised in accordance with Appendix 10 of this order may be used in conjunction with this Appendix.

5.4 If RF Legs are authorised for use in conjunction with this Appendix, the aircraft must be equipped with a map display that depicts the computed aircraft flight path.

6 Operating standards – flight planning – general

6.1 Before an RNP 1 operation commences, consideration must be given to matters that may affect the safety of the operation, including the following:

(a) whether the aircraft and the flight crew have relevant authorisations for RNP 1;

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(b) whether the aircraft can be operated in accordance with the RNP 1 requirements for:

(i) the planned route, including the route to any alternate aerodromes; and

(ii) minimum equipment requirements for the flight;

(c) whether the navigation database is current and appropriate for the region of operation and includes the navaids and waypoints required for the route;

(d) whether operating restrictions, including time limits, apply to the operation.

6.2 If the aircraft's essential RNP 1 equipment is functioning properly, the PBN capability of the aircraft must be indicated in the flight plan.

7 Operating standards – flight procedures – general

7.1 An RNP 1 operation must comply with the instructions and procedures of the OEM in relation to the performance requirements of RNP 1.

7.2 At system initialisation, the following must occur:

(a) confirmation that the navigation database is current;

(b) verification of proper entry of the ATC-assigned route immediately after initial clearance from ATC to conduct the relevant RNAV route;

(c) action to ensure the waypoints sequence, depicted by the navigation system, matches the route depicted on the appropriate charts and the assigned route.

7.3 The following steps must occur:

(a) selection of an RNP 1 SID or STAR by route name from the on-board navigation database;

(b) confirmation that the selected route conforms to the charted route or the route as modified through the insertion or deletion of specific waypoints in response to ATC clearances.

7.4 The following must not occur:

(a) creation of new waypoints by manual entry; or

(b) making manual entry of latitude, longitude or rho/theta values; or

(c) changing an RNAV SID or STAR database waypoint type from a fly-by to a flyover or vice versa.

7.5 The following checks and cross-checks must be made:

(a) a cross-check of the flight plan by comparing charts or other applicable resources with the navigation system flight plan and the aircraft map display (if applicable);

(b) if required, confirm the exclusion of specific navaids.

Note Small differences between charted navigation information and displayed navigation data may be noted. Differences of 3 degrees or less due to the equipment manufacturer's application of magnetic variation or leg track averaging are operationally acceptable.

7.6 For RNP 1 routes, a lateral deviation indicator, flight director or autopilot in LNAV mode must be used.

Note Examples of a lateral deviation indicator include CDI and HSI.

7.7 Where a lateral deviation indicator is used, scaling must be selected suitable for the navigation accuracy associated with the route or procedure, for example, full scale deflection ±1 NM.

7.8 Route centrelines must be maintained as close as practicable, as depicted by lateral deviation indicators or flight guidance, unless authorised to deviate by ATC or under emergency conditions. Navigation System Error + Flight

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Technical Error (lateral deviation) must not exceed the specified navigation accuracy.

7.9 Brief deviations from the standard mentioned in subclause 7.8 of this Appendix are acceptable during and immediately after turns, but only to the minimal extent that accurate cross-track information may not be provided during the turn.

Note Flight crew procedures and training should emphasise observance of turn anticipation commands and management of rate of turn.

7.10 If ATC issues a heading assignment taking the aircraft off a route, the navigation system flight plan may only be modified when:

(a) ATC clearance is received to rejoin the route; or

(b) ATC confirms a new clearance.

8 Operating standards – flight procedures – RNAV SID requirements

8.1 Before an eligible aircraft takes-off, the following RNAV SID requirements must be verified:

(a) that the aircraft's RNP system is available, is operating correctly and the correct aerodrome and runway data is loaded;

(b) that the correct runway and departure procedure (including any applicable en route transition) is entered in the navigation system flight plan and properly depicted;

8.2 The operator must ensure that each member of the flight crew is aware of the functional limitations of relevant RNP systems and the correct application of manual tracking procedures for path following.

8.3 RNAV guidance must be selected and available to provide flight guidance for lateral RNAV at no later than 153 m (or 500 ft) above the aerodrome field elevation.

Note The altitude at which RNAV guidance begins on a given route may be higher, for example, "climb to 304 m (or 1 000 ft), then direct to X….".

8.4 For an RNP 1 operation, an authorised method must be used to achieve an appropriate level of performance for RNP 1, for example, lateral deviation indicator, navigation map display, flight director or autopilot.

8.5 The GNSS signal must be acquired before the take-off roll commences.

8.6 For aircraft using (E)TSO-C129a equipment, the departure aerodrome must be loaded into the flight plan in order to achieve the appropriate navigation system monitoring and sensitivity.

8.7 For aircraft using (E)TSO-C146a equipment, if the departure begins at a runway waypoint, then the departure aerodrome does not need to be in the flight plan to obtain appropriate monitoring and sensitivity.

9 Operating standards – flight procedures – RNAV STAR requirements

9.1 The following must be checked and confirmed for RNAV STAR:

(a) that the aircraft navigation system is operating correctly;

(b) that the correct arrival procedure and runway (including any applicable transition) are entered in the system and properly depicted.

9.2 The operator must ensure that updating will exclude a particular navaid, if so required by a route.

9.3 A route is not to be used if doubt exists as to its validity in the navigation database.

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9.4 If the operator's contingency procedures require reversion to a conventional arrival route, provision for that arrival route must be made before commencement of the RNAV STAR.

9.5 Route modifications in the terminal area may take the form of radar headings or "direct to" clearances and may require the insertion of tactical waypoints from the navigation database. However, no member of the flight crew may make a manual entry or modification of the loaded route using temporary waypoints or fixes not contained in the database.

10 Contingency procedures for performance failure

ATC must be notified immediately if the system performance ceases to meet RNP 1 requirements during an RNP 1 operation in controlled airspace.

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Appendix 5 – Requirements for use of RNP 0.3

1 RNP 0.3 navigation authorisation for I.F.R. flights

1.1 The RNP 0.3 navigation specification was developed specifically for helicopter operations in metropolitan areas and for offshore support, including Point-in-Space (PINS) arrival and departure operations. This navigation specification addresses en route, terminal and approach operations using RNP 0.3 for all phases of flight. Fixed-wing aircraft that operate at speeds similar to helicopters are eligible for an RNP 0.3 navigation authorisation provided they meet all the requirements specified in this Appendix.

1.2 RNP 0.3 may only be used for PBN by an aircraft if the operator has an RNP 0.3 navigation authorisation in writing from CASA.

1.3 An operator may fly on a route, or in airspace designated as RNP 0.3, only if the operator holds an RNP 0.3 navigation authorisation.

1.4 RNP 0.3 requires GNSS approved to (E)TSO-C145, (E)TSO-C146 or (E)TSO-C196 as the primary navigation sensor.

1.5 An RNP 0.3 navigation authorisation may only be issued to an operator who:

(a) applies in writing to CASA for it; and

(b) supplies the documents mentioned in clause 2 of this Appendix; and

(c) satisfies CASA that RNP 0.3 operations can, and are likely to continue to, meet the requirements of this Appendix, including in relation to:

(i) aircraft eligibility; and

(ii) RNP 0.3 equipment, system performance and system functionality; and

(iii) operating standards, including flight planning and flight procedures; and

(iv) approved flight crew training referred to in clause 11; and

(v) MEL procedures; and

(vi) aircraft and RNP system maintenance; and

(vii) validity and continuing integrity of the airborne navigation database (if carried); and

(viii) navigation error reporting procedures.

1.6 An RNP 0.3 navigation authorisation may not be issued unless the aircraft meets the requirements of this Appendix.

1.7 An RNP 0.3 navigation authorisation may be issued subject to conditions if CASA considers this is necessary in the interests of safety.

1.8 It is a condition of the issue of a navigation authorisation that the applicable operational requirements of this Appendix are complied with after the issue of the authorisation.

1.9 It is a condition of the issue of a navigation authorisation that where an operational check, consideration, procedure or task (however described) is required under this Appendix, the operator must ensure that it is performed, given, followed or carried out, as the case may be.

Note The check, consideration, procedure or task may in practice be performed by the pilot in command, other members of the flight crew, the despatch officer or other operational personnel. However, legal responsibility for compliance is placed on the operator who must ensure that the performance occurs in accordance with his or her established procedures.

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2 Application — documents

The application must be made on the approved form and be accompanied by the following documents:

(a) aircraft airworthiness documents which satisfy CASA that the aircraft is equipped for RNP 0.3 operations, for example, the AFM, the AFMS or OEM service letters;

(b) a detailed description of relevant aircraft equipment for RNP 0.3 operations, including a configuration list of the components and equipment;

(c) a detailed description of the proposed flight crew training for RNP 0.3 operations, including a copy of the training syllabus for approval by CASA;

(d) a detailed description of the operating procedures to be used for RNP 0.3 operations (including flight planning and flight procedures) supported by relevant copies of, or extracts from, the following:

(i) the operations manual;

(ii) the checklists;

(iii) the contingency procedures;

(iv) the QRH;

(e) copies of the sections of the MEL applicable to RNP 0.3 operations;

(f) a detailed description of the maintenance program used to ensure the continuing airworthiness of the aircraft for RNP 0.3 operations;

(g) a detailed description of the method used to ensure the validity and continuing integrity of the airborne navigation database;

(h) if requested in writing by CASA — a copy of any relevant document referred to in any of the documents mentioned in paragraphs (a) to (g).

3 Aircraft eligibility

3.1 The aircraft is eligible for RNP 0.3 operations if the aircraft meets the requirements of subclause 3.2 or 3.3 of this Appendix.

3.2 An aircraft is eligible for RNP 0.3 operations if the operator has demonstrated to CASA that the aircraft meets the requirements of ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual,* Volume II, Part C, Chapter 7, *Implementing RNP 0.3*.

Note The system performance and functional requirements for RNP 0.3 operations are replicated in clauses 4 and 5 below.

3.3 An aircraft is eligible for RNP 0.3 operations if the aircraft's AFM, an AFMS or an OEM service letter states that the aircraft navigation system is approved for RNP 0.3 operations.

4 RNP 0.3 system performance

4.1 To meet the requirements of clause 3 of this Appendix, the system must meet the performance, monitoring and alerting requirements for RNP 0.3 operations as stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 7, *Implementing RNP 0.3*.

4.2 Positioning data from non-GNSS navigation sensors may be integrated with GNSS data if:

(a) the non-GNSS data does not cause position errors exceeding the TSE budget; or

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(b) if paragraph (a) does not apply — there is a means to deselect the non-GNSS inputs.

5 RNP 0.3 system functionality

5.1 To meet the requirements of clause 3 of this Appendix, the system must as a minimum meet the standards of functionality stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual,* Volume II, Part C, Chapter 7, *Implementing RNP 0.3*.

5.2 Baro-VNAV authorised in accordance with Appendix 8 may be used in conjunction with RNP 0.3 under this Appendix provided that the GNSS is:

(a) (E)TSO-C145 ( ) and authorised for Class Beta and operational Class 2 or 3; or

(b) (E)TSO-C146 ( ) and authorised for Class Gamma and operational Class 2 or 3; or

(c) (E)TSO-C196 ( ).

5.3 Radius to Fix Path Terminators (***RF Legs***) authorised in accordance with Appendix 10 may be used in conjunction with RNP 0.3 under this Appendix.

5.4 If RF Legs are authorised for use in conjunction with RNP 0.3 under this Appendix, the aircraft must be equipped with a map display that depicts the computed aircraft flight path.

6 Operating standards – flight planning – general

6.1 Before an RNP 0.3 operation commences, consideration must be given to matters that may affect the safety of the operation, including the following:

(a) whether the aircraft and the flight crew have relevant authorisations for RNP 0.3;

(b) whether the aircraft can be operated in accordance with the RNP 0.3 requirements for:

(i) the planned route, including the route to any alternate aerodromes; and

(ii) minimum equipment requirements for the flight;

(c) whether the navaids required for the planned route are available and adequate for the period of the operation, including any non-RNAV contingencies;

(d) whether the navigation database is current and appropriate for the region of operation and includes the navaids and waypoints required for the route;

(e) whether operating restrictions, including time limits, apply to the operation.

6.2 If the aircraft's essential RNP 0.3 equipment is functioning properly, the PBN capability of the aircraft must be indicated in the flight plan.

7 Operating standards – flight procedures – general

7.1 An RNP 0.3 operation must comply with the instructions and procedures of the OEM in relation to the performance requirements of RNP 0.3.

7.2 At system initialisation, the following must occur:

(a) confirmation that the navigation database is current;

(b) verification of proper entry of the ATC-assigned route immediately after initial clearance from ATC to conduct the relevant RNP route;

(c) action to ensure the waypoints sequence, depicted by the navigation system, matches the route depicted on the appropriate charts and the assigned route.

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7.3 The following steps must occur:

(a) selection of an RNP 0.3 SID or STAR by route name from the on-board navigation database;

(b) confirmation that the selected route conforms to the charted route, or the route as modified through the insertion or deletion of specific waypoints in response to ATC clearances.

7.4 Except in response to ATC clearances, the following must not occur:

(a) creation of new waypoints by manual entry; or

(b) making manual entry of latitude, longitude or rho/theta values; or

(c) changing an RNAV SID or STAR database waypoint type from a fly-by to a flyover or vice versa.

7.5 The following checks and cross-checks must be made:

(a) a cross-check of the flight plan by comparing charts or other applicable resources with the navigation system flight plan and the aircraft map display (if applicable);

(b) if required, confirm the exclusion of specific navaids.

Note Small differences between charted navigation information and displayed navigation data may be noted. Differences of 3 degrees or less due to the equipment manufacturer's application of magnetic variation or leg track averaging are operationally acceptable.

7.6 For RNP 0.3 routes, a lateral deviation indicator, flight director or autopilot in LNAV mode must be used. If the aircraft is approved for RF Legs, the map display under subclause 5.4 must be in accordance with Appendix 10.

Note Examples of a lateral deviation indicator include CDI and HSI.

7.7 Where a lateral deviation indicator is used, scaling must be selected suitable for the navigation accuracy associated with the route or procedure, but not greater than a full scale deflection ±0.3 NM.

7.8 Route centrelines must be maintained as close as practicable, as depicted by lateral deviation indicators or flight guidance, unless authorised to deviate by ATC or under emergency conditions NSE + FTE (lateral deviation) must not exceed the specified navigation accuracy.

7.9 Brief deviations from the standard mentioned in subclause 7.8 of this Appendix are acceptable during and immediately after turns, but only to the minimal extent that accurate cross-track information may not be provided during the turn.

Note Flight crew procedures and training must emphasise observance of turn anticipation commands and management of rate of turn.

7.10 If ATC issues a heading assignment taking the aircraft off a route, the navigation system flight plan may only be modified when:

(a) ATC clearance is received to rejoin the route; or

(b) ATC confirms a new clearance.

7.11 Manually selecting aircraft bank limiting functions may reduce the aircraft's ability to maintain its desired track and is not recommended. The pilot should recognise manually selectable aircraft bank-limiting functions might reduce ability to satisfy path requirements of the procedure, especially when executing large angle turns. This should not be construed as a requirement to deviate from FM procedures; rather, pilots should be encouraged to avoid the selection of such functions except where needed for flight safety reasons.

7.12 If the navigation system does not automatically retrieve and set the navigation accuracy from the on-board navigation database for each leg segment of a route

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or procedure, the flight crew's operating procedures must ensure the RNP 0.3 navigation accuracy for the route or procedure is manually entered into the RNP system.

8 Operating standards – flight procedures – RNP SID requirements

8.1 Before an eligible aircraft takes-off, the following RNP SID requirements must be verified:

(a) that the aircraft's RNP system is available, is operating correctly and the correct aerodrome and runway data is loaded;

(b) that the aircraft navigation system is operating correctly;

(c) that the correct aerodrome/heliport and departure procedure (including any applicable en route transition) is entered in the navigation system flight plan and properly depicted;

(d) that, if an RNP departure procedure is assigned and the runway, procedure or transition is subsequently changed, the appropriate changes are entered in the navigation system flight plan, properly depicted and available for navigation.

Note It is recommended that, within the constraints of normal operations, there be a final check of proper runway entry and correct route depiction, shortly before take-off.

8.2 The operator must ensure that each member of the flight crew is aware of the functional limitations of relevant RNP systems and the correct application of manual tracking procedures.

8.3 The flight guidance system must be selected and available to provide flight guidance for lateral navigation no later than the first waypoint defining a procedure requiring RNP 0.3 in accordance with this Appendix.

8.4 For an RNP 0.3 operation, an authorised method must be used to achieve an appropriate level of performance for RNP 0.3, for example, lateral deviation indicator, navigation map display, flight director or autopilot.

8.5 The GNSS signal must be acquired before take-off.

9 Operating standards – flight procedures – RNP STAR requirements

9.1 The following must be checked and confirmed for RNP STAR:

(a) that the aircraft navigation system is operating correctly;

(b) that the correct arrival procedure and aerodrome/heliport (including any applicable transition) are entered in the system and properly depicted.

9.2 The following must be checked and confirmed:

(a) the active navigation system flight plan, by comparing the charts with the navigation displays;

(b) the sequence of waypoints;

(c) the reasonableness of track angles;

(d) distances, altitude or speed constraints;

(e) as far as practicable, which waypoints are fly-by and which are flyover;

(f) which waypoints represent the beginning or end of a radius-to-fix leg segment.

9.3 The operator must ensure that updating will exclude a particular navaid, if so required by a route.

9.4 A route is not to be used if doubt exists as to its validity in the navigation database.

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9.5 No member of the flight crew may create a new waypoint by manual entry into the RNP system.

9.6 If the operator's contingency procedures require reversion to a conventional arrival route, provision for that arrival route must be made before commencement of the RNP STAR.

9.7 Route modifications in the terminal area may take the form of radar headings or "direct to" clearances and may require the insertion of tactical waypoints from the navigation database. However, no member of the flight crew may make a manual entry or modification of the loaded route using temporary waypoints or fixes not contained in the database.

9.8 All relevant published altitude and speed constraints must be observed.

10 Contingency procedures for performance failure

ATC must be notified immediately if the system performance ceases to meet RNP 0.3 requirements during an RNP 0.3 operation in controlled airspace.

11 Flight crew knowledge and training

11.1 An RNP 0.3 operation may only be commenced if each member of the flight crew has sufficient knowledge of the following subjects:

(a) the meaning and proper use of aircraft/helicopter equipment and navigation suffixes;

(b) the capabilities and limitations of the RNP system installed in the aircraft;

(c) the operations and airspace for which the RNP 0.3 system is approved;

(d) the limitations of the navaids to be used for the RNP 0.3 operation;

(e) the required navigation equipment for operation on RNAV routes with SIDs or STARs;

(f) depiction of waypoint types (flyover and fly-by), ARINC 424 Path Terminators, and associated aircraft flight paths;

(g) contingency procedures for RNP 0.3 failures;

(h) the radio telephony phraseology for the relevant airspace in accordance with the AIP for the State in which the aircraft is operating;

(i) the flight planning requirements for RNP 0.3 operation;

(j) RNP 0.3 procedure requirements as determined from chart depiction and textual description;

(k) RNP 0.3 system-specific information, including:

(i) levels of automation, mode annunciations, changes, alerts, interactions, reversions and degradation; and

(ii) functional integration with other aircraft systems; and

(iii) monitoring procedures for each phase of the flight; and

(iv) types of navigation sensors, for example, DME, IRU, GNSS, utilised by the RNP 0.3 system, and associated system prioritisation, weighting and logic; and

(v) aircraft configuration and operational conditions required to support RNP operations, including appropriate selection of CDI scaling (lateral deviation display scaling); and

(vi) pilot procedures consistent with the operation; and

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(vii) the meaning and appropriateness of route discontinuities and related flight crew procedures; and

(viii) turn anticipation with consideration of speed and altitude effects; and

(ix) interpretation of electronic displays and symbols;

(x) impact of pilot selectable bank limitations on aircraft/rotorcraft ability to achieve the required accuracy on the planned route.

11.2 An RNP 0.3 operation may only be conducted if each member of the flight crew has received training in, or has equivalent experience of, RNP 0.3 equipment and operating procedures, including training or experience in how to do the following, and is considered competent to use that equipment and those procedures:

(a) verify that the aircraft navigation data is current;

(b) verify the successful completion of RNP 0.3 system self-tests;

(c) initialise RNP 0.3 system position;

(d) perform a manual or automatic update (with take-off point shift, if applicable);

(e) retrieve and fly a SID and STAR with appropriate transition;

(f) verify waypoints and navigation system flight plan programming;

(g) resolve route discontinuities;

(h) adhere to speed and altitude constraints associated with a SID or STAR;

(i) fly direct to waypoint;

(j) fly a course or track to waypoint;

(k) intercept a course or track;

(l) vector off and rejoin a procedure;

(m) fly radar vectors and rejoin an RNAV route from a heading mode;

(n) determine cross-track error/deviation;

(o) determine allowable deviation limits and maintain flight within those limits;

(p) remove and reselect navigation sensor input;

(q) confirm exclusion of a specific navaid or navaid type;

(r) perform gross navigation error checks using conventional aids;

(s) change arrival aerodrome and alternate aerodrome;

(t) perform parallel offset function if capability exists, and advise ATC if this functionality is not available;

(u) perform conventional holding;

(v) carry out contingency procedures for RNAV failures.

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Appendix 6 — Requirements for use of RNP APCH

1 Eligibility for RNP APCH navigation for I.F.R. flights

1.1 RNP APCH may only be used for PBN by an aircraft that meets the requirements of this Appendix.

1.2 RNP APCH may only be used for PBN by an aircraft if the aircraft is equipped with:

(a) a stand-alone GNSS system approved for RNP APCH operations; or

(b) an FMS with GNSS input system approved for RNP APCH operations.

1.3 RNP APCH means 1 of the following:

(a) the NPA known as RNP APCH-LNAV:

(i) where lateral and longitudinal guidance is provided by GNSS SIS; and

(ii) which is flown to an MDA charted as LNAV minima on the approach plate;

Note RNP APCH-LNAV was formerly known as RNAV (GNSS).

(b) the APV known as RNP APCH-LNAV/VNAV, where:

(i) lateral and longitudinal guidance is provided by GNSS SIS; and

(ii) vertical guidance is provided by Baro-VNAV; and

Note There is, therefore, some overlap of scope and meaning between RNP APCH-LNAV/VNAV on the one hand, and Baro-VNAV on the other. See Appendix 8 for Baro-VNAV.

(iii) the approach is flown to a DA charted as LNAV/VNAV minima on the approach plate;

(c) the NPA known as RNP APCH-LP:

(i) where lateral guidance equivalent to a localiser approach is provided by SBAS augmented GNSS SIS; and

(ii) which is flown to an MDA charted as LP minima on the approach plate;

Note The NPA known as RNP APCH-LP has not yet been deployed in Australia.

(d) the APV known as RNP APCH-LPV, where:

(i) lateral, longitudinal and vertical guidance is provided by SBAS augmented GNSS SIS; and

(ii) the approach is flown to a DA charted as LPV minima on the approach plate.

Note The APV known as RNP APCH-LPV has not yet been deployed in Australia at the commencement of this Order.

1.4 RNP APCH may be used by an aircraft if the operator has been issued with, or is deemed to hold, an RNP APCH navigation authorisation under Civil Aviation Order 20.91 as in force immediately before the commencement of this Order.

1.5 An aircraft is eligible for RNP APCH-LNAV/VNAV if it meets the aircraft eligibility requirements for both of the following:

(a) Baro-VNAV;

(b) RNP APCH-LNAV.

1.6 An aircraft is eligible for RNP APCH-LNAV and RNP APCH – LNAV/VNAV if it meets the aircraft eligibility requirements for RNP AR APCH.

1.7 An aircraft referred to in subclause 1.1, 1.4, 1.5 or 1.6 of this Appendix may be subject to conditions that CASA considers necessary in the interests of safety.

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1.8 It is a condition of the eligibility of an aircraft to engage in PBN under this Appendix that the applicable operational requirements of this Appendix are complied with.

1.9 Where an operational check, consideration, procedure or task (however described) is required under this Appendix, the operator must ensure that it is performed, given, followed or carried out, as the case may be, by a flight crew member holding a relevant authorisation to do so, if required.

Note The check, consideration, procedure or task may in practice be performed by the pilot in command, other members of the flight crew, the despatch officer or other operational personnel. However, legal responsibility for compliance is placed on the operator who must ensure that the performance occurs in accordance with his or her established procedures.

1.10 An aircraft that is approved for RNP APCH – LPV, when operating within an SBAS service volume, may utilise SBAS derived vertical guidance to carry out an RNP APCH – LNAV/VNAV procedure.

2 Application — documents

If the aircraft does not comply with subclause 1.4, 1.5 or 1.6 of this Appendix, approval of the aircraft for RNP APCH operations is required. In that case, an operator must be able to supply to CASA at its request:

(a) aircraft airworthiness documents which satisfy CASA that the aircraft is equipped for RNP APCH operations, for example, the AFM, the AFMS or OEM service letters; and

(b) a detailed description of relevant aircraft equipment for RNP APCH operations, including a configuration list of the components and equipment; and

(c) a detailed description of the operating procedures to be used for RNP APCH operations (including flight planning and flight procedures) supported by relevant copies of, or extracts from, the following:

(i) the checklists;

(ii) the contingency procedures;

(iii) the QRH; and

(d) copies of the sections of the MEL applicable to RNP APCH operations; and

(e) a detailed description of the maintenance program used to ensure the continuing airworthiness of the aircraft for RNP APCH operations; and

(f) a detailed description of the method used to ensure the validity and continuing integrity of the airborne navigation database; and

(g) if requested in writing by CASA — a copy of any relevant document referred to in any of the documents mentioned in paragraphs (a) to (f).

3 Aircraft eligibility

3.1 An aircraft is eligible for RNP APCH operations if:

(a) the AFM, an AFMS or OEM service letter states that the aircraft navigation system is approved for RNP 0.3 approach operations with GNSS updating; or

(b) the aircraft is equipped with a navigation system which meets the requirements for RNP AR navigation authorisation; or

(c) the aircraft is equipped with a GNSS stand-alone system approved for NPA operations in accordance with AC 21-36 ( ) ((E)(TSO-C129a Class A1 or (E)TSO-C146 Class Gamma and operational Class 1, 2 or 3); or

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(d) the aircraft is equipped with a multi-sensor system (for example, FMS) with GNSS equipment that is:

(i) in accordance with (E)TSO-C129a Class B1, C1, B3 or C3 or (E)TSO-C145 ( ) Class 1, 2 or 3 or (E)TSO-C196 ( ); and

(ii) installation is in accordance with AC 21-36 and AC 21- 37.

3.2 An aircraft is eligible for RNP APCH – LNAV/VNAV operations if:

(a) the AFM, an AFMS or OEM service letter states that the aircraft navigation system is approved for RNP 0.3 approach operations with GNSS updating; or

(b) the aircraft is equipped with a navigation system which meets the requirements for PBN type RNP AR navigation authorisation; or

(c) the aircraft is equipped with a GNSS stand-alone system approved for NPA operations in accordance with AC 21-36 ( ) ((E)TSO-C129a Class A1 or (E)TSO-C146 Class Gamma and operational Class 2 or 3) and is approved for Baro-VNAV operations under Appendix 8; or

(d) the aircraft is equipped with a multi-sensor system (for example, FMS) with GNSS equipment that is:

(i) in accordance with (E)TSO-C129a Class B1, C1, B3, C3 or (E)TSO-C145 Class Beta and operational Class 2 or 3 or (E)TSO-C196; and

(ii) installed in accordance with AC 21-36 and AC 21-37; and

(iii) the aircraft is authorised for Baro-VNAV operations in accordance with Appendix 8.

3.3 An aircraft is eligible for RNP APCH – LP operations if:

(a) the AFM, an AFMS, or OEM service letter states that the aircraft navigation system is approved for RNP APCH – LP approach operations; or

(b) the aircraft is equipped with a GNSS stand-alone system approved for LP operations that is:

(i) in accordance with (E)TSO-C146 ( ) Class Gamma and operational Class 3; and

(ii) installed in accordance with AC 21-36; or

(c) the aircraft is equipped with a multi-sensor system (for example, FMS) with GNSS equipment that is:

(i) in accordance with (E)TSO-C145 Class Beta and operational Class 3; and

(ii) installed in accordance with AC 21-36 and AC 21-37.

3.4 An aircraft is eligible for RNP APCH – LP and RNP APCH – LPV operations if:

(a) the AFM, an AFMS or OEM service letter states that the aircraft navigation system is approved for RNP APCH – LPV approach operations; or

(b) the aircraft is equipped with a GNSS stand-alone system approved for LP and LPV operations that is:

(i) in accordance with (E)TSO-C146 Class Gamma and operational Class 3; and

(ii) installed in accordance with AC 21-36; or

(c) the aircraft is equipped with a multi-sensor system (for example, FMS) with GNSS equipment that is:

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(i) in accordance with (E)TSO-C145 ( ) Class Beta and operational Class 3; and

(ii) installed in accordance with AC 21-36 and AC 21-37.

4 RNP APCH system performance

4.1 The navigation system must meet the performance, monitoring and alerting requirements for RNP APCH operations as stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 5, *Implementing RNP APCH*. Part A for RNP APCH – LNAV and/or RNP APCH – LNAV/VNAV operations and Part B for RNP APCH – LP and/or RNP APCH – LPV operations.

4.2 Positioning data from non-GNSS navigation sensors may be integrated with GNSS data if:

(a) the non-GNSS data does not cause position errors exceeding the TSE budget; or

(b) if paragraph (a) does not apply — there is a means to deselect the non-GNSS inputs.

5 RNP APCH system functionality

5.1 Subject to subclause 5.2 of this Appendix, the system must, as a minimum, meet the standards of functionality stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 5, *Implementing RNP APCH*. Part A for RNP APCH – LNAV and/or RNP APCH – LNAV/VNAV operations and Part B for RNP APCH – LP and/or RNP APCH – LPV operations.

Note Guidance provided in AC 21-36, Global Navigation Satellite System (GNSS) Equipment: Airworthiness Guidelines, is also relevant.

5.2 The requirement for the display of lateral position relative to the desired path is:

(a) a digital indication in $1/10^{th}$ NM or less; or

(b) a relative indication which allows the pilot to determine deviation in proportion to a known indicator scale.

5.3 Where the minimum flight crew is 2 pilots, there must be a means for the pilot not flying to accurately verify the desired path and the aircraft position relative to that path.

Note To meet the intent of this requirement, in aircraft equipped with a single navigation system, both pilots must be able to access the system controls and view the system display(s) in accordance with the requirements of the applicable airworthiness standards.

5.4 Baro-VNAV authorised in accordance with Appendix 8 may be used in conjunction with RNP 0.3 under this Appendix.

5.5 Radius to Fix Path Terminators (***RF Legs***) authorised in accordance with Appendix 10 may be used in conjunction with RNP 0.3 under this Appendix.

5.6 If RF Legs are authorised for use in conjunction with RNP 0.3 under this Appendix, the aircraft must be equipped with a map display that depicts the computed aircraft flight path.

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6 Operational standards – flight planning – general

6.1 Before an RNP APCH operation commences, consideration must be given to matters that may affect the safety of the operation, including the following:

(a) whether the aircraft, and each member of the flight crew, has relevant authorisations for RNP APCH;

(b) whether the navigation database is current and appropriate for the region of operation and includes the navaids and waypoints required for the route;

6.2 If the aircraft's essential RNP APCH equipment is functioning properly, the PBN capability of the aircraft must be indicated in the flight plan.

7 Operating standards – flight procedures – general

7.1 An operator must ensure that flight procedures described in this clause are complied with.

7.2 The following must be checked and confirmed:

(a) the waypoint sequence;

(b) the reasonableness of the tracks and distances;

(c) the VPA if using RNP APCH-LNAV/VNAV;

(d) that the GNSS sensor is used for position computation;

(e) if barometric aiding is used — that the current aerodrome barometric altimeter setting is entered.

7.3 The operator must ensure that the appropriate displays are selected to permit monitoring of the aircraft's:

(a) approach path; and

(b) position relative to the approach path (cross-track and, where applicable, vertical deviation).

7.4 The aircraft is to be established on the final approach course no later than the FAF.

7.5 Descent in the final segment is not to be commenced unless:

(a) the appropriate approach mode is annunciated, namely, LNAV, LNAV/VNAV, LP or LPV; and

(b) RNP 0.3 is selected and available.

7.6 A missed approach procedure must be conducted if:

(a) the navigation system display is flagged invalid; or

(b) there is a loss of integrity alert; or

(c) the integrity alerting function is not available before passing the FAF; or

(d) during a segment of a procedure, Cross-track Error/Deviation equals or is reasonably likely to equal the RNP for the segment of the procedure; or

(e) where NSE is available during a segment of a procedure, including NSE measured as Estimate of Position Uncertainty, NSE + FTE during the segment equals or exceeds the RNP specified for the segment; or

(f) if the aircraft is equipped with serviceable automated cross-track error alerting — when a Cross-Track Error/Deviation alert is received.

Note 1 NSE and FTE are the largest tracking errors for RNP APCH. ICAO Doc 9613, *Performance-based Navigation (PBN) Manual*, notes "cross-track error/deviation" as a component of FTE.

Note 2 ICAO Doc 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 5 – Section A, provides guidance on the use of RNP APCH procedures. Pilots are

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advised to track along procedure centre lines unless authorised to deviate by ATC or under emergency conditions. So far as practicable, the cross-track error/deviation for normal operations should be limited to 0.5 NM (½ x RNP) for the initial segment, the intermediate segment and a missed approach, and to 0.15 NM (½ x RNP) for the final approach segment. Brief deviations are acceptable during and immediately after turns where accurate cross-track information is not provided during the turn. The use of a flight director or autopilot is recommended. Flight crew procedures and training should emphasise observance of turn anticipation commands and management of rate of turn.

7.7 In subclause 7.6, ***Estimate of Position Uncertainty***, or ***EPU***, means a measure of NSE provided by the navigation system of an aircraft based on a defined scale in NM that displays the current performance of the navigation system in accurately estimating the aircraft position.

Note Different system manufacturers assign specific names for EPU, including "Horizontal Protection Limit" or "HPL", "Actual Navigation Performance" or "ANP" and "Estimate of Position Error" or "EPE".

7.11 Transient deviations greater than 75 ft above the flight path are acceptable during aircraft configuration changes. Deviations greater than 75 ft below the flight path are not acceptable during aircraft configuration changes.

8 Contingency procedures for performance failure

The operator must ensure that the flight crew have and implement contingency procedures for a loss of RNP APCH capability during the approach.

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Appendix 7 — Requirements for use of RNP AR

1 RNP AR navigation authorisation for I.F.R. flights

1.1 RNP AR procedures may only be used for PBN by an aircraft if the operator has an RNP AR navigation authorisation in writing from CASA.

1.2 RNP AR procedures may only be used for PBN by an aircraft for instrument approach and departure procedures that are supported by:

(a) a GNSS LNAV system; and

(b) an FMS supported by suitable flight control, cockpit control and display systems; and

(c) a Baro-VNAV system.

Note An aircraft equipped with an SBAS augmented GNSS system and operating within an SBAS service volume may use GNSS derived vertical guidance in lieu of Baro-VNAV.

1.3 An RNP AR navigation authorisation may only be issued to an operator who:

(a) applies in writing to CASA; and

(b) supplies the documents mentioned in clause 3 of this Appendix; and

(c) satisfies CASA that RNP AR operations for the navigation authorisation sought can, and are likely to continue to, meet the requirements of this Appendix, including in relation to the following:

(i) aircraft eligibility;

(ii) RNP AR equipment, system performance and system functionality;

(iii) operating standards, including flight planning and flight procedures;

(iv) approved flight crew training and recency;

(v) MEL procedures;

(vi) aircraft and RNP system maintenance;

(vii) continued integrity of the airborne navigation database;

(viii) navigation error reporting procedures;

(ix) FOSA.

1.4 An RNP AR navigation authorisation may not be issued unless the aircraft meets the requirements of this Appendix.

1.5 RNP AR procedures may be designed to either ICAO Doc. 9905 criteria or to proprietary standards. Proprietary RNP AR designs use different terminology for some points in the procedure compared to the Doc. 9905 designs; the paragraphs below explain the terms used.

(a) Final Approach Point (***FAP***) is the point in the procedure from which the vertical path is coded into the procedure. This point must be a named waypoint and is often coincident with the Final Approach Fix (FAF). In proprietary procedures the point equivalent to the FAP is the Vertical Intercept Point (VIP).

(b) Non-Normal Decision Point (***NNDP***) is a term used in proprietary design RNP AR approach procedures and defines the point where the flight crew must determine that the aircraft is capable of carrying out the approach in its current operative system configuration. For ICAO Doc. 9905 design procedures, the equivalent point to the NNDP is the Initial Approach Fix (***IAF***).

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2 Conditions for RNP AR operations

2.1 An RNP AR navigation authorisation may be issued subject to conditions if CASA considers this is necessary in the interests of safety.

2.2 It is a condition of the issue of a navigation authorisation that the applicable operational requirements of this Appendix are complied with after the issue of the authorisation.

2.3 It is a condition of the issue of a navigation authorisation that where an operational check, consideration, procedure or task (however described) is required under this Appendix, the operator must ensure that it is performed, given, followed or carried out, as the case may be.

Note The check, consideration, procedure or task may in practice be performed by the pilot in command, other members of the flight crew, the despatch officer or other operational personnel. However, legal responsibility for compliance is placed on the operator who must ensure that the performance occurs in accordance with his or her established procedures.

3 Application — documents

The application must be made on the approved form and be accompanied by the following documents:

(a) aircraft airworthiness documents which satisfy CASA that the aircraft is equipped for RNP AR operations, for example, the AFM, the AFMS or OEM service letters;

(b) a detailed description of relevant aircraft equipment for RNP AR operations, including a configuration list of the components and equipment;

(c) a detailed description of the proposed flight crew training for RNP AR operations, including a copy of the training syllabus, for approval by CASA;

(d) a detailed description of the operating procedures to be used for RNP AR operations (including flight planning and flight procedures) supported by relevant copies of, or extracts from, the following:

(i) the operations manual;

(ii) the checklists;

(iii) the contingency procedures;

(iv) the QRH;

(e) a FOSA as set out in clause 4 of this Appendix;

(f) copies of the sections of the MEL applicable to RNP AR operations;

(g) a detailed description of the maintenance program used to ensure the continuing airworthiness of the aircraft for RNP AR operations;

(h) a detailed description of the method used to ensure the continued integrity of the airborne navigation database;

(i) if requested in writing by CASA — a copy of any relevant document referred to in any of the documents mentioned in paragraphs (a) to (h).

4 FOSA

4.1 An operator must conduct a FOSA before applying to CASA to carry out either of the following:

(a) before conducting an RNP AR operation that requires an RNP value of less than 0.3 NM;

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(b) before conducting an RNP AR operation in which the published procedure includes a procedure for one engine inoperative (***OEI***).

Note The FOSA is to be consistent with ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 6, *Implementing RNP AR APCH.* (See also the definition in paragraph 3.4 of this Order.)

4.3 The FOSA must set out details of the methods used by the operator to manage the risks associated with non-normal events arising from RNP AR operations.

4.4 The FOSA must include the mitigations implemented by the operator to reduce non-normal safety risks to the level of "As Low as Reasonably Practical (ALARP)".

Note 1 Suitable methods to mitigate non-normal safety risks include flight crew procedures (including contingency procedures), flight crew training, engineering modifications, operating limitations, and procedure design.

Note 2 Additional guidance on provision for non-normal operations is contained in FAA AC 120-29A, *Criteria for Approval of Category I and Category II, Weather Minima for Approach*.

4.5 The FOSA should set out details of the methods used by the operator to manage the risks associated with adding additional destinations where RNP AR operations will be conducted.

5 Aircraft eligibility

An aircraft is eligible for RNP AR operations only if:

(a) the OEM has documented that the aircraft is capable of RNP AR approach operations, or RNP AR departure operations or both RNP AR approach and departure operations; and

(b) the aircraft meets the requirements for RNP AR operations in accordance with ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 6, *Implementing RNP AR APCH*; and

(c) for an aircraft equipped with GNSS sensors which comply with (E)TSO-C129a, (E)TSO-C145a, (E)TSO-C146a, (E)TSO-C196a, or an equivalent standard, it carries the following minimum equipment:

(i) 2 FMS;

(ii) 2 GNSS sensors (which may be included in an MMR);

(iii) 1 IRS;

(iv) 2 flight directors;

(v) 2 flight mode annunciators;

(vi) 2 RADALTs;

(vii) duplicated primary flight and navigation displays;

(viii) duplicated alternating current power source (for which an APU may be used);

(ix) 1 autopilot channel;

(x) 1 TAWS appropriate to the class of operation; and

(d) all modifications, options or particular part numbers required by the original equipment manufacturer or the STC are installed in, or on, the aircraft or the relevant part.

6 RNP AR system performance

6.1 To meet the requirements of clause 5 of this Appendix, the system must meet the performance, monitoring and alerting requirements for RNP AR operations

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as stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 6, *Implementing RNP AR APCH*.

6.2 Positioning data from non-GNSS navigation sensors may be integrated with GNSS data if:

(a) the non-GNSS data does not cause position errors exceeding the TSE budget; or

(b) if paragraph (a) does not apply — there is a means to deselect the non-GNSS inputs.

7 RNP AR system functionality

7.1 To meet the requirements of clause 5 of this Appendix, subject to this clause, an eligible aircraft's RNP AR system must, as a minimum, meet the standards of functionality stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 6, *Implementing RNP AR APCH*.

7.2 The system must be capable of executing leg transitions and maintain tracks consistent with an RF Leg.

Note ICAO Doc. 9613 includes this requirement only where approaches are designed with RF Legs. However, RNP AR procedures designed in accordance with proprietary design criteria for use by operators of Australian aircraft are dependent upon RF Leg capability.

7.3 The following requirements must be complied with for the display of cross-track deviation, namely, within the pilot's primary field of view there must be:

(a) a suitably scaled CDI; or

(b) a map display with a numeric indication of cross-track deviation with a resolution of 0.01 NM or less.

7.4 Despite subclause 7.3 of this Appendix, for an RNP AR approach or departure with an RNP of not less than 0.3, there must be within the pilot's primary field of view:

(a) a map display; and

(b) a numeric display of cross-track deviation with a resolution of 0.1 NM or less.

7.5 Despite subclause 7.3 of this Appendix, for an RNP AR approach or departure with an RNP of 0.3 or less, the means by which the flight crew monitor and manage cross-track deviations must be:

(a) demonstrated by the operator to be adequate for all normal and non-normal conditions within the FTE appropriate to the RNP to be used; and

(b) arrived at only after operator consideration of relevant factors, including the following:

(i) information displayed in the pilot's primary field of view;

(ii) information displayed outside the pilot's primary field of view;

(iii) the resolution, scaling, numeric and other cross-track indications available;

(iv) the predictive display of aircraft flight path;

(v) the crew procedures used to monitor and manage FTE;

(vi) operator procedures for initiation of a missed approach;

(vii) information provided by the aircraft manufacturer;

(viii) simulator demonstration of FTE management.

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7.6 The navigation system is not required to provide an alert to the flight crew when GNSS updating is lost, provided there is an alert when the selected RNP no longer meets the criteria for continued navigation.

7.7 Subject to subclause 7.8 of this Appendix, the system must provide LNAV guidance throughout a go-round conducted at any point in the approach.

Note This function is commonly referred to as TOGA to LNAV.

7.8 Where continuous LNAV guidance is not available, an alternative means is acceptable only if:

(a) each flight crew member receives specific training in accurate track-keeping during a go-round; and

(b) the operator demonstrates to CASA that the lateral track can be accurately maintained under all normal and non-normal conditions.

8 Operational standards

8.1 Operating procedures for RNP AR must be in accordance with subclauses 8.2 to 8.17 of this Appendix.

Note The operating procedures contained in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 6, *Implementing RNP AR APCH* do not apply and are replaced by the operating standards in clauses 9 to 23 of this Appendix.

8.2 Subject to subclause 8.3 of this Appendix, before an RNP AR operation commences, availability of an RNP service must be predicted, taking into account relevant matters, including all of the following:

(a) aerodrome location;

(b) approach or departure operation;

(c) terrain masking;

(d) satellite serviceability (NOTAMs);

(e) installed avionics algorithms.

8.3 Subclause 8.2 of this Appendix does not apply if the aircraft can achieve LNAV accuracy that is at least equal to that required for the RNP AR operation using requisite GNSS satellites.

Note ***Requisite GNSS satellites*** is defined in paragraph 4.2 of this Order.

Radio updating

8.4 If radio updating may degrade the GNSS position, radio updating must be inhibited before commencement of the RNP AR operation.

Procedure selection

8.5 An approach or departure procedure must be retrievable by procedure identifier from the aircraft navigation database.

Procedure verification

8.6 Before an RNP AR operation commences, the following must be verified:

(a) that the correct approach or departure procedure has been selected;

(b) that the cockpit electronic displays correctly replicate the route, the waypoint sequence and significant operational details shown on the published IAL procedure chart.

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8.7 However, paragraph 8.6 (b) of this Appendix must not be complied with for an RNP AR operation that is an OEI procedure.

Note Verification that cockpit electronic displays correctly replicate the route, the waypoint sequence and significant operational details shown on the published IAL procedure chart is specifically prohibited for an OEI procedure in order to avoid inadvertent activation of the wrong route.

Procedure modification

8.8.1 The flight crew must not modify the loaded procedure.

8.8.2 The lateral path must not be modified, with the exception of:

(a) accepting a clearance to go direct to a fix in the approach procedure that is before the FAF and that does not immediately precede an RF Leg.

(b) changing the altitude and/or airspeed waypoint constraints on the initial, intermediate, or missed approach segments of an approach (e.g. to apply cold temperature corrections or comply with an ATC clearance/instruction).

Vectoring

8.9 When vectored by an air traffic service, a procedure may be intercepted at a position inside the IAF but not later than the designated Latest Intercept Point (LIP), Final Approach Point (FAP) or Vertical Intercept Point (VIP), whichever occurs closest to the Final Approach Fix (FAF). However, descent on an approach procedure below the minimum vectoring altitude is not permitted until the aircraft is established within the vertical and lateral tolerances of the procedure, and the appropriate navigation mode is engaged.

Required equipment to be serviceable

8.10 Before an RNP AR operation commences, the required equipment must be serviceable and its serviceability confirmed.

Note A list of required equipment should be readily available to the flight crew on the flight deck.

Autopilot and flight director

8.11 The standard method of flight control for RNP AR operations is autopilot coupled. However, the use of a flight director instead of the autopilot is acceptable if:

(a) the aircraft manufacturer's recommended operating procedures permit such use of the flight director; and

(b) the operator has provided each member of the flight crew with:

(i) guidance on when a flight director may be so used; and

(ii) training in the conduct of RNP AR operations using the flight director; and

(c) the operator has demonstrated to CASA that when the aircraft is flown with the flight director, FTE can be maintained within the permitted tolerances during all normal, rare-normal and non-normal circumstances.

Note The FTE used by the aircraft manufacturer to demonstrate RNP capability may be dependent upon the use of a coupled autopilot. A lesser RNP capability may be applicable to procedures flown using the flight director.

RNP selection

8.12 Before an RNP AR operation commences, the appropriate RNP must be entered into the FMC and its appropriateness and accurate entry confirmed.

Note The appropriate RNP is determined by the flight crew after consideration of the published DA (or multiple DAs), the weather and other ambient conditions, the current RNP service, and the predicted RNP service. For RNP AR procedures designed in accordance with proprietary design criteria for use by operators of Australian aircraft, other than a system default value, RNP is not extracted from the navigation database.

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GNSS updating

8.13.1 Before an RNP AR operation commences, GNSS updating must be operating and such operation confirmed.

8.13.2 Unless the AFM requires otherwise, if GNSS updating is lost during an approach, the approach may be continued if the navigation system continues to provide a solution consistent with the selected RNP.

Note The AFM may require an approach to be discontinued in the event of a loss of GNSS updating in which case the approach must be discontinued.

Track deviation monitoring

8.14.1 Deviation from the defined lateral path must not exceed 1 x RNP at all stages of flight.

8.14.2 To ensure compliance with subclause 8.14.1 of this Appendix, the operator's procedures must provide for the following:

(a) monitoring lateral tracking;

(b) track deviation alerts and callouts;

(c) flight crew intervention;

(d) regaining track;

(e) discontinuing the operation.

Note RNP AR procedures designed in accordance with proprietary design criteria for use by operators of Australian aircraft require that the standard for track-keeping is applied during turns and no allowance is made for overshoot or undershoot during entry or exit. All turns for these procedures are RF Legs.

Vertical deviation monitoring

8.15.1 After the aircraft has passed the FAP or VIP on an approach, deviation from the defined vertical path must not exceed the limiting value for vertical deviation stated in the operator's RNP AR operating procedures.

8.15.2 The operator must have RNP AR operating procedures containing the limiting value for vertical deviation.

8.15.3 The limiting value for vertical deviation may only be determined after the operator has considered the following:

(a) the aircraft manufacturer's data relating to vertical flight path accuracy;

(b) the cockpit display of vertical deviation;

(c) the value used by the designer of the IAL procedure.

8.15.4 The operator's determination of the limiting value for vertical deviation must not exceed 75 ft below the defined vertical flight path.

8.15.5 The operator's determination of the limiting value for vertical deviation above the defined vertical path must not exceed 75 ft unless a figure greater than 75 ft is determined as appropriate for the aircraft type after taking into account the following:

(a) aircraft flight characteristics;

(b) the effect that any deviation may have on the safe continuation of a stabilised approach;

(c) airspeed;

(d) energy management;

(e) aircraft height above ground level;

(f) autopilot vertical gain performance.

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8.15.6 For the purposes of this clause, the operator must have flight crew procedures for the following:

(a) monitoring vertical deviation;

(b) deviation alerts and callouts;

(c) flight crew intervention;

(d) missed approach.

Maximum airspeeds

8.16.1 For approach procedures, the limiting indicated airspeeds by segment and category are:

(a) as stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 6, Implementing RNP AR APCH; or

(b) if other speeds are specified by the procedure designer — the other speeds.

8.16.2 For departure procedures, the limiting indicated airspeeds are as specified by the procedure designer.

Limiting temperature

8.17.1 Before an RNP AR operation commences, the operator must ensure that the flight crew of an aircraft are informed of the following:

(a) whether temperature limitations apply to the operation;

(b) for what purpose temperature limitations apply (if they apply);

(c) the circumstances when temperature limitations do not apply.

8.17.2 Temperature limitations do not apply to VNAV of an aircraft that is equipped with a temperature-compensated Baro-VNAV system.

8.17.3 Temperature limitations apply to an operation in which the DA is determined by consideration of the one engine inoperative missed approach performance.

8.17.4 The operator of an aircraft that is equipped with a temperature-compensated Baro-VNAV system must ensure that each member of the flight crew is trained in the use of the system.

Altimeter setting

8.18 The operator must not permit the use of remote altimeter settings.

9 Qualification flight

9.1 An RNP AR authorisation may be issued to an operator only after a qualification flight conducted by the operator demonstrates to CASA that:

(a) the operator meets all operating standards for RNP AR operations; and

(b) the aircraft navigation, flight control, cockpit display and other systems function correctly; and

(c) the operator's flight crew procedures are adequate; and

(d) procedure design, aircraft systems, airworthiness and flight crew procedures function correctly and interact appropriately; and

(e) the operator has the capability to safely operate the most complex procedures proposed to be flown.

Note Where the qualification flight does not demonstrate capability at the operator's most complex port, the RNP AR authorisation may include a condition or limitation on operations.

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9.2 The qualification flight may be conducted in a Level D flight simulator only if:

(a) the flight simulator reasonably replicates the RNP AR related functions, software version and options of the aircraft in which the RNP AR operations will be conducted; and

(b) CASA is satisfied that any RNP AR related functions not replicated in the flight simulator are not safety critical, and are demonstrated by other means; and

(c) the flight simulation is carried out by a flight crew trained in accordance the operator's RNP AR approved training program.

9.3 Where the qualification flight is flown in an aircraft, the flight is to be conducted:

(a) in an aircraft of the same type and configuration as the aircraft in which the RNP AR operations will be conducted; and

(b) by a flight crew trained in accordance the operator's RNP AR approved training program; and

(c) in V.M.C. by day.

Note A qualification flight may be conducted on a scheduled revenue service.

10 Flight crew proficiencies

10.1 Subject to this subclause, an RNP AR operation may only be commenced if each member of the flight crew has the knowledge and training provided for in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 6, *Implementing RNP AR APCH*.

10.2 An RNP AR operation may only be conducted if each member of the flight crew has the proficiencies set out in this clause.

10.3 Each member of the flight crew must have sufficient ground training and flight training (whether in actual or simulated flight) in normal and abnormal operations to achieve operational competency.

10.4 RNP AR training proficiencies may only be acquired from successful completion of the knowledge and training elements of the operator's training course.

10.5 The required RNP AR training proficiencies to be acquired from the operator's training course are set out in Table 24-1 in Attachment 1 (***Table 24-1***) to this Appendix.

10.6 Subject to subclauses 10.8 and 10.9, each member of the flight crew must successfully complete each item of training proficiency listed in Table 24-1.

10.7 Each item of training proficiency listed in Table 24-1 must be delivered in accordance with each delivery method specified for the item.

Note A Delivery Method Legend in Table 24-1 explains the meaning of the symbols used in each item.

10.8 For the flight crew training for RNP AR operations approved by CASA, CASA may permit previous relevant RNP APCH-LNAV operational experience, including operational experience in FMC-based RNAV procedures, to exempt a pilot from some or all of an item specified in Table 24-1.

Note See paragraph 3 (c) of this Appendix for CASA approval of training. Exemption from an item of training because of prior learning is specifically noted in writing by CASA in approving an operator's training course.

10.9 If the flight crew training approved by CASA is for RNP AR APCH operations only, or for combined RNP AR APCH and RNP AR DEP operations only,

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CASA may permit the pilot to be exempted from some or all of an item specified in Table 24-1 that is not relevant to the training.

Note See paragraph 3 (c) of this Appendix for CASA approval of training. Exemption from an item of training because of the exclusive nature of the operations is specifically noted in writing by CASA in approving an operator's training course.

11 Flight crew recency

11.1 Each member of the flight crew must satisfy recency requirements in accordance with this clause.

11.2 Subject to subclause 11.3 of this Appendix, recency requirements for RNP AR operations (for example, RNP AR APCH) are satisfied if relevant RNP AR procedures are included in the recurrent training program for pilots provided by the operator's training and checking organisation under regulation 217 of *Civil Aviation Regulations 1988* (***CAR 1988***).

11.3 Recency requirements for an RNP AR APCH operation (the ***operation***), for a pilot who is not a member of an operating crew mentioned in regulation 217 of CAR, are satisfied if the pilot has conducted an RNP AR APCH procedure during the 35 days before the operation.

11.4 For this clause, conduct of either an RNP APCH-LNAV, or an RNP APCH-LNAV/VNAV, or an RNP AR APCH, meets the recency requirement for RNP APCH-LNAV, RNP APCH-LNAV/VNAV and RNP AR APCH provided the approach is conducted in an FMS equipped aircraft.

11.5 Where RNP AR operations are to be at a restricted aerodrome, or are to involve operations in the vicinity of mountainous terrain, the pilot in command must successfully complete a Route Training and Restricted Minima Program.

11.6 For RNP AR operations that are not to be at a restricted aerodrome, or not to involve operations in the vicinity of mountainous terrain, a pilot in command who has not successfully completed a Route Training and Restricted Minima Program must successfully complete at least 1 RNP AR APCH at any airfield in V.M.C. before conducting unrestricted operations.

Note ***Restricted aerodrome*** is defined in paragraph 4.2 of this Order.

12 Navigation database

General

12.1 In addition to the requirements of subsection 13 of this Order, the requirements below apply.

Data process

12.2 The operator must identify the responsible manager for the data updating process within their procedures.

12.3 The operator must document a process for accepting, verifying and loading navigation data into the aircraft.

12.4 The operator must place their documented data process under configuration control.

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Initial data validation

12.5 Before flying an RNP AR procedure in a type of aircraft in I.M.C. from an initial approach fix for the procedure, the operator must validate the navigation data for the procedure and the aircraft type by:

(a) flying the entire procedure from the initial approach fix through the approach (including vertical angle), the missed approach and the approach transitions for the selected aerodrome and runway; and

(b) confirming that the depicted procedure on the map display is the same as depicted on the published procedure; and

(c) observing the flight path and confirming on the basis of the observation that the path does not have any lateral or vertical path disconnects with the procedure data, and is consistent with the published procedure; and

(d) verifying that the aircraft navigation, flight control, cockpit display and other systems function correctly, and that the procedure is flyable.

12.5A A validation of an RNP AR procedure for an aircraft type mentioned in subclause 12.5 must be conducted in:

(a) an aircraft of the type, being flown by day in V.M.C.; or

(b) a level D flight simulation training device for the aircraft type.

12.5B A validation of an RNP AR procedure mentioned in subclause 12.5 that is conducted in an aircraft must not perform a non-normal operation unless:

(a) the flight is conducted as a private operation that does not carry a passenger, unless the passenger is a CASA officer who is on duty for the flight; or

(b) the non-normal operation is required for the safety of the flight.

Note Requirements for the validation of RNP AR procedures in non-normal operations are not regulated by clause 12 of Appendix 7 to this Civil Aviation Order.

12.5C If the matters mentioned in paragraphs 12.5 (b), (c) and (d) are confirmed for the procedure and the aircraft type, the operator must retain a copy of validated navigation data in such form that is sufficient to enable comparison with updated data in accordance with subclause 12.6.

Data updates

12.6 Upon receipt of each navigation data update for an RNP AR procedure, and before using the updated navigation data in a type of aircraft, the operator must:

(a) compare the updated data to the procedure validated under subclauses 12.5 to 12.5C and identify and resolve any discrepancies between the updated data and the validated procedure; and

(b) if any change affects the approach path or aircraft performance requirements for the procedure — confirm that the change is intended with the person with responsibility for maintenance of the procedure under Part 173 of CASR; and

(c) validate the amended procedure for the type of aircraft in accordance with subclauses 12.5 to 12.5C.

Aircraft modifications

12.7 Subject to subclause 12.8, if a system used in an aircraft type and required for an RNP AR procedure is modified (e.g. software change), the operator must validate the procedure for the aircraft type using the modified system in

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accordance with subclauses 12.5 to 12.5C, noting that flight control computers, FMS OPS and display software changes are particularly critical.

12.8 The operator is not required to validate a procedure using a modified system for an aircraft type if the manufacturer of the modified system states in writing that the modification has no effect on the navigation database or path computation for the use of the procedure in the aircraft type.

13 Implementation program

13.1 RNP AR operations may only be conducted in accordance with the operator's approved implementation program.

13.2 If an operator that has not previously conducted RNP AR operations, or RNP AR operations using a particular aircraft type, the implementation program must include limits on operating minima until the operator is able to demonstrate to CASA the capability to safely conduct RNP AR operations without such limits.

Note The initial operating period with these limitations is determined after consideration of all relevant factors including operator RNAV and VNAV operating experience, the number and frequency of RNP AR operations conducted and the number of non-compliant incidents recorded.

13.3 The implementation program must have procedures to identify any negative trend in performance or operations, including procedures for monitoring RNP AR operations and collecting relevant data.

13.4 At intervals as specified in the operator's implementation program, the operator must submit to CASA a report containing a review of operations, including the following elements:

(a) the total number of RNP AR procedures conducted;

(b) the number of satisfactory approaches and departures by aircraft and navigation system;

Note ***Satisfactory*** means the approach or departure was completed as planned without any navigation or guidance system anomalies.

(c) the reasons for unsatisfactory operations, for example:

(i) UNABLE REQ NAV PERF – RNP, GPS PRIMARY LOST, or other RNP related messages; and

(ii) excessive lateral or vertical deviation; and

(iii) TAWS warning; and

(iv) autopilot system disconnect; and

(v) navigation data errors; and

(vi) pilot report of anomaly;

(d) comments, both oral and written, from the flight crew.

14 Conditions arising from the implementation program

14.1 Full RNP AR operational capability will not be achieved until the operator has demonstrated to CASA satisfactory operations at defined stages in accordance with the operator's approved implementation program.

14.2 An RNP AR authorisation may be issued subject to:

(a) conditions to be met for each stage of the operator's approved implementation program; and

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(b) conditions under which the operator may progress to full operational capability.

Note A suitable implementation program will impose limits on RNP AR operations until sufficient operating experience and flight data has been collected to warrant progress (usually in stages) to full operational capability. Initial operations will normally be limited to day V.M.C., and subsequent phases will permit operations to I.M.C. operations with ceiling, visibility and RNP limits until full capability is achieved. It is intended that a navigation authorisation will be issued before commencement of the operator's implementation program, with specified conditions under which the operator is able to progress to full operational capability.

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Table 24-1 RNP AR training proficiencies

Delivery method legend

A Paper-based training (see *Note 1*).

B Computer-based training (CBT) or instructor lead training,

\# Recognition of prior learning if qualified to conduct RNAV (GNSS) operations in the same aircraft and FMS type. A different FMS update status is considered to be the same FMS type.

S Level D flight simulator training.

P Proficiency check required (see *Note 2*).

Item	RNP AR training proficiencies	Delivery methods				
1	GNSS theory (architecture, accuracy, integrity, etc.)	A	B	#		
2	RNP APCH procedure design basics	A	B	#		
3	RNP AR procedure design basics	A	B			
4	Rare normal wind protection and maximum coded speeds	A	B			
5	RNP/ANP/EPE definitions and the navigational concept	A	B			
6	RNP DEP and one engine inoperative procedures (Only required for an RNP AR DEP navigation authorisation.)	A	B			
7	OEI procedure obstacle clearance areas (Only required for an RNP AR a navigation authorisation including OEI operations.)	A	B			
8	Missed approach extraction capability	A	B			
9	FMS system architecture	A	B	#		
10	Multi-sensor navigation and sensor blending	A	B	#		
11	FMS failure modes and indications	A	B			
12	Navigation performance displays (NPS, XTK, VDEV)	A	B			
13	Allowable lateral and vertical FTE's	A	B			
14	VSD (where fitted)	A	B	#		
15	MEL	A	B			
16	Critical system losses prior to the IAF or FAP (NNDP or VIP)	A	B			P
17	Critical system losses after the IAF or FAP (NNDP or VIP)	A	B		S	P

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Item	RNP AR training proficiencies	Delivery methods				
18	Navigation system losses after the IAF or FAP (NNDP or VIP)	A	B		S	P
19	FMS database integrity	A	B			
20	RNP performance prediction	A	B			
21	Flight crew procedure review					
21.1	Selecting an RNP procedure	A	B		S	P
21.2	Changing an RNP procedure	A	B			
21.3	Briefing an RNP procedure	A	B		S	P
21.4	Checking an RNP procedure	A	B		S	P
21.5	RNP missed approach requirements	A	B		S	P
21.6	Navigation system failures	A	B		S	
21.7	FAP and VIP definition	A	B			
21.8	Runway changes inside the FAP or VIP	A	B			
21.9	Managing a non-normal prior to the FAP or VIP	A	B		S	P
21.10	Managing a non-normal after the FAP or VIP	A	B		S	P
21.11	Autopilot requirements	A	B		S	P
21.12	FMS default RNP values and alerts	A	B	#		
21.13	Effect of an incorrectly set local QNH	A	B	#	S	
21.14	Effect of non-standard temperature on nominal path	A	B	#		
21.15	Approach procedures including PF and PNF/PM duties	A	B		S	P
21.16	HUGS (if fitted)	A	B		S	
21.17	Monitoring and flying raw data	A	B	#	S	
21.18	FMS modes/functionality (on approach logic, VNAV PATH, FINAL APP MODE, SPD INTV, ALT INTV, Managed/Selected modes)	A	B	#	S	
21.19	FCC lateral and vertical go-round functionality	A	B			
21.20	RNP holding patterns and managing the FMS	A	B			
22	Flight simulator training					
22.1	Departure (Only required for an RNP AR DEP navigation authorisation.)				S	
22.2	Approach				S	P
22.3	Approach dual FMC failure				S	

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Item	RNP AR training proficiencies	Delivery methods				
22.4	Departure with high drift condition (Only required for an RNP AR navigation authorisation including departure operations.)				S	
22.5	Approach with high drift condition				S	
22.6	Departure asymmetric thrust (Only required for an RNP AR navigation authorisation including departure operations.)				S	P
22.7	Approach IRS failure				S	
22.8	Approach with asymmetric thrust and missed approach				S	
22.9	Approach single GPS receiver failure			#	S	
22.10	Approach navigation system alerts			#	S	

Note 1 Where both paper-based and CBT methods appear, it is intended that the item is included in written study-material as well as ground school computer-based sessions.

Note 2 Not all proficiency requirements need to be demonstrated in a flight simulator. Some proficiency items may be demonstrated by written or oral examinations, including multi-choice questions and quiz tests.

Note 3 Some proficiencies apply to specific manufacturer/operator selected equipment options. These items must be covered if they are applicable to the aircraft type or the operator's equipment.

Note 4 Operators may choose to nominate an NNDP (in addition to the VIP) for the purpose of defining actions to be taken in the event of systems failures.

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Appendix 8 — Requirements for use of Baro-VNAV

1 Baro-VNAV navigation authorisation for I.F.R. flights

1.1 Baro-VNAV may only be used for PBN by an aircraft if it meets the requirements of clause 2 below.

1.2 Baro-VNAV in accordance with this Appendix may be authorised and used in conjunction with RNAV 1, RNP 1, Advanced RNP, RNP APCH and RNP 0.3 operations.

2 Aircraft eligibility

2.1 An aircraft is eligible for Baro-VNAV operations if the aircraft is equipped with all of the following:

(a) a barometric VNAV system that meets the requirements set out in subclause 4.2 of this Appendix;

(b) a navigational database that permits the lateral and vertical path to be defined;

(c) navigation displays which enable vertical deviation from the defined VNAV path to be determined;

2.2 For paragraph 4.1 (a), a barometric VNAV system must meet the requirements of at least 1 of the following:

(a) *FAA AC 20-129 — Airworthiness Approval of Vertical Navigation (VNAV) Systems for use in the United States National Airspace System (NAS) and Alaska*;

(b) *FAA AC 20-138B — Airworthiness Approval of Positioning and Navigation Systems*;

(c) *FAA AC 90-105 — Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System*;

(d) *EASA AMC 20-27 — Airworthiness Approval and Operational Criteria for RNP APPROACH (RNP APCH) Operations, including BARO-VNAV Operations*;

(e) an approval issued in the aircraft's State of operation or registry, and which is assessed by CASA as meeting requirements that are the same as, or equivalent to, the standards of eligibility set out in this clause;

(f) a CASA assessment of the aircraft which results in a CASA determination that the aircraft meets the standards for eligibility set out in this clause.

3 Baro-VNAV system performance

3.1 To meet the requirements of clause 2 of this Appendix, an eligible aircraft's Baro-VNAV system used in Baro-VNAV operations must meet the following performance standards:

(a) the performance requirements set out in *FAA AC 20-129 — Airworthiness Approval of Vertical Navigation (VNAV) Systems for use in the United States National Airspace System (NAS) and Alaska*; or

(b) the performance requirements set out in *FAA AC 20-138B — Airworthiness Approval of Positioning and Navigation Systems*;

(c) a demonstration to CASA that the VNAV TSE, including altimetry errors, is less than 75 m (246 ft) for a probability of 99.99%.

3.2 For the purposes of the demonstration mentioned in paragraph 5.1 (c), the VNAV TSE analysis is to include all of the following:

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(a) altimetry errors, including allowance for accuracy of reported barometric pressure (ATIS error);

(b) VNAV system error, including VPA resolution error;

(c) waypoint resolution error;

(d) FTE.

Note Provision for RNAV along-track system error is not included.

4 Baro-VNAV system functionality

4.1 To meet the requirements of clause 3 of this Appendix and subject to subclause 4.2, an eligible aircraft's Baro-VNAV system must have the following functionality in Baro-VNAV operations:

(a) the system must be able to load the entire procedure to be flown into the RNP system from the on-board navigation database, including the approach, the missed approach and the approach transitions for the selected aerodrome and runway;

(b) the system must make it impossible for the flight crew to modify instrument approach procedure data;

(c) the resolution of VPA entry (from the navigation database) and display must be no greater than 0.1;

(d) the vertical path must be defined by a waypoint and a vertical angle;

(e) vertical deviation from the defined VNAV path must be continuously displayed in the primary field of view of the pilot or each pilot, as the case requires;

(f) vertical deviation resolution must be not more than 10 ft;

(g) for aircraft with a flight crew of 2 pilots — a barometric altitude from 2 independent sources must be displayed, 1 in each pilot's primary field of view;

(h) there must be a means for the flight crew to readily determine:

(i) the VNAV mode of operation, including establishment or capture of the vertical path; and

(ii) any mode change or reversion.

4.2 As an alternative to meeting the system functionality specified in subclause 4.1 for the display and monitoring of vertical deviation, the following functionality may be met: an operational assessment that enables CASA to determine that the pilot flying the aircraft is able to readily distinguish vertical deviation not exceeding plus or minus 75 ft, such that timely corrective action (including a go-round) can be initiated.

4.3 For subclause 4.2, the operational assessment must include the following:

(a) digital display of vertical deviation;

(b) displays not in the primary field of view;

(c) aural or other warnings or annunciations;

(d) crew procedures and training;

(e) use of flight director or autopilot or both;

(f) flight trials, or other performance indicators, or both of these means of assessment.

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5 Operating standards

The standards for the conduct of Baro-VNAV operations are as follows:

(a) operations must be conducted using an approved local barometric pressure source;

(b) before a Baro-VNAV approach operation may commence, the correct barometric pressure must be set and a method of cross-checking must be applied;

(c) a stabilised approach must be flown to a DA indicated on an approach chart by an LNAV/VNAV minima;

(d) the flight must limit deviations after the FAF below the defined vertical path to no more than 75 ft;

(e) a missed approach procedure must be conducted if the vertical deviation after the FAF exceeds 75 ft below the defined vertical path;

(f) any sustained deviations above the defined vertical path must not exceed 75 ft unless the operator determines that a figure greater than 75 ft is appropriate for the aircraft type after taking into account the following:

  (i) aircraft flight characteristics;

  (ii) the effect that any deviation may have on the safe continuation of a stabilised approach;

  (iii) airspeed;

  (iv) energy management;

  (v) aircraft height above ground level;

  (vi) autopilot vertical gain performance.

(g) temperature limitations, as published on the relevant approach chart, must be applied for an aircraft that is:

  (i) operating under a Baro-VNAV authorisation; and

  (ii) equipped with a Baro-VNAV system that does not provide temperature compensation in the determination of the vertical path;

(h) temperature limitations need not be applied for an aircraft that is:

  (i) operating under a Baro-VNAV authorisation; and

  (ii) equipped with a Baro-VNAV system that provides temperature compensation in the determination of the vertical path;

(i) the aircraft must be established on the vertical path no later than the FAF;

(j) if Baro-VNAV guidance is intended for use before the FAF operating procedures — the following requirements apply:

  (i) minimum altitudes must be displayed;

  (ii) the computed vertical flight path must not permit descent below any minimum altitude;

(k) the flight crew must have a means to determine the aircraft configuration and serviceability for Baro-VNAV operations.

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6 Flight crew knowledge and training

A Baro-VNAV operation may only be commenced if each member of the flight crew has knowledge of, and approved training in, how to safely conduct a Baro-VNAV operation, with particular reference to the following:

(a) Baro-VNAV instrument approach charts, including LNAV/VNAV minima, temperature limitations, and vertical flight path angle;

(b) principles of Baro-VNAV vertical guidance, including path construction and the effect of temperature;

(c) basic Baro-VNAV instrument approach procedure design;

(d) use of MDA and DA for LNAV and LNAV/VNAV minima respectively;

(e) approach procedure selection;

(f) barometric datum selection (altimeter subscale setting), and cross-checking and verification procedures, including effect of incorrect setting;

(g) VNAV mode selection and monitoring;

(h) VNAV failure modes and mode reversions;

(i) VNAV flight tolerances.

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Appendix 9 — Requirements for the use of Advanced RNP

1 Advanced RNP navigation authorisation for I.F.R. flights

1.1 Advanced RNP (***A-RNP***) may only be used for PBN by an aircraft if the operator has an Advanced RNP navigation authorisation in writing from CASA.

1.2 An operator may fly on a route or in airspace designated as A-RNP only if the operator holds an A-RNP navigation authorisation.

1.3 A-RNP requires GNSS as the primary navigation sensor.

1.4 An A-RNP navigation authorisation may only be issued to an operator who:

(a) applies in writing to CASA for it; and

(b) supplies the documents mentioned in clause 2 of this Appendix; and

(c) satisfies CASA that A-RNP operations can, and are likely to continue to, meet the requirements of this Appendix, including in relation to:

(i) aircraft eligibility; and

(ii) Advanced RNP equipment, system performance and system functionality; and

(iii) operating standards, including flight planning and flight procedures; and

(iv) approved flight crew training; and

(v) MEL procedures; and

(vi) aircraft and RNP system maintenance; and

(vii) validity and continuing integrity of the airborne navigation database (if carried); and

(viii) navigation error reporting procedures.

1.5 An A-RNP navigation authorisation may not be issued unless the aircraft meets the requirements of this Appendix.

1.6 Subject to subclause 1.12 of this Appendix, aircraft that meet the requirements of this Appendix meet the lateral accuracy and functional requirements for the navigation specifications listed below without further examination:

(a) RNAV 5; and

(b) RNAV 1; and

(c) RNAV 2; and

(d) RNP 2; and

(e) RNP 1; and

(f) RNP APCH Part A (LNAV/VNAV) and/or Part B (LP/LPV).

1.7 Aircraft that are equipped with dual independent navigation systems that meet the requirements of this Appendix meet the lateral accuracy and functional requirements for the navigation specifications listed below without further examination:

(a) RNAV 10 (RNP 10); and

(b) RNP 4 navigation element; and

(c) RNP 2 navigation element for oceanic/remote continental region use.

Note RNP 4 and RNP 2 for use in oceanic/remote continental regions, in addition to the navigation requirement, require CPDLC and ADS-C to qualify for the relevant navigation authorisation.

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1.8 Aircraft that are approved for RNP AR operations meet the system performance monitoring and alerting requirements of this Appendix without further examination. However, this specification contains additional functional requirements that are not included in the RNP AR navigation specification e.g. RF Legs, RNAV holding, parallel offset, and fixed radius transition. If such capabilities have been demonstrated and are contained in an approved RNP AR system, documentation of compliance may be all that is necessary. If such capabilities are added to an RNP AR system, or part of a new RNP system, they will be subject to typical regulatory reviews, demonstrations, tests and approval.

1.9 An A-RNP navigation authorisation may be issued subject to conditions if CASA considers this is necessary in the interests of safety.

1.10 It is a condition of the issue of a navigation authorisation that the applicable operational requirements of this Appendix are complied with after the issue of the authorisation.

1.11 It is a condition of the issue of a navigation authorisation that where an operational check, consideration, procedure or task (however described) is required under this Appendix, the operator must ensure that it is performed, given, followed or carried out, as the case may be.

Note The check, consideration, procedure or task may in practice be performed by the pilot in command, other members of the flight crew, the despatch officer or other operational personnel. However, legal responsibility for compliance is placed on the operator who must ensure that the performance occurs in accordance with his or her established procedures.

1.12 Although the airworthiness requirements of other navigation specifications may be covered by an aircraft A-RNP approval, the operational aspects of those approvals are not addressed by this Appendix. An individual navigation authorisation is required for each navigation specification that an operator uses.

2 Application — documents

The application must be made on the approved form and be accompanied by the following documents:

(a) aircraft airworthiness documents which satisfy CASA that the aircraft is equipped for A-RNP operations, for example, the AFM, the AFMS or OEM service letters;

(b) a detailed description of relevant aircraft equipment for A-RNP operations, including a configuration list of the components and equipment;

(c) a detailed description of the proposed flight crew training for A-RNP operations, including a copy of the training syllabus for approval by CASA;

(d) a detailed description of the operating procedures to be used for A-RNP operations (including flight planning and flight procedures) supported by relevant copies of, or extracts from, the following:

(i) the operations manual;

(ii) the checklists;

(iii) the contingency procedures;

(iv) the QRH;

(e) copies of the sections of the MEL applicable to A-RNP operations;

(f) a detailed description of the maintenance program used to ensure the continuing airworthiness of the aircraft for A-RNP operations;

(g) a detailed description of the method used to ensure the validity and continuing integrity of the airborne navigation database;

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(h) if requested in writing by CASA — a copy of any relevant document referred to in any of the documents mentioned in paragraphs (a) to (g).

3 Aircraft eligibility

3.1 An aircraft is eligible for A-RNP operations if the aircraft's AFM, an AFMS or an OEM service letter states that the aircraft navigation system is approved for A-RNP operations.

3.2 An aircraft is eligible for A-RNP operations if the operator has demonstrated to CASA that the aircraft meets the requirements of ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 4, *Implementing Advanced RNP*.

Note The system performance and functional requirements for A-RNP operations are replicated in clauses 4 and 5 below.

4 Advanced RNP system performance

4.1 To meet the requirements of clause 3 of this Appendix, the system must meet the performance, monitoring and alerting requirements for A-RNP operations as stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 4, *Implementing Advanced RNP*.

4.2 Positioning data from non-GNSS navigation sensors may be integrated with GNSS data if:

(a) the non-GNSS data does not cause position errors exceeding the TSE budget; or

(b) if paragraph (a) does not apply — there is a means to deselect the non-GNSS inputs.

5 Advanced RNP system functionality

5.1 To meet the requirements of clause 3 of this Appendix, the system must, as a minimum, meet the standards of functionality stated in ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Chapter 4, *Implementing Advanced RNP*.

5.2 Additional functional and performance requirements for A-RNP are:

(a) the required inclusion of:

(i) Radius to fix path terminator; and

(ii) parallel offsets; and

(iii) RNAV holding; and

(b) the optional inclusion of:

(i) scalability; and

(ii) higher continuity; and

(iii) fixed radius transitions (FRT); and

(iv) time of arrival control.

5.3 Baro-VNAV authorised in accordance with Appendix 8 may be used in conjunction with A-RNP under this Appendix.

5.4 FRT authorised in accordance with Appendix 11 may be used in conjunction with A-RNP under this Appendix.

Note A map display depicting the aircraft computed flight path must be installed for operations using RF Legs and/or FRT so is required for an A-RNP airworthiness approval.

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6 Operating standards – flight planning – general

6.1 Before an A-RNP operation commences, consideration must be given to matters that may affect the safety of the operation, including the following:

(a) whether the aircraft and the flight crew have relevant authorisations for A-RNP;

(b) whether the aircraft can be operated in accordance with the A-RNP requirements for:

(i) the planned route, including the route to any alternate aerodromes; and

(ii) minimum equipment requirements for the flight;

(c) whether the navaids required for the planned route are available and adequate for the period of the operation, including any non-RNAV contingencies;

(d) whether the navigation database is current and appropriate for the region of operation and includes the navaids and waypoints required for the route;

(e) whether operating restrictions, including time limits, apply to the operation.

6.2 If the aircraft's essential A-RNP equipment is functioning properly, the PBN capability of the aircraft must be indicated in the flight plan.

7 Operating standards — flight procedures – general

7.1 An A-RNP operation must comply with the instructions and procedures of the OEM in relation to the performance requirements of A-RNP.

7.2 At system initialisation, the following must occur:

(a) confirmation that the navigation database is current;

(b) verification of proper entry of the ATC-assigned route immediately after initial clearance from ATC to conduct the relevant A-RNP route;

(c) action to ensure the waypoints sequence, depicted by the navigation system, matches the route depicted on the appropriate charts and the assigned route.

7.3 The following steps must occur:

(a) selection of a SID or STAR by route name from the on-board navigation database;

(b) confirmation that the selected route conforms to the charted route, or the route as modified through the insertion or deletion of specific waypoints in response to ATC clearances;

(c) determination that the aircraft meets all specified criteria for the selected route or procedure and comply with the performance requirements of this Appendix.

7.4 Except in response to ATC clearances, the following must not occur:

(a) creation of new waypoints by manual entry; or

(b) making manual entry of latitude, longitude or rho/theta values; or

(c) changing an RNP SID or STAR database waypoint type from a fly-by to a flyover or vice versa.

7.5 The following checks and cross-checks must be made:

(a) a cross-check of the flight plan by comparing charts or other applicable resources with the navigation system flight plan and the aircraft map display (if applicable);

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(b) if required, confirm the exclusion of specific navaids.

Note Small differences between charted navigation information and displayed navigation data may be noted. Differences of 3 degrees or less due to the equipment manufacturer's application of magnetic variation or leg track averaging are operationally acceptable.

7.6 For A-RNP routes, a moving map display, flight director or autopilot in LNAV mode must be used.

7.7 Where a lateral deviation indicator is used, scaling must be selected suitable for the navigation accuracy associated with the route or procedure, for example, full scale deflection equals plus or minus the RNP value.

7.8 Route centrelines must be maintained as close as practicable, as depicted by lateral deviation indicators or flight guidance, unless authorised to deviate by ATC or under emergency conditions.

7.9 Brief deviations from the standard mentioned in subclause 7.8 are acceptable during and immediately after turns, but only to the minimal extent that accurate cross-track information may not be provided during the turn.

Note 1 Flight crew procedures and training should emphasise observance of turn anticipation commands and management of rate of turn.

Note 2 Piloting standards usually require the aircraft to be flown to maintain lateral deviation not exceeding half the current accuracy requirement (RNP value) or half the lateral deviation scale. Whilst this standard should be observed, pilots must also be aware that Navigation System Error + Flight Technical Error (lateral deviation) may not exceed the specified navigation accuracy. When carrying out approach operations, if the GNSS Horizontal Protection Limit (HPL) exceeds 0.15 NM, the allowable lateral deviation will be limited to less than the half scale value.

7.10 If ATC issues a heading assignment taking the aircraft off a route, the navigation system flight plan may only be modified when:

(a) ATC clearance is received to rejoin the route; or

(b) ATC confirms a new clearance.

7.11 If the navigation system does not automatically retrieve and set the navigation accuracy from the on-board navigation database for each leg segment of a route or procedure, the flight crew's operating procedures must ensure the smallest navigation accuracy for the route or procedure is manually entered into the RNP system.

8 Operating standards – flight procedures – SID requirements

8.1 Before an eligible aircraft takes-off, the following A-RNP SID requirements must be verified:

(a) that the aircraft's RNP system is available, is operating correctly and the correct aerodrome and runway data is loaded;

(b) that the aircraft navigation system is operating correctly;

(c) that the correct runway and departure procedure (including any applicable en route transition) is entered in the navigation system flight plan and properly depicted;

(d) that, if an RNP departure procedure is assigned and the runway, procedure or transition is subsequently changed, the appropriate changes are entered in the navigation system flight plan, properly depicted and available for navigation.

Note It is recommended that, within the constraints of normal operations, there be a final check of proper runway entry and correct route depiction, shortly before take-off.

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8.2 The operator must ensure that each member of the flight crew is aware of the functional limitations of relevant A-RNP systems and the correct application of manual tracking procedures.

8.3 The RNP system must be selected and available to provide flight guidance for lateral navigation no later than 153 m (or 500 ft) above the aerodrome field elevation.

Note The altitude at which navigation guidance begins on a given route may be higher, for example, "climb to 304 m (or 1 000 ft), then direct to X….".

8.4 For an RNP operation, an authorised method must be used to achieve an appropriate level of performance for the selected procedure, for example, lateral deviation indicator, navigation map display, flight director or autopilot.

8.5 The GNSS signal must be acquired before the take-off roll commences.

8.6 For aircraft using (E)TSO-C129a stand-alone equipment, the departure aerodrome must be loaded into the flight plan in order to achieve the appropriate navigation system monitoring and sensitivity.

8.7 For aircraft using (E)TSO-C146a stand-alone equipment, if the departure begins at a runway waypoint, then the departure aerodrome does not need to be in the flight plan to obtain appropriate monitoring and sensitivity.

9 Operating standards – flight procedures – RNP STAR requirements

9.1 The following must be checked and confirmed for an RNP STAR:

(a) that the aircraft navigation system is operating correctly;

(b) that the correct arrival procedure and runway (including any applicable transition) are entered in the system and properly depicted.

9.2 The following must be checked and confirmed:

(a) the active navigation system flight plan, by comparing the charts with the navigation displays;

(b) the sequence of waypoints;

(c) the reasonableness of track angles;

(d) distances, altitude or speed constraints;

(e) as far as practicable, which waypoints are fly-by and which are flyover.

9.3 The operator must ensure that updating will exclude a particular navaid, if so required by a route.

9.4 A route is not to be used if doubt exists as to its validity in the navigation database.

9.5 No member of the flight crew may create a new waypoint by manual entry into the RNP system.

9.6 If the operator's contingency procedures require reversion to a conventional arrival route, provision for that arrival route must be made before commencement of the RNP STAR.

9.7 Route modifications in the terminal area may take the form of radar headings or "direct to" clearances and may require the insertion of tactical waypoints from the navigation database. However, no member of the flight crew may make a manual entry or modification of the loaded route using temporary waypoints or fixes not contained in the database.

9.8 All relevant published altitude and speed constraints must be observed.

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10 Contingency procedures for performance failure

ATC must be notified immediately if the system performance ceases to meet RNP requirements during an RNP operation in controlled airspace.

11 Flight crew knowledge and training

11.1 An A-RNP operation may only be commenced if each member of the flight crew has knowledge of the following:

(a) the meaning and proper use of aircraft equipment and navigation suffixes;

(b) the capabilities and limitations of the RNP system installed in the aircraft;

(c) the operations and airspace for which the RNP system is approved to operate;

(d) the limitations of the navaids to be used for the RNP operation;

(e) the required navigation equipment for operation on RNP routes with SIDs or STARs;

(f) depiction of waypoint types (flyover, fly-by and FRT), ARINC 424 Path Terminators, and associated aircraft flight paths;

(g) contingency procedures for RNP failures;

(h) the radiotelephony phraseology for the relevant airspace in accordance with the AIP for the State in which the aircraft is operating;

(i) the flight planning requirements for RNP operation;

(j) RNP procedure requirements as determined from chart depiction and textual description;

(k) A-RNP system-specific information, including:

(i) levels of automation, mode annunciations, changes, alerts, interactions, reversions and degradation; and

(ii) functional integration with other aircraft systems; and

(iii) monitoring procedures for each phase of the flight; and

(iv) types of navigation sensors, for example, DME, IRU, GNSS, utilised by the A-RNP system, and associated system prioritisation, weighting and logic; and

(v) aircraft configuration and operational conditions required to support A-RNP operations, including appropriate selection of CDI scaling (lateral deviation display scaling) and/or map scale; and

(vi) pilot procedures consistent with the operation; and

(vii) the meaning and appropriateness of route discontinuities and related flight crew procedures; and

(viii) turn anticipation with consideration of speed and altitude effects; and

(ix) interpretation of electronic displays and symbols; and

(x) automatic and/or manual setting of the required navigation accuracy.

11.2 Understand the performance requirement to couple the autopilot/flight director to the navigation system's lateral guidance on RNP procedures, if required.

11.3 The equipment should not permit the flight crew to select a procedure or route that is not supported by the equipment, either manually or automatically (e.g. a procedure is not supported if it incorporates an RF Leg and the equipment does not provide RF Leg capability). The system should also restrict pilot access to procedures requiring RF Leg capability or FRT if the system can select the

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procedure, but the aircraft is not suitably equipped (e.g. the aircraft does not have the required roll steering autopilot or flight director installed).

11.4 An A-RNP operation may only be conducted if each member of the flight crew has received training in, or has equivalent experience of, A-RNP equipment and operating procedures, including training or experience in how to do the following:

(a) verify that the aircraft navigation data is current;

(b) verify the successful completion of RNP system self-tests;

(c) initialise A-RNP system position;

(d) perform a manual or automatic update (with take-off point shift, if applicable);

(e) retrieve and fly a SID and STAR with appropriate transition;

(f) verify waypoints and navigation system flight plan programming;

(g) resolve route discontinuities;

(h) adhere to speed and altitude constraints associated with a SID or STAR;

(i) fly direct to waypoint;

(j) fly a course or track to waypoint;

(k) intercept a course or track;

(l) vector off and rejoin a procedure;

(m) fly radar vectors and rejoining an RNP route from a heading mode;

(n) determine cross-track error/deviation;

(o) determine allowable deviation limits and maintain flight within those limits;

(p) remove and reselect navigation sensor input;

(q) confirm exclusion of a specific navaid or navaid type;

(r) perform gross navigation error checks using conventional aids;

(s) change arrival aerodrome and alternate aerodrome;

(t) perform parallel offset function if capability exists, and advise ATC if this functionality is not available;

(u) perform RNAV holding function;

(v) carry out contingency procedures for RNP failures;

(w) manual setting of the required navigation accuracy;

(x) operator-recommended levels of automation for phase of flight and workload, including methods to minimize cross-track error to maintain route centreline.

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Appendix 10 — Requirements for Radius to Fix (RF) Path Terminators

1 RF path terminator navigation authorisation for I.F.R. flights

1.1 The RF path terminator (commonly referred to as a RF Leg) provides the functionality for aircraft to fly a curved path with a defined radius when used in association with RNP 1, RNP 0.3, RNP APCH, and A-RNP specifications. RF Legs are an optional capability for use with RNP 1, RNP 0.3 and RNP APCH but are a minimum requirement for A-RNP.

Note RF Legs are used with RNP AR operations and have specific requirements included in the RNP AR operations specification in Appendix 7.

1.2 RF path terminators may only be used for PBN by an aircraft if the operator has a RF path terminator authorisation in writing from CASA unless subsection 9, 10 or 11 is applicable.

2 Requirements for RF path terminator

2.1 An RF path terminator navigation authorisation may only be issued to an operator who:

(a) holds an RNP 1, RNP 0.3, RNP APCH or A-RNP navigation authorisation; and

(b) complies with subclause 2.2 of this Appendix.

2.2 For paragraph 2.1 (b), an RF path terminator navigation authorisation may only be issued to an operator who:

(a) applies in writing to CASA for it; and

(b) supplies the documents mentioned in clause 3 of this Appendix; and

(c) satisfies CASA that RF path terminator operations can, and are likely to continue to, meet the requirements of this Appendix, including in relation to the following:

(i) aircraft eligibility;

(ii) RNP system equipment, system performance and system functionality;

(iii) operating standards, including flight planning and flight procedures;

(iv) approved flight crew training, and recency;

(v) MEL procedures;

(vi) aircraft and RNP system maintenance;

(vii) validity and continuing integrity of the airborne navigation database;

(viii) navigation error reporting procedures.

2.3 An RF path terminator navigation authorisation may not be issued unless the operator meets the requirements of this Appendix.

2.4 Despite subclauses 2.1, 2.2 and 2.3 of this Appendix, an RF path terminator navigation authorisation may be issued to an operator who:

(a) holds an RNP AR APCH navigation authorisation; and

(b) operates an aircraft which meets the aircraft eligibility requirements for an RNP AR APCH navigation authorisation; and

(c) applies in writing to CASA for an RF path terminator navigation authorisation.

2.5 An RF path terminator navigation authorisation may be issued, subject to conditions, if CASA considers this is necessary in the interests of safety.

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2.6 It is a condition of the issue of a navigation authorisation that the applicable operational requirements of this Appendix are complied with after the issue of the authorisation.

2.7 It is a condition of the issue of a navigation authorisation that where an operational check, consideration, procedure or task (however described) is required under this Appendix, the operator must ensure that it is performed, given, followed or carried out, as the case may be.

Note The check, consideration, procedure or task may in practice be performed by the pilot in command, other members of the flight crew, the despatch officer or other operational personnel. However, legal responsibility for compliance is placed on the operator who must ensure that the performance occurs in accordance with his or her established procedures.

2.8 The navigation system should not permit the pilot to select a procedure that is not supported by the equipment, either manually or automatically (e.g. a procedure is not supported if it incorporates an RF Leg and the equipment does not provide RF Leg capability). The navigation system should also prohibit pilot access to procedures requiring RF Leg capability if the system can select the procedure, but the aircraft is not otherwise properly equipped (e.g. the aircraft does not have the required roll steering autopilot or flight director installed).

Note 1 One acceptable means to meet these requirements is to screen the aircraft's on-board navigation database and remove any routes or procedures the aircraft is not eligible to execute. For example, if the aircraft is not eligible to complete RF Leg segments, then the database screening could remove all procedures containing RF Leg segments from the navigation database.

Note 2 Another acceptable means of compliance may be pilot training to identify and prohibit the use of procedures containing RF Legs.

3 Application — documents

The application must be made on the approved form and be accompanied by the following documents:

(a) aircraft airworthiness documents which satisfy CASA that the aircraft is equipped for RF path terminator operations, for example, the AFM, the AFMS or OEM service letters;

(b) a detailed description of relevant aircraft equipment for RF path terminator operations, including a configuration list of the components and equipment;

(c) a detailed description of the proposed flight crew training for RF path terminator operations, including a copy of the training syllabus, for approval by CASA;

(d) a detailed description of the proposed training for maintenance personnel in RF path terminator operations, including a copy of the training syllabus, for approval by CASA;

(e) a detailed description of the operating procedures to be used for RF path terminator operations (including flight planning and flight procedures) supported by relevant copies of, or extracts from, the following:

(i) the operations manual;

(ii) the checklists;

(iii) the contingency procedures;

(iv) the QRH;

(f) copies of the sections of the MEL applicable to RF path terminator operations;

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(g) a detailed description of the maintenance program used to ensure the continuing airworthiness of the aircraft for RF path terminator operations;

(h) a detailed description of the method used to ensure the validity and continuing integrity of the airborne navigation database;

(i) revisions to the MEL;

(j) if requested in writing by CASA — a copy of any relevant document referred to in any of the documents mentioned in paragraphs (a) to (i).

4 Aircraft eligibility

4.1 An aircraft is eligible for RF path terminator operations if:

(a) the aircraft is equipped with an RNP 1, RNP 0.3, RNP APCH or A-RNP system and the OEM has documented that the aircraft is capable of RF path terminator operations; and

(b) the aircraft meets the requirements for RF path terminator operations in accordance with ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Appendix 1, *Radius to Fix (RF) Path Terminator*.

Note The system performance and functional requirements for RF Path Terminator operations are replicated in clauses 5 and 6 of this Appendix.

4.2 For paragraph 4.1 (a), an RNP system with an RF path terminator function must meet the requirements of at least 1 of the following:

(a) *FAA AC 90-105 — Approval Guidance for RNP Operations and Barometric Vertical Navigation in the U.S. National Airspace System*;

(b) *FAA AC 90-101A — Approval Guidance for RNP Procedures with AR;*

(c) *FAA AC 20-138B — Airworthiness Approval of Positioning and Navigation Systems;*

(d) *EASA AMC 20-26 — Airworthiness Approval and Operational Criteria for RNP Authorisation Required Operations*;

(e) an approval issued by the National Aviation Authority of the aircraft's State of Operation or Registry, and which is assessed by CASA as meeting requirements that are the same as, or equivalent to, the requirements of paragraph (a), (b), (c) or (d) of this clause;

(f) a CASA assessment of the aircraft which results in a CASA determination that the aircraft meets the standards for eligibility set out in the paragraphs of this clause.

4.3 The flight manual or referenced airworthiness eligibility document must contain the following information:

(a) a statement indicating that the aircraft meets the requirements for RNP operations with RF Legs and has demonstrated the established minimum capabilities for these operations. This documentation should include the phase of flight, mode of flight (e.g. FD on or off, and/or AP on or off, and applicable lateral and vertical modes), minimum demonstrated lateral navigation accuracy, and sensor limitations, if any;

(b) any conditions or constraints on path steering performance (e.g. A/P engaged, FD with map display, including lateral and vertical modes, and/or CDI/map scaling requirements) should be identified. Use of manual control with CDI only, is not allowed on RF Legs;

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(c) the criteria used for the demonstration of the system, acceptable normal and non-normal configurations and procedures, the demonstrated configurations and any constraints or limitations necessary for safe operation.

5 RF path terminator system performance

To meet the requirements of clause 4 above, an eligible aircraft's RF path terminator system must meet 1 of the following performance standards:

(a) the performance requirements set out in one of the documents listed in subclause 4.2 of this Appendix;

(b) a demonstration to CASA that the navigation system has the capability to execute leg transitions and maintain track consistent with an RF Leg between 2 fixes. The lateral TSE must be within ±1 × RNP of the path defined by the published procedures for at least 95% of the total flight time for each phase of flight and each autopilot and/or flight director mode requested.

6 RF path terminator system functionality

To meet the requirements of clause 4 above, an eligible aircraft's RF path terminator system must have the following functionality:

(a) an autopilot or flight director with at least "roll-steering" capability that is driven by the RNP system. The autopilot/flight director must operate with suitable accuracy to track the lateral and, as appropriate, vertical paths required by a specific RNP procedure;

(b) an electronic map display depicting the RNP computed path of the selected procedure;

(c) the flight management computer, the flight director system, and the autopilot must be capable of commanding and achieving a bank angle up to 25 degrees above 400 feet AGL;

(d) the flight guidance mode should remain in LNAV while on an RF Leg, when a procedure is abandoned or a missed approach/go-round is initiated (through activation of TOGA or other means) to enable display of deviation and display of positive course guidance during the RF Leg. As an alternative means, crew procedures may be used that ensure that the aircraft adheres to the specified flight path throughout the RF Leg segment.

7 Operating standards

7.1 The standards for the conduct of RF path terminator operations are as follows:

(a) RF path terminator operations must be conducted in association with RNP 1, RNP 0.3, RNP APCH or A-RNP operations;

(b) when the intended route includes flying an RNP route with an RF Leg, the RNP system and autopilot/flight director must be operational on despatch;

(c) the route must be retrieved from the aircraft navigation database and conform to the charted procedure;

(d) the lateral path must not be modified except when complying with ATC clearances/instructions;

(e) the pilot must use either a flight director or autopilot and comply with any instructions or procedures identified by the manufacturer as necessary to comply with the performance requirements in this Appendix;

(f) the aircraft must be established on the procedure or route before beginning the RF Leg;

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(g) where published, the pilot must not exceed maximum airspeeds associated with the fly-ability (design) of the RF Leg.

7.2 Route centrelines must be maintained as close as practicable unless authorised to deviate by ATC or under emergency conditions. Navigation System Error + Flight Technical Error (lateral deviation) must not exceed the specified navigation accuracy.

8 Flight crew knowledge and training

An RF path terminator operation may only be commenced if each member of the flight crew has knowledge of, and approved training in, how to safely conduct an RF path terminator operation, with particular reference to the following:

(a) the meaning and proper use of RF functionality in RNP systems;

(b) associated procedure characteristics as determined from chart depiction and textual description;

(c) associated levels of automation, mode annunciations, changes, alerts, interactions, reversions, and degradation;

(d) monitoring track-keeping performance;

Note Manually selecting aircraft bank limiting functions may reduce the aircraft's ability to maintain its desired track and are not permitted. Pilots should recognise that manually selectable aircraft bank-limiting functions may reduce their ability to satisfy ATC path expectations, especially when executing large angle turns.

(e) the effect of wind on aircraft performance during execution of RF Legs and the need to remain within the RNP containment area. The training program should address any operational wind limitations and aircraft configurations essential to safely complete the RF Leg;

(f) the effect of ground speed on compliance with RF paths and bank angle restrictions impacting the ability to remain on the course centreline;

(g) interpretation of electronic displays and symbols;

(h) contingency procedures.

Note It is not required to establish a separate training program or regime if RNP and RF Leg training is already an integrated element of a training program. However, it should be possible to identify what aspects of RF Leg use are covered within a training program. Private operators should be familiar with the practices and procedures identified in CAO 20.91, section 17.

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Appendix 11 — Requirements for Fixed Radius Transitions (*FRTs*)

1 FRT navigation authorisation for I.F.R. flights

1.1 The FRT provides the functionality for aircraft to fly a defined radius transition path when separation between parallel routes is required and the fly-by transition is not compatible with separation criteria.

Note FRT is likely to be a requirement for operation in European airspace from 2018.

1.2 FRT may only be used in conjunction with the RNP 4, RNP 2 and Advanced RNP navigation specifications.

1.3 FRT may only be used for PBN by an aircraft if the operator has an FRT navigation authorisation in writing from CASA unless subsection 9, 10 or 11 are applicable.

2 Requirements for FRTs

2.1 An FRT navigation authorisation may only be issued to an operator who:

(a) holds an RNP 2 or A-RNP navigation authorisation; and

(b) complies with subclause 2.2 and the other requirements of this Appendix.

2.2 For paragraph 2.1 (b) of this Appendix, an FRT navigation authorisation may only be issued to an operator who:

(a) applies in writing to CASA for it; and

(b) supplies the documents mentioned in clause 3 of this Appendix; and

(c) satisfies CASA that FRT operations can, and are likely to continue to, meet the requirements of this Appendix, including in relation to the following:

(i) aircraft eligibility;

(ii) RNP system equipment, system performance and system functionality;

(iii) operating standards, including flight planning and flight procedures;

(iv) approved flight crew training;

(v) MEL procedures;

(vi) aircraft and RNP system maintenance;

(vii) validity and continuing integrity of the airborne navigation database;

(viii) navigation error reporting procedures.

2.3 Despite subclauses 2.1 and 2.2 of this Appendix, an FRT navigation authorisation may be issued to an operator who:

(a) holds an RNP 2 or A-RNP navigation authorisation; and

(b) operates an aircraft which meets the aircraft eligibility requirements for an RNP 2 or A-RNP navigation authorisation; and

(c) applies in writing to CASA for an FRT navigation authorisation.

2.4 An FRT navigation authorisation may be issued, subject to conditions, if CASA considers this is necessary in the interests of safety.

2.5 It is a condition of the issue of a navigation authorisation that the applicable operational requirements of this Appendix are complied with after the issue of the authorisation.

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2.6 It is a condition of the issue of a navigation authorisation that where an operational check, consideration, procedure or task (however described) is required under this Appendix, the operator must ensure that it is performed, given, followed or carried out, as the case may be.

Note The check, consideration, procedure or task may in practice be performed by the pilot in command, other members of the flight crew, the despatch officer or other operational personnel. However, legal responsibility for compliance is placed on the operator who must ensure that the performance occurs in accordance with his or her established procedures.

3 Application — documents

The application must be made on the approved form and be accompanied by the following documents:

(a) aircraft airworthiness documents which satisfy CASA that the aircraft is equipped for FRT operations, for example, the AFM, the AFMS or OEM service letters;

(b) a detailed description of relevant aircraft equipment for FRT operations, including a configuration list of the components and equipment;

(c) a detailed description of the proposed flight crew training for FRT operations, including a copy of the training syllabus, for approval by CASA;

(d) a detailed description of the proposed training for maintenance personnel in FRT operations, including a copy of the training syllabus, for approval by CASA;

(e) a detailed description of the operating procedures to be used for FRT operations (including flight planning and flight procedures) supported by relevant copies of, or extracts from, the following:

(i) the operations manual;

(ii) the checklists;

(iii) the contingency procedures;

(iv) the QRH;

(f) copies of the sections of the MEL applicable to FRT operations;

(g) a detailed description of the maintenance program used to ensure the continuing airworthiness of the aircraft for FRT operations;

(h) a detailed description of the method used to ensure the validity and continuing integrity of the airborne navigation database;

(i) revisions to the MEL;

(j) if requested in writing by CASA — a copy of any relevant document referred to in any of the documents mentioned in paragraphs (a) to (i).

4 Aircraft eligibility

4.1 An aircraft is eligible for FRT operations if:

(a) the aircraft is equipped with an RNP 2 or A-RNP system and the OEM has documented that the aircraft is capable of FRT operations; and

(b) the aircraft meets the requirements for FRT operations in accordance with ICAO Doc. 9613, *Performance-based Navigation (PBN) Manual*, Volume II, Part C, Appendix 2, *Fixed Radius Transition*.

Note The system performance and functional requirements for FRT operations are replicated in clauses 5 and 6 of this Appendix.

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4.2 For paragraph 4.1 (a) of this Appendix, an RNP system with an FRT function must meet the requirements of at least 1 of the following:

(a) *AC 20-138B — Airworthiness Approval of Positioning and Navigation Systems*;

(b) an approval issued in the aircraft's State of Operation or Registry, and which is assessed by CASA as meeting requirements that are the same as, or equivalent to, the requirements of this clause;

(c) a CASA assessment of the aircraft which results in a CASA determination that the aircraft meets the standards for eligibility set out in this clause.

4.3 The flight manual or referenced airworthiness eligibility document should contain the following information:

(a) a statement indicating that the aircraft meets the requirements for RNP operations with FRT and has demonstrated the established minimum capabilities for these operations. This documentation should include the phase of flight, mode of flight (e.g. FD on or off, and/or AP on or off, and applicable lateral and vertical modes), minimum demonstrated L/NAV accuracy, and sensor limitations, if any;

(b) any conditions or constraints on path steering performance (e.g. A/P engaged, FD with map display, including lateral and vertical modes, and/or CDI/map scaling requirements) should be identified. Use of manual control with CDI only, is not allowed on FRT;

(c) the criteria used for the demonstration of the system, acceptable normal and non-normal configurations and procedures, the demonstrated configurations and any constraints or limitations necessary for safe operation should be identified.

5 FRT system performance

To meet the requirements of clause 4 of this Appendix, an eligible aircraft's FRT system must meet the following performance standards:

(a) the performance requirements set out in any of the documents listed in clause 4.2 of this Appendix;

(b) a demonstration to CASA that the navigation system has the capability to execute leg transitions and maintain track consistent with an FRT at each waypoint. The lateral Total System Error must be within ±1 × RNP of the path defined by the published procedures for at least 95% of the total flight time for each phase of flight and each autopilot and/or flight director mode requested.

6 FRT system functionality

To meet the requirements of clause 4 of this Appendix, an eligible aircraft's FRT system must have the following functionality:

(a) the system must have the capability to execute a flight path transition and maintain a track consistent with a fixed radius between 2 route segments. The lateral TSE must be within ±1 × RNP of the path defined by the published procedure for at least 95% of the total flight time for each phase of flight and any manual, autopilot and/or flight director mode. For path transitions where the next route segment requires a different TSE and the path transition required is an FRT, the navigation system may retain the navigation accuracy value for the previous route segment throughout the entire FRT segment. For example, when a transition occurs from a route segment requiring an accuracy value of 2.0 to a route segment requiring an

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accuracy value of 1.0, the navigation system may use an accuracy value of 2.0 throughout the FRT;

(b) the system must have an electronic map display depicting the RNP computed path of the selected route with pilot selectable range and a numerical indication of the cross-track error value;

(c) the system must be able to define transitions between flight path segments using a 3-digit numeric value for the radius of turn (to 1 decimal place) in nautical miles e.g. 15.0, 22.5. The navigation database will specify the radius associated with a particular waypoint along an airway.

7 Operating standards

7.1 The standards for the conduct of FRT operations are as follows:

(a) FRT operations must be conducted in association with RNP 4, RNP 2 or Advanced RNP operations;

(b) when the intended route includes flying an RNP route with an FRT, the RNP system must be operational on despatch and autopilot/flight director should be operational;

(c) the route must be retrieved from the aircraft navigation database and conform to the charted procedure;

(d) the lateral path must not be modified except when complying with ATC clearances/instructions;

(e) the pilot should use either a flight director or autopilot and must comply with any instructions or procedures identified by the manufacturer as necessary to comply with the performance requirements in this Appendix.

7.2 Route centrelines must be maintained as close as practicable unless authorised to deviate by ATC or under emergency conditions. NSE + FTE (lateral deviation) must not exceed the specified navigation accuracy.

8 Flight crew knowledge and training

An FRT operation may only be commenced if each member of the flight crew has knowledge of, and approved training in, how to safely conduct an FRT operation, with particular reference to the following:

(a) the meaning and proper use of FRT functionality in RNP systems;

(b) associated procedure characteristics as determined from chart depiction and textual description;

(c) associated levels of automation, mode annunciations, changes, alerts, interactions, reversions, and degradation;

(d) monitoring track-keeping performance;

Note Manually selecting aircraft bank limiting functions may reduce the aircraft's ability to maintain its desired track and are not permitted. Pilots should recognise that manually selectable aircraft bank-limiting functions may reduce their ability to satisfy ATC path expectations, especially when executing large angle turns.

(e) the effect of wind on aircraft performance during execution of FRT and the need to remain within the RNP containment area. The training program should address any operational wind limitations and aircraft configurations essential to safely complete the FRT;

(f) the effect of ground speed on compliance with FRT and bank angle restrictions impacting the ability to remain on the course centreline;

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(g) interpretation of electronic displays and symbols;

(h) contingency procedures.

Note It is not required to establish a separate training program or regime if RNP and FRT training is already an integrated element of a training program. However, it should be possible to identify what aspects of FRT use are covered within a training program.

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Appendix 12 — Requirements for Time of Arrival Control

Reserved pending standards development by ICAO.

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Appendix 13 — Use of suitable area navigation systems on conventional routes and procedures

1 Purpose

The purpose of this Appendix is to define the requirements for using GNSS-based area navigation systems as either a substitute means of navigation or as an alternate means of navigation while operating on, or transitioning to, conventional (not RNAV or RNP) routes and procedures in Australia.

2 Applicability

This Appendix is applicable to operators and pilots using GNSS-based area navigation systems as substitute or alternate means of navigation when operating on, or transitioning to, conventional routes or procedures.

3 Suitable GNSS-based area navigation systems

3.1 (E)TSO-C129, (E)TSO-C145, (E)TSO-C146 or (E)TSO-C196 GNSS when either a stand-alone system or part of a multi-sensor navigation system where the operator holds, or is deemed to hold, a navigation authorisation for RNP 2 in accordance with the requirements of Appendix 3 are suitable for use as substitute means of navigation or alternate means of navigation during the en route phase of flight.

3.2 (E)TSO-C129, (E)TSO-C145, (E)TSO-C146 or (E)TSO-C196 GNSS when either a stand-alone system or part of a multi-sensor navigation system where the operator holds, or is deemed to hold, a navigation authorisation for RNP 1 and RNP APCH in accordance with the requirements of Appendix 4 and Appendix 6 are suitable for use as substitute means of navigation or alternate means of navigation during the terminal and approach phases of flight provided that they have been verified as capable of flying the procedures as published.

3.3 Many GNSS-based area navigation systems have been shown to be not capable of flying conventional terminal and approach procedures in Australia as published. Terminal and approach operations using GNSS-based area navigation systems as substitute or alternate means of navigation are not permitted when the procedure includes either a “tear drop turn” or a “DME arc” unless approved in the AFM.

Note Some departure procedures will also be difficult to fly using GNSS-based navigation systems as a substitute or alternate means of navigation, particularly when the first turn occurs at an altitude. Departures need to be carefully verified.

4 Use of suitable GNSS-based area navigation systems

4.1 Subject to the operating requirements of this Appendix, operators may use suitable GNSS-based area navigation systems to:

(a) determine the aircraft position relative to, or its distance from, a VOR, NDB, DME fix, a named fix defined by a VOR/DME location, VOR radial, or NDB bearing; and

(b) navigate to or from a VOR or NDB; and

(c) hold over a VOR, NDB or DME fix.

Note The operational uses of GNSS described in this clause apply even when a navigation aid is identified as required on a procedure.

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5 Use of suitable GNSS-based area navigation systems not permitted

An otherwise suitable GNSS-based area navigation system is not permitted to be used for:

(a) **NOTAMed procedures**. Unless otherwise specified, navigation on procedures that are identified as not authorised without exception by a NOTAM. For example, an operator may not use a suitable GNSS-based area navigation system to navigate on a procedure that is based on a recently decommissioned navigation aid;

(b) **Lateral navigation on LOC-based courses**. Lateral navigation on LOC-based courses (including LOC back-course guidance) without reference to raw LOC data.

6 Operating requirements

General operating requirements

6.1.1 Pilots must comply with the AFM, AFMS, operating manual, QRH or pilot's guide when operating the aircraft navigation system.

6.1.2 Pilots may not use the GNSS-based area navigation system as a substitute or alternate means of navigation if the aircraft has an AFM or AFMS with a limitation to monitor the underlying navigation aids for the associated operation.

6.1.3 Pilots of aircraft with an AFM limitation that requires the aircraft to have other equipment appropriate to the route being flown may only use the area navigation system as a substitute means of navigation for out-of-service navigation aids, but not for inoperative or not installed equipment.

Navigation database requirements

6.2.1 Pilots must ensure that the installed navigation database is:

(a) current (except as provided for by subsection 13 of this CAO); and

(b) appropriate for the region of intended operation and includes the waypoints, navigation aids, and fixes for departure, arrival and alternate aerodromes; and

(c) has been obtained from a supplier holding a Letter of Acceptance in accordance with paragraph 13.3 of this CAO.

6.2.2 For en route and terminal area operations, pilots must:

(a) extract the routes or procedures from the on-board navigation database by name; or

(b) extract waypoints, navigation aids, and fixes by name from the on-board navigation database; and

(c) comply with the charted route or procedure. Heading-based legs associated with procedures may be flown using manual technique (based on indicated magnetic heading) or, if available, extracted from the aircraft database and flown using area navigation system guidance.

6.2.3 For approach procedures, pilots must:

(a) extract the procedure from the on-board navigation database by name; and

(b) comply with the charted procedure. Heading-based legs associated with procedures may be flown using manual technique (based on indicated magnetic heading).

Procedure validation

6.3.1 Procedures used with suitable GNSS-based area navigation systems, as either a substitute means of navigation or as an alternate means of navigation, must be

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verified for navigation data and operability using 1 of the following processes before being used:

(a) on-going, system-wide checks of navigation data and operability;

(b) as-needed, procedure specific checks of navigation data and operability.

6.3.2 These processes must ensure navigation data (e.g. waypoint names, waypoint sequence, distance between waypoints, heading/course/track information, and vertical path angles) used in airborne equipment conform to published information. The following methods to check the operability of procedure(s) are acceptable:

(a) suitable desktop analysis;

(b) simulator evaluation; or

(c) flight (in visual meteorological conditions).

Operating requirements

6.4.1 Pilots may not manually enter published procedure or route waypoints via latitude/longitude, place/bearing, or place/bearing/distance into the aircraft navigation system.

6.4.2 Route centrelines must be maintained as close as practicable, as depicted by lateral deviation indicators or flight guidance systems during all operations described in this Appendix unless authorised to deviate by ATC or under emergency conditions.

Note 1 Brief deviations from the standard mentioned above are acceptable during and immediately after turns, but only to the minimal extent that accurate cross-track information may not be provided during the turn.

Note 2 Piloting standards usually require the aircraft to be flown to maintain lateral deviation not exceeding half the current accuracy requirement (RNP value) or half the lateral deviation scale. While this standard should be observed, pilots must also be aware that Navigation System Error + Flight Technical Error (lateral deviation) may not exceed the specified navigation accuracy. When carrying out approach operations, if the GNSS Horizontal Protection Limit (HPL) exceeds 0.15 NM, the allowable lateral deviation will be limited to less than the half scale value.

6.4.3 Operation on NDB or VOR procedures authorised under this Appendix requires navigation system accuracies of less than or equal to:

(a) 2 NM for en route operations (RNP 2);

(b) 1 NM for initial, intermediate and Missed Approach Segments (RNP 1); and

(c) 0.3 NM for Final Approach Segments (RNP APCH).

Note GNSS system as a substitute for VOR may not be approved within 8 NM of the VOR and within 4 NM from the NDB.

6.4.4 RAIM or other approved integrity monitor must be available during these operations.

Equipment requirements

6.5.1 Operators conducting regular passenger transport, or charter, operations must be equipped with at least 1 other independent navigation system in addition to the installed and operative GNSS-based area navigation system.

6.5.2 This additional system must be suitable for the intended route so that, in the event of an area navigation system failing, the aircraft is capable of proceeding safely to an aerodrome and completing an instrument approach. For example:

(a) for an aircraft equipped with (E)TSO- C145 ( ), (E)TSO-C146 ( ) or (E)TSO-C196 ( ) GNSS-based area navigation systems, an acceptable

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installation requires dual GNSS but no additional navigation equipment is required; and

(b) an aircraft equipped with (E)TSO-C129 GNSS-based area navigation systems requires operative VOR and/or ADF navigation equipment suitable for the intended en route, terminal, and approach operations, including any alternates.

6.5.3 ADF equipment need not be installed and operative, although operators of aircraft without an ADF will be bound by the operational requirements defined in this Appendix and may not have access to some procedures (that is, there may be instances when some operations might not be conducted without ADF equipment).

6.5.4 Use of an area navigation system as a substitute means of navigation may be applicable to normal in-flight use, to continuation of flight after failure, or to dispatch with inoperative conventional capability if consistent with the applicable MMEL for the aircraft type and an applicable CASA approved operator's MEL.

Alternate aerodrome requirements

6.6 For the purposes of flight planning, any required alternate aerodrome must have an available instrument approach procedure that meets the requirements of this Appendix for the equipment installed in the aircraft.

6.7 For aircraft equipped with (E)TSO-C129 ( ) GNSS systems, the alternate aerodrome must have a non-GNSS approach procedure available and the aircraft must have the requisite equipment installed and operative.

6.8 For aircraft equipped with (E)TSO-C145 ( ), (E)TSO-146 ( ) or (E)TSO-196 ( ) equipment, the approach procedures at an alternate aerodrome may be GNSS based.

7 GNSS requirements

7.1 GNSS-based area navigation systems may be used as an alternate means of navigation without restriction providing the aircraft is fitted with the equipment for the underlying navigation aid, the system is operative and the ground-based navigation aid is operative.

7.2 As part of flight planning, a prediction for GNSS integrity availability must be obtained where GNSS will be used as a substitute or alternate means of navigation.

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Notes to *Civil Aviation Order 20.91 (Instructions and directions for performance-based navigation) Instrument 2014*

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*, the *Civil Aviation Safety Regulations 1998* and the *Acts Interpretation Act 1901*) as shown in this document comprises *Civil Aviation Order 20.91 (Instructions and directions for performance-based navigation) Instrument 2014* amended as indicated in the Tables below.

Table of Orders

Year and number	Date of registration on FRL	Date of commencement	Application, saving or transitional provisions
CAO 20.91 Instrument 2014	15 December 2014 (*see* F2014L01703)	15 December 2014 (*see* s. 3)	—
CAO 20.91 Am Instrument 2017 (No. 1)	15 November 2017 (*see* F2017L01471)	16 November 2017 (*see* s. 2)	—
CAO 20.91 Am Instrument 2018 (No. 1)	1 November 2018 (see F2018L01527)	2 November 2018	—

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
subs. 3	am. F2017L01471, F2018L01527
subs. 4	am. F2018L01527
subs. 5	am. F2018L01527
subs. 6	am. F2018L01527
subs. 7	am. F2018L01527
subs. 8	am. F2018L01527
subs. 9	am. F2018L01527
subs. 10	am. F2018L01527
subs. 11	am. F2018L01527
subs. 13	am. F2018L01527
Appendix 1	am. F2018L01527
Appendix 2	am. F2018L01527
Appendix 5	am. F2018L01527
Appendix 6	am. F2018L01527
Appendix 7	am. F2018L01527
Appendix 8	am. F2018L01527
Appendix 9	am. F2018L01527
Appendix 10	am. F2018L01527
Appendix 11	am. F2018L01527
Appendix 13	am. F2018L01527

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Amendment Order (No. R22) 2004 as amended

made under regulations 5.11, 5.16 and 303 of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 30 January 2015 taking into account amendments up to *Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)*.

Prepared by the Legislative Drafting Section, Legal Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R22) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 29.2 of the Civil Aviation Orders

Section 29.2 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Schedule 1 Substitution of section 29.2 of the Civil Aviation Orders

Section 29.2

Air service operations — night flying training

1 Application

This section applies to the conduct of night circuit operations in aircraft operated by an operator authorised to conduct flying training at night.

2 Operating limitations

2.1 Aerodromes

An aerodrome used for night flying training must be 1 of the following:

(a) a military, certified or registered aerodrome that is suitable for night circuit operations;

(b) a landing area which meets the general guidelines in CAAP 92-1 and has been approved for night flying training operations by CASA;

(c) in the case of helicopters, an aerodrome or landing area described in (a) or (b) above, or a helicopter landing site which meets the guidelines in CAAP 92-2.

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2.2 Airspace

Unless otherwise approved by CASA, night circuits must not be conducted at a height less that 1 000 feet above aerodrome elevation. Operations must be conducted within a radius of 3 miles from the aerodrome reference point.

2.3 Weather Conditions

Night circuit operations must not be conducted in weather conditions less than a ceiling of 1 500 feet and visibility of 5 kilometres.

3 Supervision of operations

Night circuit operations must be conducted under the supervision of a flight instructor authorised by the operator to supervise the night flying training.

4 Aerodrome lighting and ground facilities

4.1 Lighting

The operator must ensure lighting is provided for the duration of the operations in accordance with the following:

(a) for aeroplanes — lighting as described in:
  (i) for military, certified or registered aerodromes — CAAP 92-1(1); or
  (ii) for other landing areas — CAAP 92A-1(0);

(b) for helicopters — lighting as described in subparagraph (a) or which meets the guidelines in CAAP 92-2.

4.2 Ground Facilities

The operator must ensure that the following ground facilities are provided:

(a) either:
  (i) a suitable standby power supply for fixed electric runway or HLS lighting; or
  (ii) portable runway or HLS lighting that is available for use in the event of a runway or HLS lighting power failure;

(b) a suitable means of indicating the wind velocity to aircraft on the manoeuvring area and aircraft in flight.

5 Aircraft equipment

The operator must ensure that aircraft are fitted with:

(a) serviceable instrumentation and lighting as mentioned in Civil Aviation Order 20.18 for night V.M.C. aerial work and private operations; and

(b) serviceable radio communication equipment.

Federal Register of Legislative Instruments F2015C00116

Notes to Civil Aviation Order 29.2

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 29.2 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R22	8 December 2004 (F2005B00820)	8 December 2004 (s. 2)	
CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)	FRLI 29 August 2014 (F2014L01177)	1 September 2014 (s. 2)	Sections 3 and 31 (Table A)

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 29.2	rs. CAO 2004 No. R22
subs. 1	rs. F2014L01177
subs. 2	am. F2014L01177
subs. 3	rs. F2014L01177
subs. 4	rs. F2014L01177
subs. 5	rs. F2014L01177
subs. 6	rep. F2014L01177
Appendix I	rep. F2014L01177
Appendix II	rep. F2014L01177

Table A Application, saving or transitional provisions

Sections 3 and 31 of Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1) read as follows:

3 Definitions

(1) In this instrument:

continued authorisation has the meaning given by regulation 202.261 of the *Civil Aviation Safety Regulations 1998* (***CASR 1998***).

new authorisation has the meaning given by regulation 202.261 of CASR 1998.

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(2) A reference in this instrument to a Civil Aviation Order identified by a specified number is taken to include a reference to the section of the Civil Aviation Orders with that number.

Note Some existing legislative instruments are referred to as a Civil Aviation Order followed by a number. Other instruments are referred to as a section of the Civil Aviation Orders. For consistency, in this instrument, all such instruments are referred to as a Civil Aviation Order followed by a number. For example, a reference to Civil Aviation Order 40.2.2 is taken to include a reference to section 40.2.2 of the Civil Aviation Orders.

31 Transitional — application of Civil Aviation Orders

The Civil Aviation Orders apply to a continued authorisation as if it were the equivalent new authorisation.

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Civil Aviation Amendment Order (No. R23) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under paragraph 28BA (1) (b) of the *Civil Aviation Act 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R23) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 29.3 of the Civil Aviation Orders

Section 29.3 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Federal Register of Legislative Instruments F2005B00825

Schedule 1 Substitution of section 29.3 of the Civil Aviation Orders

SECTION 29.3

AIR SERVICE OPERATIONS — AEROPLANES ENGAGED IN AGRICULTURAL OPERATION — NIGHT AERIAL SPRAYING

1 PURPOSE

1.1 The purpose of this section is to regulate night aerial spraying agricultural operations.

2 DEFINITIONS

2.1 In this section:

agricultural aeroplane means an aeroplane of a type that has been approved by CASA under paragraph 5.1 for the purpose of night spraying operations.

authorised landing area means a place authorised by CASA under regulation 89 of the *Civil Aviation Regulations 1988* for use as an aerodrome.

base landing area means:

(a) an authorised landing area; or

(b) an aerodrome;

from which an agricultural aeroplane departs after it has been assigned an operational task.

flight manoeuvring area means an area:

(a) that surrounds the perimeter of a treatment area; and

(b) the outer boundary of which is at least 1 nautical mile from that perimeter; and

(c) in which an aeroplane that is engaged in night spraying operations manoeuvres while so engaged.

hazard light means a fixed light used to identify and locate an obstruction that is a hazard within a treatment area or a flight manoeuvring area.

loading site means the ground location where an agricultural aeroplane is loaded with agricultural chemicals.

night spraying operations means night aerial spraying agricultural operations.

operational landing area means:

(a) an authorised landing area; or

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(b) an aerodrome;

from which an agricultural aeroplane departs with an agricultural load.

treatment area means an area of land that is, or is to be, treated with agricultural chemicals.

turn lights means the secondary floodlights installed on an agricultural aeroplane that are used to illuminate the ground during procedure turns.

worklights means the primary floodlights installed on an agricultural aeroplane that are used to illuminate the ground during spraying runs.

3 LANDING AREAS

3.1 An:

(a) authorised landing area; or

(b) aerodrome;

from which night spraying operations are conducted must, as a minimum, comply with the guidelines in CAAP 92-2, being guidelines that relate to night operations.

3.2 Subject to paragraph 3.3, a one-way runway may be used for night spraying operations where a two-way runway cannot be provided.

3.3 A one-way runway must not be used for night spraying operations unless:

(a) it has been inspected and approved by the pilot proposing to conduct the operation, being a pilot who holds an agricultural rating; and

(b) the runway length is not less than 150% of the take-off distance or landing distance (whichever is the greater) that is specified in the aeroplane's flight manual or approved performance chart for the prevailing conditions.

4 OPERATIONAL REQUIREMENTS

4.1 The runway lights at a base landing area or at an operational area may consist of a single row flarepath with flares spaced at intervals of not more than 90 metres.

4.2 An operational landing area must not be more than 30 nautical miles from the treatment area.

4.3 Flashing beacons must be installed and used at an operational landing area and at a treatment area in order to assist with navigation.

4.4 A pilot engaged in night spraying operations must transit between an operational landing area and a treatment area at a height of not less than 500 feet above obstructions along the route.

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4.5 An agricultural aeroplane engaged in night spraying operations must have two-way radio communication with ground units at the operational landing area and the treatment area.

4.6 Night spraying operations must not be conducted unless flight visibility is not less than 5 000 metres.

4.7 Paragraphs 4.3, 4.4 and 4.5 do not apply where a night spraying operation is conducted within 5 nautical miles of the operational landing area.

4.8 Where an operational landing area is more than 30 nautical miles from the base landing area then positioning flights to the operational landing area must be made during daylight.

5 AEROPLANE TYPE AND EQUIPMENT

5.1 An aeroplane type that is used for night spraying operations, and all aeroplane components in such an aeroplane type, must be approved by CASA for the purpose of night spraying operations.

5.2 An agricultural aeroplane:
(a) must be fitted with at least 2 worklights; and
(b) may be fitted with turnlights.

5.3 A worklight must be of not less than 450 watts and must be fitted so as to provide illumination without causing glare in the cockpit.

5.4 All worklight and turnlight installations (including switching controls and load shedding facilities) must be approved by CASA.

5.5 Subject to paragraph 5.6, an agricultural aeroplane engaged in night spraying operations must be equipped with the instruments specified in Appendix IV to section 20.18 of these Orders.

5.6 Such an aeroplane is not required to be equipped with an attitude indicator (artificial horizon) or a heading indicator (directional gyroscope).

6 RESPONSIBILITY

6.1 An operator and a pilot are, in relation to a night spraying operation, responsible for ensuring that the requirements of this section are complied with for the duration of the night spraying operation.

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7 LOW FLYING

7.1 Pursuant to regulation 174B of the *Civil Aviation Regulations 1988*, permission is granted for an agricultural aeroplane engaged in night spraying operations to be flown at night under the V.F.R. at a height less than 1 000 feet above the highest obstacle located within 10 miles of the aeroplane in flight.

7.2 Despite the permission granted under paragraph 7.1, a pilot conducting a night spraying operation must comply with subsection 3 of section 20.21 of these Orders.

Federal Register of Legislative Instruments F2005B00825

Australian Government

Civil Aviation Safety Authority

Civil Aviation Amendment Order (No. R24) 2004 as amended

made under regulation 156 of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 14 January 2015 taking into account amendments up to *Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)*.

Prepared by the Legislative Drafting Section, Legal Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R24) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 29.4 of the Civil Aviation Orders

Section 29.4 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Schedule 1 Substitution of section 29.4 of the Civil Aviation Orders

Section 29.4

Air Displays

1 Definitions

In this Order:

aerial application operation has the meaning given by regulation 61.010 of the *Civil Aviation Safety Regulations 1998*.

Air display means organised flying including cross-country events, contests, exhibitions of flying or local flights made for the purpose of carrying passengers for hire or reward performed before a public gathering.

Public gathering means people assembled at a location on the basis of a general public invitation, with or without subscription or levy.

Organiser means a person appointed by the organising body to plan and conduct the Air Display.

Cross-country event means air races, rallies and timed flight events and navigation contests.

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2 Approval

An air display shall not be conducted without the written approval of CASA.

3 Application

Written application for the approval to conduct an air display shall be submitted to CASA at least 28 days before the proposed air display is to take place and shall contain the following details:

(a) the date and locality of the proposed display;
(b) the program of events;
(c) organisations participating in the display;
(d) names of the principal participants;
(e) the name of the person proposed as organiser.

4 Conditions of approval

4.1 General Conditions

An air display shall be conducted in accordance with the following general requirements:

(a) the public shall be prevented from entering any area where aircraft engines are operating;
(b) spectator areas shall not be situated in the approach or take-off areas of an aerodrome;
(c) emergency rescue and first aid facilities shall be provided on a scale approved by CASA as commensurate with the scale and nature of the display;
(d) the air display shall be held at a location approved by CASA;
(e) the program of events shall be approved by CASA;
(f) passengers shall not be carried for hire or reward during any part of the air display except where specifically approved as part of the program;
(g) the program shall not include flying events likely to cause diversion of pilot attention from the aircraft control or which feature disorganised flight by aircraft in close proximity;
(h) the air display shall be conducted in V.M.C. except that a cross-country event may be conducted under I.F.R.

4.2 Manoeuvring Limitations

(1) Except during take-off or landing, or where specifically approved as part of the program of events, an aircraft must not operate below 500 feet above ground level.

(2) Except where specifically approved as part of the program of events, an aircraft in flight below 1 500 feet above ground level must not:

(a) track or manoeuvre towards spectators within a horizontal distance of 500 metres; or
(b) pass within 200 metres horizontal distance from spectators.

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4.3 Aerial Application Demonstrations

Airborne demonstrations of aerial application equipment must be conducted in accordance with the following additional requirements:

(a) the pilot must be authorised under Part 61 of the *Civil Aviation Safety Regulations 1998* to conduct an aerial application operation in that category of aircraft;

(b) substances having toxic or noxious characteristics must not be released from the aircraft;

(c) substances dropped or discharged from the aircraft must not contact spectators;

(d) equipment used in aerial application demonstrations must be decontaminated before the demonstration in accordance with relevant State, Territory or Commonwealth regulations.

4.4 Cross-Country Events

(1) Cross-country events shall be held over a route approved by CASA.

(2) When making application for approval the organiser shall apply as indicated in subsection 3 and shall include the following additional details:

(a) the object or purpose of the event;

(b) the class of aircraft which will be participating;

(c) the track over which it is proposed that the event will be flown;

(d) the proposed stopping places and reporting points along the route;

(e) the estimated time of commencement and completion of the event;

(f) the detailed organisation for the control of activities.

4.5 Pylon Races

Application for approval to conduct a pylon race, or a similar event, shall contain details of the area over which the event is to be staged. The area shall be:

(a) suitable for low flying; and

(b) such that the event would not constitute a nuisance to local authorities or residents; and

(c) such that the activity shall not endanger persons or property on the ground or water.

5 Planning and control

5.1 Air Traffic Control services may be provided depending on the nature, scale and location of the air display.

5.2 Where Air Traffic Control services are not provided, the approved location shall be designated as a danger area for the duration of the display.

5.3 Briefing

Prior to the start of an air display the organiser or his representative shall carry out a group briefing of all participants. The briefing must cover all aspects that are likely to affect the safety of flying operations, and shall include the following:

(a) the program of events;

(b) current and forecast weather conditions;

(c) runway(s), taxiways, spectator, aircraft parking and movement areas;

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(d) circuit pattern, holding areas, holding heights and aircraft movements;
(e) traffic control procedures and radio frequencies;
(f) emergency procedures;
(g) minimum heights and distances that apply to the display;
(h) ground handling and taxiing procedures;
(i) procedure in the event of movements of aircraft not participating in the air display.

5.4 Responsibility

The organiser shall be responsible for ensuring that the requirements of the *Civil Aviation Regulations 1988*, the *Civil Aviation Safety Regulations 1998* and of this section are met.

Note Persons or organisations intending to conduct an air display at a Commonwealth owned airfield will be required to indemnify the Commonwealth against any action or claim made against it arising from loss, damage, injury or death which may be the consequence of staging the air display, and may be required to take out public risk insurance.

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Notes to Civil Aviation Order 29.4

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 29.4 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R24	8 December 2004 (F2005B00835)	8 December 2004 (s. 2)	
CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)	FRLI 29 August 2014 (F2014L01177)	1 September 2014 (s. 2)	Sections 3 and 31 (Table A)

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 29.4	rs. CAO 2004 No. R24
subs. 1	am. F2014L01177
subs. 3	am. F2014L01177
subs. 4	am. F2014L01177
subs. 5	am. F2014L01177

Table A Application, saving or transitional provisions

Sections 3 and 31 of Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1) read as follows:

3 Definitions

(1) In this instrument:

continued authorisation has the meaning given by regulation 202.261 of the *Civil Aviation Safety Regulations 1998* (***CASR 1998***).

new authorisation has the meaning given by regulation 202.261 of CASR 1998.

(2) A reference in this instrument to a Civil Aviation Order identified by a specified number is taken to include a reference to the section of the Civil Aviation Orders with that number.

Note Some existing legislative instruments are referred to as a Civil Aviation Order followed by a number. Other instruments are referred to as a section of the Civil Aviation Orders. For consistency, in this instrument, all such instruments are referred to as a Civil Aviation Order

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followed by a number. For example, a reference to Civil Aviation Order 40.2.2 is taken to include a reference to section 40.2.2 of the Civil Aviation Orders.

31 Transitional — application of Civil Aviation Orders

The Civil Aviation Orders apply to a continued authorisation as if it were the equivalent new authorisation.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Amendment Order (No. R25) 2004 as amended

made under subregulation 150 (2) of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 15 January 2015 taking into account amendments up to *Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)*.

Prepared by the Legislative Drafting Section, Legal Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R25) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 29.5 of the Civil Aviation Orders

Section 29.5 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Schedule 1 Substitution of section 29.5 of the Civil Aviation Orders

Section 29.5

Air service operations — miscellaneous dropping of articles from aircraft in flight

1 Application

This section applies to all Australian aircraft except those aircraft engaged in aerial application operations or aerial application training operations.

1A Definitions

In this Order:

aerial application operation has the meaning given by regulation 61.010 of the *Civil Aviation Safety Regulations 1998*.

aerial application training operation means flight training for aerial application operations.

2 Directions relating to dropping of articles

2.1 This subsection deals with directions for the purposes of paragraph 150 (2) (a) of the *Civil Aviation Regulations 1988*.

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2.2 In respect of dropping for the purposes of cloud seeding or search and rescue operations, the directions set out in subsections 4 and 5 apply.

2.3 In respect of dropping for the purposes of search and rescue training operations, the directions set out in subsections 3, 4 and 5 apply.

2.3.1 In respect of the release of liquid fuel, the directions set out in subsection 8 apply.

2.4 In respect of dropping for purposes other than those mentioned in paragraphs 2.2, 2.3 and 2.3.1, the directions set out in subsections 3, 4, 5 and 7 apply.

Note 1 The directions specified in this Order do not confer any rights as against the owner of any land over which the operations may be conducted, or prejudice in any way the rights and remedies which any person may have in common law in respect of any injury to persons or damage to property caused directly or indirectly during the operations.

3 Dropping site

Dropping shall not be carried out within a control zone, within an aircraft lane of entry, or within 5 miles of a Government or licensed aerodrome, without the approval of CASA.

4 Dropping requirements

4.1 The articles or substances shall be carried inside the aircraft or in a manner specified in the flight manual or otherwise approved by CASA.

4.2 The opening through which the articles or substances are dropped shall be located so that the articles or substances, on release, will not damage or affect the operation of any part of the aircraft.

4.3 The size to weight ratio of individual articles shall be such that they will drop readily away from the aircraft.

4.4 For articles other than leaflets or substances not in the form of liquid, powder or fine grains, the dropping site shall be of such dimensions that there is no risk of the articles or substances falling outside the site.

4.5 Articles, other than leaflets or substances not in the form of liquids, powder or fine grains, shall not be dropped on a site unless it is clear of persons and stock.

4.6 The size of the leaflets and the number dropped at any one time shall be limited to an extent which will ensure that injury is not caused to persons on the ground if the leaflets fail to separate while dropping.

4.7 The dropping of articles or substances shall be controlled by a person other than the pilot in command (hereinafter referred to as the despatcher), unless the dropping can be carried out by the pilot in command from his normal crew station and without affecting his ability to control the aircraft normally.

4.8 Effective communication shall be maintained between the pilot in command and the despatcher during the dropping operation and the articles or substances shall be dropped only with the consent of the pilot in command.

Note In this Order, ***dropping operation*** means that part of the flight during which the aircraft is on the final approach path to the dropping site or target, and during which only minor changes of heading, airspeed and altitude are made.

4.9 The pilot in command shall ensure that movement of articles or substances during flight preparatory to dropping, during the dropping and after the dropping will not result in any change in aircraft trim that could cause an

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unsafe condition or cause the aircraft's centre of gravity to move outside permissible limits.

4.10 The operator shall ensure that the despatcher is properly instructed in his duties.

4.11 The pilot in command must be authorised under Part 61 of the *Civil Aviation Safety Regulations 1998* to conduct the activity.

5 Carriage of articles and persons

5.1 The carriage of articles or substances prior to dropping shall be in accordance with section 20.16.2.

5.2 Except with the permission of CASA, no person other than the persons having duties relating to the operation shall be carried in an aircraft engaged in operations during which dropping is carried out.

5.3 During dropping operations, each person on board except despatchers shall occupy a separate seat equipped with an approved safety belt or harness which shall be worn adjusted to ensure adequate restraint.

5.4 Where the dropping aperture is large enough for a person to fit through, all occupants except despatchers shall remain seated whenever the aperture is open.

5.5 A despatcher need not be provided with a seat but a position where he may sit shall be provided and equipped with an approved safety belt or harness.

5.5.1 A despatcher shall remain seated and wear a safety belt or harness adjusted to ensure adequate restraint:

(a) during take-off and landing; and

(b) during an instrument approach.

5.5.2 Except during dropping operations a despatcher shall remain seated and wear a safety belt or harness adjusted to ensure adequate restraint:

(a) in turbulent conditions; and

(b) when the aircraft is flying at a height of less than 100 feet above the terrain.

5.6 A despatcher shall wear approved restraint equipment during dropping operations and this equipment may permit him to move to but not through the dropping aperture.

6 Low flying permit

6.1 Subject to subsection 7 and pursuant to paragraph 157 (4) (b) of the *Civil Aviation Regulations 1988*, CASA grants a general permit:

(a) to each owner and operator of an aeroplane that is engaged in private, or aerial work, operations that require low flying (being dropping operations associated with search and rescue training) to fly at a height not lower than 100 feet during such operations; and

(b) to each owner and operator of an aircraft (other than an aeroplane) that is engaged in private, or aerial work, operations, being:

(i) dropping operations associated with search and rescue training; or

(ii) other dropping operations or practice for such operations;

to fly at a height lower than 500 feet during such operations over any area that is not a populous area.

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7 Operating conditions

7.1 An aircraft must not fly over any populous area at a height lower than 1 000 feet above the terrain, unless a flight at a lower height is essential to the efficient conduct of a dropping operation and such an operation is occasioned by an emergency.

7.2 Except with the permission of CASA, dropping operations shall be conducted by day only, in accordance with visual flight rules, and in continuous sight of the ground or water.

8 Directions relating to the release of liquid fuel

8.1 If paragraph 150 (2) (d) of the *Civil Aviation Regulations 1988* does not apply, a pilot in command may only release fuel in accordance with the *Air Navigation (Fuel Spillage) Regulations 1999*.

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Notes to Civil Aviation Order 29.5

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 29.5 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R25	8 December 2004 (F2005B00836)	8 December 2004 (s. 2)	
CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)	FRLI 29 August 2014 (F2014L01177)	1 September 2014 (s. 2)	Sections 3 and 31 (Table A)

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 29.5	rs. CAO 2004 No. R25
subs. 1	rs. F2014L01177
subs. 1A	ad. F2014L01177
subs. 4	am. F2014L01177
subs. 7	am. F2014L01177
Appendix I	rep. F2014L01177

Table A Application, saving or transitional provisions

Sections 3 and 31 of Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1) read as follows:

3 Definitions

(1) In this instrument:

continued authorisation has the meaning given by regulation 202.261 of the *Civil Aviation Safety Regulations 1998* (***CASR 1998***).

new authorisation has the meaning given by regulation 202.261 of CASR 1998.

(2) A reference in this instrument to a Civil Aviation Order identified by a specified number is taken to include a reference to the section of the Civil Aviation Orders with that number.

Note Some existing legislative instruments are referred to as a Civil Aviation Order followed by a number. Other instruments are referred to as a section of the Civil Aviation Orders. For

consistency, in this instrument, all such instruments are referred to as a Civil Aviation Order followed by a number. For example, a reference to Civil Aviation Order 40.2.2 is taken to include a reference to section 40.2.2 of the Civil Aviation Orders.

31 Transitional — application of Civil Aviation Orders

The Civil Aviation Orders apply to a continued authorisation as if it were the equivalent new authorisation.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Amendment Order (No. R26) 2004 as amended

made under subregulation 207 (1) and regulation 303A of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 22 December 2014 taking into account amendments up to *Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)*.

Prepared by the Legislative Drafting Section, Legal Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R26) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 29.6 of the Civil Aviation Orders

Section 29.6 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Schedule 1 Substitution of section 29.6 of the Civil Aviation Orders

Section 29.6

Air service operations — helicopter external sling load operations

1 Application

This section applies to the conduct of operations by helicopters engaged in the pick up, carriage and release of objects suspended from external sling load attachments.

2 Approval of aircraft type

2.1 Sling load operations shall only be carried out in a helicopter type for which a supplement to the aircraft flight manual, specifying the appropriate operating criteria, has been approved.

2.2 Sling load operations shall be carried out in accordance with the limitations and procedures contained in the approved helicopter flight manual.

3 Pilot qualifications

A pilot must not conduct a sling load operation unless the pilot is authorised under Part 61 of the *Civil Aviation Safety Regulations 1998* to conduct the operation.

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4 Carriage of persons

The pilot in command of a helicopter engaged in sling load operations shall not permit any person to be carried in the helicopter except:

(a) a flight crew member; or

(b) a flight crew member under training; or

(c) a person who performs an essential function in connection with sling load operations.

5 Conduct of operations

5.1 The pilot in command of a helicopter engaged in sling load operations shall be responsible for ensuring that:

(a) all personnel involved in the operation are suitably briefed prior to commencement; and

(b) adequate precautions are taken to ensure that safety of persons on the ground during sling load operations.

5.2 The pilot in command of a helicopter engaged in sling load operations shall not fly over a city, town or populous area except where a specific route is available which will ensure that in the event of load jettisoning or a forced landing, hazard will not be caused to persons or property on the ground.

5.3 Sling load operations at a specific location in a city, town or populous area may be conducted subject to the following conditions:

(a) local civic authority and police approval shall be obtained by the operator; and

(b) persons not directly involved in the sling load operations shall be kept clear of the site over which the helicopter is authorised to manoeuvre during the course of the operation; and

(c) during sling load operations on to the roof of a building, floors shall be cleared of personnel down to a level where the local fire authorities can provide adequate rescue facilities. In all cases, the 4 floors immediately below the roof shall be vacated.

5.4 The company operations manual shall include instructions to pilots and other company personnel involved in the conduct of sling load operations and shall cover, in detail, all normal and emergency procedures.

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Notes to Civil Aviation Order 29.6

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 29.6 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R26	8 December 2004	8 December 2004 (*see* s. 2)	
CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)	FRLI 29 August 2014 (*see* F2015L01177)	1 September 2014 (*see* s. 2)	Sections 3 and 31 (see Table A)

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 29.6	rs. CAO 2004 No. R26
subs. 3	am. CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)
Appendix I	rep. CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)

Table A Application, saving or transitional provisions

Sections 3 and 31 of Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1) read as follows:

3 Definitions

(1) In this instrument:

continued authorisation has the meaning given by regulation 202.261 of the *Civil Aviation Safety Regulations 1998* (***CASR 1998***).

new authorisation has the meaning given by regulation 202.261 of CASR 1998.

(2) A reference in this instrument to a Civil Aviation Order identified by a specified number is taken to include a reference to the section of the Civil Aviation Orders with that number.

Note Some existing legislative instruments are referred to as a Civil Aviation Order followed by a number. Other instruments are referred to as a section of the Civil Aviation Orders. For consistency, in this instrument, all such instruments are referred to as a Civil Aviation Order followed by a number. For example, a reference to Civil Aviation Order 40.2.2 is taken to include a reference to section 40.2.2 of the Civil Aviation Orders.

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31 Transitional — application of Civil Aviation Orders

The Civil Aviation Orders apply to a continued authorisation as if it were the equivalent new authorisation.

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Civil Aviation Amendment Order (No. R27) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under regulation 37 of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

2 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R27) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 29.8 of the Civil Aviation Orders

Section 29.8 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 29.8 of the Civil Aviation Orders

SECTION 29.8

FERRY FLIGHT OF AEROPLANES WITH 1 ENGINE INOPERATIVE

1 PERMISSIBLE UNSERVICEABILITY

1.1 Subject to this section, a defect set out in the following table in relation to the class of aircraft specified opposite the defect is approved as a permissible unserviceability:

TABLE

Defect	Class of aircraft
1. 1 engine inoperative	4 engined aeroplane
2. 1 engine inoperative	3 engined aeroplane

1.2 The use of an aeroplane included in a class of aircraft referred to in the table in paragraph 1.1 that has a defect of a kind referred to in that table opposite the relevant class is subject to the conditions set out in subsections 3, 4 and 5.

2 INTERPRETATION

2.1 In this section:

defective aeroplane means an aeroplane included in a class of aircraft referred to in the table in paragraph 1.1 that has a defect of a kind referred to in that table opposite the relevant class.

ferry flight means a flight conducted solely for the purpose of moving a defective aeroplane from a licensed aerodrome to another licensed aerodrome so that the aeroplane's inoperative engine can be repaired or replaced.

3 GENERAL CONDITIONS

3.1 A defective aeroplane must be used only for the purpose of undertaking a ferry flight or a flight under paragraph 4.4.

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3.2 Subject to this section, a defective aeroplane must not undertake a ferry flight or a flight under paragraph 4.4 except in accordance with:

(a) the restrictions, procedures and limitations relating to ferry flights that are:

(i) specified in the aeroplane's flight manual; or

(ii) approved by CASA and included in the aeroplane's operations manual;

being restrictions, procedures and limitations that are not inconsistent with this section; and

(b) any limitations relating to ferry flights that are specified in the aeroplane's certificate of airworthiness.

3.3 Where a defective aeroplane's flight manual or operations manual does not contain restrictions, procedures or limitations relating to ferry flights other than those specified in paragraphs 4.1 and 4.3, then the aeroplane must not undertake a ferry flight or a flight under paragraph 4.4.

4 CONDITIONS RELATING TO FLIGHT

4.1 Subject to paragraphs 4.2, 4.3, 4.4 and 4.5, a defective aeroplane may undertake a ferry flight only if:

(a) the aeroplane is capable of complying with the weight and performance limitations set out in section 20.7.1B of the Civil Aviation Orders; and

(b) where the aeroplane is propeller-driven — the propeller on the inoperative engine is feathered or removed; and

(c) the aeroplane does not carry any persons other than essential flight crew and does not carry any cargo, being cargo carried for hire or reward; and

(d) the aeroplane:

(i) takes-off; and

(ii) makes its approach from 1 500 feet above aerodrome level; and

(iii) lands;

in visual meteorological conditions;

(e) the ferry flight is planned so that the aeroplane does not arrive at the destination aerodrome during a period that would require the aeroplane to carry traffic holding fuel; and

(f) the particulars specified in subparagraphs (c) to (e) (inclusive) are included in the aeroplane's operations manual and the particulars specified in subparagraphs (a) and (b) are, where applicable, also included in that manual.

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4.2 For the purpose of determining whether a defective aeroplane is capable of complying with subparagraph 4.1 (a);

(a) a 4 engined defective aeroplane is to be taken to be a 3 engined aeroplane; and

(b) a 3 engined defective aeroplane is to be taken to be a 2 engined aeroplane.

4.3 Where a defective aeroplane is not capable of complying with subparagraph 4.1 (a), the aeroplane may undertake a ferry flight only if:

(a) it complies with subparagraphs 4.1 (b), (c), (d) and (e); and

(b) it takes-off during daylight hours without a tail wind; and

(c) it takes-off from a dry runway (unless procedures approved by CASA for engine-inoperative take-offs from wet runways are included in the aeroplane's flight manual or operations manual and the take-off is undertaken in accordance with those procedures); and

(d) its initial climb does not take place over a populous area, over an industrial area or over any industrial plant; and

(e) the ferry flight is not conducted in icing conditions; and

(f) the particulars specified in subparagraphs (a) to (e) (inclusive) are included in the aeroplane's operations manual.

4.4 Where a defective aeroplane is to take-off from a place that is not a licensed aerodrome, CASA may approve a flight by the aeroplane if it is satisfied that the aeroplane will comply with an operational specification determined by CASA concerning the conduct of the flight.

4.5 A flight under paragraph 4.4 must be conducted only for the purpose of moving a defective aeroplane from a place that is not a licensed aerodrome to a licensed aerodrome so that the aeroplane's inoperative engine can be repaired or replaced.

5 CONDITIONS RELATING TO TRAINING AND RECENT EXPERIENCE

5.1 A defective aeroplane must not be used to undertake a ferry flight or a flight under paragraph 4.4 unless the flight crew members for the flight meet the ferry flight training requirements set out in this section and in the aeroplane's flight manual or operations manual.

5.2 A defective aeroplane must not be used to undertake a ferry flight or a flight under paragraph 4.4 unless:

(a) the pilot in command is the company check pilot or a pilot approved by CASA; and

(b) the other flight crew members have extensive experience on an aeroplane that is of the same type as the defective aeroplane; and

(c) the flight crew members have, within the 6 months immediately before the day of the proposed ferry flight or the proposed flight

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under paragraph 4.4, as the case may be, demonstrated to the satisfaction of the operator their ability to handle all manoeuvres associated with a ferry flight.

5.3 The training referred to in paragraph 5.1 and the demonstration referred to in subparagraph 5.2 (c) may be conducted in an approved flight simulator of Level 4 or higher.

5.4 When undertaking training for the ferrying of a propeller-driven defective aeroplane, the feathered position of the propeller is to be simulated by the application of sufficient power to produce zero thrust.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 29.10 as amended

made under regulation 157 of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 15 January 2015 taking into account amendments up to *Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)*.

Prepared by the Legislative Drafting Section, Legal Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

Contents

Air service operations — aircraft engaged in aerial stock mustering operations – low flying permission

Section 29.10

Air service operations — aircraft engaged in aerial mustering operations – low flying permission

1 Application

This section applies to registered aircraft engaged in aerial mustering operations.

2 Definitions

In this section, unless the contrary intention appears:

aerial mustering means the use of aircraft to locate, direct and concentrate livestock while the aircraft is flying below 500 feet above ground level and for related training operations.

kind of aircraft means 1 of the following, an aeroplane, a helicopter or a registered gyroplane.

registered means registered under the Civil Aviation Safety Regulations 1998.

3 Classification of operations

3.1 Where aerial mustering is classified as an aerial work operation an entry shall be made in an operator's aerial work licence authorising aerial mustering as a specific operation.

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3.2 Aerial mustering may be conducted as a private operation over land occupied by the owner of the aircraft or as an aerial work operation.

Note In the case of the private operations subregulation 2 (9) of the *Civil Aviation Regulations 1988* may be applicable in determining the ownership of the aircraft.

4 Low flying permission

4.1 Pursuant to paragraph 157 (4) (b) of the *Civil Aviation Regulations 1988*, permission is hereby granted for aircraft to operate at lower heights than prescribed in paragraph 157 (1) (b) of those regulations whilst engaged in:

(a) aerial mustering operations authorised by an aerial work licence or classified as a private operation in accordance with subparagraph 2 (7) (d) (iii) of those regulations; and

(b) training flights in preparation for such operations.

4.2 The permission granted in paragraph 4.1 shall be subject to compliance with the requirements and limitations specified in this section.

4.3 Notwithstanding the permission granted in paragraph 4.1, aircraft engaged on aerial mustering operations and training relating thereto shall not be flown below a height of 500 feet above the terrain and within 600 metres horizontally of a building occupied by persons unless a notice in writing of such aerial mustering operations or training flights has been given to the residing owner, or the residing tenant of the building not less than 48 hours prior to the proposed flights and no objection to the flights is made.

4.4 Where operations are conducted in accordance with the conditions specified in paragraph 4.3, the pilot shall not operate the aircraft over or in proximity to the building unless it is operated in a pattern and at such an altitude that in the event of an emergency it can avoid endangering persons or property on the ground.

Note Attention is directed to the fact that the permission granted in this paragraph does not confer on an operator any rights as against the owner of any land over which the operations may be conducted, or prejudice in any way the rights and remedies which any person may have at common law respect of any injury to persons or damage to property caused directly or indirectly by the operator.

5 Operational limitations

5.2 During an aerial mustering operation, a pilot must not carry more than 1 other person, and that person must be essential to the successful conduct of the operation.

6 Pilot qualification

A pilot must not engage in an aerial mustering operation unless the pilot is authorised under Part 61 of the *Civil Aviation Safety Regulations 1998* to conduct an aerial mustering operation in that kind of aircraft.

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Notes to Civil Aviation Order 29.10

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 29.10 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R28	8 December 2004	8 December 2004 (s. 2)	
CAO 29.10 2006 No. 1	FRLI 7 December 2006	8 December 2006 (s. 2)	
CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)	FRLI 29 August 2014 (F2014L01177)	1 September 2014 (s. 2)	Sections 3 and 31 (Table A)

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 29.10	rs. CAO 2004 No. R28
Heading	am. F2014L01177
subs. 1	rs. CAO 29.10 2006 No. 1, F2014L01177
subs. 2	am. CAO 29.10 2006 No. 1, F2014L01177
subs. 3	am. F2014L01177
subs. 4	am. F2014L01177
subs. 5	rs. F2014L01177
subs. 6	rs. F2014L01177
subs. 7	rep. F2014L01177
subs. 8	rep. F2014L01177
subs. 9	rep. F2014L01177
subs. 10	rep. F2014L01177
subs. 11	rep. F2014L01177
subs. 12	am. CAO 29.10 2006 No. 1 rep. F2014L01177
Appendix I	rep. F2014L01177
Appendix II	rep. F2014L01177
Appendix III	rep. F2014L01177
Appendix IV	rep. CAO 29.10 2006 No. 1

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 29.11 as amended

made under subregulations 207 (1) and 208 (1) and regulations 209, 303A and 308 of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 16 January 2015 taking into account amendments up to *Civil Aviation Order (Flight Crew Licensing) Civil Repeal and Amendment Instrument 2014 (No. 1)*.

Prepared by the Legislative Drafting Section, Legal Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

Contents

Air service operations — helicopter winching and rappelling operations

Section 29.11

Air service operations — helicopter winching and rappelling operations

1 Application

This section applies to the conduct of operations by helicopters engaged in winching and rappelling.

2 Definitions

In this section:

course of training means a course of training in the techniques, and normal and emergency procedures, associated with winching and/or rappelling operations mentioned in the operator's operations manual covering the requirements:

(a) for a winch and rappelling operations endorsement; or

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(b) for a winch and rappelling operations training endorsement; or

(c) mentioned in Appendix III.

emergency service personnel means members of a police force, or fire, rescue or emergency service.

rappelling means any of the following:

(a) lowering oneself from an airborne helicopter by going down a rope hanging from the helicopter;

(b) lowering an object from an airborne helicopter by controlled release from the helicopter of a rope to which the object is tied;

(c) lowering a person or object down a rope hanging from an airborne helicopter, with descent of the object or person controlled by a person on the ground;

(d) coming down from, or going up to, an airborne helicopter by using a flexible ladder hanging from the helicopter.

winching means the pick-up or lowering of objects, a person or persons to or from the helicopter by means of a winch or hoist fitted to the helicopter.

winch or hoist means equipment which may be electrically, hydraulically or pneumatically driven which has been approved by CASA for the purpose of picking up or lowering persons or equipment to or from the ground, and into or from the helicopter.

3 Permissions and exemptions

3.1 For the purposes of regulation 151 and subregulation 250 (2) of the *Civil Aviation Regulations 1988*, CASA hereby permits helicopters to conduct winching and rappelling operations subject to the conditions specified in this section.

3.2 For the purposes of regulation 308 of the *Civil Aviation Regulations 1988*, CASA hereby exempts helicopters conducting winching and rappelling operations from compliance with the provisions of:

(a) paragraph 157 (1) (b); and

(b) paragraph 251 (1) (a); and

(c) paragraph 251 (1) (c);

of those Regulations subject to the conditions specified in this section.

Note Attention is directed to the fact that the exemptions granted by this section do not confer on an operator of a helicopter to which this section applies any rights as against the owner or occupier of any land on or over which the operations are conducted, or prejudice in any way the rights and remedies which a person may have at common law in respect of any injury to persons or damage to any property caused, directly or indirectly, by the helicopter.

4 Classification of operations

Winching and rappelling shall be classified as private, aerial work or charter operations as appropriate except that the rappelling of persons is limited to private or aerial work. In the case of aerial work or charter, an entry shall be made in the air operator's certificate authorising winching and/or rappelling as specific operations.

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5 Operating areas

5.1 Subject to paragraphs 5.2 to 5.8, winching or rappelling operations (including training operations in winching or rappelling) are to be conducted over an operating area that satisfies the following requirements:

(a) the area must have a diameter measuring at least 30 metres or twice the length of the helicopter used for the operations, whichever is longer;

(b) there must not be, within its limits, any obstruction higher than 3 metres;

(c) there must be, at its centre, a zone with a diameter of at least 5 metres that is clear of any obstruction or other hazard and is reserved for winching and/or rappelling only.

5.2 Paragraph 5.1 does not apply to winching or rappelling operations conducted in the course of a rescue or other emergency operation.

5.3 Paragraph 5.1 does not apply to advanced operational training operations in winching conducted for the purpose of a course of training leading to the issue of:

(a) a winch and rappelling operations endorsement; or

(b) a winch and rappelling operations training endorsement; or

(c) a certificate of competence described in Appendix III;

if:

(d) the operations are conducted over an operating area that is clear of any obstruction that is likely to foul the winch cable; and

(e) only weights are winched during the training operations.

5.4 Paragraph 5.1 does not apply to advanced operational training operations in rappelling conducted for the purposes of a course of training leading to the issue of:

(a) a winch and rappelling operations endorsement; or

(b) a winch and rappelling operations training endorsement; or

(c) a certificate of competence described in Appendix III;

if the operations are conducted over an operating area that is clear of:

(d) any obstruction that is likely to foul the rope or flexible ladder used during the operations; and

(e) any obstruction or other hazard that is likely to endanger any person on, or coming off, the rope or flexible ladder.

5.5 Paragraph 5.1 does not apply to advanced operational training operations in winching conducted on land for emergency service personnel if:

(a) the operations are conducted over an operating area that is clear of:

(i) any obstruction that is likely to foul the winch cable; and

(ii) any obstruction or other hazard that is likely to endanger any person on, or coming off, the winch cable; and

(b) the only persons who are winched during the operations are who have received basic winching training.

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5.6 Paragraph 5.1 does not apply to advanced operational training operations in rappelling conducted on land for emergency service personnel if:

(a) the operations are conducted over an operating area that is clear of:

(i) any obstruction that is likely to foul the rope or flexible ladder used during the operations; and

(ii) any obstruction or other hazard that is likely to endanger any person on, or coming off, the rope or flexible ladder; and

(b) the only persons who rappel or are rappelled during the operations are emergency service personnel who have received basic rappelling training.

5.7 Paragraph 5.1 does not apply to advanced operational training operations in winching conducted over a floating vessel for emergency service personnel if:

(a) the operations are conducted over an operating area that is on the deck of the vessel and is clear of:

(i) any obstruction that is likely to foul the winch cable; and

(ii) any obstruction or other hazard that is likely to endanger any person on, or coming off, the winch cable; and

(b) when approaching or leaving the operating area, the helicopter used in the operations (the ***helicopter*** in use) flies only over areas of the vessel that are clear of any obstruction; and

(c) the only persons who are winched during the operations are emergency service personnel who have received advanced operational winching training on land; and

(d) the pilot in command of the helicopter in use has explained to each person who is to be winched any emergency procedures associated with the operations; and

(e) the pilot in command of the helicopter in use and the person acting as winch operator during the operations are proficient in the winching techniques for lowering and picking up objects and persons to and from vessels.

5.8 Paragraph 5.1 does not apply to advanced operational training operations in rappelling conducted over a floating vessel for emergency service personnel if:

(a) the operations are conducted over an operating area that is on the deck of the vessel and is clear of:

(i) any obstruction that is likely to foul the rope or flexible ladder; and

(ii) any obstruction or other hazard that is likely to endanger any person on, or coming off, the rope or flexible ladder; and

(b) when approaching or leaving the operating area, the helicopter used in the operations (the ***helicopter*** in use) flies only over areas of the vessel that are clear of any obstruction; and

(c) the only persons who are rappelled during the operations are emergency service personnel who have received advanced operational rappelling training on land; and

(d) the pilot in command of the helicopter in use has explained to each person who is to be rappelled any emergency procedures associated with the operations; and

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(e) the pilot in command of the helicopter in use during the operations is proficient in the techniques for rappelling to vessels.

6 Helicopter and equipment requirements

6.1 Winching and/or rappelling operations shall only be conducted in or from helicopters for which supplements to the aircraft's flight manual, specifying the appropriate operating criteria, have been approved.

6.2 All winching equipment, rappelling equipment, fittings, lines, safety and rescue harnesses shall conform to the requirements of Part 21 of the *Civil Aviation Safety Regulations 1998*.

6.3 A helicopter shall not engage in winching and/or rappelling operations over the land at night unless it is equipped:

(a) as specified in Appendix VIII of section 20.18; and

(b) as specified in Appendix V of section 20.18 with the addition of:

(i) 2 white lights, controllable by the aircrewman/winch operator, shining downwards and of sufficient intensity to clearly illuminate the winch cable/rappelling lines and the area directly below the helicopter; and

Note A single light having 2 separate energized filaments, or a suitable hand-held torch may be approved as meeting the requirement for a second light.

(ii) 2 white lights operable by the pilot and trainable in azimuth and elevation without removing his/her hands from the flying controls; and

Note A single white light having 2 separately energized filaments may be approved as meeting this requirement provided that the selection of the alternative light can be accomplished by the pilot without removing his/her hands from the flying controls.

(c) with an approved inter-communication system which will permit continuous communication between the pilot(s) and aircrewman/winch operator.

6.4 When the flight attitude, height and position of the helicopter cannot be maintained by reference to external objects adequately illuminated by ground or celestial lighting, a helicopter shall not engage in winching operations over the surface of the sea or a body of water at night unless it is equipped:

(a) as specified in paragraph 4.2 and Appendix VII of section 20.18; and

(b) with the lights and inter-communication system specified in subparagraphs 6.3 (b) and (c).

Note At all times when the helicopter is being operated below the minimum I.M.C. airspeed the equipment associated with the automatic pilot and/or automatic stabilisation system shall provide the pilot(s) with an easily interpreted and accurate display of the height of the helicopter above the surface of the sea or water, ground speed forwards, backwards, to the left and right and vertical speed in the correct sense.

7 Winching

7.1 In the case of charter operations involving the carriage of passengers for hire or reward to or from any place on land and all operations involving winching over offshore platforms or vessels, multi-engine helicopters capable of hovering out of ground effect with 1 engine inoperative during the actual winching operation shall be used.

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7.2 In determining hover out of ground effect performance, up to 50% of the forecast wind, or 80% of the wind measured at the ship or site may be used. The maximum figure so derived for hover performance calculations shall not exceed 20 knots. If a valid forecast is not available and an accurate wind measurement cannot be obtained, the hover performance calculations shall be predicted on nil wind.

7.3 In actual rescue operations or in emergency situations e.g. insertion of fire-fighters or emergency service personnel where there is a demonstrated urgent requirement for a winch-equipped helicopter, or where training or demonstrations for the purpose necessitates the actual lifting or lowering of persons, multi- or single engine helicopters may be used. If a multi-engine helicopter is used in operations of this kind, the helicopter need not be capable of hovering out of ground effect with 1 engine inoperative.

8 Rappelling

8.1 The following rappelling operations (***restricted rappelling operations***):

(a) rappelling operations (other than training operations in rappelling) of the kind mentioned in paragraph (a) or (d) of the definition of ***rappelling*** in subsection 2;

(b) rappelling operations (other than training operations in rappelling) of the kind mentioned in paragraph (c) of the definition of ***rappelling*** in which persons are lowered from an helicopter;

are to be conducted only if:

(c) they are permitted under paragraph 8.2; or

(d) they are part of a rescue or other emergency operation conducted by emergency service personnel who have received advanced operational training in rappelling techniques.

8.2 CASA may, in writing, permit an operator to conduct restricted rappelling operations if:

(a) the only persons who rappel or are rappelled during the operations are:

(i) emergency service personnel who have received advanced operational training in rappelling techniques; or

(ii) persons who have received advanced operational training in rappelling techniques and are employed by an organisation that hires out the services of persons who have received such training; and

(b) CASA is satisfied that the operations are not likely to endanger the life of any person.

8.3 The permission must identify the operations covered by the permission and specify:

(a) the time and place at which, and the occasion (if any) in conjunction with which, the operations are to be conducted; and

(b) the conditions (if any) subject to which the permission is granted.

9 Pilot qualifications

A pilot must not act as part of the flight crew of a helicopter engaged in winching or rappelling operations unless the pilot is authorised under Part 61

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of the *Civil Aviation Safety Regulations 1998* to conduct a winch or rappelling operation in a helicopter.

10 Aircrewman/winch operator qualifications

10.1 No person may act as an aircrewman or winch operator on a helicopter engaged in winching and/or rappelling operations unless he/she has satisfactorily completed a course of training for winching or rappelling operations, as appropriate, and has been certified by an approved person and his/her log book (Department of Transport and Communications publication 408, Revised 6/85) has been endorsed in accordance with the format specified at Appendix III.

10.2 For the purpose of this subsection an approved person shall be:

(a) in the case of a company which has an approved check and training organisation — a company check and training pilot or an aircrewman who has demonstrated to an officer approved for the purposes of this paragraph his/her proficiency to impart the appropriate winching and/or rappelling operational training and has been approved in writing by CASA; or

(b) in the case of a company which does not have a check and training organisation — the chief pilot or another pilot or an aircrewman who has demonstrated his/her proficiency to impart the appropriate winching and/or rappelling operational training and has been approved in writing by CASA; or

(c) the holder of a winch and rappelling operations training endorsement; or

(d) an officer approved for the purposes of this paragraph.

11 Carriage of persons

The pilot in command of a helicopter engaged in winching or rappelling operations shall not permit any person to be carried in the helicopter except:

(a) a flight crew member; or

(b) a flight crew member under training; or

(c) a person who performs an essential function in connection with the winching and/or rappelling operation; or

(d) a person who is to be winched or rappelled.

12 Conduct of operations

12.1 The pilot in command of a helicopter engaged in winching or rappelling operations shall be responsible for ensuring that:

(a) an appropriate qualified aircrewman/winch operator is carried in the helicopter; and

(b) all operating crew members are properly qualified to perform the duties to which they are assigned; and

(c) all personnel involved in the operation are properly briefed prior to commencement; and

(d) adequate precautions are taken to ensure the safety of all persons in the helicopter or on the ground or in any way involved in the operation.

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12.2 Except in the case of actual rescue operations or emergency situations, winching and/or rappelling operations at a specific location in a city, town or populous area may only be conducted subject to the following conditions:

(a) The guidelines in CAAP 92-2 shall be met.

(b) Persons not directly involved in the winching and/or rappelling operations shall be kept clear of the site over which the helicopter is authorised to manoeuvre during the course of the operations.

(c) During winching and/or rappelling operations on the roof of a building, floors shall be cleared of personnel down to a level where the local fire authorities can provide adequate rescue facilities. In all cases, except in an actual emergency operation, the 4 floors immediately below the roof shall be evacuated.

12.3 The company's operations manual shall include instructions to pilots, aircrewmen/winch operators and other personnel involved in the conduct of winching and/or rappelling operations, as appropriate, and shall cover, in detail:

(a) equipment pre-flight and serviceability checks; and

(b) all normal and emergency operating drills and procedures; and

(c) operating crew duties; and

(d) intercom procedures and phraseology; and

(e) pilot qualifications, training and recency requirements; and

(f) aircrewman/winch operator qualifications, training and recency requirements.

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Appendix III

Certificate of competency in winching/rappelling* operations for endorsement in a helicopter winch operator's/ aircrewman's* log book

I ..... hereby certify that ..... has successfully completed a course of training in helicopter winching/rappelling operations covering:

1. Weight and balance considerations.
2. Pre-flight and serviceability checks of the helicopter's winching/rappelling* equipment including normal and emergency operating mechanisms.
3. Normal and emergency operating drills and procedures.
4. Standard hand signals in accordance with Appendix I of section 20.3 of the Civil Aviation Orders.

I consider the applicant competent to act as a helicopter winch operator/aircrewman* in helicopter winching/rappelling* operations.

Signed.....

Date .....

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Notes to Civil Aviation Order 29.11

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 29.11 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R29	8 December 2004 (F2005B00842)	8 December 2004 (s. 2)	
CAO 29.11 2006 No. 1	FRLI 5 April 2006 (F2006L01042)	6 April 2006 (s. 2)	
CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)	FRLI 29 August 2014 (F2014L01177)	1 September 2014 (s. 2)	Sections 3 and 31 (Table A)

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 29.11	rs. CAO 2004 No. R29
subs. 2	am. CAO 29.11 2006 No. 1, F2014L01177
subs. 5	am. CAO 29.11 2006 No. 1, F2014L01177
subs. 6	am. F2014L01177
subs. 9	rs. F2014L01177
subs. 10	am. F2014L01177
Appendix I	rep. F2014L01177
Appendix II	rep. F2014L01177

Table A Application, saving or transitional provisions

Sections 3 and 31 of Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1) read as follows:

3 Definitions

(1) In this instrument:

continued authorisation has the meaning given by regulation 202.261 of the *Civil Aviation Safety Regulations 1998* (***CASR 1998***).

new authorisation has the meaning given by regulation 202.261 of CASR 1998.

(2) A reference in this instrument to a Civil Aviation Order identified by a specified number is taken to include a reference to the section of the Civil Aviation Orders with that number.

Note Some existing legislative instruments are referred to as a Civil Aviation Order followed by a number. Other instruments are referred to as a section of the Civil Aviation Orders. For consistency, in this instrument, all such instruments are referred to as a Civil Aviation Order

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followed by a number. For example, a reference to Civil Aviation Order 40.2.2 is taken to include a reference to section 40.2.2 of the Civil Aviation Orders.

31 Transitional — application of Civil Aviation Orders

The Civil Aviation Orders apply to a continued authorisation as if it were the equivalent new authorisation.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Amendment Order (No. R35) 2004 as amended

made under regulations 5.14, 5.16 and 5.18 of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 19 January 2015 taking into account amendments up to *Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)*.

Prepared by the Legislative Drafting Section, Legal Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R35) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 40.2.2 of the Civil Aviation Orders

Section 40.2.2 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Schedule 1 Substitution of section 40.2.2 of the Civil Aviation Orders

Section 40.2.2

Balloon grade of night V.F.R. rating

1 Application

1.1 For the purposes of subregulation 5.14 (1):

(a) the flight tests that must be passed; and

(b) the other requirements that must be satisfied;

for the issue of a balloon grade of night V.F.R rating are set out in subsections 5 and 6 and paragraph 7.2.

2 Interpretation

2.2 A reference in this section to a regulation or subregulation identified by a numerical code (for example, 5.18 or 5.14 (1)) is a reference to the regulation or subregulation in the Civil Aviation Regulations 1988 identified by that code.

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4 Duration

4.1 For the purposes of subregulation 5.17 (3), a night V.F.R. rating remains in force until the holder of the rating no longer holds a flight crew licence.

5 Aeronautical knowledge

5.1 Before undertaking a flight test required by subsection 7, an applicant for a balloon grade of night V.F.R. rating must pass an examination conducted or set by CASA or an approved pilot.

5.2 A person must not attempt an examination mentioned in paragraph 5.1 unless the person satisfies the requirements of subsection 6.

6 Aeronautical experience — night V.F.R. rating

6.4 An applicant for a balloon grade of night V.F.R. rating must:

(a) hold a commercial pilot (balloon) licence; and

(b) satisfy the requirements set out in subsection 1A of Appendix I.

7 Aeronautical skill

7.2 An applicant for a balloon grade of night V.F.R. rating must pass the flight test set out in subsection 2A of Appendix I.

8 Authority given by rating

8.2 For the purposes of regulation 5.18:

(a) the authority given by a balloon grade of night V.F.R. rating; and

(b) the limitations on that authority; and

(c) the flight tests that must be passed and other requirements that must be satisfied before that authority may be exercised;

are set out in subsection 9, and in subsections 3 and 6 of Appendix I.

9 Recent experience requirements

9.1 The holder of a night V.F.R. rating must not exercise the authority given by the rating unless he or she satisfies the requirements set out in subsection 5 of Appendix I.

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Appendix I

Night V.F.R. rating

1A Aeronautical experience — balloons

1A.1 For the purposes of subparagraph 6.4 (b), the aeronautical experience must include:

(a) at least 3 hours flight time as a pilot of a balloon that was flown at night; and

(b) satisfactory completion of a course of training in accordance with paragraph 1A.2.

1A.2 For the purposes of subparagraph 1A.1 (b), the course of training must include:

(a) at least 3 flights at night with:

(i) a person who holds a flight instructor (balloon) rating and a balloon grade of night V.F.R. rating; or

(ii) an approved person; and

(b) training in the aeronautical skills needed to control a balloon by reference to instruments.

1A.3 CASA may approve a person for the purposes of sub-subparagraph 1A.2 (a) (ii).

2A Flight test — balloons

2A.1 An applicant for a balloon grade of night V.F.R. rating must satisfy CASA, an approved testing officer or an approved person that he or she can safely carry out the following manoeuvres:

(a) take-off;

(b) climb to 1 500 feet above the ground at nominated rate (±20%);

(c) level-off and maintain ±100 feet for 5 minutes;

(d) descend to 500 feet above the ground at nominated rate (±20%);

(e) level-off and maintain ±50 feet for 2 minutes;

(f) carry out necessary fuel management during night flight whilst maintaining height ±100 feet;

(g) carry out passenger management during night flight;

(h) in surveyed area, descend to not more than 100 feet above the ground at a rate of not more than 100 feet per minute during the last 100 feet, for approach and overshoot to an emergency landing area.

2A.2 The manoeuvre mentioned in sub-subparagraph 2A.1 (h) may be followed by either a landing or a climb to a height of at least 100 feet above the ground to continue the flight.

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3 Authority given by rating

Subject to subsections 5 and 6, a balloon grade of night VFR rating authorises the holder of the rating to fly as pilot in command of balloons on aerial work, or charter, flights by night under the V.F.R.

5 Recent experience requirements

For the purposes of paragraph 9.1, a balloon grade of night VFR rating does not authorise the holder of the rating to fly as pilot in command of a balloon by night unless, within the period of 1 year immediately before the day of the proposed flight, the holder has completed 1 or more of the following:

(a) carried out at least 1 flight of at least 30 minutes duration of a balloon at night as pilot in command, as pilot acting in command under supervision or in dual flying; or

(b) satisfactorily completed a balloon proficiency check that was conducted at night; or

(c) passed a flight test that was conducted at night for the purpose of the issue of a balloon pilot licence, or the issue, or renewal, of a balloon pilot rating.

6 Balloon grade of night V.F.R. rating — limitations on authority

6.1 A balloon grade of night V.F.R. rating does not authorise the holder of the rating:

(a) to land a balloon at night, unless he or she lands the balloon:

(i) in the course of giving or receiving flying training; or

(ii) in an emergency; or

(b) to carry passengers in a particular class of balloon that is flying:

(i) at night; and

(ii) in charter operations;

unless he or she has passed the flight test set out paragraph 2A.1 in a balloon of that class.

7 Balloon grade of night V.F.R. rating — conditions

7.1 For the purposes of regulation 11.068 of the *Civil Aviation Safety Regulations 1998*, it is a condition of each balloon grade of night V.F.R. rating that the holder of the grade of rating must not exercise the authority given by the grade of rating in a balloon unless the balloon:`

(a) has at least 2 independent fuel systems; and

(b) takes-off not more than 1 hour before first light; and

(c) carries sufficient fuel to enable it to remain airborne until at least 1 hour after first light; and

(d) carries at least 2 torches; and

(e) carries a light that is capable of lighting sufficient ground for the balloon to be landed at night in an emergency.

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Notes to Civil Aviation Order 40.2.2

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 40.2.2 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R35	8 December 2004 (F2005B00858)	8 December 2004 (s. 2)	
CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)	FRLI 29 August 2014 (F2014L01177)	1 September 2014 (s. 2)	Sections 3 and 31 (Table A)

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 40.2.2	rs. CAO 2004 No. R35
Heading	rs. F2014L01177
subs. 1	am. F2014L01177
subs. 2	am. F2014L01177
subs. 4	am. F2014L01177
subs. 5	rs. F2014L01177
subs. 6	am. F2014L01177
subs. 6A	rep. F2014L01177
subs. 7	am. F2014L01177
subs. 8	am. F2014L01177
subs. 9	am. F2014L01177
Appendix I	am. F2014L01177
Appendix II	rep. F2014L01177

Table A Application, saving or transitional provisions

Sections 3 and 31 of Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1) read as follows:

3 Definitions

(1) In this instrument:

continued authorisation has the meaning given by regulation 202.261 of the *Civil Aviation Safety Regulations 1998* (***CASR 1998***).

new authorisation has the meaning given by regulation 202.261 of CASR 1998.

(2) A reference in this instrument to a Civil Aviation Order identified by a specified number is taken to include a reference to the section of the Civil Aviation Orders with that number.

Note Some existing legislative instruments are referred to as a Civil Aviation Order followed by a number. Other instruments are referred to as a section of the Civil Aviation Orders. For consistency, in this instrument, all such instruments are referred to as a Civil Aviation Order followed by a number. For example, a reference to Civil Aviation Order 40.2.2 is taken to include a reference to section 40.2.2 of the Civil Aviation Orders.

31 Transitional — application of Civil Aviation Orders

The Civil Aviation Orders apply to a continued authorisation as if it were the equivalent new authorisation.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 40.7 – Aircraft endorsements (balloons) and flight instructor (balloons) ratings as amended

made under subregulation 5.14 (1) regulation 5.16, subregulation 5.17 (3), regulation 5.18, subregulations 5.20 (1), 5.22 (1), and 5.23 (1) of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 3 September 2019 taking into account amendments up to *Civil Aviation Order 40.7 Amendment Instrument 2019 (No. 1)*. It is a compilation of *Civil Aviation Order 40.7* – Aircraft endorsements (balloons) and flight instructor (balloons) ratings as amended and in force on 1 September 2019.

Prepared by the Legislative Drafting Section, Legal & Regulatory Affairs Division, Civil Aviation Safety Authority, Canberra.

Compilation No. 3.

Contents

Section 40.7

Aircraft endorsements (balloons) and flight instructor (balloons) ratings

2 Definitions

2.1 In this Order, unless the contrary intention appears:

(a) words and phrases have the same meaning as in Part 5 of CAR; and

(b) a reference to a regulation 5, or to a subregulation or paragraph within a regulation 5, is a reference to that provision as it appears in CAR.

2.2 In this Order:

ABTO means for approved balloon testing officer.

AOC means Air Operator's Certificate.

CAR means the *Civil Aviation Regulations 1988*.

CASR means the *Civil Aviation Safety Regulations 1998*.

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Class 1 has the same meaning as in regulation 5.01.

Class 1 (R) endorsement means a restricted Class 1 balloon endorsement.

Class 1 (U) endorsement means an unrestricted Class 1 balloon endorsement.

Class 2 has the same meaning as in regulation 5.01.

Class 2 (R) endorsement means a restricted Class 2 balloon endorsement.

Class 2 (U) endorsement means an unrestricted Class 2 balloon endorsement.

Class 3 has the same meaning as in regulation 5.01.

examiner means a CASA FOI or an ABTO who may conduct a commercial pilot (balloon) licence flight test in accordance with regulation 5.147.

FOI stands for flying operations inspector.

overseas balloon endorsement means a qualification (whether it is called an endorsement, rating or authority, or is known by some other name) that:

(a) authorises the holder of the qualification to fly a particular class of balloon; and

(b) was issued by the overseas national aviation authority.

Note National aviation authority is defined in the CASR Dictionary.

PICUS (short for pilot in command under supervision) has the same meaning as in regulation 5.40.

2.3 An overseas balloon endorsement ***is at least the equivalent of*** a particular class of balloon endorsement if it authorises the holder of the overseas balloon endorsement to fly, as pilot in command in an aerial work operation or a charter operation, a balloon that meets the description of the particular class of balloon as set out in Table 5.01 in CAR.

4 Class 1 balloon endorsement

4.1 Subject to subsections 7 and 9, for subregulation 5.23 (1), CASA directs that the requirements in this subsection must be met for the issue of a Class 1 balloon endorsement.

Eligibility

4.2 The person seeking the endorsement (the ***applicant***) must:

(a) be qualified to hold a commercial pilot (balloon) licence in accordance with subregulation 5.138 (1) of CAR; and

(b) have a logbook that may be endorsed for a Class 1 balloon by the person conducting the flight test, using CASA Form 214 (as in force or existence from time to time).

Note Under regulation 5.147, the flight test required in order to be qualified to hold a commercial pilot (balloon) licence is conducted by a CASA FOI or an ABTO, in this instrument referred to as an ***examiner***.

Class 1 (R) endorsement

4.3 For regulation 11.068 of CASR, an initial Class 1 balloon endorsement is subject to the condition that it is a Class 1 (R) endorsement until the restriction mentioned in paragraph 4.4 is removed in accordance with paragraph 4.6.

4.4 For paragraph 4.3, the restriction is that holder of the Class 1 (R) endorsement (the ***endorsement holder***) must not, as pilot in command, operate a Class 1 balloon carrying more than 7 people (including the holder) in a balloon AOC operation.

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4.5 If an applicant satisfies the requirements of paragraph 4.2, then the examiner who conducted the flight test must endorse the logbook with a Class 1 (R) endorsement by:

(a) applying the relevant Class 1 (R) sticky label from the completed CASA Form 214 and sending the top copy to CASA for its records; and

(b) recording in the logbook the name, ARN and signature of the examiner.

Removal of restriction

4.6 For paragraph 4.3, the restriction mentioned in paragraph 4.4 is removed from the holder's Class 1 (R) endorsement only if the following requirements are complied with:

(a) the endorsement holder must be authorised, in accordance with regulation 5.141, to fly the balloon type that he or she proposes to fly (the ***balloon type***);

(b) the endorsement holder must have completed at least 5 hours (involving at least 5 take-offs and landings) as PICUS in the balloon type, specifically in AOC operations carrying 7 or more people, with 1 of the following as pilot in command (***PIC***):

(i) the chief pilot of the balloon AOC holder;

(ii) the holder of a flight instructor (balloon) rating;

(c) the PIC mentioned in sub-subparagraph (b) (i) or (ii) must:

(i) hold a Class 1 (U) endorsement; and

(ii) be authorised in the balloon type; and

(iii) have at least 25 hours' experience flying a balloon whose envelope volume is equal to or greater than that of the balloon being flown;

(d) the endorsement holder must have completed a proficiency check flight as PICUS in the balloon type in AOC operations with:

(i) a PIC mentioned in subparagraph (b) who is qualified in accordance with subparagraph (c); or

(ii) an examiner who satisfies the requirements mentioned in sub-subparagraphs (c) (i), (ii) and (iii);

(e) the proficiency check flight mentioned in paragraph (d) must involve:

(i) balloon flight time of at least 1 hour; and

(ii) at least 1 balloon inflation and 1 balloon deflation;

(f) at the end of the proficiency check flight, the person who was the PIC for subparagraph (d) (the ***recommender***) must:

(i) determine if the endorsement holder is competent to fly 7 or more passengers in an AOC operation; and

(ii) if the endorsement holder is competent, recommend, through an entry in the applicant's logbook, that he or she be endorsed with a Class 1 (U) endorsement by an examiner.

Note But an actual endorsement only takes effect when **the label from Form 214** has been affixed to the applicant's logbook by an examiner under paragraph 4.10.

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Class 1 (U) endorsement

4.7 For sub-subparagraph 4.6 (f) (ii), the recommendation must be in the following form:

[*Name of endorsement holder [logbook holder] and ARN*] is recommended to be endorsed to fly a Class 1 balloon with 7 or more passengers subject to the limitations of the balloon type.

[*Signature of recommender and date.*]

[*Printed name of recommender and ARN.*]

[*Qualifications of recommender — delete those not applicable below.*]

[*Examiner (Approved Balloon Testing Officer or CASA FOI).*]

[*Flight Instructor (Balloon) holder.*]

[*Chief Pilot of [Name the Balloon AOC holder]*.]

4.8 The recommender must complete a proficiency check flight report.

Note A proficiency check flight report using the Balloon Flight Review form in Appendix E to CAAP 5.81-1(1) is an acceptable means of compliance.

4.9 A copy of the proficiency check flight report must be retained in safe custody by:

(a) the logbook holder; and

(b) the chief pilot of the AOC holder.

4.10 Within 14 days after making the recommendation mentioned in paragraph 4.7, the recommender must give a copy of the proficiency check flight report and the applicant's logbook to an examiner who, if satisfied, must endorse the logbook with the Class 1 (U) endorsement by:

(a) applying the relevant Class 1 (U) sticky label from the completed CASA Form 214 and sending the top copy to CASA for its records; and

(b) recording in the logbook the name, ARN, date and signature of the examiner.

Note 1 The endorsement only takes effect when the label has been affixed to the endorsement holder's logbook by an examiner.

Note 2 An examiner who conducts the proficiency check flight for subparagraph 4.6 (d) may be both the recommender and the examiner for paragraph 4.10.

5 Class 2 balloon endorsement

5.1 Subject to subsections 8 and 9, for subregulation 5.23 (1), CASA directs that the requirements in this subsection must be met for the issue of a Class 2 balloon endorsement.

Eligibility

5.2 The person seeking the endorsement (the ***applicant***) must:

(a) hold a Class 1 (U) endorsement in accordance with subsection 4; and

(b) have at least 175 hours as PIC of any Class 1 balloon; and

(c) have at least 80 hours as PIC in balloon charter flights; and

(d) pass a proficiency check flight, in a Class 2 balloon of the type for which the applicant is seeking a Class 2 balloon endorsement (the ***proficiency check flight***), conducted by 1 of the following who holds a Class 2 (U) endorsement:

(i) an examiner;

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(ii) if an examiner is not available — the holder of a flight instructor (balloon) rating approved in writing by CASA to conduct Class 2 balloon endorsement proficiency check flights; and

Note Flight time as PICUS does not constitute flight time as PIC.

(e) have a logbook that may be endorsed for a Class 2 balloon by 1 of the following using CASA Form 214 (as in force or existence from time to time):

(i) an examiner, who conducted the proficiency check flight;

(ii) another examiner, provided that he or she has received the following from the examiner or the flight instructor (balloon) who conducted the proficiency check flight:

(A) a written recommendation to make the endorsement;

(B) a proficiency check flight report;

(C) the applicant's logbook.

Class 2 (R) endorsement

5.3 For regulation 11.068 of CASR, a Class 2 balloon endorsement is subject to the condition that it is a Class 2 (R) endorsement until the restriction mentioned in paragraph 5.4 is removed in accordance with paragraph 5.6.

5.4 For paragraph 5.3, the restriction is that the holder of the Class 2 (R) endorsement (the ***endorsement holder***) must not fly a Class 2 balloon with an envelope volume that is greater than 400 000 cubic feet in an AOC operation.

5.5 If an applicant satisfies the requirements of paragraph 5.2, then, subject to paragraph 5.6, the examiner who conducted the proficiency check flight must endorse the logbook with a Class 2 (R) endorsement by:

(a) applying the relevant Class 2 (R) sticky label from the completed CASA Form 214 and sending the top copy to CASA for its records; and

(b) recording in the logbook the name, ARN, date and signature of the examiner.

5.6 If:

(a) an applicant satisfies the requirements of paragraph 5.2; and

(b) the proficiency check flight was conducted by a flight instructor (balloon) in accordance with sub-subparagraph 5.2 (d) (ii);

then:

(c) the flight instructor (balloon) must recommend, through an entry in the applicant's logbook, that he or she be endorsed for a Class 2 (R) endorsement by an examiner; and

(d) an examiner, having been provided with the documents mentioned in sub-subparagraph 5.2 (e) (ii), must, if satisfied, endorse the logbook with a Class 2 (R) endorsement as if subparagraphs 5.5 (a) and (b) applied.

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Removal of restriction

5.7 For paragraph 5.3, the restriction mentioned in paragraph 5.4 is removed from the endorsement holder's Class 2 (R) endorsement only if the following requirements are complied with:

(a) the endorsement holder must be authorised, in accordance with regulation 5.141, to fly the balloon type that he or she proposes to fly (the ***balloon type***);

(b) the endorsement holder must have completed at least 5 hours (involving at least 5 take-offs and landings) as PICUS in the balloon type in AOC operations with 1 of the following as PIC:

(i) the chief pilot of the AOC holder for the AOC operations;

(ii) the holder of a flight instructor (balloon) rating;

(c) the PIC mentioned in sub-subparagraph (b) (i) or (ii) must:

(i) hold an unrestricted Class 2 balloon endorsement; and

(ii) be authorised in the balloon type; and

(iii) have at least 25 hours' experience flying a balloon whose envelope volume is equal to or greater than that of the balloon type;

(d) the endorsement holder must have completed a proficiency check flight as PICUS in the balloon type in AOC operations with:

(i) a PIC mentioned in subparagraph (b) who is qualified in accordance with subparagraph (c); or

(ii) an examiner who satisfies the requirements mentioned in sub-subparagraphs (c) (i), (ii) and (iii);

(e) the proficiency check flight mentioned in paragraph (d) must involve:

(i) balloon flight time of at least 1 hour; and

(ii) at least 1 balloon inflation and 1 balloon deflation;

(f) at the end of the proficiency check flight, the person who was the PIC for subparagraph (d) (the ***recommender***) must:

(i) determine if the endorsement holder is competent to fly the balloon type with an envelope volume that is greater than 400 000 cubic feet in an AOC operation; and

(ii) if the endorsement holder is competent, recommend, through an entry in the holder's logbook, that he or she be endorsed with a Class 2 (U) endorsement by an examiner.

Note But an actual endorsement only takes effect when **the label from Form 214** has been affixed to the applicant's logbook by an examiner under subsection 5.11.

Class 2 (U) endorsement

5.8 For subparagraph 5.7 (f), the recommendation must be in the following form:

[*Name of endorsement holder [logbook holder] and ARN*] is recommended to be endorsed to fly a Class 2 balloon with an envelope volume that is greater than 400 000 cubic feet in an AOC operation, subject to the limitations of the balloon type.

[*Signature of recommender and date.*]

[*Printed name of recommender and ARN.*]

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[*Qualifications of recommender — delete those not applicable below.*]

[*Examiner (Approved Balloon Testing Officer (ABTO) or CASA FOI).*]

[*Flight Instructor (Balloon) holder.*]

[*Chief Pilot of [Name the Balloon AOC holder]*.]

5.9 The recommender must complete a proficiency check flight report.

Note A proficiency check flight report using the balloon flight review form in Appendix E to CAAP 5.81-1(1) is an acceptable means of compliance.

5.10 A copy of the flight report must be retained in safe custody by:

(a) the logbook holder; and

(b) the chief pilot of the AOC holder.

5.11 Within 14 days after making the recommendation mentioned in paragraph 5.6, the recommender must give a copy of the proficiency check flight report and the applicant's logbook to an examiner who, if satisfied, must endorse the logbook by:

(a) applying the relevant Class 2 (U) sticky label from the completed CASA Form 214 and sending the top copy to CASA for its records; and

(b) recording in the logbook the name, ARN, date and signature of the examiner.

Note 1 The endorsement only takes effect when the label has been affixed to the endorsement holder's logbook by an examiner.

Note 2 An examiner who conducts the proficiency check flight for subparagraph 5.7 (d) may be both a recommender and the examiner for paragraph 5.11.

6 Class 3 gas balloon endorsement

6.1 For subregulation 5.23 (1), CASA directs that the requirements in this subsection must be met for the issue of a Class 3 gas balloon endorsement.

6.2 CASA may issue a Class 3 gas balloon endorsement only after assessing that the applicant's detailed safety case, which must be submitted with the applicant's application, is satisfactory for aviation safety.

Note Gas balloons are generally small and carry no more than 2 persons. They are not currently in use for charter operations in Australia and training is not available. In the event that there is a requirement for gas balloon endorsements in the future, it is likely that Civil Aviation Order (***CAO***) 40.7 would be amended to specifically address that contingency.

7 Overseas balloon endorsement for restricted or unrestricted Class 1 balloon endorsement

7.1 For subregulation 5.23 (1), CASA directs that the requirements in this subsection must be met for the issue of a Class 1 (R) endorsement or a Class 1 (U) endorsement (as the case requires) to the holder of an overseas balloon endorsement on or after 1 September 2019.

7.2 The person seeking the particular endorsement (the ***applicant***) must:

(a) hold an overseas balloon endorsement that is at least the equivalent of a Class 1 (R) endorsement or a Class 1 (U) endorsement (as the case requires) (the ***relevant overseas balloon endorsement***); and

(b) be qualified to hold a commercial pilot (balloon) licence in accordance with subregulation 5.138 (2) of CAR; and

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Note Under regulation 5.147, the flight test required in order to be qualified to hold a commercial pilot (balloon) licence is conducted by an examiner who applies the label from the completed CASA Form 214 and sends the top copy to CASA for its records.

(c) have an ARN, and a logbook that is capable of being endorsed.

7.3 If an applicant satisfies the requirements of paragraph 7.2, then the examiner who conducted the flight test must endorse the logbook:

(a) with a Class 1 (U) endorsement as if paragraph 4.6 applied — if the person's logbook contains persuasive evidence that the person's relevant overseas balloon endorsement authorises the person to operate the equivalent of a Class 1 balloon carrying more than 7 people (including the person) in a balloon operation that is an AOC operation or equivalent; or

(b) with a Class 1 (R) endorsement — if subparagraph (a) is not the case.

7.4 For paragraph 7.3, the endorsement by the examiner must be by:

(a) applying the relevant Class 1 (R) or Class 1 (U) sticky label from the completed CASA Form 214 and sending the top copy to CASA for its records; and

(b) recording in the logbook the name, ARN, date and signature of the examiner.

7.5 A person who is issued with a Class 1 (R) endorsement may have the restriction removed only if paragraphs 4.6 to 4.10 are complied with as if they applied to, and for, the person.

8 Overseas balloon endorsement for restricted or unrestricted Class 2 balloon endorsement

8.1 For subregulation 5.23 (1), CASA directs that the requirements in this subsection must be met for the issue of a Class 2 (R) endorsement or a Class 2 (U) endorsement (as the case requires) to the holder of an overseas balloon endorsement on or after 1 September 2019.

8.2 The person seeking the particular endorsement (the ***applicant***) must:

(a) hold an overseas balloon endorsement that is at least the equivalent of a Class 2 (R) endorsement or a Class 2 (U) endorsement (as the case requires) (the ***relevant overseas balloon endorsement***); and

(b) have persuasive logbook evidence of at least 175 hours as PIC of any Class 1 balloon or equivalent; and

(c) have persuasive logbook evidence of at least 80 hours as PIC on balloon passenger charter flights; and

(d) have passed a commercial pilot (balloon) licence flight test in accordance with regulation 5.147; and

Note Under regulation 5.147, the flight test is conducted by an examiner who applies the label from the completed CASA Form 214 and sends the top copy to CASA for its records.

(e) have passed a commercial pilot (balloon) licence theory examination; and

(f) have an ARN, and a logbook that is capable of being endorsed.

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8.3 If an applicant satisfies the requirements of paragraph 8.2, then the examiner who conducted the flight test must endorse the logbook:

(a) with:

(i) a Class 2 (U) endorsement as if paragraph 5.6 applied — if the person's logbook contains persuasive evidence that the person's relevant overseas balloon endorsement authorises the person to operate a Class 2 balloon or equivalent, with an envelope volume that is greater than 400 000 cubic feet, in a balloon operation that is an AOC operation or equivalent; and

(ii) on the basis of the Class 2 (U) endorsement under sub-subparagraph (i) — with a Class 1 (U) endorsement, if not already so endorsed; or

(b) with:

(i) a Class 2 (R) endorsement — if sub-subparagraph (a) (i) is not the case; and

(ii) on the basis of the Class 2 (R) endorsement under sub-subparagraph (i) — with a Class 1 (U) endorsement, if not already so endorsed.

8.4 For paragraph 8.3, the endorsement by the examiner must be by:

(a) applying the relevant Class 2 (R) or Class 2 (U) sticky label from the completed CASA Form 214 and sending the top copy to CASA for its records; and

(b) recording the relevant Class 1 (U) endorsement on the Form; and

(c) recording in the logbook the name, ARN, date and signature of the examiner.

8.5 A person who is issued with a Class 2 (R) endorsement may have the restriction removed only if paragraphs 5.7 to 5.11 are complied with as if they applied to, and for, the person.

9 Transitional application of subsections 4, 5 and 6

9.1 A person, who on or after 1 September 2019 applies for the issue of an initial Class 1 balloon endorsement, is entitled to be issued with the endorsement if:

(a) the endorsement would be the first balloon endorsement that the person has held (a ***first endorsement***); and

(b) the requirements of subsection 4 are satisfied by, and for, the person.

9.2 A person (a ***grandfathered person***) who, immediately before 1 September 2019 (the ***commencement***) holds a class of balloon endorsement (an ***old endorsement***) issued under subsection 12 of CAO 40.7, as in force immediately before the commencement (***subsection 12***), is taken to hold the balloon endorsement mentioned in Table 9.3 as if the endorsement had been issued under subsection 4, 5, 6, 7 or 8, as the case may be (a ***new endorsement***).

9.3 For paragraph 9.3, for an old endorsement mentioned in a row of column 1 of Table 9.2, the new endorsement is that mentioned in the same row in column 2.

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Table 9.3 New for old endorsements of grandfathered persons

Old endorsement	New endorsement
Class 1 endorsement issued before 1 September 2014	Class 1 (R)
Class 2 endorsement issued before 1 September 2014	Class 1 (U)
Class 3 endorsement issued before 1 September 2014	Class 2 (R)
Class 4 endorsement issued before 1 September 2014	Class 2 (U)
Class 1 endorsement issued on or after 1 September 2014	Class 1 (U)
Class 2 endorsement issued on or after 1 September 2014	Class 2 (U)

9.4 Subsection 4, 5, 6, 7 or 8, as the case may be, applies to the holder of any endorsement issued or held in accordance with this subsection (a ***transitional endorsement***) for any issue of a class of balloon endorsement for which the transitional endorsement was, at any time, a prerequisite.

16 Flight instructor (balloon) rating

16.1 For the purposes of subregulation 5.14 (1):

(a) the flight tests that must be passed; and

(b) the other requirements that must be satisfied;

for the issue, or renewal, of a flight instructor (balloon) rating are set out in this subsection.

16.1.1 An applicant for a flight instructor (balloon) rating must:

(a) have the aeronautical experience set out in paragraph 16.2; and

(b) pass a flight test conducted by CASA, an approved testing officer or an approved person in accordance with the flight instructor (balloon) rating flight test report form.

16.2 For the purposes of subparagraph 16.1.1 (a), the aeronautical experience must consist of:

(a) at least 250 hours as pilot in command that includes not less than:

(i) 100 hours free flight time in a balloon engaged in charter operations; and

(ii) 5 hours tethered flight time; and

(b) holding a commercial pilot (balloon) licence that has been in force for the immediately preceding period of 2 years.

16.3 For subregulation 5.17 (3), a flight instructor (balloon) rating remains in force for:

(a) 1 year from the last day of the month in which the rating was issued; or

(b) 2 years from the last day of the month in which the rating was renewed.

16.4 An applicant for the renewal of a flight instructor (balloon) rating must pass a flight test conducted by CASA, an approved test officer or an approved person in accordance with the flight instructor rating test report form.

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16.4A A flight instructor (balloon) rating is renewed:

(a) if the flight test mentioned in paragraph 16.4 has been passed within the 90 days before the rating would have expired — on the day the rating would have expired; or

(b) in any other case — on the day on which the flight test was passed.

16.5 For the purposes of regulation 5.18, a flight instructor (balloon) rating authorises the holder of the rating:

(a) to give flying training in accordance with the balloon syllabus; and

(b) to give flying training for the issue of an aircraft endorsement for a balloon, being an endorsement held by the holder; and

(ba) to conduct a proficiency check flight for a class of balloon endorsement, provided the holder holds the same class of balloon endorsement without restriction; and

(c) to conduct a balloon flight review; and

(d) if the holder is approved under regulation 5.20 — to give training for the issue or renewal of a balloon rating.

16.6 For the purposes of subregulation 5.20 (1), the holder of a pilot licence and a flight instructor (balloon) rating is approved to give flying training for the issue of a balloon grade of night V.F.R. rating if he or she holds a balloon grade of night V.F.R. rating.

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Notes to Civil Aviation Order 40.7

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 40.7 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R43	8 December 2004 (F2005B00871)	8 December 2004 (*see* s. 2)	
CAO 40.7 2006 (No. 1)	FRLI 30 June 2006 (F2006L02072)	1 July 2006 (*see* s. 2)	
CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)	FRLI 29 August 2014 (F2014L01177)	1 September 2014 (*see* s. 2)	Sections 3 and 31 (Table A)
CAO 40.7 2019 (No. 1)	FRL 14 August 2019 (F2019L01062)	1 September 2019 (*see* s. 2)	

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 40.7	rs. CAO 2004 No. R43
subs. 2	am. F2014L01177
subs. 2	rs. F2019L01062
subs. 3	rep. F2014L01177
subs. 4	ad. F2019L01062
subs. 5	ad. F2019L01062
subs. 6	ad. F2019L01062
subs. 7	rep. F2014L01177
subs. 7	ad. F2019L01062
subs. 8	ad. F2019L01062
subs. 9	ad. F2019L01062
subs. 12	am. F2006L02072
subs. 12	rep. F2019L01062
subs. 16	am. F2006L02072, F2019L01062

Table A Application, saving or transitional provisions

Sections 3 and 31 of Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1) read as follows:

3 Definitions

(1) In this instrument:

continued authorisation has the meaning given by regulation 202.261 of the *Civil Aviation Safety Regulations 1998* (***CASR 1998***).

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new authorisation has the meaning given by regulation 202.261 of CASR 1998.

(2) A reference in this instrument to a Civil Aviation Order identified by a specified number is taken to include a reference to the section of the Civil Aviation Orders with that number.

Note Some existing legislative instruments are referred to as a Civil Aviation Order followed by a number. Other instruments are referred to as a section of the Civil Aviation Orders. For consistency, in this instrument, all such instruments are referred to as a Civil Aviation Order followed by a number. For example, a reference to Civil Aviation Order 40.2.2 is taken to include a reference to section 40.2.2 of the Civil Aviation Orders.

31 Transitional — application of Civil Aviation Orders

The Civil Aviation Orders apply to a continued authorisation as if it were the equivalent new authorisation.

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Civil Aviation Amendment Order (No. 2) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under regulation 303A of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

18 March 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. 2) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 45.0 of the Civil Aviation Orders

Section 45.0 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Amendment of section 45.0 of the Civil Aviation Orders

1 Section 45.0

substitute

SECTION 45.0 FLIGHT CREW STANDARDS — SYNTHETIC TRAINERS — GENERAL

1 APPLICABILITY

This section specifies conditions for the approval under the *Civil Aviation Regulations 1988* (CAR 1988) of synthetic trainers.

2 DEFINITIONS

In this section, unless the contrary intention appears:

accreditation check means the testing of a synthetic trainer for the purpose of approving it and assigning a category to it in accordance with subsection 3.

accreditation test guide means a document which contains a group of synthetic trainer tests compiled by the operator and approved by CASA.

approved synthetic trainer means a synthetic trainer approved by CASA for the purpose of gaining credits.

credit means an entitlement to complete specified flight time, airwork sequences and recent experience requirements by means of an approved synthetic trainer.

Note: More detailed definitions appear in the CASA publication "FSD-2 Operational Standards and Requirements — Approved Synthetic Trainers". For definitions of ***synthetic flight trainer*** and ***synthetic trainer***, see CAR 1988.

3 ACCREDITATION OF A SYNTHETIC TRAINER

3.1 An application for an accreditation check of a synthetic trainer must be made to CASA. The application must contain information as detailed in the CASA publication "FSD-2 Operational Standards and Requirements — Approved Synthetic Trainers" (CASA publication FSD-2).

3.2 CASA, after a review of the application, must arrange with the operator to carry out the accreditation check. The operator must ensure that the arrangements for the accreditation check are in accordance with the CASA publication FSD-2. Any defects noted during the conduct of the accreditation check must be noted in the

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accreditation test guide. The completed accreditation test guide must be retained with the synthetic trainer.

3.3 The accreditation check must be carried out by CASA.

3.4 Following the successful completion of an accreditation check, CASA must approve the synthetic trainer and classify it by assigning to it category A, B or C, whichever is the most suitable, having regard to:

(a) the results of the accreditation check; and

(b) the credits appropriate to that category, as set out in CASA publication FSD-2.

4 APPROPRIATE CREDITS

4.1 A list of credits appropriate to the category assigned to an approved synthetic trainer is detailed in subsection 3.3, 3.4 or 3.5 of the CASA publication FSD-2.

5 RECURRENT FIDELITY CHECKS

5.1 CASA must conduct a recurrent fidelity check annually of an approved synthetic trainer.

6 SUSPENSION OR CANCELLATION OF APPROVAL

6.1 Where an operator knows or suspects that the accuracy or realism of an approved synthetic trainer has been degraded he or she must conduct tests and calibration procedures to establish the nature of the deficiency. Any deficiencies so established must be recorded and, if included in the synthetic trainer's minimum equipment list, are taken to suspend the approval until rectification has taken place.

6.2 CASA may suspend or cancel the approval of a synthetic trainer if it determines that the synthetic trainer no longer complies with the operational standards and requirements appropriate to its category.

6.3 A synthetic trainer may not be used for a purpose referred to in this Order if its approval is suspended or cancelled.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 48.1 Instrument 2019
(as amended)

made under subregulation 5 (1), regulation 210A and subregulation 215 (3) of the *Civil Aviation Regulations 1988*, subregulation 11.068 (1) of the *Civil Aviation Safety Regulations 1998*, and paragraph 28BA (1) (b) and subsection 98 (4A) of the *Civil Aviation Act 1988*.

This compilation was prepared on 2 December 2021 taking into account amendments up to *Civil Aviation Order 48.1 Amendment Instrument 2021 (No. 1)*. It is a compilation of *Civil Aviation Order 48.1 Instrument 2019* as amended and in force on 2 December 2021.

Prepared by the Advisory and Drafting Branch, Legal, International and Regulatory Affairs Division, Civil Aviation Safety Authority, Canberra.

Compilation No. 3

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Contents

Note This Table of Contents is not part of *Civil Aviation Order 48.1 Instrument 2019*. It is for reader guidance only. The Table may be modified or edited in any published version of the Instrument. See paragraph 1.2 in Part 1.

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PART 1 GENERAL

1 Name of instrument

1.1 This instrument is the *Civil Aviation Order 48.1 Instrument 2019*.

1.2 The Table of Contents at the front of this instrument is not part of this instrument. It is for guidance only and may be modified or edited in any published version of this instrument.

4 Application

4.1 Subject to paragraph 4.2, this CAO applies on and from 2 December 2021 to each of the following:

(a) subject to subparagraph (b), an AOC, other than a foreign air transport AOC;

Note The expression "foreign air transport AOC" and the related expression "foreign air transport operation" are defined in the CASR Dictionary. See Part 129 of CASR.

(b) except when subsection 11 applies — an AOC which covers application operations under Part 137 of CASR;

(c) a Part 138 certificate;

(d) a Part 141 certificate;

(e) a flight crew member employed by the holder of an AOC or a certificate to which subparagraph (a), (b), (c), or (d) applies;

(f) for the purposes of subsection 16 — a flight crew member mentioned in that subsection;

(g) a flight crew member on a flight conducted as a private operation.

4.2 Without affecting paragraph 4.4, this CAO does not apply to any of the following:

(a) a Part 141 operator for authorised Part 141 flight training;

(b) a Part 142 operator for authorised Part 142 activity;

(c) an FCM of an operator mentioned subparagraph (a) or (b);

if the flight training or the activity is conducted in a flight simulation training device as the sole and exclusive form of training or activity conducted by the operator under the authorisation.

Note The CAO will apply to a person mentioned in subparagraph (a) or (b), and hence apply to a person mentioned in subparagraph (c), if any training or activity involves operations in an aircraft.

4.3 Subject to paragraph 4.4, this CAO sets out:

(a) for paragraph 28BA (1) (b) of the Act — conditions on each AOC mentioned in subparagraphs 4.1 (a) and (b); and

(b) for subregulation 11.068 (1) of CASR, conditions on each of the following:

(i) each Part 138 certificate mentioned in subparagraph 4.1 (c);

(ii) each Part 141 certificate mentioned in subparagraph 4.1 (d);

Note Conditions on an AOC are imposed under paragraph 28BA (1) (b) of the Act. Conditions on a Part 141 certificate or a Part 138 certificate are imposed under subregulation 11.068 (1) of CASR.

(c) for subregulation 11.068 (1) of CASR — conditions on the flight crew licence of each flight crew member mentioned in subparagraphs 4.1 (e), (f) and (g).

4.4 The condition set out in paragraph 16.1 applies to the holder of a flight crew licence whether or not the person is employed by the holder of an AOC or a Part 138, Part 141,or Part 142 certificate mentioned in paragraph 4.1 or 4.2.

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Note Under regulation 11.077 of CASR, it is an offence for a person holding a flight crew licence to contravene a condition of the licence.

5 When the CAO takes effect

5.1 Without affecting this CAO as in force immediately before 2 December 2021, this CAO takes effect:

(a) for an operator who holds an AOC or certificate mentioned in paragraph 4.1 — on and from 2 December 2021; and

(b) for a person who is issued with an AOC or certificate mentioned in paragraph 4.1 — on and from the day the AOC or certificate is issued; and

(c) for a flight crew member of an operator or person mentioned in subparagraph (a) or (b) — on and from the day mentioned in subparagraph (a) or (b) for the operator or person; and

(d) for a flight crew member on a flight conducted as a private operation — on and from 2 December 2021.

5.2 Each flight crew member of an operator or person mentioned in paragraph 5.1 must comply with the applicable requirements of this CAO that apply to, and take effect for, the operator or person in accordance with this subsection.

5A Approval of non-compliance

5A.1 CASA may, on application or on its own initiative, by instrument in writing, approve limited or minor non-compliance with the requirements of a specified provision of this CAO.

5A.2 An approval has the effect that the specified provision of this CAO does not apply to the AOC holder to whom the approval applies, provided that any conditions expressed in the approval are complied with.

Note The expression AOC holder includes the holder of a Part 138 certificate or a Part 141 certificate: see the definition of ***AOC holder*** in subsection 6.

5A.3 An approval mentioned in paragraph 5A.2 has the effect that the specified provision of this CAO does not apply to the AOC holder's flight crew members.

5A.4 CASA must not grant an approval unless CASA is satisfied that compliance with the approval, including any conditions of the approval, will preserve an acceptable level of aviation safety.

5A.5 An instrument of approval is a legislative instrument if the instrument is expressed to apply to a class of AOC holders.

5A.6 An instrument of approval is not a legislative instrument if the instrument is expressed to apply to a particular AOC holder.

6 Definitions

6.1 In this CAO:

access, in a provision referring to 1 or more of the following (***necessities***):

(a) a crew rest facility;

(b) suitable sleeping accommodation;

(c) suitable resting accommodation;

(d) adequate sustenance;

means that there is no restriction on, or impediment to, a flight crew member's immediate and actual use of the necessity:

(e) in accordance with the provision; or

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(f) if the provision is a definition — in accordance with a provision which uses the defined term.

acclimatised has the meaning given in subsection 7.

acclimatised time means local time at the location where an FCM is acclimatised.

Act means the *Civil Aviation Act 1988*.

adaptation period means a continuous off-duty period for an FCM to become acclimatised to a particular location.

adequate sustenance means food and drink, including clean drinking water, in quantities sufficient to reasonably sustain a person in the person's circumstances.

aerial work certificate means a certificate issued under regulation 138.040 of CASR.

aerial work operator has the meaning given by the CASR Dictionary.

Note An aerial work operator is the holder of an aerial work certificate.

AOC means an Air Operator's Certificate.

AOC holder, or ***holder***, means the holder of an Air Operator's Certificate issued under Part III, Division 2 of the Act but, except in subsection 4, is also taken to include the holder of one of the following to whom this CAO applies:

(a) a Part 138 certificate;

(b) a Part 141 certificate.

Note See also paragraph 6.5.

approval means approval in writing.

assigned means assigned by the AOC holder to his or her FCM.

Note For example, the AOC holder ***assigns*** to the FCM ***duty***, ***standby***, a ***home base***, a ***flight duty period***, a ***reporting time***.

augmented crew operation means an aircraft operation in which 1 or more FCMs, additional to the minimum required number of FCMs, are engaged in a flight to allow 1 or more FCMs to be relieved of duty during flight time.

authorised Part 141 flight training has the same meaning as in subregulation 141.015 (2) of CASR but does not include flight training that is conducted in a flight simulation training device as the sole and exclusive form of training conducted by the operator.

authorised Part 142 activity has the same meaning as in subregulation 142.015 (3) of CASR but does not include flight training that is conducted in a flight simulation training device as the sole and exclusive form of training conducted by the operator.

bed, for suitable sleeping accommodation, includes at least 1 pillow, clean bed linen, and bed covering appropriate for the temperature of the accommodation.

call out means being required by an AOC holder to commence a duty period during a standby.

CAR means the *Civil Aviation Regulations 1988*.

CASR means the *Civil Aviation Safety Regulations 1998*.

Chief Executive Officer means the person who is:

(a) if the AOC holder is an individual — that individual; or

(b) if the AOC holder is a corporation — the person (however described) whom CASA was satisfied, for subparagraph 28 (1) (b) (iv) of the Act (and the definition of ***key personnel*** in subsection 28 (3) of the Act), could hold or carry out the duties of the AOC holder's Chief Executive Officer.

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complex operation means an operation which involves 1 or more of the following:

(a) an FDP with a displacement time of 2 hours or more;

(b) an augmented crew operation;

(c) an FDP that commences when the FCM is:

(i) in an unknown state of acclimatisation; or

(ii) acclimatised to a location other than the location where the FDP commences.

Note AOC holders should consider the impact of Daylight Saving Time on local time differences for relevant locations because Daylight Saving Time may have an impact on whether or not an operation is complex.

consecutive, in relation to the hours or days of a period of time mentioned in a provision of this CAO, means a continuous, unbroken, period of time for the duration of the hours or days mentioned.

crew member has the meaning given by the CASR Dictionary.

crew rest facility means 1 of the following defined classes of facility on board an aircraft that is available to an FCM:

(a) ***class 1***, which means a bunk or other surface that:

(i) is fit for the purpose of an FCM obtaining sleep in a horizontal sleeping position; and

(ii) is located separate from both the flight deck and passenger compartment in an area that:

(A) is temperature-controlled; and

(B) allows the FCM to control light; and

(C) provides isolation from noise and disturbance;

(b) ***class 2***, which means a seat in an aircraft cabin that:

(i) is fit for the purpose of an FCM obtaining sleep in a horizontal or near-horizontal sleeping position; and

(ii) is separated from passengers by at least a curtain that provides darkness and some noise mitigation; and

(iii) is reasonably free from disturbance by passengers or crew members;

(c) ***class 3***, which means a seat in an aircraft cabin or flight deck that:

(i) is fit for the purpose of an FCM obtaining rest; and

(ii) reclines at least 40 degrees from the vertical plane; and

(iii) provides leg and foot support in the reclined position.

cruise means the period of a flight from not less than 30 minutes after take-off until not less than 60 minutes before the estimated time of landing.

cumulative duty means the progressive sum of duty periods.

cumulative flight time, for an FCM, means the progressive total of flight time accrued by the FCM when acting as a crew member on board any aircraft, but excluding flight time accrued during recreational private operations.

day means the period between local midnight at home base and the subsequent local midnight at home base.

displacement time means the difference in local time between:

(a) the place where an FCM commenced an FDP; and

(b) the place where the FCM undertakes an off-duty period following the FDP.

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duty means any task that a person who is employed as an FCM is required to carry out associated with the business of an AOC holder.

duty period means a period of time which:

(a) starts when an FCM is required by an AOC holder to report for duty; and

(b) ends when the FCM is free of all duties.

Note A duty period includes any time spent by the FCM in positioning. See the definition of ***positioning*** in subparagraph 6.3 (e).

early start, for an FDP of an FCM, means:

(a) in Appendix 2:

(i) if the FCM is acclimatised — an FDP that commences between the hours of 0500 and 0659 local time at the location where the FCM is acclimatised; or

(ii) if the FCM is in an unknown state of acclimatisation — an FDP that commences between the hours of 0500 and 0659 local time at the location where the FCM was last acclimatised; and

(b) for an Appendix other than Appendix 2 — an FDP that commences between the hours of 0500 and 0659 local time at the location where an FCM commences the FDP.

emergency service operation means an operation involving an aircraft:

(a) for the purpose of law enforcement, or saving or protecting life or property; and

(b) conducted by, or at the request of, an organisation recognised by an Australian governmental agency as having responsibility to conduct or request the operation as part of the organisation's functions.

employment includes employment under a contract for services.

fatigue, for an FCM, means a physiological state of reduced alertness or capability to perform mental or physical tasks, which:

(a) may impair the ability of the FCM to safely operate an aircraft; and

(b) is caused by 1 or more of the following:

(i) the FCM's lack of sleep;

(ii) the FCM's extended wakefulness;

(iii) the FCM's circadian phase at any relevant time;

(iv) the FCM's workload of mental activities, or physical activities, or mental and physical activities at any relevant time.

fatigue risk management system (or ***FRMS***) means a comprehensive system for managing fatigue-related risks that:

(a) is appropriate for the size, nature and complexity of the AOC holder's operations; and

(b) includes all of the elements set out in Appendix 7; and

(c) is approved for implementation by CASA.

fit for the purpose, for a crew rest facility, or suitable sleeping accommodation, means that the facility, or accommodation, has ergonomic characteristics which make it suitable for an FCM to obtain sleep or rest, as the case requires.

Note CASA has issued guidance on relevant ergonomic characteristics in CAAP 48-01.

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flight crew licence has the meaning given by the CASR Dictionary.

flight crew member (or ***FCM***) has the same meaning as in the Regulations. The abbreviation ***FCMs*** means more than 1 FCM.

Note Under Part 1 of the CASR Dictionary, ***flight crew member*** means a crew member who is a pilot or flight engineer assigned to carry out duties essential to the operation of an aircraft during flight time. Any reference to ***flight crew*** has a corresponding meaning.

flight duty period (or ***FDP***) means a period of time which:

(a) starts when a person is required by an AOC holder to report for a duty period in which 1 or more flights as an FCM are undertaken; and

(b) ends at the later of:

(i) the person's completion of all duties associated with the flight, or the last of the flights; or

(ii) 15 minutes after the end of the person's flight, or the last of the flights.

Note See also the definition of ***positioning***.

flight review has the same meaning as in regulation 61.010 of CASR.

Note ***Flight review*** means an assessment of the competency of an FCM to perform:

(a) for the holder of a pilot licence or flight engineer licence — an activity authorised by a flight crew rating that the crew member holds; or

(b) for the holder of a glider pilot licence — an activity authorised by the licence.

flight time, for an FCM, means such part of the total time mentioned for an aircraft in subparagraph (a) or (b) (as the case may be) which occurs while the FCM is acting as a crew member on board the aircraft:

(a) in the case of a heavier-than-air aircraft — the total time from the moment at which the aircraft first moves under its own power for the purpose of taking-off, until the moment at which it comes to rest after landing; and

(b) in the case of a lighter-than-air aircraft — the total time from the moment at which the aircraft first becomes airborne until it comes to rest on the ground, excluding any time during which the aircraft is moored.

Note Thus, flight time for an FCM does not include the time he or she spends in positioning.

flight training has the same meaning as in regulation 61.010 of CASR and, to avoid doubt, includes flight training associated with aerial work.

Note ***Flight training***, for a flight crew licence, rating or endorsement, means the training mentioned in regulation 61.195 of CASR for the licence, rating or endorsement.

flight training associated with aerial work means flight training for the grant, under Part 61 of CASR, of a rating or endorsement mentioned in subparagraph (a), (b), (c) or (d):

(a) the following operational ratings:

(i) low-level rating;

(ii) aerial application rating;

(iii) night vision imaging system rating;

(b) endorsements for the following operational ratings:

(i) low-level rating;

(ii) aerial application rating;

(iii) night vision imaging system rating;

(c) the following endorsements on the flight instructor rating:

(i) low-level rating training endorsement (category specific);

(ii) aerial application rating (day) training endorsement (category specific);

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(iii) aerial application rating (night) training endorsement (category specific);
(iv) night vision imaging system rating training endorsement;
(v) sling operations training endorsement;
(vi) winching and rappelling operations training endorsement;

(d) the following endorsements on the flight examiner rating:
(i) low-level rating flight test endorsement (category specific);
(ii) aerial application rating flight test endorsement (category specific);
(iii) night vision imaging system rating flight test endorsement.

FRMS Manager means the person in an AOC holder's organisation who is appointed by the Chief Executive Officer to be responsible for the day-to-day implementation, management and continuing effectiveness of the AOC holder's FRMS.

home base means the location, assigned by the AOC holder to the FCM, from where the FCM normally starts and ends a duty period or a series of duty periods.

in-flight rest means, in an augmented crew operation, the period of time, or periods of time, during which an FCM has access to a crew rest facility.

late-night operation means an operation where an FDP includes more than 30 minutes between the hours of 2300 and 0530 local time.

local night means a period of 8 consecutive hours which includes the hours between 2200 and 0500 local time.

local time, for a location, means:

(a) local time in the time zone of the location; or

(b) local time in a time zone (the ***alternative local time***):
(i) that adjoins the time zone of the location; and
(ii) whose nearest boundary is reasonably proximate to the location;
provided the alternative local time is:
(iii) specified in the AOC holder's operations manual; and
(iv) used consistently as local time for the location, for the purposes of this CAO.

Note 1 CASA considers an alternative time zone to be used consistently as local time for a location if it is used, for example, throughout a period of daylight saving in the location or the adjoining time zone.

Note 2 Examples of where an AOC holder may consider using alternative local time are as follows:

Local time	Alternative local time
Gold Coast airport, Queensland summertime	NSW
Kununurra airport, Western Australia	NT

medical personnel means a person with medical, paramedical or nursing qualifications, and responsibilities directly related to the qualifications.

medical transport operation means an aircraft operation consisting of 1 or more flights for any of the following purposes:

(a) delivery of urgent medical assistance to a person, when determined to be necessary by a medical transport tasker;

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(b) transportation of any of the following, when determined to be necessary by a medical transport tasker:

(i) an ill or injured person;

(ii) another person directly involved with the person mentioned in sub-subparagraph (i);

Note For example, a close relative or the police.

(iii) medical personnel intended to be, or who are, directly involved with the person mentioned in sub-subparagraph (i);

(iv) blood, tissue or an organ for transfusion, grafting or transplantation (an ***item***), including a person who has authorised custody of the item;

(c) the return of the aircraft to its base because an operation mentioned in subparagraph (a) or (b) is completed.

medical transport tasker means:

(a) medical personnel; or

(b) an organisation whose purpose is, or whose purposes include, medical transport tasking.

multi-pilot operation:

(a) means an aircraft operation conducted under multi-pilot procedures contained in the AOC holder's operations manual; but

(b) does not include:

(i) contracted checking, within the meaning of regulation 142.020 of CASR; or

(ii) contracted recurrent training within the meaning of regulation 142.020 of CASR;

unless the training or checking is conducted as a multi-crew operation within the meaning of regulation 61.010 of CASR.

mustering operation means an aerial work operation, by a Part 138 operator, to herd or otherwise control livestock, and includes the following:

(a) aerial livestock spotting;

(b) aerial humane killing of livestock that is injured or being culled;

(c) flight training associated with aerial work for any of the activities mentioned in this definition.

off-duty period means a period of time during which an FCM is free of all duties and standby associated with his or her employment.

operator proficiency check has the same meaning as in regulation 61.010 of CASR.

Note An ***operator proficiency check*** means an assessment conducted by an operator in accordance with its training and checking responsibilities under the Regulations of whether a person has the aeronautical skills and knowledge required by the operator.

Part 138 certificate means an aerial work certificate issued under regulation 138.040 of CASR.

Part 138 operator means the holder of a Part 138 certificate.

Part 141 certificate means the Part 141 certificate of a Part 141 operator to whom this CAO applies and, to that extent only, has the same meaning as in subregulation 141.015 (4) of CASR.

Note See also paragraph 4.2 which excludes from the scope of the CAO a Part 141 operator whose training is conducted exclusively through the use of a flight simulation training device. In

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subregulation 141.015 (4) of CASR, a ***Part 141 certificate*** is defined as a certificate issued under regulation 141.060 of CASR. Except in paragraph 2.2, and subsections 4 and 4B, a reference in this CAO to an AOC holder is taken to include a Part 141 operator: see paragraph 6.4.

Part 141 operator means a Part 141 operator to whom this CAO applies and, to that extent only, has the same meaning as in subregulation 141.015 (3) of CASR.

Note See also paragraph 4.2 which excludes from the scope of the CAO a Part 141 operator whose training is conducted exclusively through the use of a flight simulation training device. In subregulation 141.015 (3) of CASR, a ***Part 141 operator*** is defined as the holder of a Part 141 certificate. Except in paragraph 2.2, and subsections 4 and 4B, a reference in this CAO to an AOC holder is taken to include a Part 141 operator: see paragraph 6.4.

Part 142 operator means a Part 142 operator to whom this CAO applies and, to that extent only, has the same meaning as in subregulation 142.015 (4) of CASR.

Note See also paragraph 4.2 which excludes from the scope of the CAO a Part 142 operator whose activity is conducted exclusively through the use of a flight simulation training device.

positioning is defined in paragraph 6.3.

private operation has the meaning given by the CASR Dictionary.

reassign means to assign to an FCM in a modified form that which had previously been assigned to the FCM.

recreational private operation means flying conducted by an FCM in a personal capacity, and at and for the FCM's leisure.

Note A flight conducted by an FCM as a private operation is not a recreational private operation if it is conducted for, or on behalf of, an entity, regardless of whether or not the entity is an AOC holder.

reporting time means the time assigned to an FCM to commence an FDP.

roster means a list made available to an FCM by an AOC holder setting out the times when the FCM is assigned to undertake duties or standby.

sector, for this CAO, has the following meanings:

(a) except for a rotorcraft — any flight consisting of a take-off and a landing, when conducted by a person in the capacity of an FCM;

(b) for a rotorcraft — the period:

  (i) from when the rotor blades start turning until they stop turning; and

  (ii) during which an FCM on the rotorcraft conducts 1 or more flights, each consisting of a take-off and a landing;

(c) each hour, or each part of an hour, of an FDP spent in a synthetic training device.

single-pilot operation means any operation other than a multi-pilot operation.

sleep opportunity means a period of time during an off-duty period when an FCM:

(a) is not meeting the reasonable requirements of bodily functioning such as eating, drinking, washing or dressing; and

(b) has access to suitable sleeping accommodation without, under normal circumstances, being interrupted by any requirement of the AOC holder.

Note When an FCM is interrupted during sleep opportunity, this may affect the FCM's fitness for duty before the commencement of, or during, the next FDP.

SMS means a safety management system approved by CASA.

split duty means an FDP which contains a split-duty rest period.

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split-duty rest period means a predefined period of time (or, for Appendix 4B or Appendix 5, a period of time that may or may not be predefined) during which an FCM:

(a) has access to suitable resting accommodation or suitable sleeping accommodation; and

(b) is relieved of all duties associated with his or her employment by the AOC holder.

standby means a period of time during which an FCM:

(a) is required by an AOC holder to hold himself or herself available for duties; and

(b) has access to suitable sleeping accommodation; and

(c) is free from all duties associated with his or her employment.

Note If suitable sleeping accommodation is not available for an FCM, who is required by an AOC holder to hold himself or herself available for duty, the FCM will be considered to be on duty and not on standby.

standby-like arrangement means a period of time during which an FCM:

(a) is required by an AOC holder to hold himself or herself available for duties; and

(b) has no access to suitable sleeping accommodation.

suitable resting accommodation means a comfortable resting area:

(a) which has a comfortable temperature and minimal noise levels; and

(b) which contains at least a comfortable chair; and

(c) at which the FCM has access to adequate sustenance at times appropriate to the duty requirements.

Note Suitable resting accommodation is solely for split-duty rest periods. Suitable sleeping accommodation may also be used for split-duty rest periods.

suitable sleeping accommodation means accommodation, not within an aircraft, that is fit for the purpose of an FCM obtaining sleep, and that includes the following:

(a) a comfortable room, compartment or facility;

(b) a single occupancy, at the discretion of the FCM;

(c) access to clean, tidy and hygienic amenities, including a toilet and hand washing basin;

(d) a bed that is comfortable, flat and horizontal, allowing the occupant to sleep on his or her stomach, and back, and either side;

(e) minimum noise levels, including low occurrence of random noise;

(f) the means to control light, temperature and ventilation;

(g) access to adequate sustenance.

Note A person's home or residence is considered to meet the requirements of ***suitable sleeping accommodation***.

synthetic training device has the same meaning as in the Regulations.

Note Under the Dictionary in CASR, ***synthetic training device*** means a flight simulator, a flight training device, or a basic instrument flight trainer.

the Regulations means CAR and CASR, as in force from time to time.

Note The effect of regulation 2C is that ***the Regulations***, CAR and CASR, are to be read together.

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time zone means a defined region of the earth with a uniform local time which differs by 1 hour, or by part of 1 hour, from the uniform local time of an adjoining region of the earth.

unforeseen operational circumstance means an unplanned exceptional event that becomes evident after the commencement of the FDP, such as unforecast weather, equipment malfunction, or air traffic delay.

Note Guidance on the application of ***unforeseen operational circumstances*** is contained in CAAP 48-01.

window of circadian low, or ***WOCL***, for an FCM, means:

(a) in Appendix 2:

(i) if the FCM is acclimatised — the period between the hours of 0200 and 0559 local time at the location where the FCM is acclimatised; or

(ii) if the FCM is in an unknown state of acclimatisation — the period between the hours of 0200 and 0559 local time at the location where the FCM was last acclimatised; and

(b) in an Appendix other than Appendix 2 — the period between the hours of 0200 and 0559 local time at the location where the FCM commences a duty period.

written application, for an approval, means the written application of the AOC holder who is seeking the approval.

6.2 In this CAO, if any duty is performed during all, or any part, of the period of the ***WOCL***, the WOCL is infringed.

6.3 For this CAO, ***positioning***, for a person who is employed as an FCM:

(a) means being transported, as a passenger, to a location, by any mode of transportation, as required by the AOC holder; and

(b) does not include being transported to or from suitable accommodation after or before an FDP; and

(c) if undertaken immediately before duty that includes the person flying an aircraft as an FCM (***flying duty***) — must be considered part of his or her FDP; and

(d) if undertaken immediately after the person's flying duty and no other flying duty is to be conducted in the duty period — is not part of his or her FDP or off-duty period; and

(e) is duty and part of the duty period.

Note The time spent positioning following an FDP, as described in subparagraph 6.3 (d), is not part of the FDP or off-duty period. However, it is added to the FDP for calculating off-duty period requirements. See, for example, clause 10 in Appendix 2.

6.4 The expression, ***the operations manual***, when used in a provision of this CAO, is taken to mean whichever of the following the Regulations require of the AOC holder to whom the provision applies:

(a) the operations manual of the AOC holder;

(b) the exposition of the AOC holder.

6.5 In this CAO, other than subsection 4:

(a) a reference to an AOC is taken to include a Part 138 certificate or a Part 141 certificate; and

(b) a reference to an AOC holder, or a holder, is taken to include a Part 138 operator or a Part 141 operator; and

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(c) a reference to an FCM of an AOC holder (however described) is taken to include an FCM of a Part 138 operator or a Part 141 operator.

7 Determination of acclimatisation

7.1 At the commencement of an FDP or an off-duty period at a location, an FCM must be considered to be acclimatised to the location if:

(a) the location differs in local time by less than 2 hours from the location where the FCM was last acclimatised; and

(b) the FCM has remained in an acclimatised state since he or she was last acclimatised.

Note AOC holders and FCMs should be aware that a determination of acclimatisation under this definition may impact on an individual's body clock to a small degree. For guidance on acclimatisation, AOC holders and FCMs should refer to CAAP 48-01.

7.2 At the commencement of an FDP or an off-duty period (a ***period***) at a new location which differs in local time by 2 hours or more from the location where the FCM was last acclimatised (the ***original location***), the FCM is considered to remain acclimatised to the original location if the period at the new location commences less than 36 hours after the FCM commenced a duty period at the original location.

7.3 At the commencement of an FDP or an off-duty period (a ***period***) at a new location which differs in local time by 2 hours or more from the location where the FCM was last acclimatised (the ***original location***), the FCM is considered to be in an unknown state of acclimatisation if the period at the new location commences 36 hours or more after the FCM commenced a duty period at the original location.

7.4 An FCM is considered to remain in his or her state of acclimatisation (whether acclimatised to a particular location, or in an unknown state of acclimatisation) until he or she has had:

(a) an adaptation period in a location (the ***adaptation location***) in accordance with Table 7.1 in this subsection; or

(b) an adaptation period that is:

(i) in a location other than home base; and

(ii) in accordance with subparagraph (a); and

(iii) reduced by 12 hours for each previous off-duty period that:

(A) immediately preceded the adaptation period; and

(B) was taken at an off-duty location which differs in local time by less than 2 hours from the adaptation location; and

(C) included an off-duty location local night.

7.5 In applying Table 7.1 to arrive at an adaptation period for paragraph 7.4:

(a) determine the time zone displacement between:

(i) the location where the FCM was last acclimatised (the ***original location***); and

(ii) each location where an FDP or off-duty period was commenced since last acclimatised (***later locations***); and

(b) then choose the time zone displacement between the original location and whichever of the later locations gives the greatest time zone displacement; and

(c) then choose the time zone change in the Table that corresponds to the greatest time zone displacement; and

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(d) then choose the direction (west or east) in which the FCM travelled and in which, therefore, the greatest time zone displacement occurred under subparagraph (b); and

(e) then choose the number of hours west or east (as the case requires) that corresponds to the time zone change chosen under subparagraph (c).

Table 7.1 Adaptation period to become acclimatised

Time zone change (measured in time zones)	**Adaptation period to become acclimatised to new location (hours)**	
Note See definition of ***time zone***	***West***	***East***
2	24	30
3	36	45
4	48	60
5	48	60
6	48	60
7	72	90
8	72	90
9	72	90
10 or more	96	120

Note 1 ***Adaptation period*** means a continuous off-duty period for an FCM to become acclimatised to a particular location.

Note 2 An adaptation period under paragraph 7.4 may commence before the time when an FCM comes to be in an unknown state of acclimatisation.

Note 3 For guidance in determining acclimatisation, including examples of how an FCM becomes reacclimatised in accordance with paragraph 7.4, AOC holders and FCMs should refer to CAAP 48-01.

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PART 2 CONDITIONS

8 General condition on Air Operators' Certificates

Each AOC is subject to the condition that the AOC holder must:

(a) comply with each requirement for the AOC holder as set out in this CAO; and

(b) comply with the limits and requirements for an FCM as provided for by each Appendix of this CAO which the AOC holder applies to the FCM; and

(c) ensure that each of the AOC holder's FCMs, when acting as such, complies with each requirement imposed by this CAO on flight crew licences.

9 General conditions on flight crew licences

9.1 The flight crew licence of an AOC holder's FCM is subject to the condition that the FCM must comply with each limit and requirement imposed on the FCM by this CAO.

9.2 The flight crew licence of an FCM in a private operation is subject to the condition that the FCM must comply with the requirement imposed on the FCM by paragraph 16.1 of this CAO.

Note Under regulation 11.077 of CASR, breach of a flight crew licence condition is a strict liability offence.

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PART 3 LIMITS AND REQUIREMENTS

10 Limits and requirements for operations

10.1 Subject to subsections 11, 12 and 13, for an aircraft operation mentioned in column 1 of Table 10.1, an AOC holder must:

(a) choose at least 1 of the Appendices in column 2 of the Table that corresponds to the operation; and

(b) comply with the limits and requirements for FCMs mentioned in whichever 1 or more of the Appendices in column 2 of the Table the holder chooses that corresponds to the operation; and

(c) for each kind of operation conducted by the holder — specify in the operations manual the Appendix or Appendices with which the holder has chosen to comply.

Note 1 In this subsection, and generally throughout the CAO, a reference to an AOC holder is taken to include a reference to a Part 138 operator and a Part 141 operator: see paragraph 6.4, but also paragraph 4.2.

Note 2 This CAO, including the limits and requirements under subsection 10, does not apply to flight training in a flight simulation training device. However, if an AOC holder requires an FCM to carry out flight training in a flight simulation training device (***FSTD***) as well as flight duties, the training in the FSTD must be counted as duty by virtue of the definition of ***duty*** in subsection 6.

Table 10.1 Limits and requirements for operations

Column 1 — Operation	Column 2 — Appendix
Any operation.	Appendix 1
Any multi-pilot operation, except flight training.	Appendix 2
Any multi-pilot operation, except: (a) a complex operation; and (b) flight training.	Appendix 3
Any operation.	Appendix 4
Any balloon operation.	Appendix 4A
Any of the following: (a) a medical transport operation; (b) an emergency service operation; (c) flight training for an operation mentioned in paragraphs (a) and (b); (d) an operator proficiency check for an operation mentioned in paragraph (a) or (b); (e) a flight review for an operation mentioned in paragraph (a) or (b).	Appendix 4B
Any of the following: (a) an aerial work operation; (b) flight training associated with aerial work; (c) an operator proficiency check for an operation mentioned in paragraph (a); (d) a flight review for an operation mentioned in	Appendix 5

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Column 1 — Operation	Column 2 — Appendix
paragraph (a).	
Any of the following: (a) an aerial work operation, conducted during daylight hours only; (b) flight training associated with aerial work conducted during daylight hours only; (c) an operator proficiency check for an operation mentioned in paragraph (a); (d) a flight review for an operation mentioned in paragraph (a).	Appendix 5A
Any of the following: (a) flight training; (b) a proficiency check; (c) a flight review.	Appendix 6
Any operation.	Appendix 7 *Note* Use of Appendix 7 requires CASA approval.

10.2 Subject to subsections 11 and 13, each FCM of an AOC holder must comply with the limits and requirements mentioned in the Appendix or Appendices which the AOC holder has chosen to comply with under paragraph 10.1.

11 Part 137 operations

11.1 Despite any other provision of this Order, this subsection takes effect on 2 September 2019.

11.2 In this subsection:

relevant operation means an aerial application operation in an aeroplane under Part 137 of CASR.

Note Subsection 11 has no application to aerial application operations in a helicopter.

11.3 Except for this subsection, paragraph 16.1 and any relevant definitions in subsection 5, this CAO does not apply to:

(a) an AOC holder engaged in a relevant operation;

(b) an FCM employed by, and undertaking duties for, the AOC holder mentioned in subparagraph (a).

11.4 It is a condition on the AOC of an AOC holder mentioned in subparagraph 11.3 (a) that the holder must comply with Subpart 137.Q of CASR.

Note Such AOC holders are bound by Subpart 137.Q of CASR and there are penalties under Subpart 137.Q for failure to comply.

11.5 It is a condition on the flight crew licence of an FCM mentioned in subparagraph 11.3 (b) that the FCM must comply with Subpart 137.Q of CASR.

Note Such FCMs are bound by Subpart 137.Q of CASR and there are penalties under Subpart 137.Q for failure to comply.

11.6 Subject to paragraph 11.7, before an FCM conducts a relevant operation for an AOC holder, the holder must be satisfied that the FCM has received awareness material, or training, in managing the fatigue-related risks relevant to his or her duties as an FCM.

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11.7 Paragraph 11.6 does not apply until 1 July 2020 to an AOC holder for a relevant operation if the holder held an AOC for the relevant operation immediately before 30 April 2013.

12 Private operations

12.1 Subject to paragraph 12.3, this CAO does not apply to an AOC holder when conducting private operations.

12.2 Subject to the condition mentioned in paragraph 16.1, and paragraph 12.3, this CAO does not apply to an FCM when conducting private operations.

Note The condition under paragraph 16.1 applies to FCMs whether or not they are employed by an AOC holder. Paragraph 16.1, therefore, applies to FCMs engaged in private operations as well as FCMs engaged in operations under an AOC. Guidance on the assessment of individual cognitive and physical fitness is contained in CAAP 48-01. CASA recommends that FCMs engaged in private operations consider this guidance in determining self-prescribed limits.

12.3 Despite paragraphs 12.1 and 12.2, if an FCM performs duty by conducting a private operation (a ***private flight***) during an FDP that involves a flight that is not a private operation (a ***non-private flight***), the rules in paragraph 12.4 apply in relation to the FCM.

12.4 For paragraph 12.3:

(a) if the private flight is conducted *before* any non-private flight is conducted — the private flight time must be taken to be part of the FCM's FDP and must not be taken to be part of the FCM's off-duty period; and

(b) if the private flight is conducted *between* non-private flights — the private flight time must be taken to be part of the FCM's FDP and must not be taken to be part of the FCM's off-duty period; and

(c) if:

(i) only 1 non-private flight is conducted during the FDP; and

(ii) the private flight is conducted *after* the non-private flight;

the private flight time must be taken to be part of the FCM's duty period and must not be taken to be part of the FCM's off-duty period; and

(d) if:

(i) more than 1 non-private flight is conducted during the FDP; and

(ii) the private flight is conducted *after* the last non-private flight;

the private flight time must be taken to be part of the FCM's duty period and must not be taken to be part of the FCM's off-duty period.

Note CAAP 48-01 provides examples of how to consider private flights within an FDP.

13 Operations under multiple Appendices

13.1 If, under paragraph 10.1, 2 or more Appendices apply to a single FDP of an FCM, the following rules apply for an operation undertaken at any particular time in the FDP:

(a) the maximum FDP that an AOC holder and an FCM must comply with is the FDP limit contained in the Appendix under which the operation is being conducted at that particular time;

(b) the maximum flight time that an AOC holder and an FCM must comply with is the flight time limit contained in the Appendix under which the operation is being conducted at that particular time.

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13.2 In determining the maximum FDP and flight time under paragraph 13.1, the limit determined from each Appendix must be based on the time of commencement of the FDP, and not on the time of commencement of operations under each Appendix.

13.3 At any particular time in an FDP, the AOC holder and FCM must each ensure that the FCM remains within the cumulative duty and cumulative flight time limits for the Appendix under which the operation is being conducted at that particular time.

13.4 Where operations under 2 or more Appendices are undertaken in a single FDP, the minimum off-duty period that the AOC holder and FCM must comply with following the FDP is that contained in the Appendix with the highest off-duty period as if the entire FDP was performed under that Appendix.

13.5 Subject to paragraph 13A.2, an AOC holder and an FCM must comply with the off-duty period requirements of the Appendix determined under paragraph 13.4 before the FCM commences another FDP.

13A Transitioning from Appendix 4B, 5 or 5A, or Subpart 137.Q of CASR

13A.1 Subject to paragraph 13A.2, an FCM, transitioning from the application of Appendix 4B, 5 or 5A, or Subpart 137.Q of CASR to his or her last FDP or standby, to the application of another Appendix of this CAO (other than Appendix 4B, 5 or 5A) (the ***other Appendix***) to his or her next FDP or standby, must before commencing the next FDP or standby under the other Appendix, have had at least 6 days off-duty in the previous 28 consecutive days.

13A.2 Subject to paragraph 13A.3, if, despite paragraph 13A.1, an FCM has not had the minimum number of days off-duty that are specified under the subsection for the transition to the other Appendix, the FCM may commence a first FDP or standby under the other Appendix provided that:

(a) the off-duty period immediately before the first FDP or standby under the other Appendix is at least 12 hours; and

(b) the report time for the FCM for the first FDP is not earlier than 0700 hours local time; and

(c) the FCM's previous FDP was less than 8 hours; and

(d) the first FDP is less than 8 hours in duration; and

(e) after the first FDP, there is only 1 subsequent FDP, also of less than 8 hours, before the requirements of paragraph 13A.1 must be complied with.

13A.3 Paragraph 13A.2 does not apply to a transition to Appendix 1.

14 AOC holder obligations

Fitness for duty

14.1 An AOC holder must not assign a duty on a flight to an FCM if the AOC holder reasonably believes that the FCM is unfit to perform the duty because of fatigue.

Limits

14.2 The limits and requirements that are to apply to an FCM must be determined in accordance with the Appendix chosen under this CAO to apply to the FCM.

Note The word "limit" in a provision refers expressly or impliedly to a quantity of time and, *depending on the context and other language of the provision*, is used to denote a maximum quantity of time that is not to be exceeded except in accordance with this CAO, or a minimum quantity of time that is not to be reduced except in accordance with this CAO.

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Operations manual

14.3 The AOC holder must include in the operations manual:

(a) the limits arising from compliance with each applicable Appendix of this CAO that the holder has chosen to apply to an FCM, showing:

(i) each maximum limit under the Appendix which must not be exceeded; and

(ii) each minimum limit under the Appendix which must not be reduced; and

Note 1 For example, taking into account the provisions of an applicable Appendix, an FDP *limit* must not be exceeded, and an *off-duty period* must not be reduced.

Note 2 An AOC holder with an FRMS implementation approval must include relevant limits in the operations manual (see subclauses 2.5 and 3.2 in Appendix 7).

(b) for FCMs conducting a particular operation — each limit mentioned in subparagraph (a) as modified by the AOC holder for the FCMs and the operation, but not so as to exceed a maximum limit, or reduce a minimum limit, set out in the applicable Appendix; and

(c) where the need to take account of possible hazards arises under subsection 15 — for FCMs conducting a particular operation, each limit mentioned in subparagraph (b) as modified by taking the possible hazard into account.

Employee responsibilities

14.4 An AOC holder must set out in the operations manual its employees' responsibilities for operational fatigue management, and fatigue risk management.

Meals

14.5 Except for operations under Appendix 7 — Fatigue Risk Management System (FRMS), where an FCM's FDP is to exceed 5 hours, the AOC holder must provide the opportunity for the FCM to have access to adequate sustenance (a ***meal***) during the first 5 hours and periodically after that meal, so that not more than 5 hours elapse between each meal.

Note For operations under Appendix 7, it is expected that the FRMS would provide the opportunity for FCMs to have access to adequate sustenance at appropriate intervals.

Records and reports

14.6 An AOC holder must maintain records (including relevant reports and documents) of the following:

(a) FCM rosters;

(b) actual duty periods;

(c) actual flight times of each FCM when acting in the capacity of a crew member;

Note Thus, the flight time record does not include time spent positioning.

(d) actual split-duty rest periods, standby periods and off-duty periods;

(e) any FDP that was extended under the relevant provision (if any) of the Appendix or FRMS which the AOC holder has chosen to comply with, including information about the extensions in such detail as enables the holder to comply with subparagraph 14.8 (a).

Note A record under subparagraph 14.6 (e) is not required where an FDP is reassigned under the relevant provision of the Appendix, unless the reassignment results in an FDP that exceeds the relevant limit set out in the AOC holder's operations manual.

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14.7 Each record mentioned in paragraph 14.6, including copies of reports and documents, must be securely retained for at least 5 years from the date the record and copy were made.

14.8 Each record concerning an extension of an FDP or a flight time limit mentioned in subparagraph 14.6 (e) must be:

(a) studied and used by the AOC holder to provide for continuous improvement of the holder's fatigue management, and fatigue risk management policies; and

(b) promptly given to CASA, if so requested in writing.

Home base

14.9 Subject to paragraph 14.10, an AOC holder must:

(a) determine the home base for each FCM (a ***home base determination***); and

(b) inform each FCM of his or her home base determination; and

(c) set out in its operations manual procedures for making a home base determination which ensure that each determination, and any changes to it, do not adversely affect aviation safety.

Note A determination of home base should be assigned with a degree of permanence.

14.10 Paragraph 14.9 does not apply for an AOC holder in relation to an FCM who only conducts operations for which the limitations and requirements are those set out in Appendix 5 or Appendix 5A.

Rosters

14.11 An AOC holder must publish each roster so far in advance of the FDPs and standby periods listed in it as to provide the FCM to whom it applies with a reasonable opportunity to plan adequate rest before his or her duty.

Note Guidance for AOC holders with regards to their obligations is contained in CAAP 48-01.

15 Enhanced fatigue management obligations

15.1 This subsection applies to an AOC holder to whom 1 or more of Appendices 2, 3, 4, 4A, 4B, 5, 5A and 6 of this CAO applies in accordance with subsection 10.

Operations manual procedures for hazards, multiple Appendices etc.

15.2 The AOC holder must set out the following in the operations manual:

(a) procedures for identifying any reasonably foreseeable hazard that may compromise an FCM's alertness during an FDP;

(b) procedures for determining the limits and requirements mentioned in subparagraph 14.3 (c) which take into account the identified hazards;

(c) procedures for the continuous monitoring and evaluation of the AOC holder's policies, limits, practices and relevant organisational experiences, taking into account the hazards identified by the procedures mentioned in subparagraph (a), with a view to continuous improvement of fatigue management, and fatigue risk management;

(d) where the AOC holder undertakes operations under multiple Appendices — procedures to ensure that transitions between the different limits of the Appendices:

(i) are undertaken in accordance with subsections 13 and 13A; and

(ii) do not adversely affect aviation safety;

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(e) details of the training and assessment required by paragraph 15.3.

Note The procedures mentioned in this paragraph may be met, at least in part, by existing procedures such as those for an SMS.

Training

15.3 Subject to subsection 15A, the AOC holder must, as a minimum:

(a) make available, and require each FCM to undertake, initial and recurrent fatigue-related risk training relevant to the FCM's duties in operations under the AOC; and

(b) at the end of the initial training, and at the end of each occasion of recurrent training — assess the FCM's knowledge and learning from the training.

Note The training required by this paragraph may be incorporated into existing training programs such as an AOC holder's human factors and non-technical skills training program.

15.4 Initial training under paragraph 15.3:

(a) for an FCM who becomes an AOC holder's employee after this CAO takes effect for the holder — must occur within 6 months of the person commencing the employment; and

(b) for an FCM who was the AOC holder's employee on the date this CAO takes effect for the holder — must occur within 6 months of the CAO taking effect.

15.5 Initial training under paragraph 15.3 must:

(a) be in accordance with a syllabus; and

(b) deliver a thorough knowledge and understanding of the following:

(i) fatigue causes;

(ii) fatigue-related impairment;

(iii) the management of risks associated with fatigue;

(iv) the AOC holder's fatigue risk management obligations and procedures under the operations manual and this CAO; and

(c) equip each FCM with the ability to comply with his or her obligations under this CAO in operations for the AOC holder.

15.6 Recurrent training must occur at appropriate intervals and:

(a) be in accordance with a syllabus; and

(b) revise the knowledge and understanding acquired under paragraph 15.5; and

(c) deliver a thorough knowledge and understanding of any changes in the AOC holder's operating practices, or fatigue risk management obligations and procedures, that have occurred since initial training or the preceding recurrent training (as the case may be).

15.7 Subject to subsection 15A, an FCM must:

(a) attend the initial and each recurrent training mentioned in paragraph 15.3; and

(b) at the end of each training, successfully complete an assessment of learning from the training; and

(c) satisfy the AOC holder that he or she has sufficient knowledge of, and competence in managing, the fatigue-related risks relevant to his or her duties as an FCM.

15.8 The AOC holder must maintain for each FCM records of training and assessment completed under this subsection.

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15.9 Each record mentioned in paragraph 15.8 must be securely retained from the date the record was made until at least 12 months after the FCM ceases to be employed by the AOC holder.

Note Guidance for AOC holders on these additional obligations is contained in CAAP 48-01.

15A Recognition of prior initial training

15A.1 In this subsection:

agent means an organisation contracted by an AOC holder to provide initial training to its FCMs.

currency time means the period of time that is the appropriate interval at which an AOC holder requires recurrent training to occur under paragraph 15.6.

Note For example, the interval may be every 18 months, or every 24 months. Further guidance is provided in CAAP 48-01.

initial training means fatigue-related risk training relevant to a person's duties as an FCM.

registered training organisation has the same meaning as in the Dictionary in CASR.

Note ***Registered training organisation*** means a training organisation listed on the National Register as a registered training organisation.

15A.2 This subsection applies to an AOC holder (the ***current AOC holder***) for an FCM (a ***new FCM***) who becomes a new employee of the current AOC holder.

15A.3 Subject to paragraph 15A.4, the references to initial training in paragraphs 15.3 and 15.7 do not apply to the current AOC holder for a new FCM who has successfully completed initial training (the ***prior initial training***) with:

(a) a different AOC holder or its agent; or

(b) the current AOC holder or its agent when previously employed by the current AOC holder; or

(c) a registered training organisation capable of delivering initial training.

15A.4 Paragraph 15A.3 does not apply unless:

(a) the prior initial training was completed within the currency time immediately before the new FCM becomes employed by the current AOC holder; and

(b) the current AOC holder is satisfied that:

(i) the prior initial training complied with the requirements of subparagraph 15.5 (a) and sub-subparagraphs 15.5 (b) (i) to (iii); and

(ii) the new FCM complied with the requirements of paragraph 15.7 for the prior initial training; and

(c) the satisfaction mentioned in subparagraph (b) is based on authentic records proving the matters mentioned in sub-subparagraphs (b) (i) and (ii); and

(d) within 4 weeks of the new FCM being employed by the current AOC holder — the new FCM has successfully completed an induction course to inform him or her of any fatigue-related risks and information specific to the current AOC holder; and

(e) the records mentioned in subparagraph (c), and details of the induction course mentioned in subparagraph (d), are:

(i) included with the new FCM records mentioned in paragraph 15.8; and

(ii) retained for at least the period mentioned in paragraph 15.9.

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16 Flight crew member obligations

16.1 For subregulation 11.068 (1) of CASR, it is a condition on each flight crew licence that the licence holder must not begin to carry out any task for a flight if, due to fatigue, the FCM is, or is likely to be, unfit to perform a task that the FCM must perform during the flight.

Note Guidance for FCMs on this obligation is contained in CAAP 48-01.

16.2 The condition in paragraph 16.1 applies to an FCM regardless of whether the flight is conducted on behalf of an AOC holder, or a Part 138 operator, or a Part 141 operator, or as a private operation.

Note An FCM employed by an AOC holder must not exceed any limit specified for the FCM in the AOC holder's operations manual, except where an extension is permitted.

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APPENDIX 1 BASIC LIMITS

1 Sleep opportunity before an FDP

1.1 An FCM must not be assigned or commence an FDP commencing away from home base unless, within the 10 hours immediately before commencing the FDP, he or she has at least 8 consecutive hours' sleep opportunity.

1.2 An FCM must not be assigned or commence an FDP commencing at home base unless, within the 12 hours immediately before commencing the FDP, he or she has at least 8 consecutive hours' sleep opportunity.

Note See subsection 6 of this CAO for the definition of ***sleep opportunity*** where it is defined as occurring during an off-duty period.

2 FDP and flight time limits

2.1 An FCM may only be assigned an FDP that is between the following times:

(a) the earlier of the following:

(i) the beginning of morning civil twilight on a day;

(ii) 0700 hours local time on the day;

(b) 0100 hours (local time at the location where the FDP commenced) on the following day.

2.2 Subject to subclauses 2.1, 2.3 and 2.4, an FCM may be assigned an FDP that is not longer than 9 hours.

2.3 If an FCM is assigned an FDP that is to commence before 0600 hours local time, being after the beginning of morning civil twilight — the assigned FDP must not be longer than 8 hours.

2.4 If an FCM is assigned an FDP that is to commence at or after 1400 hours local time — the assigned FDP must not be longer than 8 hours.

Note If an FDP commences *after* 1700 hours on a day, the FDP must be *less* than 8 hours because, under paragraph 2.1 (b), an FDP must not end later than 0100 hours on the following day (all times being local time at the commencing location).

2.5 An FCM may be assigned an FDP that finishes after 2200 hours local time (a ***late FDP***) only if not more than 3 late FDPs are assigned to the FCM in any 168 consecutive hours.

2.6 An FCM must not be assigned or commence flight time for flight training during an FDP unless the flight training is conducted during the first 7 hours of the FDP's flight time.

2.7 An FCM must not exceed the flight time limit, or an FDP limit mentioned in subclause 2.2, 2.3 or 2.4, except in accordance with clause 3.

3 Extensions

3.1 An FDP limit mentioned in clause 2 may be extended by up to 1 hour if:

(a) the FDP has commenced; and

(b) unforeseen operational circumstances arise; and

(c) an extension of the FDP is operationally necessary to complete the duty; and

(d) the FCM considers himself or herself fit for the extension.

Note 1 Under regulation 91.215 of CASR, the pilot in command of an aircraft is responsible for the conduct and safety of members of the crew on the aircraft and, therefore, has discretion not to permit an extension.

Note 2 Guidance on the assessment of individual cognitive and physical fitness is contained in CAAP 48-01.

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3.2 Flight training for up to 30 minutes may be conducted after the first 7 hours of the FDP's flight time if:

(a) unforeseen operational circumstances arise after the commencement of the FDP; and

(b) it is operationally necessary in order to complete the duty; and

(c) the FCM considers himself or herself fit for the extension.

3.3 An FDP limit must not be extended under this clause if it would cause an FCM to exceed the cumulative flight time limits in clause 5.

3.4 Despite any limit or number under this Appendix, if:

(a) unforeseen operational circumstances arise after take-off on the final sector of an FDP; and

(b) the unforeseen operational circumstances would cause an FCM to exceed any limit or number permitted under this Appendix;

then, the flight may continue to the planned destination at the discretion of the pilot in command.

4 Off-duty period limits

4.1 An FCM must have a minimum off-duty period of at least 12 consecutive hours during any consecutive 24-hour period.

4.2 Before beginning an FDP, an FCM must have had:

(a) at least 36 consecutive hours off-duty, including 2 local nights, in the 168 hours before the projected end time of the assigned FDP; and

(b) at least 6 days off-duty in the 28 consecutive days before the FDP commences.

4.3 If an FDP under this Appendix is followed by an FDP under another Appendix, then, despite anything in the other Appendix, the FCM must have a minimum off-duty period of at least 12 consecutive hours before commencing the FDP under the other Appendix.

5 Limit on cumulative flight time

5.1 The cumulative flight time accrued by an FCM during any consecutive 28-day period must not exceed 100 hours.

5.2 The cumulative flight time accrued by an FCM during any consecutive 365-day period must not exceed 1 000 hours.

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APPENDIX 2 MULTI-PILOT OPERATIONS EXCEPT FLIGHT TRAINING

1 Sleep opportunity before an FDP or standby

1.1 An FCM must not be assigned or commence an FDP or standby commencing away from home base unless he or she has at least 8 consecutive hours' sleep opportunity within the 10 hours immediately before:

(a) if the commencement of the FDP has not been delayed — commencing the FDP; or

(b) subject to paragraph (c), if the commencement of the FDP has been delayed — the original reporting time for the FDP; or

(c) if the commencement of the FDP has been delayed by a single delay of 10 hours or more — commencing the FDP following the delay; or

(d) for a standby — commencing the standby.

1.2 An FCM must not be assigned or commence an FDP or standby commencing at home base unless he or she has at least 8 consecutive hours' sleep opportunity within the 12 hours immediately before:

(a) if the commencement of the FDP has not been delayed — commencing the FDP; or

(b) subject to paragraph (c), if the commencement of the FDP has been delayed — the original reporting time for the FDP; or

(c) if the commencement of the FDP has been delayed by a single delay of 10 hours or more — commencing the FDP following the delay; or

(d) for a standby — commencing the standby.

Note See subsection 6 of this CAO for the definition of ***sleep opportunity***, where it is defined as occurring during an off-duty period.

2 Limits for an acclimatised FCM

2.1 Subject to clause 5, an acclimatised FCM must not be assigned an FDP longer than the number of hours specified in Table 2.1 in this clause (the ***FDP limit***), as determined by the acclimatised time at the start of the FDP and the number of sectors to be flown.

2.2 An acclimatised FCM must not be assigned flight time longer than 10.5 hours except in an augmented crew operation.

Note There is no flight time limit for an augmented crew operation.

2.3 In applying Table 2.1, first, choose the appropriate acclimatised time at which the FDP for the FCM is to start, then choose the number of sectors which are to be flown. The maximum FDP for the acclimatised FCM is the number under the chosen number of sectors that corresponds to the chosen acclimatised time at which the FDP for the FCM is to start.

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Table 2.1 Maximum FDP (in hours) for an acclimatised FCM according to number of sectors and acclimatised time at the start of the FDP

Acclimatised time at start of FDP	Maximum FDP hours according to sectors to be flown					
	1-3	4	5	6	7	8+
0000-0459	10	9.5	9	8.5	8	7.5
0500-0559	11	10.5	10	9.5	9	8.5
0600-0659	12	11.5	11	10.5	10	9.5
0700-1259	13	12.5	12	11.5	11	10.5
1300-1359	12	11.5	11	10.5	10	9.5
1400-1459	11	10.5	10	9.5	9	8.5
1500-2359	10	9.5	9	8.5	8	7.5

Note To determine an FCM's acclimatised time, refer to subsection 7 at the beginning of this CAO.

3 Limits for an FCM in an unknown state of acclimatisation

3.1 Subject to clause 5, an FCM in an unknown state of acclimatisation must not be assigned an FDP longer than the number of hours specified in Table 3.1 in this clause, as determined by duration of the off-duty period immediately before the FDP and the number of sectors to be flown.

3.2 An FCM in an unknown state of acclimatisation must not be assigned flight time longer than 10.5 hours except in an augmented crew operation.

Note There is no flight time limit for an augmented crew operation.

3.3 In applying Table 3.1, first, choose the appropriate duration of off-duty period before the FDP for the FCM, then choose the number of sectors which are to be flown. The maximum FDP for the appropriate off-duty period for the FCM is the number under the chosen number of sectors that corresponds to the chosen off-duty period.

Table 3.1 Maximum FDP for an FCM in an unknown state of acclimatisation according to number of sectors and duration of the off-duty period immediately before the FDP

Duration of off-duty period immediately before the FDP	Maximum FDP hours according to sectors to be flown					
	1-3	4	5	6	7	8+
Less than 30 hours	10	9.5	9	8.5	8	7.5
30 hours or more	12	11.5	11	10.5	10	9.5

3.4 An FCM may only be assigned 4 consecutive FDPs in an unknown state of acclimatisation after which the FCM must have an adaptation period sufficient to become reacclimatised in accordance with paragraph 7.4 at the beginning of this CAO.

4 Increase in FDP limits by split duty

4.1 Subject to subclause 4.4, where an FDP contains a split-duty rest period of at least 4 consecutive hours with access to suitable sleeping accommodation, the

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maximum FDP worked out under clause 2 or 3 may be increased by up to 4 hours, provided the new maximum under clause 2 or 3 does not then exceed 16 hours.

4.2 After an FDP mentioned in subclause 4.1, the first 4 hours of the split-duty rest period may be reduced by 2 hours in determining the subsequent off-duty period or cumulative duty time under clause 10 or 12 of this Appendix.

4.3 Subject to subclause 4.4, where an FDP contains a split-duty rest period of at least 2 consecutive hours with access to suitable resting accommodation, the FDP limits under subclause 2.1 or 3.1 may be increased by half the duration of the split-duty rest period, provided the increase is not more than 2 hours.

4.4 If a split-duty rest period includes any period between the hours of 2300 to 0529:

(a) acclimatised time; or

(b) if the FCM is in an unknown state of acclimatisation — local time;

then:

(c) the split-duty rest period must be for a consecutive period of at least 7 hours with access to suitable sleeping accommodation; and

(d) the maximum FDP may be increased to 16 hours (if not already permitted); and

(e) the reduction in the subsequent off-duty period and cumulative duty time, provided for in subclause 4.2, does not apply.

4.5 Any remaining portion of an FDP following a split-duty rest period must be no longer than 6 hours.

5 Increase in FDP and flight time limits in an augmented crew operation

5.1 An acclimatised FCM in an augmented crew operation may be assigned an FDP that is no longer than the number of hours specified in Table 5.1 in this clause, as determined by the acclimatised time at the start of the FDP, the class of crew rest facility available, and the number of additional FCMs — but only if the conditions in subclause 5.3 are met.

5.2 An FCM in an unknown state of acclimatisation in an augmented crew operation may be assigned an FDP that is no longer than the number of hours specified in Table 5.2 in this clause, as determined by the duration of the off-duty period immediately before the FDP, the class of crew rest facility available, and the number of additional FCMs — but only if the conditions in subclause 5.3 are met.

5.3 For subclauses 5.1 and 5.2, the conditions are as follows:

(a) the AOC holder's operations manual must have procedures for augmented crew operations;

(b) the FCMs at the end of the FDP for the augmented crew operation must be the same as the FCMs who commenced the first sector of the FDP;

Note For safety reasons, this is a critical condition. If, for example, a medical emergency required the disembarkation of an FCM during the FDP, for the flight to continue all of the FCMs must be replaced with a new augmented crew commencing a new FDP.

(c) the FDP must be limited to not more than 3 sectors;

(d) the minimum in-flight rest during the FDP must be:

(i) for each FCM who will not be at the aircraft controls during the final landing — 1.5 consecutive hours; and

(ii) for each FCM who will be at the aircraft controls during the final landing — 2 consecutive hours;

(e) the in-flight rest must be planned for the cruise phase of the flight;

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(f) if an assigned FDP is to exceed 14 hours, then:

(i) not more than 2 sectors may be assigned; and

(ii) where 2 sectors are assigned, either:

(A) each FCM who will be at the aircraft controls during the landing at the end of the second sector must have had an in-flight rest period of at least 2 consecutive hours within the 8-hour period that ends at the scheduled time of the landing; or

(B) the scheduled flight time of the second sector must be at least 9 hours;

(g) if an assigned FDP is to exceed 16 hours, then:

(i) only 1 sector may be assigned; and

(ii) the minimum in-flight rest during the FDP must be:

(A) for each FCM who will not be at the aircraft controls during the final landing — 2 consecutive hours; and

(B) for each FCM who will be at the aircraft controls during the final landing — 3 consecutive hours.

Note The minimum in-flight rest specified may not provide adequate rest to ensure alertness for the remainder of the FDP. Guidance on the use of in-flight rest is contained in CAAP 48-01.

5.4 To apply Table 5.1 for an FCM who is acclimatised, first, choose the appropriate acclimatised time at which his or her FDP is to start, then choose the class of crew rest facility available and within the class choose the number of additional FCMs. The maximum FDP for the acclimatised FCM is the number under the chosen number of additional FCMs under the chosen class that corresponds to the acclimatised time at which the FDP for the FCM is to start.

Table 5.1 Maximum FDP (in hours) for an acclimatised FCM in an augmented crew operation according to class of crew rest facility, number of additional FCMs and acclimatised time at the start of the FDP

Acclimatised time at start of FDP	**Maximum FDP according to class of crew rest facility and number of additional FCMs**					
	Class 1		**Class 2**		**Class 3**	
Additional FCMs	**1**	**2**	**1**	**2**	**1**	**2**
0700-1059	16	18	15	16.5	14	15
1100-1559	16	18	15	16.5	13	14
1600-0459	16	18	15	16.5	12	13
0500-0659	16	18	15	16.5	13	14

Note To determine an FCM's acclimatised time, refer to subsection 7 at the beginning of this CAO.

5.5 To apply Table 5.2 to an FCM who is in an unknown state of acclimatisation, first, choose the appropriate off-duty period that is immediately before his or her FDP, then choose the class of crew rest facility available and within the class choose the number of additional FCMs. The maximum FDP for the FCM is the number under the chosen number of additional FCMs under the chosen class that corresponds to the off-duty period.

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Table 5.2 Maximum FDP (in hours) for an FCM in an unknown state of acclimatisation in an augmented operation according to class of crew rest facility, number of additional FCMs and duration of off-duty period immediately before the FDP

Duration of off-duty period immediately before the FDP	Maximum FDP according to class of crew rest facility and number of additional FCMs					
	Class 1		Class 2		Class 3	
Additional FCMs	**1**	**2**	**1**	**2**	**1**	**2**
Less than 30 hours	16	18	15	16.5	12	13
30 hours or more	16	18	15	16.5	14	15

Note These are the maximum FDP and flight time limits under this Appendix unless, for any particular FCM, other provisions have the effect of reducing these limits (for example, subsections 14 and 15 of this CAO).

6 Delayed reporting time

Delays without operations manual procedures

6.1 Subclauses 6.2 to 6.4 apply to an AOC holder if the operations manual does not have procedures for delays.

6.2 The AOC holder may:

(a) only delay an FCM's reporting time (the ***original reporting time***) if the FCM is first informed of the delay at least 10 hours before the reporting time; and

(b) if paragraph (a) applies — consider the period between the original reporting time and the new reporting time (the ***period of the delay***) to be an off-duty period; and

(c) if paragraph (b) applies — at the end of the off-duty period, assign an FDP to the FCM subject to the applicable limits set out in this Appendix or another Appendix of this CAO.

6.3 If the AOC holder:

(a) delays the FCM's original reporting time; and

(b) does not inform the FCM of the delay at least 10 hours before the original reporting time;

then the FCM's FDP is taken to commence at the original reporting time.

6.4 If subclause 6.3 applies, the off-duty period requirements of this Appendix apply to the FCM whether or not the flight occurs.

Delays under operations manual procedures

6.5 Subclauses 6.6 to 6.13 apply to an AOC holder if the operations manual has procedures for 1 or more delays.

6.6 If an AOC holder's operations manual has procedures for delays, the AOC holder may delay an FCM's original reporting time if the AOC holder informs the FCM of the new reporting time as follows:

(a) if the FCM is at home base:

(i) at least 2 hours before the original reporting time; and

(ii) at least 2 hours before each new reporting time; or

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(b) if the FCM is not at home base:

(i) at least 1 hour before the time the FCM would normally have had to leave his or her accommodation in order to report in a timely way for duty at the original reporting time; and

(ii) at least 1 hour before each new time the FCM would normally have had to leave his or her accommodation in order to report in a timely way for duty at the reporting time.

6.7 If an FCM is informed of a delay in accordance with subclause 6.6, the period between the original reporting time and the final new reporting time is deemed to be standby.

Note The period mentioned in subclause 6.7 is deemed to be standby whether or not subparagraph (b) of the definition of ***standby*** is met.

6.8 If an FCM is not informed of a delay in accordance with subclause 6.6, the FCM's FDP is taken to commence at whichever of the following is the later:

(a) the original reporting time;

(b) the last new reporting time following a delay of which the FCM was informed in accordance with subclause 6.6.

6.9 If subclause 6.8 applies, the off-duty period requirements of this Appendix apply to the FCM whether or not the flight occurs.

A single delay of at least 10 hours under operations manual procedures

6.10 Despite subclause 6.7, if the period of any single delay to an FCM's FDP is at least 10 hours, the AOC holder may:

(a) consider the period of the delay to be an off-duty period; and

(b) at the end of the off-duty period, assign an FDP to the FCM subject to the applicable limits set out in this Appendix or another Appendix of this CAO.

Maximum FDP after delay under operations manual procedures

6.11 Subject to subclause 6.13, if:

(a) an FCM's FDP is delayed under subclause 6.6; and

(b) the FDP commences at a new reporting time that is within 4 hours of the original reporting time;

then the maximum FDP must be based on whichever of the following is the more limiting in calculating the FDP:

(c) the original reporting time;

(d) the new reporting time.

6.12 Subject to subclause 6.13, if:

(a) the FCM's FDP is delayed under subclause 6.6; and

(b) the FDP commences at a new reporting time that is at least 4 hours after the original reporting time;

then:

(c) the FDP is taken to have commenced 4 hours after the original reporting time; and

(d) the maximum FDP must be based on whichever of the following is the more limiting in calculating the FDP:

(i) the original reporting time;

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(ii) the time at which the FDP is taken to have commenced in accordance with paragraph (c).

6.13 The combined duration of 1 or more delays and the immediately following FDP must not exceed 16 hours unless the FDP:

(a) is an augmented crew operation;

(b) contains a split-duty rest period.

Cancellations — with or without operations manual procedures for delays

6.14 If:

(a) an FCM's FDP is delayed under subclause 6.2 or 6.6; and

(b) the AOC holder informs the FCM that the flight will not occur (***cancellation***);

then, the FCM must have an off-duty period of at least 10 consecutive hours, commencing from the time he or she is informed of the cancellation, before again being assigned an FDP in accordance with this Appendix or another Appendix of this CAO.

Meaning of "informed"

6.15 In this clause:

informed means informed by the AOC holder in accordance with procedures in the holder's operations manual for communicating information between the holder and an FCM.

7 Reassignment and extension

7.1 After an FCM's assigned FDP commences, the AOC holder may reassign to the FCM a modified FDP and number of sectors to be flown (a ***reassignment***), provided that each of the following applies:

(a) subject to subclause 7.3 — the modified FDP and flight time does not exceed the limits in the holder's operations manual for the new number of sectors;

(b) the FCM has confirmed that he or she is fit for the reassignment.

Note Fitness in this context is based on the FCM's self-assessment. An FCM has an obligation under paragraph 16.1 of this CAO not to carry out any task for a flight if, due to fatigue, the FCM is, or is likely to become, unfit for the task. If such circumstances apply, the FCM must decline the reassignment.

7.2 If subclause 7.1 applies, the FCM may continue in the modified FDP in accordance with subclause 7.1.

7.3 Despite the FDP limits provided in the operations manual, in unforeseen operational circumstances at the discretion of the pilot in command:

(a) the FDP limits in the operations manual may be extended by up to:

(i) 1 hour; or

(ii) for an augmented crew operation under clause 5 — 2 hours; and

(b) the sectors for the FDP limits may be increased by 1 more than would otherwise be the case for the FDP.

7.4 Before exercising the discretion under subclause 7.3 to extend the FDP limit of an FCM, the pilot in command must:

(a) do the following:

(i) consult each FCM who is a crew member on the aircraft;

(ii) be satisfied that each FCM considers himself or herself fit for the extension; and

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(b) if the FCM whose FDP would be extended is the pilot in command — do the following:

(i) consult each FCM who is a crew member on the aircraft;

(ii) be satisfied that, as pilot in command, he or she is fit for the extension.

7.5 Despite the limits provided in the operations manual, the flight time limit for an FDP may be extended by not more than 30 minutes if:

(a) it is operationally necessary in order to complete the duty;

(b) the FCM, or each FCM, considers himself or herself fit for the extension.

7.6 An FDP limit must not be reassigned or extended under this clause if it would cause an FCM to exceed the cumulative flight time limits in clause 11 or the cumulative duty time limits in clause 12.

7.7 Despite any limit or number under this Appendix, if:

(a) unforeseen operational circumstances arise after take-off on the final sector of an FDP; and

(b) the unforeseen operational circumstances would cause an FCM to exceed any limit or number permitted under this Appendix;

then the flight may continue to the planned destination or alternate at the discretion of the pilot in command.

Note 1 Under regulation 91.215 of CASR, the pilot in command of an aircraft is responsible for the conduct and safety of members of the crew on the aircraft and, therefore, has a discretion to not permit an extension to occur even if otherwise permissible under this clause.

Note 2 Guidance on the assessment of individual cognitive and physical fitness is contained in CAAP 48-01.

8 Standby limits and standby-like arrangements

8.1 An AOC holder must not require an FCM to be on continuous standby for a period longer than 14 hours.

8.2 The maximum allowable FDP after a call out from standby must be decreased by the number of hours by which the standby exceeds 4 hours.

8.3 If an FCM is called out, the maximum combined duration of standby and the subsequent FDP is 16 hours, except where the subsequent FDP:

(a) is an augmented crew operation; or

(b) includes a split-duty rest period, in suitable sleeping accommodation, of at least 4 consecutive hours.

8.4 A standby which is completed without a call out must be followed by an off-duty period of at least 10 consecutive hours.

8.5 To remove any doubt, the period of time in which an FCM is held in a standby-like arrangement must be treated as a duty period for the purposes of this CAO.

Note For example, the period spent in a standby-like arrangement must be included as part of a following FDP assigned to the FCM or added to the preceding FDP when determining minimum off-duty periods under clause 10.

9 Positioning

On completion of assigned flight duties in an FDP (the ***relevant FDP***), an FCM may position to a suitable location as required by the AOC holder.

Note As with any duty, the time spent in positioning after completion of the FDP must be added to the relevant FDP when determining minimum off-duty periods under clause 10.

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10 Off-duty period limits

Off-duty period following an FDP

10.1 If the sum of an FCM's FDP, and his or her duty time (if any) after completion of the FDP but before commencement of the following off-duty period, does not exceed 12 hours, his or her following off-duty period must be at least as follows:

(a) if the FCM is acclimatised and undertaking the off-duty period away from home base — the sum of:

(i) 10 hours; and

(ii) the amount that the displacement time exceeds 3 hours if travelling west, or 2 hours if travelling east;

(b) if the FCM is acclimatised and undertaking the off-duty period at home base — the sum of:

(i) 12 hours; and

(ii) the amount that the displacement time exceeds 3 hours if travelling west, or 2 hours if travelling east;

(c) if the FCM is in an unknown state of acclimatisation — the sum of:

(i) 14 hours; and

(ii) the amount of the displacement time.

10.2 If the sum of an FCM's FDP, and his or her duty time (if any) after completion of the FDP but before commencement of the following off-duty period (***other duty time***), exceeds 12 hours, his or her following off-duty period must be at least as follows:

(a) if the FCM is acclimatised — 12 hours, plus the sum of:

(i) 1.5 times the time that the FDP and the other duty time exceeded 12 hours; and

(ii) the amount that the displacement time exceeds 3 hours if travelling west, or 2 hours if travelling east;

(b) if the FCM is in an unknown state of acclimatisation — 14 hours, plus the sum of:

(i) 1.5 times the time that the FDP and the other duty time exceeded 12 hours; and

(ii) the amount of the displacement time.

Reduction in off-duty period

10.3 Despite subclause 10.1, if the sum of an FCM's FDP (the ***last FDP***), and his or her duty time (if any) after completion of the FDP but before commencement of the following off-duty period, does not exceed 10 hours, his or her following off-duty period (***ODP 2***), may be reduced to not less than 9 hours provided that:

(a) the off-duty period undertaken immediately before the last FDP was at least 12 hours, including a local night; and

(b) the FCM is acclimatised at the commencement of the ODP 2; and

(c) the ODP 2 is undertaken over a local night; and

(d) the ODP 2 is not undertaken at home base; and

(e) the off-duty period following the FDP after ODP 2 is at least 12 hours, including a local night.

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10.4 Despite subclauses 10.1 and 10.2, if, after an FDP (the ***first FDP***) but before the next FDP (the ***second FDP***), the off-duty period calculated under this clause is more than 14 hours, the off-duty period may be reduced to not less than 14 hours, provided that:

(a) the reduced off-duty period is undertaken away from home base; and

(b) the first FDP was not extended past the FDP limit as provided for under the AOC holder's operations manual; and

(c) the FCM commences the second FDP in an acclimatised state; and

(d) the off-duty period following the second FDP is of at least 36 consecutive hours and includes 2 local nights.

Off-duty periods for cumulative fatigue recovery

10.5 Before beginning an FDP or standby, an FCM must have had at least 36 consecutive hours off-duty, including 2 local nights, in the 168 hours before the projected end time of the assigned FDP or assigned standby.

10.6 Before beginning an FDP or standby, an FCM must have had at least 6 days off-duty in the 28 consecutive days before the standby or FDP commences.

11 Limit on cumulative flight time

11.1 The cumulative flight time accrued by an FCM during any consecutive 28-day period must not exceed 100 hours.

11.2 The cumulative flight time accrued by an FCM during any consecutive 365-day period must not exceed 1 000 hours.

12 Limit on cumulative duty time

12.1 The cumulative duty accrued by an FCM during any consecutive 168-hour period must not exceed 60 hours.

12.2 The cumulative duty accrued by an FCM during any consecutive 336-hour period must not exceed 100 hours.

Note 168 hours is the number of hours in a 7-day period, and 336 hours is the number of hours in a 14-day period.

13 Limits on infringing the WOCL and early starts

13.1 Subject to subclause 13.3, an FCM must not be assigned more than 3 consecutive early starts.

13.2 Subject to subclause 13.3, an FCM, whose duties have already infringed 3 consecutive WOCLs, must not be assigned an FDP that would again infringe the WOCL without at least an intervening off-duty period that includes a local night.

Note See paragraph 6.2 of this CAO for duties that infringe a WOCL.

13.3 Despite subclauses 13.1 and 13.2, the FCM may have a 4th, or a 4th and a 5th, consecutive early start (whether or not the start infringes the WOCL) if:

(a) the maximum FDP permissible on the day of the 4th early start is reduced by 2 hours; and

(b) the maximum FDP permissible on the day of the 5th early start is reduced by 4 hours.

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14 Maximum durations must not be exceeded

Unless an extension is permitted under clause 7, in performing duty an FCM must not exceed the following:

(a) the maximum duration of the FDP specified for the FCM in the AOC holder's operations manual;

(b) the maximum flight time specified for the FCM in the AOC holder's operations manual.

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APPENDIX 3 MULTI-PILOT OPERATIONS EXCEPT COMPLEX OPERATIONS AND FLIGHT TRAINING

Note Multi-pilot operations (other than flight training) that do not cross time zones, or involve augmented crew operations, may find Appendix 3 more suitable than Appendix 2 because it has the same limitations but is less complex.

1 Sleep opportunity before an FDP or standby

1.1 An FCM must not be assigned or commence an FDP or standby commencing away from home base unless he or she has at least 8 consecutive hours' sleep opportunity within the 10 hours immediately before:

(a) if the commencement of the FDP has not been delayed — commencing the FDP; or

(b) subject to paragraph (c), if the commencement of the FDP has been delayed — the original reporting time for the FDP; or

(c) if the commencement of the FDP has been delayed by a single delay of 10 hours or more — commencing the FDP following the delay; or

(d) for a standby — commencing the standby.

1.2 An FCM must not be assigned or commence an FDP or standby commencing at home base unless he or she has at least 8 consecutive hours' sleep opportunity within the 12 hours immediately before:

(a) if the commencement of the FDP has not been delayed — commencing the FDP; or

(b) subject to paragraph (c), if the commencement of the FDP has been delayed — the original reporting time for the FDP; or

(c) if the commencement of the FDP has been delayed by a single delay of 10 hours or more — commencing the FDP following the delay; or

(d) for a standby — commencing the standby.

Note See subsection 6 of this CAO for the definition of ***sleep opportunity***, where it is defined as occurring during an off-duty period.

2 FDP and flight time limits

2.1 An FCM must not be assigned an FDP longer than the number of hours specified in Table 2.1 in this clause (the ***FDP limit***), as determined by the local time at the start of the FDP and the number of sectors to be flown.

2.2 An FCM must not be assigned flight time longer than 10.5 hours.

2.3 In applying Table 2.1, first, choose the appropriate local time at which the FDP for the FCM is to start, then choose the number of sectors which are to be flown. The maximum FDP for the FCM is the number under the chosen number of sectors that corresponds to the chosen local time at which the FDP for the FCM is to start.

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Table 2.1 Maximum FDP (in hours) for an FCM according to number of sectors and local time at the start of the FDP

Local time at start of FDP	Maximum FDP hours according to sectors to be flown					
	1-3	**4**	**5**	**6**	**7**	**8+**
0000-0459	10	9.5	9	8.5	8	7.5
0500-0559	11	10.5	10	9.5	9	8.5
0600-0659	12	11.5	11	10.5	10	9.5
0700-1259	13	12.5	12	11.5	11	10.5
1300-1359	12	11.5	11	10.5	10	9.5
1400-1459	11	10.5	10	9.5	9	8.5
1500-2359	10	9.5	9	8.5	8	7.5

3 Increase in FDP limits by split duty

3.1 Subject to subclause 3.4, where an FDP contains a split-duty rest period of at least 4 consecutive hours with access to suitable sleeping accommodation, the maximum FDP worked out under clause 2 may be increased by up to 4 hours, provided the new maximum under clause 2 does not then exceed 16 hours.

3.2 After an FDP mentioned in subclause 3.1, the first 4 hours of the split-duty rest period may be reduced by 2 hours in determining the subsequent off-duty period or cumulative duty time under clause 8 or 10 of this Appendix.

3.3 Subject to subclause 3.4, where an FDP contains a split-duty rest period of at least 2 consecutive hours with access to suitable resting accommodation, the FDP limits under subclause 2.1 may be increased by half the duration of the split-duty rest period, provided the increase is not more than 2 hours.

3.4 If a split-duty rest period includes any period between the hours of 2300 to 0529 local time, then:

(a) the split-duty rest period must be for a consecutive period of at least 7 hours with access to suitable sleeping accommodation; and

(b) the maximum FDP may be increased to 16 hours (if not already permitted); and

(c) the reduction in the subsequent off-duty period and cumulative duty time, provided for in subclause 3.2, does not apply.

3.5 Any remaining portion of an FDP following a split-duty rest period must be no longer than 6 hours.

4 Delayed reporting time

Delays without operations manual procedures

4.1 Subclauses 4.2 to 4.4 apply to an AOC holder if the operations manual does not have procedures for delays.

4.2 The AOC holder may:

(a) only delay an FCM's reporting time (the ***original reporting time***) if the FCM is first informed of the delay at least 10 hours before the reporting time; and

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(b) if paragraph (a) applies — consider the period between the original reporting time and the new reporting time (the ***period of the delay***) to be an off-duty period; and

(c) if paragraph (b) applies — at the end of the off-duty period, assign an FDP to the FCM subject to the applicable limits set out in this Appendix or another Appendix of this CAO.

4.3 If the AOC holder:

(a) delays the FCM's original reporting time; and

(b) does not inform the FCM of the delay at least 10 hours before the original reporting time;

then, the FCM's FDP is taken to commence at the original reporting time.

4.4 If subclause 4.3 applies, the off-duty period requirements of this Appendix apply to the FCM whether or not the flight occurs.

Delays under operations manual procedures

4.5 Subclauses 4.6 to 4.13 apply to an AOC holder if the operations manual has procedures for 1 or more delays.

4.6 If an AOC holder's operations manual has procedures for delays, the AOC holder may delay an FCM's original reporting time if the AOC holder informs the FCM of the new reporting time as follows:

(a) if the FCM is at home base:

(i) at least 2 hours before the original reporting time; and

(ii) at least 2 hours before each new reporting time;

(b) if the FCM is not at home base:

(i) at least 1 hour before the time the FCM would normally have had to leave his or her accommodation in order to report in a timely way for duty at the original reporting time; and

(ii) at least 1 hour before each new time the FCM would normally have had to leave his or her accommodation in order to report in a timely way for duty at the reporting time.

4.7 If an FCM is informed of a delay in accordance with subclause 4.6, the period between the original reporting time and the final new reporting time is deemed to be standby.

Note The period mentioned in subclause 4.7 is deemed to be standby whether or not paragraph (b) of the definition of ***standby*** is met.

4.8 If an FCM is not informed of a delay in accordance with subclause 4.6, the FCM's FDP is taken to commence at whichever of the following is the later:

(a) the original reporting time;

(b) the last new reporting time following a delay of which the FCM was informed in accordance with subclause 4.6.

4.9 If subclause 4.8 applies, the off-duty period requirements of this Appendix apply to the FCM whether or not the flight occurs.

A single delay of at least 10 hours under operations manual procedures

4.10 Despite subclause 4.7, if the period of any single delay to an FCM's FDP is at least 10 hours, the AOC holder may:

(a) consider the period of the delay to be an off-duty period; and

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(b) at the end of the off-duty period, assign an FDP to the FCM subject to the applicable limits set out in this Appendix or another Appendix of this CAO.

Maximum FDP after delay under operations manual procedures

4.11 Subject to subclause 4.13, if:

(a) an FCM's FDP is delayed under subclause 4.6; and

(b) the FDP commences at a new reporting time that is within 4 hours of the original reporting time;

then the maximum FDP must be based on whichever of the following is the more limiting in calculating the FDP:

(c) the original reporting time;

(d) the new reporting time.

4.12 Subject to subclause 4.13, if:

(a) the FCM's FDP is delayed under subclause 4.6; and

(b) the FDP commences at a new reporting time that is at least 4 hours after the original reporting time;

then:

(c) the FDP is taken to have commenced 4 hours after the original reporting time; and

(d) the maximum FDP must be based on whichever of the following is the more limiting in calculating the FDP:

(i) the original reporting time;

(ii) the time at which the FDP is taken to have commenced in accordance with paragraph (c).

4.13 The combined duration of 1 or more delays and the immediately following FDP must not exceed 16 hours unless the FDP contains a split-duty rest period.

Cancellations — with or without operations manual procedures for delays

4.14 If:

(a) an FCM's FDP is delayed under subclause 4.2 or 4.6; and

(b) the AOC holder informs the FCM that the flight will not occur (***cancellation***);

then the FCM must have an off-duty period of at least 10 consecutive hours, commencing from the time he or she is informed of the cancellation, before again being assigned an FDP in accordance with this Appendix or another Appendix of this CAO.

Meaning of "informed"

4.15 In this clause:

informed means informed by the AOC holder in accordance with procedures in the holder's operations manual for communicating information between the holder and an FCM.

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5 Reassignment and extension

5.1 After an FCM's assigned FDP commences, the AOC holder may reassign to the FCM a modified FDP and number of sectors to be flown (a ***reassignment***), provided that each of the following applies:

(a) subject to subclause 5.3 — the modified FDP does not exceed the limits in the holder's operations manual for the new number of sectors;

(b) the FCM has confirmed that he or she is fit for the reassignment.

Note Fitness in this context is based on the FCM's self-assessment. An FCM has an obligation under paragraph 16.1 of this CAO not to carry out any task for a flight if, due to fatigue, the FCM is, or is likely to become, unfit for the task. If such circumstances apply, the FCM must decline the reassignment.

5.2 If subclause 5.1 applies, the FCM may continue in the modified FDP in accordance with subclause 5.1.

5.3 Despite the FDP limits provided in the operations manual, in unforeseen operational circumstances at the discretion of the pilot in command:

(a) the FDP limits in the operations manual may be extended by up to 1 hour; and

(b) the sectors for the FDP limits may be increased by 1 more than would otherwise be the case for the FDP.

5.4 Before exercising the discretion under subclause 5.3 to extend the FDP limit of an FCM, the pilot in command must:

(a) do the following:

(i) consult each FCM who is a crew member on the aircraft;

(ii) be satisfied that each FCM considers himself or herself fit for the extension; and

(b) if the FCM whose FDP would be extended is the pilot in command — do the following:

(i) consult each FCM who is a crew member on the aircraft;

(ii) be satisfied that, as pilot in command, he or she is fit for the extension.

5.5 Despite the limits provided in the operations manual, the flight time limit for an FDP may be extended by not more than 30 minutes if:

(a) it is operationally necessary in order to complete the duty; and

(b) the FCM, or each FCM, considers himself or herself fit for the extension.

5.6 An FDP limit must not be reassigned or extended under this clause if it would cause an FCM to exceed the cumulative flight time limits in clause 9 or the cumulative duty time limits in clause 10.

5.7 Despite any limit or number under this Appendix, if:

(a) unforeseen operational circumstances arise after take-off on the final sector of an FDP; and

(b) the unforeseen operational circumstances would cause an FCM to exceed any limit or number permitted under this Appendix;

then the flight may continue to the planned destination or alternate at the discretion of the pilot in command.

Note 1 Under regulation 91.215 of CASR, the pilot in command of an aircraft is responsible for the conduct and safety of members of the crew on the aircraft and, therefore, has a discretion to not permit an extension to occur even if otherwise permissible under this clause.

Note 2 Guidance on the assessment of individual cognitive and physical fitness is contained in CAAP 48-01.

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6 Standby limits and standby-like arrangements

6.1 An AOC holder must not require an FCM to be on continuous standby for a period longer than 14 hours.

6.2 The maximum allowable FDP after a call out from standby must be decreased by the number of hours by which the standby exceeds 4 hours.

6.3 If an FCM is called out, the maximum combined duration of standby and the subsequent FDP is 16 hours except where the subsequent FDP includes a split-duty rest period, in suitable sleeping accommodation, of at least 4 consecutive hours.

6.4 A standby which is completed without a call out must be followed by an off-duty period of at least 10 consecutive hours.

6.5 To remove any doubt, the period of time in which an FCM is held in a standby-like arrangement must be treated as a duty period for the purposes of this CAO.

Note For example, the period spent in a standby-like arrangement must be included as part of a following FDP assigned to the FCM or added to the preceding FDP when determining minimum off-duty periods under clause 8.

7 Positioning

On completion of assigned flight duties in an FDP (the ***relevant FDP***), an FCM may position to a suitable location as required by the AOC holder.

Note As with any duty, the time spent in positioning after completion of the FDP must be added to the relevant FDP when determining minimum off-duty periods under clause 8.

8 Off-duty periods

Off-duty period following an FDP

8.1 If the sum of an FCM's FDP, and his or her duty time (if any) after completion of the FDP but before commencement of the following off-duty period, does not exceed 12 hours, his or her following off-duty period must be at least as follows:

(a) if the FCM is undertaking the off-duty period away from home base — 10 hours;

(b) if the FCM is undertaking the off-duty period at home base — 12 hours.

8.2 If the sum of an FCM's FDP, and his or her duty time (if any) after completion of the FDP but before commencement of the following off-duty period (***other duty time***), exceeds 12 hours, his or her following off-duty period must be at least the sum of:

(a) 12 hours; and

(b) 1.5 times the time that the FDP and the other duty time exceeded 12 hours.

Reduction in off-duty period

8.3 Despite subclause 8.1, if the sum of an FCM's FDP (the ***last FDP***), and his or her duty time (if any) after completion of the FDP but before commencement of the following off-duty period (***other duty time***), does not exceed 10 hours, his or her following off-duty period (***ODP 2***), may be reduced to not less than 9 hours provided that:

(a) the off-duty period undertaken immediately before the last FDP was at least 12 hours, including a local night; and

(b) the ODP 2 is undertaken over a local night; and

(c) the ODP 2 is not undertaken at home base; and

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(d) the off-duty period following the FDP after ODP 2 is at least 12 hours, including a local night.

8.4 Despite subclause 8.2, if, after an FDP (the ***first FDP***) but before the next FDP (the ***second FDP***), the off-duty period calculated under this clause is more than 14 hours, the off-duty period may be reduced to not less than 14 hours, provided that:

(a) the reduced off-duty period is undertaken away from home base; and

(b) the first FDP was not extended past the FDP limit provided for under the AOC holder's operations manual; and

(c) the off-duty period following the second FDP is of at least 36 consecutive hours and includes 2 local nights.

Off-duty periods for cumulative fatigue recovery

8.5 Before beginning an FDP or standby, an FCM must have had at least 36 consecutive hours off-duty, including 2 local nights, in the 168 hours before the projected end time of the assigned FDP or assigned standby.

8.6 Before beginning an FDP or standby, an FCM must have had at least 6 days off-duty in the 28 consecutive days before the standby or FDP commences.

9 Limit on cumulative flight time

9.1 The cumulative flight time accrued by an FCM during any consecutive 28-day period must not exceed 100 hours.

9.2 The cumulative flight time accrued by an FCM during any consecutive 365-day period must not exceed 1 000 hours.

10 Limit on cumulative duty time

10.1 The cumulative duty accrued by an FCM during any consecutive 168-hour period must not exceed 60 hours.

10.2 The cumulative duty accrued by an FCM during any consecutive 336-hour period must not exceed 100 hours.

Note 168 hours is the number of hours in a 7-day period, and 336 hours is the number of hours in a 14-day period.

11 Limits on infringing the WOCL and early starts

11.1 Subject to subclause 11.3, an FCM must not be assigned more than 3 consecutive early starts.

11.2 Subject to subclause 11.3, an FCM, whose duties have already infringed 3 consecutive WOCLs, must not be assigned an FDP that would again infringe the WOCL without at least an intervening off-duty period that includes a local night.

Note See paragraph 6.2 of this CAO for duties that infringe a WOCL.

11.3 Despite subclauses 11.1 and 11.2, the FCM may have a 4th, or a 4th and a 5th, consecutive early start (whether or not the start infringes the WOCL) if:

(a) the maximum FDP permissible on the day of the 4th early start is reduced by 2 hours; and

(b) the maximum FDP permissible on the day of the 5th early start is reduced by 4 hours.

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12 Maximum durations must not be exceeded

Unless an extension is permitted under clause 5, in performing duty an FCM must not exceed the following:

(a) the maximum duration of the FDP specified for the FCM in the AOC holder's operations manual;

(b) the maximum flight time specified for the FCM in the AOC holder's operations manual.

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APPENDIX 4 ANY OPERATIONS

Note This Appendix would generally be used by an AOC holder conducting single-pilot air transport operations. However, it may also be used by an operator conducting multi-pilot operations, aerial work operations, flight training, or any combination of operations. The enhanced fatigue management obligations set out in subsection 15 of this CAO apply to an AOC holder operating under this Appendix.

1 Sleep opportunity before an FDP or standby

1.1 An FCM must not be assigned or commence an FDP or standby commencing away from home base unless he or she has at least 8 consecutive hours' sleep opportunity within the 10 hours immediately before:

(a) if the commencement of the FDP has not been delayed — commencing the FDP; or

(b) subject to paragraph (c), if the commencement of the FDP has been delayed — the original reporting time for the FDP; or

(c) if the commencement of the FDP has been delayed by a single delay of 10 hours or more — commencing the FDP following the delay; or

(d) for a standby — commencing the standby.

1.2 An FCM must not be assigned or commence an FDP or standby commencing at home base unless he or she has at least 8 consecutive hours' sleep opportunity within the 12 hours immediately before:

(a) if the commencement of the FDP has not been delayed — commencing the FDP; or

(b) subject to paragraph (c), if the commencement of the FDP has been delayed — the original reporting time for the FDP; or

(c) if the commencement of the FDP has been delayed by a single delay of 10 hours or more — commencing the FDP following the delay; or

(d) for a standby — commencing the standby.

Note See subsection 6 of this CAO for the definition of ***sleep opportunity***, where it is defined as occurring during an off-duty period.

2 FDP and flight time limits

2.1 An FCM must not be assigned an FDP longer than the number of hours specified in Table 2.1 in this clause (the ***FDP limit***), as determined by the local time at the start of the FDP.

2.2 An FCM must not be assigned or commence flight time for flight training during an FDP unless the flight training is conducted during the first 7 hours of the FDP's flight time.

2.3 In applying Table 2.1, first, choose the appropriate local time at which the FDP for the FCM is to start. The maximum FDP for the FCM is the number that corresponds to the chosen local time at which the FDP for the FCM is to start.

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Table 2.1 Maximum FDP (in hours) according to local time at start of FDP

Local time at start of FDP	Maximum FDP
0500 – 0559	9
0600 – 0759	10
0800 – 1059	11
1100 – 1359	10
1400 – 2259	9
2300 – 0459	8

3 Increase in FDP limits by split duty

3.1 Subject to subclause 3.4, where an FDP contains a split-duty rest period of at least 4 consecutive hours with access to suitable sleeping accommodation, the maximum FDP worked out under clause 2 may be increased by up to 4 hours.

3.2 After an FDP mentioned in subclause 3.1, the first 4 hours of the split-duty rest period may be reduced by 2 hours for the purpose of determining the subsequent off-duty period or cumulative duty time under clause 8 or 10 of this Appendix.

3.3 Subject to subclause 3.4, where an FDP contains a split-duty rest period of at least 2 consecutive hours with access to suitable resting accommodation, the FDP limits under subclause 2.1 may be increased by half the duration of the split-duty rest period, provided the increase is not more than 2 hours.

3.4 If a split-duty rest period includes any period between the hours of 2300 to 0529 local time, then:

(a) the split-duty rest period must be for a consecutive period of at least 7 hours with access to suitable sleeping accommodation; and

(b) the maximum FDP may be increased to 15 hours (if not already permitted); and

(c) the reduction in the subsequent off-duty period and cumulative duty time, provided for in subclause 3.2, does not apply.

3.5 Any remaining portion of an FDP following a split-duty rest period must be no longer than 5 hours.

Note These are the maximum FDP and flight time limits under this Appendix unless, for any particular FCM, other provisions have the effect of reducing these limits (for example, subsections 14 and 15 of this CAO).

4 Delayed reporting time

Delays without operations manual procedures

4.1 Subclauses 4.2 to 4.4 apply to an AOC holder if the operations manual does not have procedures for delays.

4.2 The AOC holder may:

(a) only delay an FCM's reporting time (the ***original reporting time***) if the FCM is first informed of the delay at least 10 hours before the reporting time; and

(b) if paragraph (a) applies — consider the period between the original reporting time and the new reporting time (the ***period of the delay***) to be an off-duty period; and

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(c) if paragraph (b) applies — at the end of the off-duty period, assign an FDP to the FCM subject to the applicable limits set out in this Appendix or another Appendix of this CAO.

4.3 If the AOC holder:

(a) delays the FCM's original reporting time; and

(b) does not inform the FCM of the delay at least 10 hours before the original reporting time;

then the FCM's FDP is taken to commence at the original reporting time.

4.4 If subclause 4.3 applies, the off-duty period requirements of this Appendix apply to the FCM whether or not the flight occurs.

Delays under operations manual procedures

4.5 Subclauses 4.6 to 4.13 apply to an AOC holder if the operations manual has procedures for 1 or more delays.

4.6 If an AOC holder's operations manual has procedures for delays, the AOC holder may delay an FCM's original reporting time if the AOC holder informs the FCM of the new reporting time as follows:

(a) if the FCM is at home base:

(i) at least 2 hours before the original reporting time; and

(ii) at least 2 hours before each new reporting time; or

(b) if the FCM is not at home base:

(i) at least 1 hour before the original reporting time; and

(ii) at least 1 hour before each new reporting time.

4.7 If an FCM is informed of a delay in accordance with subclause 4.6, the period between the original reporting time and the final new reporting time is deemed to be standby.

Note The period mentioned in subclause 4.7 is deemed to be standby whether or not subparagraph (b) of the definition of ***standby*** is met.

4.8 If an FCM is not informed of a delay in accordance with subclause 4.6, the FCM's FDP is taken to commence at whichever of the following is the later:

(a) the original reporting time; or

(b) the last new reporting time following a delay of which the FCM was informed in accordance with subclause 4.6.

4.9 If subclause 4.8 applies, the off-duty period requirements of this Appendix apply to the FCM whether or not the flight occurs.

A single delay of at least 10 hours under operations manual procedures

4.10 Despite subclause 4.7, if the period of any single delay to an FCM's FDP is at least 10 hours, the AOC holder may:

(a) consider the period of the delay to be an off-duty period; and

(b) at the end of the off-duty period, assign an FDP to the FCM subject to the applicable limits set out in this Appendix or another Appendix of this CAO.

Maximum FDP after delay under operations manual procedures

4.11 Subject to subclause 4.13, if:

(a) an FCM's FDP is delayed under subclause 4.6; and

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(b) the FDP commences at a new reporting time that is within 4 hours of the original reporting time;

then the maximum FDP must be based on whichever of the following is the more limiting in calculating the FDP:

(c) the original reporting time;

(d) the new reporting time.

4.12 Subject to subclause 4.13, if:

(a) the FCM's FDP is delayed under subclause 4.6; and

(b) the FDP commences at a new reporting time that is at least 4 hours after the original reporting time;

then:

(c) the FDP is taken to have commenced 4 hours after the original reporting time; and

(d) the maximum FDP must be based on whichever of the following is the more limiting in calculating the FDP:

(i) the original reporting time;

(ii) the time at which the FDP is taken to have commenced in accordance with paragraph (c).

4.13 The combined duration of 1 or more delays and the immediately following FDP must not exceed 16 hours unless the FDP contains a split-duty rest period.

Cancellations — with or without operations manual procedures for delays

4.14 If:

(a) an FCM's FDP is delayed under subclause 4.2 or 4.6; and

(b) the AOC holder informs the FCM that the flight will not occur (***cancellation***);

then the FCM must have an off-duty period of at least 10 consecutive hours, commencing from the time he or she is informed of the cancellation, before again being assigned an FDP in accordance with this Appendix or another Appendix of this CAO.

Meaning of "informed"

4.15 In this clause:

informed means informed by the AOC holder in accordance with procedures in the holder's operations manual for communicating information between the holder and an FCM.

5 Reassignment and extension

5.1 After an FCM's assigned FDP commences, the AOC holder may reassign to the FCM a modified FDP (a ***reassignment***), provided that each of the following applies:

(a) subject to subclause 5.3 — the modified FDP does not exceed the applicable limits in the holder's operations manual;

(b) the FCM has confirmed that he or she is fit for the reassignment.

Note Fitness in this context is based on the FCM's self-assessment. An FCM has an obligation under paragraph 16.1 of this CAO not to carry out any task for a flight if, due to fatigue, the FCM is, or is likely to become, unfit for the task. If such circumstances apply, the FCM must decline the reassignment.

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5.2 If subclause 5.1 applies, the FCM may continue in the modified FDP in accordance with subclause 5.1.

5.3 Despite the FDP limits provided in the operations manual, in unforeseen operational circumstances at the discretion of the pilot in command, the FDP limits in the operations manual may be extended by up to 1 hour.

5.4 Before exercising the discretion under subclause 5.3 to extend the FDP limit, the pilot in command must be satisfied that he or she is fit for the extension.

5.5 Flight training for up to 30 minutes may be conducted after the first 7 hours of the FDP's flight time if:

(a) unforeseen operational circumstances arise after the commencement of the FDP; and

(b) it is operationally necessary in order to complete the duty; and

(c) the FCM considers himself or herself fit for the extension.

5.6 An FDP limit must not be reassigned or extended under this clause if it would cause an FCM to exceed the cumulative flight time limits in clause 9 or the cumulative duty time limits in clause 10.

5.7 Despite any limit or number under this Appendix, if:

(a) unforeseen operational circumstances arise after take-off on the final sector of an FDP; and

(b) the unforeseen operational circumstances would cause an FCM to exceed any limit or number permitted under this Appendix;

then the flight may continue to the planned destination or alternate at the discretion of the pilot in command.

Note 1 Under regulation 91.215 of CASR, the pilot in command of an aircraft is responsible for the conduct and safety of members of the crew on the aircraft and, therefore, has a discretion to not permit an extension to occur even if otherwise permissible under this clause.

Note 2 Guidance on the assessment of individual cognitive and physical fitness is contained in CAAP 48-01.

6 Standby limits and standby-like arrangements

6.1 An AOC holder must not require an FCM to be on continuous standby for a period longer than 14 hours.

6.2 The maximum allowable FDP after a call out from standby must be decreased by the number of hours by which the standby exceeds 4 hours.

6.3 A standby which is completed without a call out must be followed by an off-duty period of at least 10 consecutive hours.

6.4 To remove any doubt, the period of time in which an FCM is held in a standby-like arrangement must be treated as a duty period for the purposes of this CAO.

Note For example, the period spent in a standby-like arrangement must be included as part of a following FDP assigned to the FCM or added to the preceding FDP when determining minimum off-duty periods under clause 8.

7 Positioning

On completion of assigned flight duties in an FDP (the ***relevant FDP***), an FCM may position to a suitable location as required by the AOC holder.

Note As with any duty, the time spent in positioning after completion of the FDP must be added to the relevant FDP when determining minimum off-duty periods under clause 8.

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8 Off-duty periods

Off-duty period following an FDP

8.1 If the sum of an FCM's FDP, and his or her duty time (if any) after completion of the FDP but before commencement of the following off-duty period, does not exceed 12 hours, his or her following off-duty period must be at least as follows:

(a) if the FCM is undertaking the off-duty period away from home base — the sum of:

(i) 10 hours; and

(ii) the amount that the displacement time exceeds 3 hours if travelling west, or 2 hours if travelling east;

(b) if the FCM is undertaking the off-duty period at home base — the sum of:

(i) 12 hours; and

(ii) the amount that the displacement time exceeds 3 hours if travelling west, or 2 hours if travelling east.

8.2 If the sum of an FCM's FDP, and his or her duty time (if any) after completion of the FDP but before commencement of the following off-duty period (***other duty time***), exceeds 12 hours, his or her following off-duty period must be at least 12 hours, plus the sum of:

(a) 1.5 times the time that the FDP and the other duty time exceeded 12 hours; and

(b) the amount that the displacement time exceeds 3 hours if travelling west, or 2 hours if travelling east.

Reduction in off-duty period

8.3 Despite subclause 8.1, if the sum of an FCM's FDP (the ***last FDP***), and his or her duty time (if any) after completion of the FDP but before commencement of the following off-duty period, does not exceed 10 hours, his or her following off-duty period (***ODP 2***), may be reduced to not less than 9 hours provided that:

(a) the off-duty period undertaken immediately before the last FDP was at least 12 hours, including a local night; and

(b) the ODP 2 is undertaken over a local night; and

(c) the ODP 2 is not undertaken at home base; and

(d) the off-duty period following the FDP after ODP 2 is at least 12 hours, including a local night.

8.4 Despite subclause 8.2, if, after an FDP (the ***first FDP***), but before the next FDP (the ***second FDP***), the off-duty period calculated under this clause is more than 14 hours, the off-duty period may be reduced to not less than 14 hours, provided that:

(a) the reduced off-duty period is undertaken away from home base; and

(b) the first FDP was not extended past the FDP limit provided for under the AOC holder's operations manual; and

(c) the off-duty period following the second FDP is of at least 36 consecutive hours and includes 2 local nights.

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Off-duty periods for cumulative fatigue recovery

8.5 Before beginning any standby time or FDP, an FCM must have had at least 36 consecutive hours off-duty, including 2 local nights, in the 168 hours before the projected end time of the assigned FDP or assigned standby.

8.6 Before beginning any standby time or FDP, an FCM must have had at least 6 days off-duty in the 28 consecutive days before the standby or FDP commences.

9 Limit on cumulative flight time

9.1 The cumulative flight time accrued by an FCM during any consecutive 28-day period must not exceed 100 hours.

9.2 The cumulative flight time accrued by an FCM during any consecutive 365-day period must not exceed 1 000 hours.

10 Limit on cumulative duty time

10.1 The cumulative duty accrued by an FCM during any consecutive 168-hour period must not exceed 60 hours.

10.2 The cumulative duty accrued by an FCM during any consecutive 336-hour period must not exceed 100 hours.

Note 168 hours is the number of hours in a 7-day period, and 336 hours is the number of hours in a 14-day period.

11 Limits on infringing the WOCL and early starts

11.1 Subject to subclause 11.3, an FCM must not be assigned more than 3 consecutive early starts.

11.2 Subject to subclause 11.3, an FCM, whose duties have already infringed 3 consecutive WOCLs, must not be assigned an FDP that would again infringe the WOCL without at least an intervening off-duty period that includes a local night.

Note See paragraph 6.2 of this CAO for duties that infringe a WOCL.

11.3 Despite subclauses 11.1 and 11.2, the FCM may have a 4^{th}, or a 4^{th} and a 5^{th}, consecutive early start (whether or not the start infringes the WOCL) if:

(a) the maximum FDP permissible on the day of the 4^{th} early start is reduced by 2 hours; and

(b) the maximum FDP permissible on the day of the 5^{th} early start is reduced by 4 hours.

12 Maximum durations must not be exceeded

Unless an extension is permitted under clause 5, in performing duty an FCM must not exceed the following:

(a) the maximum duration of the FDP specified for the FCM in the AOC holder's operations manual;

(b) the maximum flight time specified for the FCM in the AOC holder's operations manual.

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APPENDIX 4A BALLOON OPERATIONS

1 Sleep opportunity before an FDP

An FCM must not be assigned or commence an FDP unless he or she has at least:

(a) 8 consecutive hours' sleep opportunity within the 10 hours immediately before commencing the FDP; or

(b) 10 hours' sleep opportunity, of which at least 6 must be consecutive, within the 24 hours immediately before commencing the FDP.

Note See subsection 6 of this CAO for the definition of ***sleep opportunity***, where it is defined as occurring during an off-duty period.

2 FDP limits

2.1 An FCM must not be assigned an FDP longer than the number of hours specified in Table 2.1 in this clause (the ***FDP limit***), as determined by whether or not the FDP contains a split-duty rest period.

Table 2.1Maximum FDP (in hours) for an FCM according to whether or not the FDP contains a split-duty rest period

Does the FDP contain a split-duty rest period?	Maximum FDP (hours)
No	6
Yes	10

2.2 An FCM cannot continue in an FDP for longer than 6 hours unless he or she has completed or commenced a split-duty rest period of at least 4 consecutive hours.

3 Increase in FDP limits by split duty

3.1 Subject to subclause 3.4, where an FDP contains a split-duty rest period of at least 4 consecutive hours with access to suitable sleeping accommodation (the ***split-duty rest period***), the maximum FDP may be increased by the duration of the split-duty rest period to a maximum of 15 hours.

3.2 After an FDP mentioned in subclause 3.1, the first 4 hours of the split-duty rest period may be reduced by 2 hours for the purpose of determining the subsequent off-duty period or cumulative duty time under clause 5 or 7 of this Appendix.

3.3 If a split-duty rest period includes any period between the hours of 2100 to 0329 local time, then:

(a) the split-duty rest period must be for a consecutive period of at least 7 hours with access to suitable sleeping accommodation; and

(b) subclause 3.2 does not apply.

3.4 Any remaining portion of an FDP following a split-duty rest period must be no longer than 5 hours.

Note These are the maximum FDP and flight time limits under this Appendix unless, for any particular FCM, other provisions have the effect of reducing these limits (for example, subsections 14 and 15 of this CAO).

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4 Extensions

4.1 Despite the FDP limits provided in the operations manual, in unforeseen operational circumstances at the discretion of the pilot in command, the FDP limits in the operations manual may be extended up to a maximum of 1 hour if:

(a) the FDP has commenced; and

(b) the FCM considers himself or herself fit for the extension.

4.2 An FDP limit must not be extended under this clause if it would cause an FCM to exceed the cumulative flight time limits in clause 6 or the cumulative duty time limits in clause 7.

4.3 Despite any limit or number under this Appendix, if:

(a) unforeseen operational circumstances arise after take-off on the final sector of an FDP; and

(b) the unforeseen operational circumstances would cause an FCM to exceed any limit or number permitted under this Appendix;

then the flight may continue to the planned destination at the discretion of the pilot in command.

Note 1 Under regulation 91.215 of CASR, the pilot in command of an aircraft is responsible for the conduct and safety of members of the crew on the aircraft and, therefore, has a discretion to not permit an extension to occur even if otherwise permissible under this clause.

Note 2 Guidance on the assessment of individual cognitive and physical fitness is contained in CAAP 48-01.

5 Off-duty periods

5.1 Following an FDP, an FCM must have an off-duty period of at least 10 consecutive hours.

5.2 Despite subclause 5.1, an FCM may take 2 off-duty periods of not less than 4 consecutive hours each, with an intervening duty period of not more than 2 hours, provided the total duration of the 2 off-duty periods is not less than 13 hours.

Note The sleep opportunity requirements in clause 1 continue to apply. For example, if the use of 2 off-duty periods does not allow for a single period of 8 consecutive hours prior sleep opportunity, then paragraph 1.1 (b) of this Appendix provides for the option of using 2 or more periods to achieve a prior sleep opportunity of 10 hours, provided 1 of the periods is a minimum of 6 consecutive hours.

5.3 Before beginning any FDP, an FCM must have had at least 2 full days (consecutively or otherwise) off-duty in the 14 consecutive days before the projected end time of the assigned FDP.

5.4 For subclause 5.3, a ***full day*** means the period between 2 consecutive midnights.

6 Limit on cumulative flight time

The cumulative flight time accrued by an FCM during any consecutive 28-day period must not exceed 50 hours.

7 Limit on cumulative duty time

7.1 The cumulative duty accrued by an FCM during any consecutive 168-hour period must not exceed 45 hours.

7.2 The cumulative duty accrued by an FCM during any consecutive 336-hour period must not exceed 84 hours.

Note 168 hours is the number of hours in a 7-day period, and 336 hours is the number of hours in a 14-day period.

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APPENDIX 4B MEDICAL TRANSPORT OPERATIONS AND EMERGENCY SERVICE OPERATIONS

1 FDP and flight time limits

1.1 An FCM must not be assigned an FDP longer than the number of hours specified in Table 1.1 in this clause (the ***FDP limit***), as determined by the local time at the start of the FDP and, for a multi-pilot operation, the number of sectors to be flown.

Table 1.1 Maximum FDP (in hours) for an FCM according to local time at the start of the FDP

Local time at start of FDP	Maximum FDP		
	Single-pilot operation	Multi-pilot operation	
		1-2 sectors	3+ sectors
0500 – 0559	11	12	12
0600 – 0659	11.5	13	12.5
0700 – 1159	12	14	13
1200 – 1459	11	13	12
1500 – 1559	10.5	12	11.5
1600 – 0459	10	11	11

FDP limit may be increased twice per 168-hour period

1.2 Despite subclause 1.1, the FDP limit for an FCM may be increased to not more than the following limits (an ***increased FDP***) provided the conditions in subclause 1.3 are complied with:

(a) for a single-pilot operation — 12 hours;

(b) for any multi-pilot operation — 14 hours.

1.3 For subclause 1.2:

(a) there must be no more than 2 increased FDPs in any 168 consecutive hour period; and

(b) the off-duty period before commencing an increased FDP must be not less than 12 hours; and

(c) an increased FDP must be followed by an off-duty period of not less than 12 hours; and

(d) an increased FDP must not be further increased by a split-duty rest period under clause 2, but it may be extended under clause 3.

Note Clause 5 also requires that an FCM who conducts an increased FDP under this clause has an off-duty period of at least 36 hours, including 2 local nights, during the 168 consecutive hour period.

1.4 An FCM must not be assigned or commence flight time for flight training during an FDP unless the flight training is conducted during the first 7 hours of the FDP's flight time.

Note Subclause 1.4 does not apply to a flight review or a proficiency check because these are not flight training as defined in paragraph 6.1 of this CAO.

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1.5 If, in the 8 hours immediately before an FDP (the ***8-hour period***), an FCM performed duties other than conducting a flight in an aircraft (***non-flying duties***) the maximum permissible duration of the FDP must be decreased by the greater of:

(a) 30 minutes; or

(b) the total duration of the non-flying duties performed during the 8-hour period.

1.6 An FCM must not exceed an FDP limit set out in the AOC holder's operations manual in accordance with this CAO.

2 Increase in FDP limits by split duty

2.1 Subject to subclauses 2.2 and 2.6, if an FDP contains a split-duty rest period of at least 2 consecutive hours with access to suitable sleeping accommodation, the FDP worked out under clause 1 may be increased by the duration of the split-duty rest period.

2.2 For subclause 2.1, the remaining length of the FDP resumed at the time the split-duty rest period ends (the ***resumption time***) must not be greater than the FDP limit that would apply under Table 1.1 to an FCM who commenced a new FDP at the resumption time.

2.3 After an FDP mentioned in subclause 2.1, the duration of the split-duty rest period may be reduced by 50% in determining the subsequent off-duty period under subclause 5.1 or cumulative duty time under clause 7.

2.4 Subject to subclause 2.6, if an FDP contains 1 or 2 split-duty rest periods, each of at least 2 consecutive hours with access to suitable resting accommodation, the maximum FDP worked out under clause 1 may be increased by half the duration of the split-duty rest period or periods up to a total of 2 hours.

2.5 The requirements of subclause 5.1 are taken to be met if an FDP contains a split-duty rest period with access to suitable sleeping accommodation, and the split-duty rest period is:

(a) of at least 10 consecutive hours, plus the number of hours difference in local time between the location where the FDP commenced and the location where the split-duty rest period is undertaken; and

(b) undertaken over a local night.

2.6 An FDP that includes a split-duty rest period must not exceed 16 hours.

Note For any particular FCM, other provisions of this CAO may have the effect of reducing maximum FDP limits under this Appendix (see, for example, subsections 14 and 15 of this CAO).

3 Extensions

3.1 Subject to subclause 3.3, in unforeseen operational circumstances, at the discretion of the FCM, an FDP may be extended, by up to a maximum of 2 hours for a multi-pilot operation, or 1 hour for a single-pilot operation, beyond:

(a) the FDP limit specified in Table 1.1 (including that limit as increased under subclause 1.2); or

(b) the FDP limit specified in Table 1.1 as increased by a split-duty rest period under clause 2, provided the extended FDP does not exceed 16 hours.

3.2 Subject to subclause 3.3, if:

(a) an AOC holder has urgent operations procedures in the operations manual; and

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(b) an operation is deemed to be urgent in accordance with the manual;

then at the discretion of the FCM, an FDP containing an urgent operation may be extended by up to a maximum of 4 hours beyond:

(c) the FDP limit specified in Table 1.1 (including that limit as increased under subclause 1.2), provided the extended FDP does not exceed 16 hours; or

(d) the FDP limit specified in Table 1.1 as increased by a split-duty rest period under clause 2, provided the extended FDP does not exceed 16 hours.

3.3 Before exercising the discretion under subclause 3.1 or 3.2 to extend the FDP limit of an FCM, the pilot in command of a multi-pilot operation must:

(a) do the following:

(i) consult each FCM who is a crew member on the aircraft;

(ii) be satisfied that each FCM considers himself or herself fit for the extension;

(b) if the FCM whose FDP would be extended is the pilot in command — do the following:

(i) consult each FCM who is a crew member on the aircraft;

(ii) be satisfied that, as pilot in command, he or she is fit for the extension.

Note Due to the nature of medical transport operations and emergency service operations, for urgent operations extensions may be permitted in operational circumstances where the operator and the flight crew are satisfied the safety of the flight will not be impacted by fatigue.

3.4 Despite the limits provided in the operations manual, the flight time limit for an FDP may be extended by not more than 30 minutes if:

(a) it is operationally necessary in order to complete the duty; and

(b) the FCM, or each FCM, considers himself or herself fit for the extension.

3.5 Flight training for up to 30 minutes may be conducted after the first 7 hours of the FDP's flight time if:

(a) unforeseen operational circumstances arise after the commencement of the FDP; and

(b) it is operationally necessary in order to complete the duty; and

(c) the FCM considers himself or herself fit for the extension.

3.6 An FDP limit must not be extended under this clause if it would cause an FCM to exceed the cumulative flight time limits in clause 7.

3.7 Despite any limit or number under this Appendix, if:

(a) unforeseen operational circumstances arise after take-off on the final sector of an FDP; and

(b) the unforeseen operational circumstances would cause an FCM to exceed any limit or number permitted under this Appendix;

then the flight may continue to the planned destination or alternate at the discretion of the pilot in command.

Note 1 Under regulation 91.215 of CASR, the pilot in command of an aircraft is responsible for the conduct and safety of members of the crew on the aircraft and, therefore, has a discretion to not permit an extension to occur even if otherwise permissible under this clause.

Note 2 Guidance on the assessment of individual cognitive and physical fitness is contained in CAAP 48-01.

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4 Standby

4.1 An FCM may be placed on standby.

4.2 If an FCM is called out from standby to commence an FDP (which may include a split-duty rest period), the FDP must be followed by an off-duty period in accordance with clause 5.

4.3 If an FCM is called out to commence duties other than flying duties, the FCM may return to standby following that duty period. However, subclause 1.6 applies to a subsequent FDP.

5 Off-duty period limits

Off-duty period following an FDP

5.1 Immediately after an FDP, an FCM must have an off-duty period of at least the following consecutive hours, during which there must be access to suitable sleeping accommodation for at least 8 consecutive hours:

(a) if the off-duty period includes the period between 2300 and 0559 hours local time — the sum of:

(i) 8 hours; and

(ii) the amount of time that the FDP exceeds 12 hours (provided the excess is not due to an extension mentioned in subparagraph (iv)); and

(iii) the amount of displacement time of the FDP; and

(iv) 1 hour for every 30 minutes, or part of 30 minutes, that the FDP was extended beyond the FDP limit;

(b) if the off-duty period does not include the period between 2300 and 0559 hours local time — the sum of:

(i) 10 hours; and

(ii) the amount of time that the FDP exceeds 12 hours (provided the excess is not due to an extension mentioned in subparagraph (iv)); and

(iii) the amount of displacement time of the FDP; and

(iv) 1 hour for every 30 minutes, or part of 30 minutes, that the FDP was extended beyond the FDP limit.

Reduction in off-duty period

5.2 If an off-duty period calculated under subclause 5.1 is greater than 12 hours, the off-duty period may be reduced to not less than 12 hours provided that:

(a) the next FDP is conducted under this Appendix; and

(b) the off-duty period following the next FDP is at least 24 hours.

Off-duty periods for cumulative fatigue recovery

5.3 If, in any consecutive 168-hour period (the ***period***), an FCM conducts either:

(a) 3 or more FDPs, each of which involves a late-night operation; or

(b) an increased FDP in accordance with subclause 1.2;

then the FCM must have an off-duty period of at least 36 consecutive hours, including 2 local nights during the period.

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5.4 Before beginning an FDP or standby, an FCM must have had at least 1 of the following:

(a) in any consecutive 336-hour period before the projected end of the assigned FDP or standby — 1 off-duty period of at least 36 consecutive hours, including 2 local nights;

(b) in any consecutive 504-hour period before the projected end of the assigned FDP or assigned standby — 1 off-duty period of at least 72 consecutive hours, including 3 local nights.

Note 336 hours is the number of hours in a 14-day period, and 504 hours is the number of hours in a 21-day period.

6 Limit on cumulative flight time

6.1 The cumulative flight time accrued by an FCM during any consecutive 28-day period must not exceed 100 hours.

6.2 The cumulative flight time accrued by an FCM during any consecutive 365-day period must not exceed 1 000 hours.

7 Limit on cumulative duty time

7.1 The cumulative duty time accrued by an FCM during any consecutive 168-hour period (the ***period***) must not exceed:

(a) if an FCM has not had at least 1 off-duty period of at least 36 hours, including 2 local nights during the period — 40 hours; and

(b) if an FCM has had at least 1 off-duty period of at least 36 hours, including 2 local nights during the period — 60 hours.

Note 168 hours is the number of hours in a 7-day period and 336 hours is the number of hours in a 14-day period.

7.2 The cumulative duty accrued by an FCM during any consecutive 336-hour period must not exceed 100 hours.

8 Limit on late-night operations

8.1 In any period of 168 consecutive hours, an FCM must not be assigned, or conduct, more than 4 FDPs involving late-night operations.

8.2 If in any period of 168 consecutive hours (the ***period***) an FCM conducts 3 or more FDPs involving late-night operations, the FCM is limited to 40 hours cumulative duty time during the period.

Note See also subclause 5.3 which requires that an FCM must have an off-duty period of at least 36 consecutive hours, including 2 local nights if 3 or more late-night operations are conducted during any 168 consecutive hour period.

9 Maximum durations must not be exceeded

Unless an extension is permitted under clause 3, in performing duty an FCM must not exceed the following:

(a) the maximum duration of the FDP specified for the FCM in the AOC holder's operations manual;

(b) the maximum flight time specified for the FCM in the AOC holder's operations manual.

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APPENDIX 5 AERIAL WORK OPERATIONS AND FLIGHT TRAINING ASSOCIATED WITH AERIAL WORK

1 FDP limits

1.1 An FCM must not be assigned an FDP longer than the number of hours specified in Table 1.1 in this clause, as determined by:

(a) the local time at the start of the FDP; and

(b) whether the operation is a single-pilot operation or a multi-pilot operation; and

(c) for a multi-pilot operation — whether the number of sectors is 1 or 2, or 3 or more.

Note Aerial work operations captured by this Appendix are widely varied. Therefore, operators are reminded to limit FDP in accordance with their operator obligations, and include FDP limits in their operations manual.

1.2 An FCM must not be assigned or commence flight time for flight training during an FDP unless the flight training is conducted during the first 7 hours of the FDP's flight time.

Table 1.1 Maximum FDP (in hours) for an FCM according to local time at the start of the FDP

Local time at start of FDP	Maximum FDP (hours)		
	Single-pilot operation	Multi-pilot operation	
		For 1 or 2 sectors	For 3 or more sectors
0500 – 0559	11	12	12
0600 – 0659	11.5	13	12.5
0700 – 1159	12	14	13
1200 – 1459	11	13	12
1500 – 1559	10.5	12	11.5
1600 – 0459	10	11	11

FDP limit may be increased twice per 168-hour period

1.3 Despite subclause 1.1, the FDP limit for an FCM may be increased to not more than the following limits (an ***increased FDP***) provided the conditions in subclause 1.4 are complied with:

(a) for a single-pilot operation — 12 hours;

(b) for any multi-pilot operation — 14 hours.

1.4 For subclause 1.3:

(a) there must be no more than 2 increased FDPs in any 168 consecutive hour period; and

(b) the off-duty period before commencing an increased FDP must be not less than 12 hours; and

(c) an increased FDP must be followed by an off-duty period of not less than 12 hours; and

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(d) an increased FDP must not be further increased by a split-duty rest period under clause 2, but it may be extended under clause 3.

Note Clause 5 also requires that an FCM who conducts an increased FDP under this clause has an off-duty period of at least 36 hours, including 2 local nights, during the 168 consecutive hour period.

1.5 If, in the 8 hours immediately before an FDP (the ***8-hour period***), an FCM performed duties other than conducting a flight in an aircraft (***non-flying duties***) the maximum permissible duration of the FDP must be decreased by the greater of:

(a) 30 minutes; or

(b) the total duration of the non-flying duties performed during the 8-hour period.

1.6 In any 168 consecutive hours, an FCM must not be assigned, or conduct, more than 4 FDPs which include any time between midnight and 0459 local time.

1.7 An FCM must not exceed an FDP limit set out in the AOC holder's operations manual in accordance with this CAO.

2 Increase in FDP limits by split duty

2.1 If an FDP contains a split-duty rest period of at least 3 consecutive hours at suitable sleeping accommodation, the maximum FDP worked out under clause 1 may be increased by the duration of the split-duty rest period.

2.2 Where an FDP contains a split-duty rest period of at least 2 consecutive hours with access to suitable resting accommodation, the maximum FDP worked out under subclause 1.1 may be increased by half the duration of the split-duty rest period, provided the increase is not more than 2 hours.

2.3 Any portion of an FDP remaining after a split-duty rest period must be no longer than the sum of 6 hours and any permitted extension under clause 3.

Note These are the maximum FDP limits under this Appendix unless, for any particular FCM, other provisions have the effect of reducing these limits (for example, subsections 14 and 15 of this CAO).

3 Extensions

3.1 Subject to subclause 3.2, at the discretion of the FCM, an FDP may be extended by up to a maximum of 2 hours beyond:

(a) the FDP limit specified in Table 1.1, including that limit as increased under subclause 1.3; or

(b) the FDP limit specified in Table 1.1 only, as increased by a split-duty rest period under clause 2.

Note Due to the nature of aerial work operations, extensions are permitted in operational circumstances where the FCM is satisfied that the safety of the flight will not be impacted by fatigue.

3.2 Before deciding to extend an FDP under subclause 3.1, the pilot in command of a multi-pilot operation must:

(a) do the following:

(i) consult each FCM who is a crew member on the aircraft;

(ii) be satisfied that each FCM considers himself or herself fit for the extension; and

(b) if the FCM whose FDP would be extended is the pilot in command — do the following:

(i) consult each FCM who is a crew member on the aircraft;

(ii) be satisfied that, as pilot in command, he or she is fit for the extension.

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3.3 Flight training for up to 30 minutes may be conducted after the first 7 hours of the FDP's flight time if:

(a) unforeseen operational circumstances arise after the commencement of the FDP; and

(b) it is operationally necessary in order to complete the duty; and

(c) the FCM considers himself or herself fit for the extension.

3.4 Subject to subclause 3.5, any extension over the FDP limit requires the off-duty period required by subclause 5.1 to be increased by 1 hour for every 30 minutes, or part of 30 minutes, that the FDP is extended beyond the FDP limit.

3.5 If an off-duty period calculated under subclause 3.2 is greater than 12 hours, the off-duty period may be reduced to not less than 12 hours provided that:

(a) the next FDP is conducted under this Appendix; and

(b) the off-duty period following the next FDP is at least 36 hours, including 2 local nights.

3.6 An FDP limit must not be extended under this clause if it would cause an FCM to exceed the cumulative flight time limits in clause 6.

3.7 Despite any limit or number under this Appendix, if:

(a) unforeseen operational circumstances arise after take-off on the final sector of an FDP; and

(b) the unforeseen operational circumstances would cause an FCM to exceed any limit or number permitted under this Appendix;

then the flight may continue to the planned destination or alternate at the discretion of the pilot in command.

Note 1 Under regulation 91.215 of CASR, the pilot in command of an aircraft is responsible for the conduct and safety of members of the crew on the aircraft and, therefore, has a discretion to not permit an extension to occur even if otherwise permissible under this clause.

Note 2 Guidance on the assessment of individual cognitive and physical fitness is contained in CAAP 48-01.

4 Standby

4.1 An FCM may be placed on standby.

4.2 If an FCM is called out from standby to commence an FDP (which may include a split-duty rest period), the FDP must be followed by an off-duty period in accordance with clause 5.

4.3 If an FCM is called out to commence duties other than flying duties, the FCM may return to standby following that duty period. However, subclause 1.5 applies to a subsequent FDP.

5 Off-duty period limits

Off-duty period following an FDP

5.1 Immediately after an FDP, an FCM must have an off-duty period of at least the following number of consecutive hours, during which there must be access to suitable sleeping accommodation for at least 8 consecutive hours:

(a) if the off-duty period includes the period between 2300 and 0559 hours local time — 8;

(b) if the off-duty period does not include the period between 2300 and 0559 hours local time — 10.

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Note Under subclause 3.2 of this Appendix the off-duty period is increased by 1 hour for every 30 minutes, or part of 30 minutes, that the FDP is extended beyond the FDP limit.

Off-duty periods for cumulative fatigue recovery

5.2 Before beginning an FDP or standby, an FCM must have had at least 1 of the following:

(a) in any consecutive 336-hour period before the projected end of the assigned FDP or standby — 1 off-duty period of at least 36 consecutive hours, including 2 local nights;

(b) in any consecutive 504-hour period before the projected end of the assigned FDP or assigned standby — 1 off-duty period of at least 72 consecutive hours, including 3 local nights.

Note 336 hours is the number of hours in a 14-day period, and 504 hours is the number of hours in a 21-day period.

5.3 If, in any consecutive 168-hour period (the ***period***), an FCM conducts 1 or 2 increased FDPs in accordance with subclause 1.3, the FCM must have an off-duty period of at least 36 consecutive hours, including 2 local nights during the period.

6 Limit on cumulative flight time

6.1 The cumulative flight time accrued by an FCM during any consecutive 168-hour period must not exceed 50 hours.

6.2 Subject to subclause 6.4, the cumulative flight time accrued by an FCM during any consecutive 28-day period must not exceed 170 hours.

6.3 Subject to subclause 6.4, the cumulative flight time accrued by an FCM during any consecutive 90-day period must not exceed 450 hours.

6.4 The cumulative flight time limits in subclauses 6.2 and 6.3 may be reset to zero immediately after the FCM is provided with at least 5 consecutive days off-duty.

6.5 Subject to subclause 6.6, the cumulative flight time accrued by an FCM during any consecutive 365-day period must not exceed 1 200 hours.

6.6 The cumulative flight time limit in subclause 6.5 may be reset to zero if the FCM is provided with at least 28 consecutive days off-duty.

Note These cumulative flight time limits are designed to mitigate the effects of cumulative fatigue. AOC holders are reminded, first, of the emotional, cognitive and physical effects of workload on the performance of FCMs in addition to fatigue and, secondly, that these limits are for optimal circumstances and may not be achievable due to hazard identification and other procedures required under subsection 15 of this CAO.

7 Maximum durations must not be exceeded

Unless an extension is permitted under clause 3, in performing duty an FCM must not exceed the following:

(a) the maximum duration of the FDP specified for the FCM in the AOC holder's operations manual;

(b) the maximum flight time specified for the FCM in the AOC holder's operations manual.

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APPENDIX 5A DAYLIGHT AERIAL WORK OPERATIONS AND FLIGHT TRAINING ASSOCIATED WITH AERIAL WORK

1 Sleep opportunity before an FDP

An FCM must not be assigned or commence an FDP at a location unless he or she:

(a) has had at least 8 consecutive hours' sleep opportunity within the 10 hours immediately before commencing the FDP; and

(b) on each of the 3 local nights immediately before commencing the FDP, has not carried out any duties during the 8 hours prior to 30 minutes before morning civil twilight at the location.

Note The intent of paragraph (b) is to prohibit an FCM from undertaking an FDP under Appendix 5A if they have undertaken any duties on the 3 nights immediately before the FDP.

2 FDP and flight time limits

2.1 An FCM must not be assigned or commence an FDP that:

(a) begins more than 30 minutes before the beginning of morning civil twilight at the location at which the FDP commences; or

(b) ends later than the end of evening civil twilight at the location at which the FDP commences.

Note This subclause does not affect other legislative requirements that limit Day VFR operations.

2.2 An FCM may only be assigned an FDP with a total duration no longer than 14 hours in any 1 day (the ***FDP limit***).

2.3 An FCM must not be assigned or commence flight time for flight training during an FDP unless the flight training is conducted during the first 7 hours of the FDP's flight time.

Note Subclause 2.3 does not apply to a flight review or a proficiency check because these are not flight training as defined in paragraph 6.1 of this CAO.

3 Extensions

3.1 Subject to subclause 3.2, at the discretion of the FCM, an FDP may be extended up to a maximum of 1 hour beyond the FDP limit in subclause 2.2, provided the FCM considers himself or herself fit for the extension.

3.2 An FDP must not be extended beyond the end of evening civil twilight, unless this is necessary to complete the duties associated with the last daylight flight.

3.3 Flight training for up to 30 minutes may be conducted after the first 7 hours of the FDP's flight time if:

(a) unforeseen operational circumstances arise after the commencement of the FDP; and

(b) it is operationally necessary in order to complete the duty; and

(c) the FCM considers himself or herself fit for the extension.

4 Off-duty period limits

4.1 Following an FDP, an FCM must have an off-duty period of at least 10 consecutive hours.

4.2 An FCM must, in any consecutive 384-hour period, have a period of at least 2 consecutive days off-duty.

Note 384 hours is the number of hours in a 16-day period.

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5 Limit on cumulative flight time

5.1 The cumulative flight time accrued by an FCM during any consecutive 384-hour period must not exceed 100 hours.

5.2 If the operation is a mustering operation, the cumulative flight time accrued by the FCM during any consecutive 30-day period must not exceed 120 hours if the combined total of his or her flying time in mustering operations as pilot in command and pilot in command under supervision is less than 500 hours.

5.3 The cumulative flight time limits in subclauses 5.1 and 5.2 may be reset to zero immediately after the FCM is provided with at least 5 consecutive days off-duty.

5.4 The cumulative flight time accrued by an FCM during any consecutive 365-day period must not exceed 1 200 hours.

5.5 The cumulative flight time limit in subclause 5.4 may be reset to zero immediately after the FCM is provided with at least 28 consecutive days off-duty.

Note 1 384 hours is the number of hours in a 16-day period.

Note 2 These cumulative flight time limits are designed to mitigate the effects of cumulative fatigue. AOC holders are reminded, first, of the emotional, cognitive and physical effects of workload on the performance of FCMs in addition to fatigue and, secondly, that these limits are for optimal circumstances and may not be achievable due to hazard identification and other procedures required under subsection 15 of this CAO.

6 Maximum durations must not be exceeded

Unless an extension is permitted under clause 3, in performing duty an FCM must not exceed the following:

(a) the maximum duration of the FDP specified for the FCM in the AOC holder's operations manual;

(b) the maximum flight time specified for the FCM in the AOC holder's operations manual.

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APPENDIX 6 FLIGHT TRAINING

Note Appendix 6 does not apply to flight training in a flight simulation training device.

1 Sleep opportunity before an FDP or standby

An FCM must not be assigned or commence an FDP or standby unless he or she has at least 8 consecutive hours' sleep opportunity within the 12 hours immediately before commencing the FDP or standby.

Note See subsection 6 of this CAO for the definition of ***sleep opportunity***, where it is defined as occurring during an off-duty period.

2 FDP and flight time limits

2.1 An FCM must not be assigned an FDP longer than the number of hours specified in Table 2.1 in this clause (the ***FDP limit***), as determined by the local time at the start of the FDP.

2.2 For any FDP, an FCM must not be assigned flight time longer than 7 hours.

2.3 In applying Table 2.1, first, choose the appropriate local time at which the FDP for the FCM is to start. The maximum FDP for the FCM is the number that corresponds to the chosen local time at which the FDP for the FCM is to start.

Table 2.1 Maximum FDP (in hours) according to local time at start of FDP

Local time at start of FDP	Maximum FDP
0500 – 0559	9
0600 – 0659	10
0700 – 0759	10
0800 – 1059	11
1100 – 1359	10
1400 – 2259	9
2300 – 0459	8

3 Increase in FDP limits by split duty

3.1 Subject to subclause 3.4, if an FDP contains a split-duty rest period of at least 4 consecutive hours with access to suitable sleeping accommodation, the maximum FDP worked out under clause 2 may be increased by up to 4 hours.

3.2 After an FDP mentioned in subclause 3.1, the first 4 hours of the split-duty rest period may be reduced by 2 hours for the purpose of determining the subsequent off-duty period or cumulative duty time under clause 7 or 9 of this Appendix.

3.3 Subject to subclause 3.4, where an FDP contains a split-duty rest period of at least 2 consecutive hours with access to suitable resting accommodation, the FDP limits under subclause 2.1 may be increased by half the duration of the split-duty rest period, provided the increase is not more than 2 hours.

3.4 If a split-duty rest period includes any period between the hours of 2300 to 0529 local time, then:

(a) the split-duty rest period must be for a consecutive period of at least 7 hours with access to suitable sleeping accommodation; and

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(b) the maximum FDP may be increased to 15 hours (if not already permitted); and

(c) the reduction in the subsequent off-duty period and cumulative duty time, provided for in subclause 3.2, does not apply.

3.5 Unless the FDP is extended under clause 4, any portion of an FDP remaining after a split-duty rest period must be no longer than 5 hours.

Note These are the maximum FDP and flight time limits under this Appendix unless, for any particular FCM, other provisions have the effect of reducing these limits (for example, subsections 14 and 15 of this CAO).

4 Reassignment and extension

4.1 After an FCM's assigned FDP commences, the AOC holder may reassign to the FCM a modified FDP (a ***reassignment***), provided that each of the following applies:

(a) subject to subclauses 4.3 and 4.5 — the modified FDP and flight time does not exceed the applicable limits in the holder's operations manual;

(b) the FCM has confirmed that he or she is fit for the reassignment.

Note Fitness in this context is based on the FCM's self-assessment. An FCM has an obligation under paragraph 16.1 of this CAO not to carry out any task for a flight if, due to fatigue, the FCM is, or is likely to become, unfit for the task. If such circumstances apply, the FCM must decline the reassignment.

4.2 If subclause 4.1 applies, the FCM may continue in the modified FDP in accordance with subclause 4.1.

4.3 Despite the FDP limits provided in the operations manual, in unforeseen operational circumstances at the discretion of the pilot in command, the FDP limits in the operations manual may be extended by up to 1 hour.

4.4 Before exercising the discretion under subclause 4.3 to extend an FDP limit in the operations manual, the pilot in command must be satisfied that he or she, and any other FCM, are fit for the extension.

4.5 Despite the limits provided in the operations manual, the flight time limit for an FDP may be extended by not more than 30 minutes if:

(a) unforeseen operational circumstances arise after the commencement of the FDP; and

(b) it is operationally necessary in order to complete the duty; and

(c) the FCM considers himself or herself fit for the extension.

4.6 An FDP limit must not be reassigned or extended under this clause if it would cause an FCM to exceed the cumulative flight time limits in clause 8 or the cumulative duty time limits in clause 9.

4.7 Despite any limit or number under this Appendix, if:

(a) unforeseen operational circumstances arise after take-off on the final sector of an FDP; and

(b) the unforeseen operational circumstances would cause an FCM to exceed any limit or number permitted under this Appendix;

then the flight may continue to the planned destination or alternate at the discretion of the pilot in command.

Note 1 Under regulation 91.215 of CASR, the pilot in command of an aircraft is responsible for the conduct and safety of members of the crew on the aircraft and, therefore, has a discretion to not permit an extension to occur even if otherwise permissible under this clause.

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Note 2 Guidance on the assessment of individual cognitive and physical fitness is contained in CAAP 48-01.

5 Standby limits and standby-like arrangements

5.1 An AOC holder must not require an FCM to be on continuous standby for a period longer than 14 hours.

5.2 The maximum allowable FDP after a call out from standby must be decreased by the number of hours by which the standby exceeds 4 hours.

5.3 A standby which is completed without a call out must be followed by an off-duty period of at least 10 consecutive hours.

5.4 To remove any doubt, the period of time in which an FCM is held in a standby-like arrangement must be treated as a duty period for the purposes of this CAO.

Note For example, the period spent in a standby-like arrangement must be included as part of a following FDP assigned to the FCM or added to the preceding FDP when determining minimum off-duty periods under clause 7.

6 Positioning

On completion of assigned flight duties in an FDP (the ***relevant FDP***), an FCM may position to a suitable location as required by the AOC holder.

Note As with any duty, the time spent in positioning after completion of the FDP must be added to the relevant FDP when determining minimum off-duty periods under clause 7.

7 Off-duty periods

Off-duty period following an FDP

7.1 After an FCM's FDP and any duty time after completion of the FDP but before commencement of the following off-duty period (***other duty time***), his or her following off-duty period must be at least the sum of:

(a) 12 hours; and

(b) 1.5 times the time that the FDP and the other duty time exceeded 12 hours.

Off-duty periods for cumulative fatigue recovery

7.2 Before beginning any standby time or FDP, an FCM must have had at least 36 consecutive hours off-duty, including 2 local nights, in the 168 hours before the projected end time of the assigned FDP or assigned standby.

7.3 Before beginning any standby time or FDP, an FCM must have had at least 6 days off-duty in the 28 consecutive days before the standby or FDP commences.

8 Limit on cumulative flight time

8.1 The cumulative flight time accrued by an FCM during any consecutive 28-day period must not exceed 100 hours.

8.2 The cumulative flight time accrued by an FCM during any consecutive 365-day period must not exceed 1 000 hours.

9 Limit on cumulative duty time

9.1 The cumulative duty accrued by an FCM during any consecutive 168-hour period must not exceed 60 hours.

9.2 The cumulative duty accrued by an FCM during any consecutive 336-hour period must not exceed 100 hours.

Note 168 hours is the number of hours in a 7-day period, and 336 hours is the number of hours in a 14-day period.

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10 Limits on infringing the WOCL and early starts

10.1 Subject to subclause 10.3, an FCM must not be assigned more than 3 consecutive early starts.

10.2 Subject to subclause 10.3, an FCM, whose duties have already infringed 3 consecutive WOCLs, must not be assigned an FDP that would again infringe the WOCL without at least an intervening off-duty period that includes a local night.

Note See paragraph 6.2 of this CAO for duties that infringe a WOCL.

10.3 Despite subclauses 10.1 and 10.2, the FCM may have a 4th, or a 4th and a 5th, consecutive early start (whether or not the start infringes the WOCL) if:

(a) the maximum FDP permissible on the day of the 4th early start is reduced by 2 hours; and

(b) the maximum FDP permissible on the day of the 5th early start is reduced by 4 hours.

11 Maximum durations must not be exceeded

Unless an extension is permitted under clause 4, in performing duty an FCM must not exceed the following:

(a) the maximum duration of the FDP specified for the FCM in the AOC holder's operations manual;

(b) the maximum flight time specified for the FCM in the AOC holder's operations manual.

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APPENDIX 7 FATIGUE RISK MANAGEMENT SYSTEM (FRMS)

1 General

1.1 An AOC holder may apply to CASA for:

(a) a trial FRMS implementation approval, for all or part of its operations; or

(b) a full FRMS implementation approval, for all or part of its operations.

Note An AOC holder is not eligible for a full implementation approval until the FRMS has been in effective operation for at least 12 months from the date of a trial implementation approval. See clause 9.

1.2 For a trial or full FRMS implementation approval, an FRMS must include CASA approval of each of the following elements of the FRMS:

(a) the policy and objectives, and related documentation, in accordance with clause 2;

(b) the practical operating procedures in accordance with clause 3;

(c) the hazard identification, risk assessment and mitigation procedures in accordance with clause 4;

(d) the safety assurance procedures in accordance with clause 5;

(e) the safety promotion procedures in accordance with clause 6;

(f) the change management procedures in accordance with clause 7.

Note 1 Significant changes require CASA approval. See clause 7.

Note 2 Guidance for the development and implementation of an FRMS is available on the ICAO and CASA websites.

1.3 If the AOC holder has an SMS, a trial or full FRMS implementation approval will not be given unless CASA is satisfied that the FRMS is integrated with the SMS.

1.4 Before CASA issues a trial FRMS implementation approval, CASA must be satisfied that the AOC holder's FRMS:

(a) comprises all of the elements mentioned in subclause 1.2; and

(b) is a safe, integrated, data-driven, system which appears to be reasonably capable of continuously and effectively monitoring and managing fatigue-related safety risks using scientific principles and knowledge, and operational experience; and

(c) will enable the AOC holder to assess the extent to which FCMs and other relevant personnel perform at levels of alertness sufficient to ensure the safety of operations.

1.5 Before CASA issues a full FRMS implementation approval, CASA must be satisfied that the AOC holder's FRMS:

(a) comprises all the elements mentioned in subclause 1.2; and

(b) is a safe, integrated, data-driven, system which will continuously and effectively monitor and manage fatigue-related safety risks using scientific principles and knowledge, and operational experience; and

(c) will enable the AOC holder to ensure that FCMs and other relevant personnel perform at levels of alertness sufficient to ensure the safety of operations.

2 FRMS policy and documentation

2.1 The AOC holder must have an FRMS policy:

(a) referring to all elements of the FRMS mentioned in subclause 1.2; and

(b) if the AOC holder has an SMS — which integrates the FRMS with the SMS.

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2.2 The policy must require that all operations to which the FRMS applies be clearly defined in the operations manual.

2.3 The policy must:

(a) make it clear that while primary responsibility for the FRMS lies with the AOC holder, its effective implementation requires shared responsibility by management, FCMs, and other relevant personnel; and

(b) clearly indicate the safety objectives of the FRMS; and

(c) be approved in writing by the Chief Executive Officer; and

(d) be accessible to all relevant areas and levels of the organisation in a way that indicates the AOC holder's specific endorsement of the policy; and

(e) declare management commitment to:

(i) effective safety reporting; and

(ii) provision of adequate resources for the FRMS; and

(iii) continuous improvement of the FRMS; and

(f) require that clear lines of accountability are identified for management, FCMs, and all other relevant personnel; and

(g) require periodic reviews to ensure the policy remains relevant and appropriate.

2.4 The policy must:

(a) be in a written statement; and

(b) require that each other element of the FRMS mentioned in subclause 1.2 be described in a written statement.

2.5 In addition to the requirements under subclause 2.4, and the relevant limits and procedures contained in the operations manual in accordance with this CAO, the FRMS must also be supported by the following documentation, namely, up-to-date identification, description and records of the following:

(a) the personnel accountabilities, responsibilities and authorities for effective implementation of the FRMS, including the FRMS Manager;

(b) the mechanisms for ongoing involvement in fatigue risk management of management, FCMs, and all other relevant personnel;

(c) the FRMS training programs, training requirements and records of attendance at training;

(d) scheduled and actual flight times, and duty periods and off-duty periods with significant deviations and reasons for deviations noted;

(e) the FRMS outputs, including findings from collected data, and recommendations and actions taken.

2.6 An AOC holder's exposition or operations manual (as the case requires) must contain the details of the FRMS.

Note 1 See also paragraph 6.4 in subsection 6 in relation to references to expositions and operations manuals.

Note 2 The FRMS may be subject to CASA directions under regulation 11.245 of CASR in the interests of aviation safety — see subclause 7.4 of this Appendix.

3 FRMS practical operating procedures

3.1 The FRMS practical operating procedures must, as a minimum:

(a) incorporate scientific principles and knowledge; and

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(b) identify, on an ongoing basis, fatigue-related safety hazards and the risks that result from them; and

(c) ensure that remedial actions necessary to effectively mitigate the risks associated with the hazards are implemented properly; and

(d) provide for continuous recording and monitoring of, and regular assessment of:

(i) fatigue-related safety hazards; and

(ii) relevant remedial actions; and

(iii) the extent to which mitigation of fatigue-related risks is achieved by remedial actions; and

(e) provide for continuous improvement in the effectiveness of the FRMS.

3.2 The FRMS practical operating procedures must set out:

(a) maximum values for each FCM for the following:

(i) flight times;

(ii) flight duty periods;

(iii) duty periods; and

(b) minimum values for each FCM off-duty periods.

Note The terms ***flight time***, ***flight duty period***, ***duty period*** and ***off-duty period*** are defined in this CAO.

3.3 For subclause 3.2, the values for each FCM must be based on scientific principles and knowledge and subject to safety assurance processes.

3.4 Subject to subclause 3.5, where an AOC holder acquires data from an FRMS which indicates that the maximum and minimum values required under paragraphs 3.2 (a) and (b) are too high or too low, respectively, the AOC holder must amend the FRMS to ensure that these values are acceptable.

3.5 For subclause 3.4, an amendment may only be made in accordance with clause 7.

4 FRMS hazard identification, risk assessment and mitigation procedures

FRMS hazard identification procedures

4.1 FRMS hazard identification procedures must be based on the following processes for fatigue-related hazard identification:

(a) the predictive process;

(b) the proactive process;

(c) the reactive process.

4.2 The predictive process must be capable of identifying fatigue-related hazards by examining FCM scheduling and taking into account the following:

(a) factors known to affect sleep;

(b) factors known to affect fatigue;

(c) the effects of the factors mentioned in paragraphs (a) and (b) on FCM performance.

4.3 The proactive process must be capable of identifying fatigue-related hazards within current flight operations.

4.4 The reactive process must be capable of identifying the contribution of fatigue-related hazards to actual events that could have affected, or did affect,

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safety, with a view to determining how the effects of fatigue on each event could have been minimised.

FRMS risk assessment procedures

4.5 FRMS risk assessment procedures must be capable of determining the following:

(a) the probability of events occurring or circumstances arising that create a fatigue-related hazard;

(b) the potential severity of fatigue-related hazards;

(c) when the safety risks associated with paragraph (a) or (b) require mitigation.

4.6 For subclause 4.5, the FRMS risk assessment procedures must ensure that identified fatigue-related hazards are examined in relation to the following:

(a) the relevant operational context and procedures in which the identified fatigue-related hazard arose;

(b) the probability of the fatigue-related hazard arising in those circumstances;

(c) the possible consequences of the fatigue-related hazard in those circumstances;

(d) the effectiveness of existing safety procedures and controls.

FRMS risk mitigation procedures

4.7 FRMS risk mitigation procedures for each fatigue-related hazards must be capable of:

(a) selecting appropriate mitigation strategies for the hazard; and

(b) implementing the selected mitigation strategies; and

(c) monitoring the implementation and effectiveness of the strategies.

5 FRMS safety assurance procedures

5.1 FRMS safety assurance procedures must provide for:

(a) continuous monitoring of the performance of the FRMS;

(b) the analysis of fatigue-related trends;

(c) measurements to validate the effectiveness of mitigation strategies.

5.2 FRMS safety assurance procedures must include a formal process for the management of changes to the FRMS arising from the following:

(a) identification of changes in the operational environment that may affect FRMS;

(b) identification of changes within the AOC holder's organisation that may affect FRMS.

5.3 The FRMS safety assurance procedures must include a formal process to assess:

(a) what impact a change mentioned in paragraph 5.2 (a) or (b) may have on the effective performance of the FRMS; and

(b) for such a change — what amendment, change or modification may be needed to the FRMS to ensure its continued effective performance.

5.4 FRMS safety assurance procedures must provide for the continuous improvement of the FRMS, by including the following:

(a) the elimination or modification of fatigue-related risk controls that:

(i) have had unintended negative consequences; or

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(ii) are no longer required because of changes in the AOC holder's operational or organisational environment;

(b) routine evaluations of facilities, equipment, documentation and procedures to determine their implications for fatigue-related risk management and control;

(c) identification of emerging fatigue-related risks to allow the introduction of new procedures and procedures to mitigate such risks.

6 FRMS safety promotion procedures

6.1 FRMS safety promotion procedures for fatigue-related hazards must include training and communication programs capable of supporting and continuously improving all elements of the FRMS in the delivery of optimum safety levels.

6.2 For subclause 6.1, FRMS safety promotion procedures must include the following:

(a) training programs for management, FCMs, and all other relevant personnel to ensure competency levels commensurate with the role and responsibility of the person under the FRMS;

(b) an effective FRMS communication plan that:

(i) explains all elements of the FRMS to management, FCMs, and all other relevant personnel; and

(ii) describes the communication channels which they must use to gather, disseminate and apply FRMS-related information.

7 FRMS change management procedures

7.1 For this clause, a ***significant change*** means:

(a) any increase to the values required under paragraph 3.2 (a); and

(b) any decrease to the values required under paragraph 3.2 (b); and

(c) any other change to any element of the FRMS that does not maintain or improve, or is not likely to maintain or improve, aviation safety.

7.2 The FRMS change management procedures must:

(a) meet the requirements of this clause; and

(b) clearly indicate how the AOC holder will amend, change or modify any element of the FRMS consistently with the requirements of this clause.

7.3 The change management procedures set out in this clause apply to:

(a) an AOC holder with a trial FRMS implementation approval; and

(b) an AOC holder with a full FRMS implementation approval.

7.4 After issuing an FRMS implementation approval, CASA may, in writing, direct an AOC holder to amend, change or modify the FRMS (including practices and documents), and the AOC holder must comply within the time specified by CASA in the direction.

Note 1 A failure to comply may result in revocation of the FRMS implementation approval.

Note 2 CASA's power to direct changes to an FRMS is an emergency power for safety purposes only. It does not relieve any approval holder of their own obligation to improve the performance of their FRMS where this is safe and practicable.

7.5 The AOC holder must not make a significant change to any element of the FRMS unless an application to make the change is approved in writing by CASA.

7.6 An application for approval of a significant change must:

(a) be in writing; and

(b) set out the change; and

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(c) be accompanied by a copy of the part of the AOC holder's FRMS documentation affected by the change, clearly identifying the change.

7.7 A change to the FRMS that is not a significant change must be:

(a) made in accordance with the FRMS change management procedures; and

(b) notified in writing to CASA within the following period after the change is made:

(i) 7 days;

(ii) either:

(A) if an AOC holder's approved SMS amendment process under Part 82 of the CAOs has a different CASA notification period for SMS amendments — the period specified in the process; or

(B) if an AOC holder's exposition change process under the Regulations has a different CASA notification period for non-significant changes — the period specified in the process.

8 Trial FRMS implementation approval

8.1 CASA may, on written application, issue an AOC holder with a trial FRMS implementation approval for up to 24 months, if CASA is satisfied that each element of the AOC holder's FRMS:

(a) complies with and meets the requirements, attributes and characteristics of an FRMS under this Appendix; and

(b) is capable of delivering:

(i) identified safety outcomes; and

(ii) fatigue-risk data and reports; and

(iii) continuous improvement in the delivery of safety outcomes.

8.2 If an approval was issued under subclause 8.1, CASA may, by issuing a new trial FRMS implementation approval, extend the duration of the approval:

(a) on the written application of the AOC holder; or

(b) on CASA's own initiative if CASA considers that aviation safety requires a longer trial FRMS implementation approval period before a full FRMS implementation approval.

Note More than 1 extension is possible if CASA considers it appropriate and trial FRMS implementation approval status could, therefore, be required to last longer than 24 months.

9 Full FRMS implementation approval

9.1 CASA may, on written application, issue an AOC holder with a full FRMS implementation approval, if the AOC holder:

(a) has held a trial FRMS implementation approval for at least 12 consecutive months; and

(b) satisfies CASA, through relevant data and reports, that the FRMS:

(i) is demonstrably delivering the safety outcomes expected when the trial FRMS implementation approval was given; and

(ii) is capable of delivering continuous improvement in the delivery of safety outcomes.

9.2 If, for this clause, CASA decides not to issue the AOC holder with a full FRMS implementation approval, the holder may apply again to CASA for a trial FRMS implementation approval and clauses 8 and 9 will apply according to their terms.

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9.3 For paragraph 9.1 (a), a trial FRMS implementation approval is deemed to include such an approval issued under *Civil Aviation Order 48.1 Instrument 2013* as in force immediately before the commencement of this CAO.

10 Expiry, suspension, revocation, surrender of FRMS implementation approval

10.1 An FRMS implementation approval stops having effect if:

(a) it expires, or it is suspended or revoked in writing by CASA; or

(b) the AOC holder tells CASA in writing that the holder wants to surrender the approval.

10.2 If the approval is revoked or surrendered, the AOC holder must return the approval instrument to CASA within 14 days.

10.3 CASA may revoke or suspend an approval if:

(a) the AOC holder does not comply with the requirements of this CAO for implementation or use of an FRMS; or

(b) CASA considers that continued implementation or use of the FRMS would adversely affect aviation safety; or

(c) the AOC holder refuses CASA reasonable access to any information or records produced under or for the FRMS which CASA requests in writing for the purpose of assessing the effectiveness and safety of the FRMS; or

(d) for a revocation only — CASA wishes to reissue the approval in a varied form.

10.4 To avoid doubt, in this clause, reference to an ***FRMS implementation approval*** means a trial or full FRMS implementation approval, and includes the approval as varied by CASA.

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Notes to Civil Aviation Order 48.1

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Act 1988, Civil Aviation Regulations 1988* and *Civil Aviation Safety Regulations 1998*) as shown in this compilation comprises *Civil Aviation Order 48.1 Instrument 2019* amended as indicated in the Tables below.

Table of Orders

Year and number	Date of registration on FRL	Date of commencement	Application, saving or transitional provisions
CAO 48.1 Instrument 2019	15 August 2019 (F2019L01070)	2 September 2019 (*see* s. 2)	
CAO 48.1 Amdt. Instrument 2019 (No. 1)	18 November 2019 (F2019L01473)	18 November 2019 (*see* s. 2)	
CAO 48.1 Amdt. Instrument 2020 (No. 1)	26 June 2020 (F2020L00805)	26 June 2020 (*see* s. 2)	
CAO 48.1 Amdt. Instrument 2021 (No. 1)	25 November 2021 (F2021L01610)	2 December 2021 (*see* s. 2)	

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
subs. 2	rep. *Legislation Act 2003*, s. 48D
subs. 3	rep. *Legislation Act 2003*, 48C
subs. 4	am. F2021L01610
subs. 5	am. F2019L01473, F2020L00805 rs. F2021L01610
subs. 5A	ad. F2019L01473
Sub. 5A.2	am. F2021L01610
subs. 5AB	ad. F2020L00805 rep. F2021L01610
subs. 6	am. F2020L00805, F2021L01610
subs. 10	am. F2021L01610
subs. 12	am. F2021L01610
subs. 16	am. F2021L01610
Appendix 1	am. F2021L01610
Appendix 2	am. F2021L01610
Appendix 3	am. F2021L01610
Appendix 4	am. F2021L01610
Appendix4A	am. F2021L01610
Appendix 4B	am. F2021L01610
Appendix 5	am. F2021L01610
Appendix 6	am. F2021L01610

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Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
Appendix 7	am. F2021L01610

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 82.0 Instrument 2014 as amended

made under paragraph 28BA (1) (b) and subsection 98 (4A) of the *Civil Aviation Act 1988*, subregulations 5 (1) and 209 (1) of the *Civil Aviation Regulations 1988* and subsection 33 (3) of the *Acts Interpretation Act 1901*.

This compilation was prepared on 2 December 2021 taking into account amendments up to *Civil Aviation Order (Flight Operations) Repeal and Amendment Instrument 2021 (No. 1)*. It is a compilation of *Civil Aviation Order 82.0 Instrument 2014* as amended and in force on 2 December 2021.

Prepared by the Advisory and Drafting Branch, Legal, International and Regulatory Affairs Division, Civil Aviation Safety Authority, Canberra.

Compilation No. 5

Civil Aviation Order 82.0 Instrument 2014

1A Name of instrument

(1) This instrument is the *Civil Aviation Order 82.0 Instrument 2014*.

(2) This instrument may be cited as *Civil Aviation Order 82.0*.

(3) A reference in an instrument to section 82.0 of the Civil Aviation Orders is a reference to this instrument.

1 Application

This Order applies to Air Operators' Certificates authorising the flying or operation of an aircraft for a purpose prescribed by regulation 206 of CAR and sets out conditions to which such certificates are subject for the purposes of paragraph 28BA (1) (b) of the Act.

2 Definitions

2.1 In this Part:

Act means the *Civil Aviation Act 1988*.

AFM means aircraft flight manual.

certificate means an Air Operator's Certificate issued by CASA under Division 2 of Part III of the Act.

GPS means Global Positioning System.

MTOW means maximum take-off weight.

3 Conditions relating to "borrowed" certificates

3.1 Each certificate authorising the operation of a glider for the purpose prescribed by paragraph 206 (c) of CAR is subject to the condition that its holder ("the AOC holder") must not, without the prior written approval of CASA, enter into an arrangement with a person whose certificate is suspended or cancelled ("the other person") under which the AOC holder agrees:

(a) to use, in any operation covered by the AOC holder's certificate, any aircraft that the other person was authorised to operate under the certificate that is suspended or cancelled; or

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(b) to use, in connection with any operation covered by the AOC holder's certificate, any person employed or engaged by, or otherwise working for, the other person in connection with any operation covered by the certificate that is suspended or cancelled; or

(c) to conduct any operation, or any part of an operation, that the other person intended to conduct under the certificate that is suspended or cancelled.

3.2 Each certificate authorising the operation of a glider for the purpose prescribed by paragraph 206 (c) of CAR is subject to the condition that its holder ("the AOC holder") must not, without the prior written approval of CASA, enter into an arrangement with a person whose certificate has been varied ("the other person"), under which the AOC holder agrees:

(a) to use, in any operation covered by the AOC holder's certificate, any aircraft that the other person:

(i) was, immediately before the variation, authorised to operate under the other person's certificate; but

(ii) is no longer authorised to operate under the certificate as varied; or

(b) to use, in connection with any operation covered by the AOC holder's certificate, any person employed or engaged by, or otherwise working for, the other person in connection with any operation that the other person:

(i) was, immediately before the variation, authorised to conduct under the other person's certificate; but

(ii) is no longer authorised to conduct under the certificate as varied; or

(c) to conduct any operation, or any part of an operation that the other person:

(i) intended to conduct under the other person's certificate as it had effect immediately before the variation; but

(ii) is no longer authorised to conduct under the certificate as varied.

3.3 Each certificate authorising the operation of a glider for the purpose prescribed by paragraph 206 (c) of CAR is subject to the condition that its holder ("the AOC holder") must not, without the prior written approval of CASA, enter into an arrangement with a person whose application for a certificate is still pending ("the other person") under which the AOC holder agrees:

(a) to use, in any operation covered by the AOC holder's certificate, any aircraft proposed to be covered by the certificate sought; or

(b) to use, in connection with any operation covered by the AOC holder's certificate, any person proposed to be employed or engaged by the other person in connection with any operation proposed to be covered by the certificate sought; or

(c) to conduct any operation, or any part of an operation, proposed to be covered by the certificate sought.

4 General AOC conditions — safety operational specifications

4.1 Each certificate is subject to the condition that CASA may, by notice in writing given to the certificate holder, issue safety operational specifications to be complied with by the certificate holder.

(a) the authorised area(s) of operations;

(b) the EDTO alternate aerodromes;

(c) the specific approved airframe/engine combinations;

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(d) the maximum EDTO for the applicable airframe/engine combinations;

(e) the maximum diversion time for the applicable airframe/engine combination;

(f) the approved OEI cruise speed for the applicable airframe/engine combination;

(g) for aeroplanes with more than 2 turbine engines — the approved AEO cruise speed for the applicable airframe/engine combination.

4.2 Each certificate is subject to the condition that, where CASA issues safety operational specifications to the certificate holder, the holder must publish the material in a separate section of the operations manual reserved solely for those specifications, and that material may not be varied without the approval of CASA.

4.3 Each certificate is subject to the condition that, where the certificate holder is unable to comply with the safety operational specifications so issued, the holder will cease operations under the certificate until the holder is able to comply with those specifications.

5 Chief Pilot

5.1 Where a Chief Pilot is required by Civil Aviation Order 82.1 (***CAO 82.1***) to be appointed by an operator, it is a condition of the operator's certificate that the operator will comply with the requirements of Appendix 1 of this section.

Note 1 From 2 December 2021, CAO 82.1 only applies to operators holding an AOC authorising operation of a glider for the purpose prescribed by paragraph 206 (c) of CAR, that is, commercial glider passenger-carrying operations.

Note 2 From 2 December 2021, operators holding an AOC authorising operation of an aircraft for the purpose prescribed by paragraph 206 (b) of CAR (commercial Part 137 aerial application operations) are not required to have their Chief Pilot comply with Appendix 1. The requirements relating to the head of flight operations for such an operator are in Part 137 of CASR. See regulation 137.065 of CASR.

6 Variation of conditions or obligations

6.1 A certificate holder may apply in writing to CASA for a variation in the conditions and obligations applicable to the certificate.

6.2 An application must be made in a form that provides details of the proposed variation.

11 Use of electronic flight bags (*EFB*)

11.1 If the pilot in command of an aircraft, operated under an AOC authorising operations for the purpose prescribed by paragraph 206 (b) of CAR, uses an EFB as a means of viewing or accessing authorised aeronautical information, the certificate authorising the operations is subject to the condition that the AOC holder must comply with, and ensure flight crew compliance with, the applicable requirements in Appendix 9.

11.2 For this subsection, ***EFB*** has the meaning given to it in Appendix 9.

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Appendix 1

Subsection 5

1 Approval of Chief Pilot by CASA

1.1 A person must not be appointed as, or act as, a Chief Pilot unless the person's appointment has been approved in writing by CASA after application in writing by the operator.

1.2 The application must include the following details in relation to the person:

(a) current licences, ratings and endorsements held;

(b) total flight time, total time as pilot in command and, where applicable, total instrument flight time and multi-engine aircraft experience;

(c) a comprehensive outline of flying history, including experience in commercial operations.

1.3 The appointment may be approved only if the person has:

(a) in the opinion of CASA, maintained a satisfactory record in the conduct or management of flying operations; and

(b) been assessed, by an examiner appointed by CASA, as suitable to carry out the responsibilities of a Chief Pilot; and

(c) passed an oral examination, conducted by an examiner appointed by CASA, covering the regulatory requirements for the safe conduct of commercial operations; and

(d) passed a flight planning, loading and performance examination, conducted by an examiner appointed by CASA, based on the operator's most complex aircraft; and

(e) if required by CASA — flown with a person nominated by CASA to demonstrate his or her suitability for appointment.

1.4 CASA must:

(a) give written notice of the approval, or refusal of approval, to the operator and to the person; and

(b) if CASA refuses to approve the appointment — include in the notice the reasons for the refusal.

1.5 An approval:

(a) relates only to the operator mentioned in the notice of approval; and

(b) may be subject to conditions mentioned in the notice of approval; and

(c) remains in force:

(i) for the period mentioned in the notice of approval; or

(ii) if no period is mentioned — while the person maintains a satisfactory standard of performance.

2 Responsibilities of Chief Pilot

2.1 The Chief Pilot for an operator is to have control of all flight crew training and operational matters affecting the safety of the flying operations of the operator.

2.2 The responsibilities of a Chief Pilot must, unless CASA otherwise specifies in writing, include the following responsibilities:

(a) ensuring that the operator's air operations are conducted in compliance with the Act, the *Civil Aviation Safety Regulations 1998*, the Manuals of Standards, the *Civil Aviation Regulations 1998* and the Civil Aviation Orders;

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(b) arranging flight crew rosters;

(c) maintaining a record of licences, ratings, and route qualifications held by each flight crew member, including:

(i) validity; and

(ii) recency; and

(iii) type endorsements and any applicable licence restrictions;

(d) maintaining a system to record flight crew duty and flight times to ensure compliance with duty and flight time limitations in accordance with Part 48 of the Orders;

(e) ensuring compliance with loading procedures specified for each aircraft type used by the operator and proper compilation of loading documents, including passenger and cargo manifests;

(f) monitoring operational standards, maintaining training records and supervising the training and checking of flight crew of the operator;

(g) conducting proficiency tests in the execution of emergency procedures and issuing certificates of proficiency as required by section 20.11;

(h) training flight crew in the acceptance and handling of dangerous goods as required by the *Civil Aviation Regulations 1988* or the Orders;

(i) maintaining a complete and up-to-date reference library of operational documents as required by CASA for the class of operations conducted;

(j) allocating appropriate aircraft.

3 Delegation by Chief Pilot

A Chief Pilot, in exercising any responsibility, may delegate duties to other members of the operator's staff, but may not delegate training and checking duties without the written approval of CASA.

4 Qualifications of Chief Pilot

4.2 Where the operator engages in operations under the instrument flight rules, the Chief Pilot must hold an instrument rating appropriate to the category and class of operations conducted by the operator.

4.3 Unless otherwise approved in writing by CASA, a Chief Pilot must hold a licence with the appropriate endorsements and ratings to permit him or her to act as pilot in command of all operations authorised by the operator's certificate.

6 Cancellation or suspension of approval

6.1 In spite of subclause 5.5, an approval may be cancelled or suspended at any time if, in the opinion of CASA, the performance of the Chief Pilot is no longer of an acceptable standard.

6.2 Where CASA cancels or suspends a person's appointment as a Chief Pilot CASA must:

(a) notify the person and the operator in writing of the cancellation or suspension; and

(b) provide the person and the operator with reasons for the cancellation or suspension.

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Appendix 9

Requirements to be met for the use of an EFB

1 Definitions

1.1 In this Appendix:

AFM means the aircraft flight manual for the aircraft to which the abbreviation refers.

aircraft means an aircraft operated under the AOC of the AOC holder mentioned in subclause 11.1 of this CAO.

Note Subclause 11.1 of this CAO is above, in the main body of the CAO, under the heading **Use of electronic flight bags (EFB)**.

aircraft-installed, for an EFB, means fitted to an aircraft:

(a) by the aircraft manufacturer in accordance with the type certificate, or supplemental type certificate, for the aircraft issued by the NAA of a recognised foreign country; or

(b) in accordance with a supplemental type certificate under Subpart 21E of CASR 1998; or

(c) in accordance with Subpart 21M of CASR 1998.

approved mount means a mount, approved in writing by CASA, which:

(a) does not require the use of tools for mounting the EFB or dismounting it; and

(b) whether or not the mount is holding the EFB, and whether or not a screen-protector is used, does not:

(i) obstruct the flight crew when entering or leaving the flight deck; or

(ii) affect the flight crew's physical or visual access to the operational controls and displays on the flight deck; or

(iii) affect the flight crew's external vision from the flight deck; or

(iv) if the EFB is connected to aircraft power or an external antenna — affect the operation of the aircraft or the safety of the flight crew; or

(v) present, including through cabling or other connectivity, a safety hazard to the flight crew at any time, including in an emergency.

authorised EFB custodian means a person who is authorised in writing by the HFO to have custody of an AOC holder's EFB.

backup EFB means an EFB that is:

(a) of at least the same class and functionality level as the permitted EFB of the most senior flight crew member to whom an EFB was issued (***designated EFB member***); and

(b) available to be used in the event of the failure or malfunction of the EFB of the designated EFB member.

Note The EFB issued to flight crew member, other than the designated EFB member, may be used as the backup EFB. Under subclause 3.7 of this Appendix, any requirements of this Appendix that apply to, or in relation to, a flight crew EFB, also apply to the backup EFB.

class means a Class 1 EFB or a Class 2 EFB.

Class 1 EFB means an EFB that is portable but not mounted.

Class 2 EFB means an EFB that is portable and mounted.

Note A Class 3 EFB means an EFB that is aircraft-installed. This Order does not deal with Class 3 EFB.

CAR 1988 means the *Civil Aviation Regulations 1988*.

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CASR 1998 means the *Civil Aviation Safety Regulations 1998*.

data means digital data primarily used for the operation of an aircraft, including aeronautical maps, charts, and any other written, numerical, diagrammatic or cartographic information or instructions.

EFB system means the hardware, the operating system, the loaded software and any antennae, connections and power sources, used for the operation of an EFB.

electronic flight bag, or ***EFB***, means the portable electronic device of an EFB system that satisfies all of the following requirements:

(a) it is not an instrument, equipment or navigation computer to which any of the following, as in force immediately before 2 December 2021, would have applied:
  (i) regulation 207 of CAR 1988;
  (ii) regulation 232A of CAR 1988;
  (iii) Civil Aviation Order 20.18;

(b) it provides, as a minimum, data storage, search, computational and display capabilities;

(c) it uses a screen which displays data in a size and form that is at least as easily read and used as it would be in a paper document for which the EFB would be a substitute;

(d) it is used primarily on the flight deck of an aircraft by the flight crew of the aircraft for the purpose of accessing and using data relevant to the operation of the aircraft.

flight crew EFB means the permitted EFB which the AOC holder must ensure each operating flight crew member has the exclusive use of on the flight deck of an aircraft.

Note See subclause 3.5 of this Appendix.

functionality level means 1 of the following functionality levels mentioned in subclause 1.3:

(a) functionality level 1;

(b) functionality level 2;

(c) functionality level 3;

(d) functionality level 4.

HFO, for an AOC holder, means the head of flying operations (however described).

mounted has the meaning given in paragraph (b) of the definition of ***portable***, and includes a mount that is:

(a) attached to the aircraft; or

(b) not attached to the aircraft but secured to a flight crew member, for example, a kneepad.

Note The mount for an EFB that is mounted to the aircraft structure requires airworthiness approval under Subpart 21.M of the CASR 1998.

operating flight crew member means a member of the minimum flight crew required for operation of an aircraft under its AFM.

portable, for an EFB, means designed by its manufacturer to be carried by hand, and carried by hand onto the flight deck of an aircraft by a flight crew member or an authorised EFB custodian, for use:

(a) without a mount; or

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(b) when mounted in the flight deck by a flight crew member on an approved mount.

recognised foreign country has the same meaning as in regulation 21.012 of CASR 1998.

1.2 In this Appendix:

(a) a reference to ***training*** is taken to include a reference to the contemporaneous assessment, by the trainer, of the person who has been trained; and

(b) a reference to carrying a portable EFB ***onto the flight deck of an aircraft*** includes carrying the EFB off the flight deck after use.

1.3 For the definition of ***functionality level***:

(a) ***functionality level 1*** means that the EFB:

(i) is used to view authorised aeronautical information, but without the functionality to change any of that data; and

(ii) may have a flight planning tool to facilitate the use of the data mentioned in subparagraph (i); and

(iii) may be 1 or more of the following:

(A) subject to subparagraph (iv) — held in the hand;

(B) mounted on an approved mount;

(C) attached to a stand-alone kneeboard secured to a flight crew member;

(D) connected to aircraft power for battery re-charging;

(E) connected to an installed antenna intended for use with the EFB for situational awareness but not navigation; and

(iv) unless secured in accordance with sub-subparagraph (iii) (B) or (C) — must be stowed:

(A) during take-off and landing; and

(B) during an instrument approach; and

(C) when the aircraft is flying at a height less than 1 000 feet above the terrain; and

(D) in turbulent conditions; and

(v) has no data connectivity with the avionics systems of the aircraft; and

(vi) may have wireless or other connectivity to receive or transmit information for EFB administrative control processes only; and

(b) ***functionality level 2*** means that the EFB:

(i) must have the functionality of functionality level 1; and

(ii) subject to subclause 1.4, has 1 or more software applications that use algorithms requiring manual input to satisfy operational requirements; and

(iii) has no data connectivity with the avionics systems of the aircraft; and

(iv) may have wireless or other connectivity to receive or transmit information for EFB administrative control processes only; and

Note Examples of "software applications that use algorithms requiring manual input to satisfy operational requirements" include weight and balance calculations, or performance calculations required by the aircraft's approved flight manual.

(c) ***functionality level 3*** means that the EFB has:

(i) the functionality of functionality levels 1 and 2; and

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(ii) 1 or more software applications that permit one-way only acceptance of data directly from the aircraft systems for use by the flight crew to satisfy operational requirements; and

(iii) data connectivity with the avionics systems of the aircraft:

(A) on a one-way, read-only basis; or

(B) to receive or transmit information for aircraft administrative control processes only; and

Note For example, the link may be via Wi-Fi and as a data link must have system security.

(d) ***functionality level 4*** means that the EFB has:

(i) the functionality of functionality levels 1, 2 and 3; and

(ii) 1 or more software applications that permit acceptance of data directly from the aircraft systems for direct input to the aircraft's flight management system to satisfy operational requirements; and

(iii) data connectivity with the avionics systems of the aircraft that:

(A) is secure; and

(B) does not have adverse effects on the avionic systems of the aircraft; and

(C) has High Intensity Radiated Fields and lightning protection; and

(D) is capable of being overridden by manual input in the event of an EFB malfunction or failure; and

(E) may receive or transmit information for aircraft administrative control processes.

Note This bi-directional link may be via wireless connectivity, for example, Wi-Fi, and system security must prevent external interference.

2 Software application validation

2.1 This clause applies for a software application (***SA***) of the kind mentioned in subparagraph (b) (ii) of the definition of ***functionality level 2*** in subclause 1.3 (including when functionality level 2 is adopted for functionality level 3 or functionality level 4).

2.2 Before first use of the SA, or after any updating of the SA, the AOC holder must:

(a) validate the output from the SA for the aircraft to ensure that it complies with the performance limitations set out in the AFM; and

(b) retain written evidence of the completion of this validation for the duration of the validation; and

(c) make the written evidence mentioned in paragraph (b) available to CASA on request.

2.3 If the SA is for use in weight and balance calculations for an aircraft, the suitability of the SA must be validated in writing by a weight control officer (within the meaning of Civil Aviation Order 100.7).

3 Permitted EFB

3.1 The AOC holder's operations manual (the ***operations manual***) must clearly identify the EFB which the holder permits a flight crew member to use (a ***permitted EFB***).

3.2 The identification of a permitted EFB in the operations manual must indicate its class and functionality level.

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3.3 An AOC holder may make an EFB a permitted EFB for an aircraft only if he or she has first demonstrated and documented that the EFB is suitable for:

(a) use in the aircraft for operational purposes, taking into account, for example, radiation, electromagnetic interference, and other electronic devices, instruments and equipment carried on, or installed in, the aircraft; and

(b) the operating conditions in which the EFB is to be used, including, for example, the expected ranges of temperature, humidity, lighting, turbulence and altitude.

3.4 The AOC holder must ensure that a flight crew member of an aircraft must not use an EFB other than a permitted EFB.

3.5 The AOC holder must issue each operating flight crew member with a permitted EFB for his or her exclusive use on the flight deck of an aircraft.

3.6 The AOC holder must ensure that, at the point of aircraft despatch, there is available on the flight deck and accessible to the pilot in command:

(a) a backup EFB capable of substituting, in all respects, for the EFB of the most senior flight crew member to whom an EFB was issued; or

Note See Definitions in subclause 1.1.

(b) paper versions of the authorised aeronautical information for the flight for which the EFB of the pilot in command was intended to be a substitute.

3.7 Any requirements of this Appendix that apply to, or in relation to, flight crew EFB, also apply to a backup EFB.

Note To avoid doubt, a backup EFB does not require a further backup EFB.

4 EFB Administrator

4.1 The AOC holder must designate a person to be his or her EFB Administrator.

4.2 The EFB Administrator must be a person who has undergone training in the use, management and administration of a permitted EFB, as specified in the operations manual.

4.3 The AOC holder must ensure that the EFB Administrator has the authority and responsibility to manage and administer, on behalf of the AOC holder and in accordance with any requirements set out in the operations manual, the obligations imposed on the AOC holder under this Appendix, including in relation to:

(a) the continuing accuracy of the identification, class and functionality level of the permitted EFB; and

(b) the currency, reliability and security of the permitted EFB and EFB system; and

(c) the validations required under clause 2 for a software application of the kind mentioned in subparagraph (b) (ii) of the definition of ***functionality level 2*** in subclause 1.3 (including when functionality level 2 is adopted for functionality level 3 or functionality level 4); and

(d) flight crew training for, and use of, a permitted EFB; and

(e) permitted EFB user obligations imposed on members of the flight crew by the operations manual; and

(f) human factors and flight deck resource management in relation to the use of a permitted EFB; and

(g) backup EFB; and

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(h) the validity of authorisations and certifications required for data link security for the permitted EFB system.

4.4 The EFB Administrator must be accountable to the AOC holder's HFO for:

(a) managing and administering flight crew use of a permitted EFB; and

(b) ensuring that the detailed operational procedures for the use of a permitted EFB are complied with.

4.5 To avoid doubt, the operations manual must set out relevant requirements for each of the matters mentioned in subclause 4.3.

5 EFB Administrator training

5.1 The AOC holder must establish, and set out in the operations manual:

(a) the nature, content and duration of the training that an EFB Administrator must have successfully completed before exercising responsibilities as the EFB Administrator; and

(b) the recurrent training that the EFB Administrator must complete while exercising those responsibilities.

5.2 The training and recurrent training must be:

(a) provided by a person approved in writing by the AOC holder; and

(b) specific for the functionality level and class of the permitted EFB.

5.3 The training and recurrent training must provide competency in the use, management and administration of a permitted EFB, including in the requirements and operational procedures set out in the operations manual and this Appendix.

6 Flight crew training

6.1 The AOC holder must establish, and set out in the operations manual, the nature, content and duration of the training that each flight crew member of an aircraft must have successfully completed before using a permitted EFB.

6.2 The training must be completed before a person may use the permitted EFB, and must include training in:

(a) the instructions and recommendations of the manufacturer of the permitted EFB as hardware; and

(b) the instructions and recommendations of the developer and installer of the permitted EFB's software; and

(c) the procedures to be followed if the permitted EFB carried on an aircraft fails or malfunctions during the operation of the aircraft.

6.3 If the pilot in command of an aircraft uses a permitted EFB as a means of viewing some of the authorised aeronautical information, the training in the use of the EFB must ensure continuing flight crew proficiency in the non-EFB documents used to complement EFB use.

6.4 The training must be provided by a person approved by the HFO, and be specific for the functionality level and class of the permitted EFB.

7 Certification of completion of EFB training

For clauses 5 and 6, the operations manual must require the AOC holder's HFO to certify in writing to the AOC holder that, for the following persons:

(a) the EFB Administrator;

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(b) each flight crew member of an aircraft under the AOC who may use the permitted EFB;

the HFO is satisfied that the person:

(c) has been trained and assessed in accordance with the operations manual; and

(d) is competent:

(i) for the EFB Administrator — to manage and administer, in accordance with the requirements set out in the operations manual and this Appendix, flight crew use of the permitted EFB; and

(ii) for a flight crew member — to use a permitted EFB, in accordance with the requirements set out in the operations manual and this Appendix.

8 Hardware integrity for aircraft-installed EFB

The AOC holder must establish, and set out in the operations manual, procedures which make it clear that the EFB Administrator is not responsible for the management and administration of the hardware of, and that is associated with, an aircraft-installed EFB.

9 Hardware integrity for EFBs

9.1 Without affecting clause 8, the AOC holder must establish, and set out in the operations manual, procedures to safely manage the hardware of, and accessories for, a permitted EFB, including:

(a) its removal, repair, replacement, re-installation and maintenance; and

(b) its storage when off the aircraft, and its stowage when on the aircraft and not mounted.

9.2 For subclause 9.1, ***hardware*** and ***accessories*** include the following:

(a) the electronic device constituting the hardware of the permitted EFB;

(b) any mount for the EFB;

(c) cables and antennae for the EFB;

(d) screen protectors for the EFB;

(e) batteries and other portable power sources for the EFB.

10 Data integrity for permitted EFBs

The AOC holder must establish, and set out in the operations manual, procedures for the following for a permitted EFB:

(a) the loading of software on to the EFB (including who may do this and how it is to be done);

(b) the entry of data into, and the verification of data in, the EFB (including who may do this and how it is to be done);

(c) ensuring that any data loaded on to the EFB is current and up-to-date for any time that it is used in an aircraft operation;

(d) protection of the EFB system, including protection of data in the EFB, and data links, from unauthorised use, electronic interference, corruption or viruses;

(e) ensuring the tracking of the EFB database expiry dates, and ensuring the accurate and reliable updating of data bases;

(f) flight crew error and defect reporting for the EFB;

(g) procedures to be followed if a permitted EFB wholly or partially fails or malfunctions during an aircraft operation;

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(h) testing of the EFB following:

(i) the loading or unloading of software; or

(ii) EFB hardware maintenance; or

(iii) the occurrence of a circumstance mentioned in paragraph (g).

11 Flight crew procedures

The AOC holder must establish for a permitted EFB, and set out in the operations manual, flight crew procedures for the following:

(a) who may use the EFB;

(b) when the EFB may be used and the purposes for which it may be used;

(c) how the EFB is to be used;

Note As defined above, EFB means both the hardware and the software of the device.

(d) if there are 2 or more sources on board the aircraft for the same operational data, one of which is the permitted EFB of the flight crew — establishing the order of precedence for the use of the sources;

(e) the cross-checks to be carried out by each flight crew member to verify EFB data before it is relied upon, in particular safety-critical EFB data;

(f) how the following are to be avoided or minimised in the use of the EFB:

(i) flight crew member error;

(ii) flight crew member overload;

(g) the power sources to be used for the EFB;

(h) the backup data, data sources and power sources to be carried on board an aircraft for the contingency of an EFB or EFB power-source failure.

12 Maintenance control for EFB

12.1 The AOC holder must ensure that the hardware of a permitted EFB and an EFB system is maintained in accordance with this clause.

12.2 The AOC holder must establish, and set out in an appropriate document (for example, a maintenance control manual), detailed operational procedures for the maintenance control of a permitted EFB and EFB system.

12.3 The procedures must ensure that only the original manufacturer of the permitted EFB, or a person approved in writing by the original manufacturer, may maintain the hardware of a permitted EFB.

12.4 The procedures must ensure that only the original manufacturer of the permitted EFB, or a person approved in writing by the original manufacturer, may modify the operating system of the permitted EFB.

12.5 The procedures must ensure that only the original producer of a software application loaded on to a permitted EFB, or a person approved in writing by the original producer, may modify that software application for use on the EFB.

13 Safety paramount

13.1 The procedures to be included in the operations manual, and the appropriate document mentioned in subclause 12.2, in relation to EFBs must be designed to achieve the highest practicable level of safety in the use of the permitted EFB.

13.2 The AOC holder must ensure that each member of the holder's personnel who has obligations under the operations manual in relation to the permitted EFB or EFB system complies with those obligations.

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Notes to Civil Aviation Order 82.0

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Act 1988,* the *Civil Aviation Regulations 1988* and the *Acts Interpretation Act 1901*) as shown in this compilation comprises Civil Aviation Order 82.0 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 82.0 Instrument 2014	12 December 2014 (F2014L01689)	12 December 2014 (s. 2)	—
CAO 82.0 2014 (No. 3)	22 December 2014 (F2014L01793)	23 December 2014 (s. 2)	—
CAO 82.0 2014 (No. 1)	12 December 2014 (F2014L01693)	1 January 2015 (s. 2)	See Table A
CAO 82.0 2014 (No. 2)	19 December 2014 (F2014L01763)	S. 2A: 19 December 2014. Remainder: 1 January 2015 (2. 2B)	See Table A, Table B and Table C
CAO 82.0 2015 (No. 1)	27 February 2015 (F2015L00226)	28 February 2015	—
CAO 82.0 (No. 1) 2018	11 October 2018 (F2018L01415)	8 November 2018	—
CAO Amdt Instrument 2021 (No. 1)	1 December 2021 (F2021L01680)	2 December 2021	—

Table of Amendments

ad. = added or inserted am. = amended rep.= repealed rs. = repealed and substituted

Provision affected	How affected
subs. 1B	rep. LA s. 48D
subs. 1C	rep. LA s. 48C
subs. 1D	am. CAO 82.0 2015 No. 1
	rep. F2021L01680
subs. 1	am. F2021L01680
subs. 2	am. CAO 82.0 2014 No. 3; CAO 82.0 2014 No. 2, CAO 82.0 2015 No. 1; CAO 82.0 (No. 1) 2018, F2021L01680
subs. 3	am. F2021L01680
subs. 3A	rs. CAO 82.0 2014 No. 3
	am. CAO 82.0 (No. 1) 2018
	rep. F2021L01680
subs. 3B	am. CAO 82.0 2014 No. 2
	rep. F2021L01680
subs. 3BA	am. CAO 82.0 2014 No. 2
	rep. F2021L01680
subs. 3BB	am. CAO 82.0 2014 No. 2
	rep. F2021L01680
subs. 3BC	am. CAO 82.0 2014 No. 2
	rep. F2021L01680
subs. 3BD	rep. F2021L01680
subs. 3C	rep. F2021L01680

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Table of Amendments

ad. = added or inserted am. = amended rep.= repealed rs. = repealed and substituted

Provision affected	How affected
subs. 3D	rep. F2021L01680
subs. 3E	rep. F2021L01680
subs. 4	am. CAO 82.0 2014 No. 2, F2021L01680
sub. 5	am. F2021L01680
subs. 7	am. CAO 82.0 2014 No. 2
	rep. F2021L01680
subs. 8	rep. F2021L01680
subs. 8A	rep. F2021L01680
subs. 8B	rep. F2021L01680
subs. 8C	rep. F2021L01680
subs. 9	rep. F2021L01680
subs. 10	rep. F2021L01680
sub. 11	am. F2021L01680
Appendix 1	am. F2021L01680
Appendix 2	rep. F2021L01680
Appendix 3	am. CAO 82.0 2014 No. 2
	rep. F2021L01680
Appendix 4	am. CAO 82.0 2014 No. 2
	rep. F2021L01680
Appendix 5	am. CAO 82.0 2014 No. 2
	rep. F2021L01680
Appendix 6	rep. F2021L01680
Appendix 7	am. CAO 82.0 2014 No. 2
	rep. F2021L01680
Appendix 8	rep. F2021L01680
Appendix 8B	rep. F2021L01680
Appendix 8C	rep. F2021L01680
Appendix 9	am. F2021L01680

Table A

Civil Aviation Order 82.1 Amendment Instrument 2014 (No. 1) (***CAO No. 1***) was registered on 12 December 2014 to commence on 1 January 2015. *Civil Aviation Order 82.1 Amendment Instrument 2014 (No. 2)* was registered on 19 December 2014 to commence on 1 January 2015, except that section 2A commenced on 19 December 2014. Section 2A repealed CAO No. 1. Therefore, CAO No. 1 never commenced.

Table B

1. *Civil Aviation Order 82.1 Amendment Instrument 2014 (No. 2)* (***CAO No. 2***) commenced on 1 January 2015. The application of the amendments in CAO No. 2 is qualified by section 3, Transitional application — aeroplanes with more than 2 engines, of CAO No. 2 (see Table C).

2. CAO No. 2 commenced on 1 January 2015. Amendment number 7 in Schedule 1 of CAO No. 2 omitted "90 minutes" and inserted "60 minutes" into the definition of ***threshold time*** in sub-subparagraph 2.1 (a) (i). However, under section 4, Transitional application of new definition — ***threshold time***, of CAO No. 2, amendment number 7 does not apply until 1 July 2015.

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3. CAO No. 2 commenced on 1 January 2015. Amendment number 19 in Schedule 1 of CAO No. 2 repealed paragraphs 3BC.5 to 3BC.8. Under section 5, Transitional application — omission of paragraphs 3BC.5 to 3BC.8, of CAO No. 2, amendment number 19 does not apply until 1 July 2015.

Table C Application, saving or transitional provisions

Sections 3, 4 and 5 of Civil Aviation Order 82.0 Amendment Instrument 2014 (No. 2) read as follows:

3 Transitional application — aeroplanes with more than 2 engines

The amendments to Civil Aviation Order 82.0 in Schedule 1 of this instrument, other than the amendments to subsections 3B and 3BA, do not apply to an Air Operator's Certificate authorising the operation of an aeroplane with more than 2 engines until 1 July 2015.

Note *Civil Aviation Order 82.0 Amendment Order (No. 3) 2007* (the ***2007 amendment***) first created rules for EDTO. Under section 5 of the 2007 amendment, apart from subsections 3B and 3BA, the new EDTO rules do not apply to aeroplanes with more than 2 engines until 1 July 2015. Similarly, the amendments in Schedule 1 of *Civil Aviation Order 82.0 Amendment Instrument 2014 (No. 2)* do not apply to aeroplanes with more than 2 engines until 1 July 2015, except for the amendments to subsections 3B and 3BA, which apply to all aeroplanes on 1 January 2015. On 1 July 2015, when provisions as now amended take effect for aeroplanes with more than 2 engines, they will only apply to passenger-carrying operations in such aeroplanes — see paragraph 3BC.4 created by amendment number 20 of Schedule 1.

4 Transitional application of new definition — *threshold time*

Amendment number 7 in Schedule 1 of this instrument does not apply until 1 July 2015.

Note By virtue of amendment number 7 in Schedule 1, for a twin engine aeroplane certificated to carry more than 19 passengers, or having a maximum payload capacity exceeding 3 410 kg, the threshold time is to be reduced from 90 minutes to 60 minutes. However, amendment number 7 in Schedule 1, which makes this reduction, does not take effect until 6 months after commencement of this instrument, namely, 1 July 2015.

5 Transitional application — omission of paragraphs 3BC.5 to 3BC.8

Amendment number 19 in Schedule 1 of this instrument does not apply until 1 July 2015.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 82.1 (as amended)

made under paragraph 28BA (1) (b) and subsection 98 (4A) of the *Civil Aviation Act 1988.*

This compilation was prepared on 2 December 2021 taking into account amendments up to *Civil Aviation Order (Flight Operations) Repeal and Amendment Instrument 2021 (No. 1)*. It is a compilation of Civil Aviation Order 82.1 (Conditions on Air Operators' Certificates authorising commercial glider passenger operations) as amended and in force on 2 December 2021.

Prepared by the Advisory and Drafting Branch, Legal, International and Regulatory Affairs Division, Civil Aviation Safety Authority, Canberra.

Compilation No. 14.

Contents

Section 82.1 (Conditions on Air Operators' Certificates authorising commercial glider passenger operations)

Section 82.1

Conditions on Air Operators' Certificates authorising commercial glider passenger operations

1 Application of conditions

1.1 This section applies to certificates authorising the operation of a glider for the purpose prescribed by paragraph 206 (c) of CAR.

1.2 For the purposes of paragraph 28BA (1) (b) of the Act, each certificate authorising the operation of a glider for the purpose prescribed by paragraph 206 (c) of CAR is subject to the condition that the obligations set out in this section are complied with.

1.3 The condition and obligations set out in this section are in addition to the conditions set out in section 82.0.

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1A Definition

1A.1 In this section:

approved loading system means a system prepared by an operator in accordance with the requirements of Civil Aviation Order 100.7, and approved by CASA or the holder of an appropriate and valid Weight Control Authority for ensuring that an aircraft is loaded within approved limits at all times during flight.

2 Obligations in relation to organisation and facilities

2.1 Each operator must provide sufficient qualified personnel to operate the services proposed by the operator.

2.2 Each operator must establish a position of Chief Pilot and appoint a person to that position.

2.3 CASA may, having regard to the size of the organisation or the nature and scope of services of an operator:

(a) require the operator to provide additional supervisory positions; or

(b) approve the allocation of the duties and responsibilities associated with more than 1 position to 1 person.

2.4 Each operator must provide and maintain facilities and documentation sufficient to enable the operator to conduct services with safety and in compliance with Appendix 1. The scale of the facilities and documentation required of each operator may vary according to the size and scope of the operation.

2.4A Each operator must provide an operations manual for the use and guidance of the operations personnel of the operator.

Note Before 2 December 2021, this requirement was in subregulation 215 (1) of CAR.

2.4B Each operator must ensure that the operations manual contains such information, procedures and instructions with respect to the flight operations of all types of aircraft operated by the operator as are necessary to ensure the safe conduct of the flight operations (other than information, procedures or instructions that are set out in other documents required to be carried in the aircraft under CAR and CASR).

Note Before 2 December 2021, this requirement was in subregulation 215 (2) of CAR.

2.4C Each operator must revise the operations manual from time to time where necessary as the result of changes in the operator's operations, aircraft or equipment, or in the light of experience.

Note Before 2 December 2021, this requirement was in subregulation 215 (5) of CAR.

2.4D Each operator must ensure that all amendments to the operations manual are incorporated in all copies of the operations manual kept within the operator's organisation and that copies of those amendments are forwarded to all persons to whom copies of the operations manual have been provided in accordance with paragraph 2.5.

Note Before 2 December 2021, this requirement was in subregulation 215 (8) of CAR.

2.4E For regulation 11.245 of CASR, each member of the operations personnel of the operator must comply with all instructions contained in the operations manual insofar as they relate to the member's duties or activities.

Note Before 2 December 2021, this requirement was in subregulation 215 (9) of CAR.

2.4F The direction in paragraph 2.4E ceases to be in force at the end of 1 December 2031.

2.5 Each operator must include in the operator's operations manual so much of the information set out in CASA's publication 'Guide to the preparation of Operations

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Manuals' that is relevant to the operator's operations and must provide copies of the manual to all operating crew members employed by the operator.

2A Loading

2A.1 Where an aircraft has an approved loading system, the operator and the pilot in command must ensure that the aircraft is loaded at all times in accordance with that system.

Note 1 Before 2 December 2021, this requirement was in subsection 3 of Civil Aviation Order 20.16.1.

Note 2 Civil Aviation Order 100.7 requires all aircraft, except balloons, to have a loading system unless it can be shown that the aircraft cannot possibly be loaded so that its centre of the gravity falls outside the approved range, observing all limitations on compartment loads.

Note 3 Some acceptable types of loading systems are given in the CASA publication titled *Weight Control of Aircraft*. Where the necessary limitations can be presented in placard form, such placards prominently displayed in the aircraft may be an acceptable type of loading system.

2A.2 When passengers are carried, the operator or the operator's representative must compile a passenger list and leave it for retention at the aerodrome of departure. The list must contain the aircraft registration, the names of passengers carried, the date and estimated time of departure, and the places of embarkation and destination.

Note Before 2 December 2021, this requirement was in subsection 7 of Civil Aviation Order 20.16.1.

6 Obligations in relation to operating different aircraft models

6.1 This subsection applies to each operator who holds a certificate authorising operations in an aircraft identified in the certificate by:

(a) manufacturer and type only; or

(b) aircraft class only.

6.2 The operator must ensure that:

(a) the operations manual contains current and appropriate operating information, procedures and instructions (the ***specific instructions***) for each aircraft type and model operated; and

(b) before a pilot operates an aircraft, the chief pilot is satisfied that the pilot:

(i) is competent to operate the aircraft in accordance with the specific instructions for the aircraft type and model; and

(ii) understands the differences in each model of the aircraft type operated by the operator; and

(c) the operations manual, the maintenance control manual or other airworthiness control document contains appropriate maintenance control instructions for each aircraft type and model operated.

6.3 A current pilot operating handbook (***POH***) or aircraft flight manual (***AFM***) for the aircraft type and model when attached to the operations manual is taken to contain the specific instructions.

6.4 However, if the specific instructions in the POH or AFM do not contain instructions to ensure compliance with the Australian legislative requirements for operations of the aircraft type and model, these instructions must be stated in the operations manual.

6.5 In this subsection:

appropriate means sufficiently detailed to enable the safe operation of the aircraft type and model in accordance with the Australian legislative requirements.

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Australian legislative requirements means the requirements of the Civil Aviation Regulations 1988, the Civil Aviation Safety Regulations 1998 and the Civil Aviation Orders.

7 Obligations in relation to AOC Holder's Safety Questionnaire

7.1 CASA may in writing or by electronic means or by facsimile ask an AOC holder to complete an AOC Holder's Safety Questionnaire (***AHSQ***) by accurately answering all questions in the AHSQ.

7.2 Each AOC holder must:

(a) comply with the request; and

(b) ensure that the AHSQ is completed and submitted not later than 28 days after being asked by CASA.

7.3 An AOC holder may before the end of the 28 day period apply in writing to CASA for an extension.

7.4 CASA may grant the extension subject to conditions.

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Appendix 1

Paragraph 2.4

Facilities and documentation

1 Facilities

1.1 Each operator must provide and maintain at least the following facilities:

(a) an operating headquarters through which CASA may communicate with the person or persons responsible for any aspect of the operations conducted under the terms of the operator's certificate;

(b) buildings, at each place where operating crew are based, of adequate size and suitable for the conduct of the operator's operations.

2 Documentation

2.1 Each operator must provide a reference library of operational documents which is readily available to all operating crews and which includes:

(a) a copy of the Act, the *Civil Aviation Regulations 1988*, the *Civil Aviation Safety Regulations 1998* and those Parts of the Civil Aviation Orders and Manuals of Standards that apply to the operator's operations; and

(b) those parts of the Aeronautical Information Publications that are relevant to the class of operations conducted by the operator; and

(c) an operations manual; and

(d) if the carriage of dangerous goods is intended — a dangerous goods manual or an operations manual supplement.

2.2 Each operator who distributes operational documents to flight crews and other operating staff must maintain records of that distribution and must provide an amendment system for such documents.

2.3 Each operator must maintain:

(a) up-to-date records showing the recent experience status of each flight crew member and the currency of licences, ratings and endorsements held by each member; and

(b) up-to-date records showing the flight time and duty time achieved by each flight crew member during the immediately preceding 7 consecutive days, 30 consecutive days and 365 days and during each fortnight standing alone for the preceding 12 months.

2.4 Each operator must maintain a training file in respect of each flight crew member, recording at least:

(a) each ground training course completed or attempted, including the results for each phase or subject and the final assessment of the standard achieved; and

(b) each endorsement training course completed or attempted, including the results of each phase of training, the number of times each exercise was undertaken and the results of each test or check; and

(c) each flight or simulator proficiency check completed or attempted, including the results of each phase of training, the number of times each exercise was undertaken and the results of each check; and

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(d) each period of training, other than training referred to in paragraph (a), (b) or (c), undertaken in an aircraft or simulator, including the exercises completed or attempted, and an assessment of the standard achieved.

2.5 Each operator must provide the following documentation:

(a) copies of expired maintenance releases and approved trip records for all aircraft covering the immediately preceding 12 months of operation, where applicable;

(c) copies of passenger lists as required by paragraph 2A.2 for the immediately preceding 3 months of operations;

(g) for a leased aircraft — details of the lease conditions to enable CASA to:

(i) assess the arrangements for operational control of the aircraft; and

(ii) assess the arrangements for the maintenance of the aircraft; and

(iii) ensure that the aircraft meets airworthiness requirements.

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Notes to Civil Aviation Order 82.1

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Act 1988*) as shown in this compilation comprises Civil Aviation Order 82.1 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R53	23 December 2004	23 December 2004 (*see* s. 2)	
CAO 2005 No. 1	FRLI 27 January 2005	28 January 2005 (*see* s. 1)	
CAO 2005 No. 3	FRLI 18 March 2005	19 March 2005 (*see* s. 1)	
CAO 82.1 2005 No. 1	FRLI 25 July 2005	26 July 2005 (*see* s. 2)	
CAO 82.1 2006 No. 2	FRLI 6 January 2006	7 January 2006 (*see* s. 2)	
CAO 82.1 2006 No. 3	FRLI 25 May 2006	26 May 2006 (*see* s. 2)	
CAO 82.1 2007 No. 1	FRLI 18 June 2007	19 June 2007 (*see* s. 2)	
CAO 82.1 2007 No. 2	FRLI 30 October 2007	31 October 2007 (*see* s. 2)	
CAO 82.1 2009 No. 1	FRLI 5 March 2009	6 March 2009 (*see* s. 2)	
CAO 82.1 2009 No. 2	FRLI 22 December 2009	23 December 2009 (*see* s. 2)	
CAO 82.1 2010 No. 1	FRLI 12 April 2010	13 April 2010 (*see* s. 2)	
CAO 82.1 2011 No. 1	FRLI 13 January 2012	14 January 2012 (*see* s. 2)	
CAO 82.1 2014 No. 1	FRLI 21 May 2014	22 May 2014 (*see* s. 2)	
Civil Aviation Legislation Amdt & Repeal (ATSOs) Instrument 2017	FRL 30 November 2017 (F2017L01553)	30 November 2017 (*see* s. 2)	
Civil Aviation Order (Flight Operations) Repeal and Amendment Instrument 2021 (No. 1)	FRL 1 December 2021 (F2021L01680)	2 December 2021 (*see* s. 2)	

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Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 82.1	rs. CAO 2004 No. R53
CAO title	am. F2021L01680
subs. 1	am. F2021L01680
subs. 1A	ad. F2021L01680
subs. 2	am. F2021L01680
subs. 2A	ad. F2021L01680
subs. 3	rep. F2021L01680
subs. 4	rep. F2021L01680
subs. 5	am. CAO 2005 No. 1; CAO 2005 No. 3; CAO 82.1 2007 No. 1; CAO 82.1 2009 No. 1; CAO 82.1 2011 No. 1 rep. F2021L01680
subs. 6	ad. CAO 82.1 2005 No. 1 am. F2021L01680
subs. 7	ad. CAO 82.1 2007 No. 2
Appendix 1	am. CAO 82.1 2010 No. 1, F2021L01680
Appendix 2	am. CAO 82.1 2006 No. 2; CAO 82.1 2006 No. 3 rep. F2021L01680
Appendix 3	ad. CAO 82.1 2009 No. 1 am. CAO 82.1 2009 No. 2; CAO 82.1 2011 No. 1; CAO 82.1 2014 No. 1; F2017L01553 rep. F2021L01680
Appendix 3A	ad. CAO 82.1 2011 No. 1 rep. F2021L01680
Appendix 4	ad. CAO 82.1 2009 No. 1 rs. CAO 82.1 2009 No. 2 am. CAO 82.1 2011 No. 1; F2017L01553 rep. F2021L01680

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 82.7 – Air Operators' Certificates authorising commercial balloon licence or rating training (as amended)

made under paragraph 28BA (1) (b) of the *Civil Aviation Act 1988*.

This compilation was prepared on 2 December 2021 taking into account amendments up to *Civil Aviation Order (Flight Operations) Repeal and Amendment Instrument 2021 (No. 1)*. It is a compilation of Civil Aviation Order 82.7 – Air Operators' Certificates authorising commercial balloon licence or rating training as amended and in force on 2 December 2021.

Prepared by the Advisory and Drafting Branch, Legal, International and Regulatory Affairs Division, Civil Aviation Safety Authority, Canberra.

Compilation No. 3

Contents

Section 82.7

Air Operators' Certificates authorising commercial balloon licence or rating training

1 Application

1.1 This section applies to Air Operators' Certificates authorising the flying or operation of an aircraft for the purpose prescribed by paragraph 206 (a) of CAR and sets out the conditions to which such certificates are subject for the purposes of paragraph 28BA (1) (b) of the Act.

2 Interpretation

2.1 In this section:

certificate means an Air Operator's Certificate issued by CASA under Division 2 of Part III of the Act.

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flight crew member, in relation to balloons, means a licensed crew member employed by an operator to carry out duties essential to the operation of a balloon during free flight time or tethered flight time and any reference to 'flight crew' has the same meaning.

Note This term has a meaning in this section that is different to the meaning of the term given by the Dictionary of CASR.

operational support crew means persons employed by an operator to carry out duties associated with loading, launching or retrieving balloons.

passenger means a person who is not a flight crew member.

Note This term has a meaning in this section that is different to the meaning of the term given by the Dictionary of CASR.

4 Conditions

4.1 Each certificate is subject to the condition that CASA may, by notice in writing given to the certificate holder, issue safety operational specifications to be complied with by the certificate holder.

4.2 Each certificate is subject to the condition that, where CASA issues safety operational specifications to the certificate holder, the holder must publish the material in a separate section of the operations manual reserved solely for those specifications, and that material may not be varied without the approval of CASA.

4.3 Each certificate is subject to the condition that, where the certificate holder is unable to comply with the safety operational specifications so issued, the holder will cease operations under the certificate until the holder is able to comply with those specifications.

4.5 Each certificate is subject to the condition that the obligations set out in subsection 5 are complied with.

5 Obligations in relation to organisation and facilities

5.1 Each operator must provide sufficient qualified personnel to operate the services proposed by the operator.

5.2 Each operator must establish a position of Chief Pilot and, subject to subsection 6, must appoint a person to that position.

5.3 CASA may, having regard to the size of the organisation or the nature and scope of services of an operator:

(a) require the operator to provide additional supervisory positions; or

(b) approve the allocation of the duties and responsibilities associated with more than 1 position to 1 person.

5.4 Each operator must provide and maintain facilities and documentation sufficient to enable the operator to conduct services with safety and in compliance with Appendix 1.

5.5 For the purposes of paragraph 5.4, the scale of the facilities and documentation required of each operator may vary according to the size and scope of the operation.

5.5A Each operator must provide an operations manual for the use and guidance of the operations personnel of the operator.

Note Before 2 December 2021, this requirement was in subregulation 215 (1) of CAR.

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5.5B Each operator must ensure that the operations manual contains such information, procedures and instructions with respect to the flight operations of all types of aircraft operated by the operator as are necessary to ensure the safe conduct of the flight operations (other than information, procedures or instructions that are set out in other documents required to be carried in the aircraft under CAR and CASR).

Note Before 2 December 2021, this requirement was in subregulation 215 (2) of CAR.

5.5C Each operator must revise the operations manual from time to time where necessary as the result of changes in the operator's operations, aircraft or equipment, or in the light of experience.

Note Before 2 December 2021, this requirement was in subregulation 215 (5) of CAR.

5.5D Each operator must ensure that all amendments to the operations manual are incorporated in all copies of the operations manual kept within the operator's organisation and that copies of those amendments are forwarded to all persons to whom copies of the operations manual have been provided in accordance with paragraph 5.6.

Note Before 2 December 2021, this requirement was in subregulation 215 (8) of CAR.

5.5E For regulation 11.245 of CASR, each member of the operations personnel of the operator must comply with all instructions contained in the operations manual insofar as they relate to the member's duties or activities.

Note Before 2 December 2021, this requirement was in subregulation 215 (9) of CAR.

5.5F The direction in paragraph 5.5E ceases to be in force at the end of 1 December 2031.

5.6 Each operator must include in the operator's operations manual as much of the information set out in CASA's publication 'Guide to the preparation of Operations Manuals' as is relevant to the operator's operations and must provide copies of the manual to all flight crew and operational support crew employed by the operator.

6 Chief Pilot

6.1 Each certificate is subject to the condition that the requirements set out in Appendix 2 are complied with.

7 Obligations in relation to AOC Holder's Safety Questionnaire

7.1 CASA may in writing or by electronic means or by facsimile ask an AOC holder to complete an AOC Holder's Safety Questionnaire (***AHSQ***) by accurately answering all questions in the AHSQ.

7.2 Each AOC holder must:

(a) comply with the request; and

(b) ensure that the AHSQ is completed and submitted not later than 28 days after being asked by CASA.

7.3 An AOC holder may before the end of the 28 day period apply in writing to CASA for an extension.

7.4 CASA may grant the extension subject to conditions.

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Appendix 1

Paragraph 5.4

Facilities and documentation

1 Facilities

1.1 Each operator must provide and maintain an operating headquarters through which CASA may communicate with the person or persons responsible for any aspect of the operations conducted under the terms of the operator's certificate.

2 Documentation

2.1 Each operator must provide a reference library of operational documents which is readily available to all flight crew members and operational support crew and which includes:

(a) a copy of the Act, the *Civil Aviation Regulations 1988*, the *Civil Aviation Safety Regulations 1998* and those Parts of the Civil Aviation Orders and Manuals of Standards that apply to the operator's operations; and

(b) those parts of the Aeronautical Information Publications that are relevant to the operations conducted by the operator; and

(c) an operations manual.

2.2 Each operator who distributes operational documents to flight crew and operational support crew must maintain records of that distribution and must provide an amendment system for those documents.

2.3 Each operator must maintain up-to-date records showing the recent experience status of each flight crew member and the currency of licences, ratings and endorsements held by each member.

2.4 Each operator must maintain a training file in respect of each flight crew member, recording at least:

(a) each endorsement training course completed or attempted, including the results of each phase of training, the number of times each exercise was undertaken and the results of each test or check; and

(b) each flight proficiency check completed or attempted, including the results of each phase of training, the number of times each exercise was undertaken and the results of each test or check; and

(c) each period of training, other than training referred to in paragraph (a) or (b), undertaken in a balloon, including the exercises completed or attempted, and an assessment of the standard achieved.

2.5 Each operator must maintain the following documentation:

(a) copies of approved trip records for each balloon covering the immediately preceding 12 months of operations, where applicable;

(c) a catalogue of authorised areas for the launching of a balloon and areas where balloon operations are frequently conducted showing, in diagrammatic form, location by co-ordinates or in reference to prominent geographic features, elevation above sea level, hazards in the area, any restrictions or specific conditions relating to the use of particular areas, and the method of contacting the owner or controlling authority.

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Appendix 2

Subsection 6

1 Approval of Chief Pilot by CASA

1.1 A person must not be appointed as, or to act as, a Chief Pilot unless the person's appointment has been approved in writing by CASA after application in writing by the operator.

1.2 The application must include the following details in relation to the person:

(a) current licences, ratings and endorsements held;

(b) total flight time and total time as pilot in command;

(c) a comprehensive outline of flying history, including experience in aerial work, and charter, operations in balloons.

1.3 A person will not be approved as a Chief Pilot unless:

(a) in the opinion of CASA, he or she has maintained a satisfactory record in the conduct or management of flying operations; and

(b) before being approved as a Chief Pilot, the person has:

(i) been assessed, by CASA, as suitable to carry out the responsibilities of a Chief Pilot; and

(ii) passed an oral examination conducted by such an examiner covering the regulatory requirements for the safe conduct of aerial work operations and charter operations.

1.4 In addition to the requirements specified in clause 1.3, a person proposed for appointment as Chief Pilot may be required to fly with a person nominated by CASA to demonstrate his or her suitability for appointment.

1.5 CASA must give written notice of an approval, or refusal of an approval, for a person to be appointed as, or to act as, a Chief Pilot to the operator and to the person and must, where a proposed appointment is rejected, include in the notice the reasons for the rejection.

1.6 An approval may be given subject to conditions specified in the notice of approval.

1.7 An approval remains in force for such period (if any) as CASA specifies in the notice of approval.

1.8 If a period for which an approval is to remain in force is not specified in the notice of approval, the approval remains in force subject only to the approved person maintaining a satisfactory standard of performance.

1.9 An approval relates only to the operator specified in the notice of approval.

2 Cancellation or suspension of approval

2.1 In spite of clause 1.7, an approval may be cancelled or suspended at any time if, in the opinion of CASA, the performance of the Chief Pilot is no longer of a satisfactory standard.

2.2 Where CASA cancels or suspends a person's appointment as a Chief Pilot CASA must:

(a) notify the person and the operator in writing of the cancellation or suspension; and

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(b) provide the person and the operator with reasons for the cancellation or suspension.

3 Responsibilities of Chief Pilot

3.1 The Chief Pilot is to have control of all flight crew training and operational matters affecting the safety of the flying operations of the operator.

3.2 The responsibilities of a Chief Pilot must, unless CASA otherwise specifies in writing, include the following responsibilities:

(a) ensuring that the operator's flying operations are conducted in compliance with the Act, the *Civil Aviation Regulations 1988*, the *Civil Aviation Safety Regulations 1998*, the Civil Aviation Orders and the Manuals of Standards;

(b) arranging flight crew rosters;

(ba) ensuring that all flight crew members are competent to fly the class and type of balloon that they are rostered to fly under the AOC, whether as pilot in command (PIC) or as pilot in command under supervision (PICUS);

(c) maintaining a record of licences, ratings and group endorsements, held by each flight crew member, including:

(i) validity; and

(ii) recency; and

(iii) applicable licence restrictions;

(d) ensuring that a flight crew member does not fly a balloon if he or she suffers from fatigue, illness or injury, the effects of which are likely to interfere with the safe exercise of the person's duties as a flight crew member of a balloon;

(e) ensuring compliance with loading procedures specified for each balloon used by the operator and proper compilation of loading documents, including passenger manifests;

(f) monitoring operational standards, maintaining training records and supervising the training and checking of flight crew;

(g) conducting proficiency tests in the execution of emergency procedures;

(h) maintaining a complete and up-to-date reference library of operational documents, as required by CASA for balloon flying operations;

(j) allocating balloons;

(k) ensuring that each flight crew member, before beginning a flight, has studied all available information appropriate to the intended flight.

4 Delegation by Chief Pilot

4.1 A Chief Pilot, in exercising any responsibility, may delegate duties to other members of the operator's staff.

5 Qualifications of Chief Pilot

5.1 Unless otherwise approved in writing by CASA, a Chief Pilot must hold a licence with the appropriate endorsements and ratings to permit the Chief Pilot to act as pilot in command of all operations authorised by the operator's certificate.

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5.2 Subject to clause 6, a Chief Pilot must, unless CASA approves otherwise in writing, meet the requirements set out in subclause 5.4 and Table 5.2, Chief Pilot requirements.

5.3 In Table 5.2:

full-time, for employment, means employed for at least 38 hours per week.

part-time, for employment, means employed for at least 20 hours per week.

5.4 In Table 5.2, for the type and number of balloons mentioned in the same row of columns 1 and 2, the Chief Pilot must meet the minimum total flight time requirements, the aerial work and charter experience requirements and the other requirements mentioned in columns 3, 4 and 5, respectively, of the same row.

6 Transitional application of subclauses 5.2, 5.3 and 5.4

6.1 A person who on or after the commencement of this clause (the ***commencement***) is the subject of an application to CASA by an operator, for approval of the person as a Chief Pilot, must comply with the requirements in subclauses 5.2, 5.3 and 5.4 (the ***transitional clauses***).

6.2 A person (a ***grandfathered person***), who immediately before the commencement is a Chief Pilot, is deemed to have complied with the transitional clauses and, to that extent, to have been approved accordingly, until the later of:

(a) the expiry of the Chief Pilot approval; or

(b) the day that is 3 months after the commencement.

Table 5.2 Chief Pilot requirements

Type of balloon	Number of balloons operated at the same time	Minimum total flight time requirements	Required experience in aerial work and charter	Other requirements
Class 1 balloon used for balloon AOC operations	1	250 hours as pilot in command (***PIC***) of a balloon	A minimum of 24 months' experience as a balloon pilot	The Chief Pilot: (a) must hold the balloon class endorsement for the balloon type used by the AOC holder; and (b) must be employed by the AOC holder on at least a part-time basis; and (c) must not be the Chief Pilot for another AOC holder.

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Type of balloon	**Number of balloons operated at the same time**	**Minimum total flight time requirements**	**Required experience in aerial work and charter**	**Other requirements**
Class 1 balloon used for balloon AOC operations	2 or 3	250 hours as PIC, including 100 hours as PIC in balloon AOC operations	A minimum of 12 months' experience as a balloon pilot for a balloon AOC holder	The Chief Pilot: (a) must hold the balloon class endorsements for all of the balloon types used in the AOC holder's fleet; and (b) must be employed by the AOC holder on a full-time basis; and (c) must not be the Chief Pilot for another AOC holder.
Class 1 balloons used for balloon AOC operations	4 or more	350 hours as PIC, including 300 hours as PIC in balloon AOC operations	A minimum of 24 months' experience as pilot for a balloon AOC holder	The Chief Pilot: (a) must hold the balloon class endorsements for all of the balloon types used in the AOC holder's fleet; and (b) must be employed by the AOC holder on a full-time basis; and (c) must not be the Chief Pilot for another AOC holder.

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Type of balloon	**Number of balloons operated at the same time**	**Minimum total flight time requirements**	**Required experience in aerial work and charter**	**Other requirements**
Class 1 balloons and Class 2 balloons used for balloon AOC operations	1 or more Class 1 balloons and 1 or more Class 2 balloons	350 hours as PIC, including 300 hours as PIC in balloon AOC operations	A minimum of 24 months' experience as pilot for a balloon AOC holder	The Chief Pilot: (a) must hold the balloon class endorsements for all of the balloon types used in the AOC holder's fleet; and (b) must be employed by the AOC holder on a full-time basis; and (c) must not be the Chief Pilot for another AOC holder.
Class 2 balloons used for balloon AOC operations	1 or more	350 hours as PIC, including 300 hours as PIC in balloon AOC operations	A minimum of 24 months' experience as pilot for a balloon AOC holder	The Chief Pilot: (a) must hold the balloon class endorsements for all of the balloon types used in the AOC holder's fleet; and (b) must be employed by the AOC holder on a full-time basis; and (c) must not be the Chief Pilot for another AOC holder.

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Notes to Civil Aviation Order 82.7

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Act 1988*) as shown in this compilation comprises Civil Aviation Order 82.7 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R56	23 December 2004	23 December 2004 (*see* s. 2)	
CAO 82.7 2007 No. 1	FRLI 30 October 2007	31 October 2007 (*see* s. 2)	
CAO 82.7 2019 No. 1	FRL 14 August 2019 (F2019L01063)	1 September 2019 (*see* s. 2)	
Civil Aviation Order (Flight Operations) Repeal and Amendment Instrument 2021 (No. 1)	FRL 1 December 2021 (F2021L01680)	2 December 2021 (*see* s. 2)	

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 82.0	rs. 2004 No. R56
CAO title	am. F2021L01680
subs. 1	am. F2021L01680
subs. 2	am. F2021L01680
subs. 5	am. F2021L01680
subs. 7	ad. CAO 82.7 2007 No. 1
Appendix 1	am. F2021L01680
Appendix 2	am. CAO 82.7 2019 No. 1, F2021L01680

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 95.4.1 (as amended)

made under regulation 308 of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 29 March 2013 taking into account amendments up to *Civil Aviation Order 95.4.1 Amendment Instrument 2013 (No. 1)*.

Prepared by the Legislative Drafting Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

Contents

Section 95.4.1 (Exemption from provisions of the *Civil Aviation Regulations 1988* — gliders engaged in charter operations)

Section 95.4.1

Exemption from provisions of the *Civil Aviation Regulations 1988* — gliders engaged in charter operations

1 Interpretation

1.1 In this section, unless the contrary intention appears:

CFI means:

(a) the operator's chief flying instructor; or

(b) the operator's instructor panel chairperson.

GFA means the Gliding Federation of Australia (A.C.N. 008 560 263).

glider means:

(a) a sailplane; or

(b) a power-assisted sailplane; or

(c) a powered sailplane.

glider pilot means a person who:

(a) is a member of the GFA; and

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(b) holds a C gliding certificate issued by the GFA.

level 2 GFA instructor means a person who holds a level 2 instructor authorisation issued by the GFA.

operator means an incorporated gliding club which:

(a) is affiliated with the GFA; and

(b) engages in charter operations.

power-assisted sailplane has the same meaning as in section 95.4.

powered sailplane has the same meaning as in section 95.4.

sailplane has the same meaning as in section 95.4.

2 Exemption

2.1 Subject to paragraph 2.2, a glider engaged in charter operations, or a person who is in, on, or otherwise associated with the operation of, a glider engaged in charter operations, is exempt from compliance with the following provisions of the *Civil Aviation Regulations 1988*:

(aa) Parts 4 and 4A, provided that both the GFA Operational Regulations and the GFA Manual of Standard Procedures Part 3 Airworthiness are complied with;

(a) subregulation 55 (6);

(b) Part 5;

(c) subregulations 83 (1), (2) and (3) in respect of VHF equipment;

(d) paragraphs 133 (1) (a) and (e);

(e) paragraphs 139 (1) (d) and (e);

(f) subregulation 150 (1) in relation to the dropping of towing or drag increasing devices;

(g) paragraph 155 (3) (a), on condition that:

(i) if the acrobatic flight takes place more than 2 nautical miles from a licensed aerodrome — the flight does not take place at a height of less than 1 000 feet above the highest point of the terrain or of any obstacle on the terrain within a radius of 600 metres of a line extending vertically below the aircraft unless the prior approval of CASA has been obtained; and

(ii) if the acrobatic flight takes place at 2 nautical miles or less from a licensed aerodrome — the flight does not take place at a height of less than 2 000 feet above the aerodrome unless the prior approval of CASA has been obtained;

(h) paragraph 157 (1) (b) when a glider is engaged in ridge or hill soaring;

(i) subregulation 162 (3) to the extent that, if the glider is overtaking another glider engaged in ridge or hill soaring, the overtaking glider:

(i) must pass between the ridge or hill and the overtaken glider; and

(ii) may, if necessary, alter its heading to the left to do so;

(j) subregulation 163AA (2);

(k) paragraphs 166A (2) (d), (e) and (f), provided that an aircraft operating in the circuit area of a non-controlled aerodrome must, as far as practicable, make all turns in the established circuit direction;

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(l) subregulation 173 (3);

(m) subregulation 207 (2) in relation to the carriage of:

(i) a gyroscopic turn and slip indicator; and

(ii) an outside air temperature indicator;

(n) regulation 213 provided that aircraft used in charter operations are maintained in accordance with the GFA Operational Regulations;

(o) regulation 216;

(p) regulations 226, 227 and 229 in relation to a person who:

(i) holds qualifications issued by GFA; or

(ii) has been appropriately instructed by a person who holds qualifications issued by the GFA;

(q) subregulation 243 (1), except when the glider is operating:

(i) in controlled airspace unless air traffic control has authorised the use of an alternative frequency; or

(ii) in the vicinity of a non-controlled aerodrome that is a certified, registered, military or designated non-controlled, aerodrome;

(r) regulation 246 in relation to a glider which is launched using an external power source;

(s) regulation 322 (5).

2.2 The exemptions set out in paragraph 2.1 have effect only if:

(a) the person piloting the glider complies with subsection 4 and 5; and

(b) the operator complies with subsection 6.

2.3 Paragraph 2.1 does not apply to a person in, on, or otherwise associated with the operation of, an aircraft that is towing a glider.

3 Licence not required

3.1 For the purposes of paragraph 20AB (1) (b) of the Act (Flying aircraft without a licence etc.), a person is authorised to perform any duty essential to the operation of a glider without holding a flight crew licence, except making airborne radio transmissions on aeronautical HF frequencies.

4 Issue of charter glider authorisation

4.1 A person must not pilot a glider engaged in charter operations unless he or she:

(a) holds a charter glider authorisation issued by a CFI that certifies that the person meets the requirements set out in Appendix 1; and

(b) the charter glider authorisation has not stopped having effect under paragraph 4.4.

4.2 A charter glider authorisation must be entered in the glider pilot's log book.

4.3 A charter glider authorisation has effect for the period, not exceeding 2 years and 5 months, stated in it.

4.4 A charter glider authorisation stops having effect:

(a) if the authorisation is suspended by a CFI; or

(b) if the pilot ceases to meet the requirements of Appendix 1; or

(c) at the end of the period stated in it;

whichever happens first.

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4.5 A charter glider authorisation must not be renewed unless the glider pilot has satisfactorily completed a flight test conducted by a level 2 GFA instructor.

5 Conditions applicable to the holder of a charter glider authorisation

5.1 The holder of a charter glider authorisation must not operate a glider unless, in the 3 months preceding the charter flight, he or she has been at the controls of a glider of the kind undertaking the flight for at least 3 take-offs and 3 landings.

5.2 The holder of a charter glider authorisation must not operate a glider under I.F.R. or at night.

5.3 The holder of a charter glider authorisation who is flying a glider engaged in ridge or hill soaring must not fly at a height of less than 100 feet if within 100 metres of a person, a building, or a public road.

5.4 The holder of a charter glider authorisation must not fly a glider over water beyond a safe gliding distance from a suitable landing area.

5.5 The holder of a charter glider authorisation:

(a) must plan a charter operation so as to land at the place from which it departed; and

(b) in the case of a power-assisted sailplane or a powered sailplane — must have the aircraft's engine in operation during all times that the aircraft is out of gliding range of the aerodrome from which it took off; and

(c) except in an emergency — must not land a glider anywhere except the aerodrome from which it took off.

5.6 The holder of a charter glider authorisation must not undertake a charter flight as pilot in command of a glider:

(a) less than 24 hours after he or she has donated blood; or

(b) if he or she is temporarily unfit due to taking medication; or

(c) if he or she is temporarily unfit due to illness or injury; or

(d) if he or she becomes aware that he or she may have, or be subject to, diabetes, epilepsy, fits, recurrent fainting, giddiness, blackouts, high blood pressure or heart disease.

5.7 If an illness or injury referred to in subparagraph 5.6 (c) persists for more than 30 days, the holder of the charter pilot authorisation must not undertake a charter flight as pilot in command until the holder has been certified fit to do so by a medical practitioner.

5.8 Despite subparagraph 5.6 (d), the holder of a charter glider authorisation may undertake a charter flight as pilot in command if a medical practitioner certifies that he or she is fit to do so.

5.9 If the holder of a charter glider authorisation suffers severe head injuries, the holder must not exercise the privileges of the authorisation until he or she has been certified fit to do so by a medical practitioner.

5.10 If the holder of a charter glider authorisation customarily wears sight correction spectacles, the holder must have a spare set of spectacles readily accessible during a glider flight.

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6 Conditions applicable to the operator of charter glider flights

6.1 The operator of a power-assisted sailplane that is engaged in charter operations must ensure that it has engraved placards bearing the following words in the cockpit in full view of, and legible from, each seat:

"1. THIS POWER-ASSISTED SAILPLANE MUST BE OPERATED IN ACCORDANCE WITH THE PROVISIONS OF CIVIL AVIATION ORDER 95.4 AND 95.4.1.

2. TAKE-OFFS USING ONLY INSTALLED ENGINE POWER ARE PROHIBITED."

6.2 The operator of a powered sailplane that is engaged in charter operations must ensure that it has engraved placards bearing the following words in the cockpit in full view of, and legible from, each seat:

"THIS POWERED SAILPLANE MUST BE OPERATED IN ACCORDANCE WITH THE PROVISIONS OF CIVIL AVIATION ORDER 95.4 AND 95.4.1."

6.3 An operator must ensure that:

(a) each of its glider pilots who engage in charter operations holds a charter glider authorisation; and

(b) each other person who assists with the charter operations is appropriately trained and qualified to give the assistance.

6.4 An operator must ensure that, before each charter flight, each glider passenger:

(a) receives a safety briefing; and

(b) is clearly instructed that he or she must not manipulate or interfere with the glider's controls.

6.5 The operator of a glider that is engaged in charter operations must ensure that:

(a) the glider carries a fire extinguisher; and

(b) the glider carries a first aid kit.

6.6 Subparagraph 6.5 (a) does not apply:

(a) to a sailplane without an electrical system; or

(b) to a sailplane with an electrical system if the electrical system:

(i) has a master switch; and

(ii) is protected by a fuse near the battery.

6.7 Subparagraph 6.5 (b) does not apply to a sailplane if the operator's ground personnel who are engaged in launching the sailplane have ready access to a first-aid kit.

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Appendix 1

Qualifications for the issue of a charter glider authorisation to a glider pilot

1. A glider pilot must have at least 60 hours of gliding experience, of which at least 5 hours must be as pilot in command of a 2 seat glider with both seats occupied.
2. A glider pilot must demonstrate competence in the following flight sequences:
   (a) a normal launch and release or, in the case of a powered sailplane, normal take-off;
   (b) recognising, and recovering from, stalls and spins induced by the examiner;
   (c) the practical application of flight rules and procedures;
   (d) flying a normal circuit without reference to an altimeter;
   (e) flying a normal circuit without reference to an airspeed indicator;
   (f) the applicable emergency procedures during launch, or take-off, and in flight.
3. When carrying out the sequences required under clause 2, the glider pilot:
   (a) may be required to sit in either seat of the glider; and
   (b) must complete all sequences without:
      (i) fault in lookout or handling technique; or
      (ii) harsh use of the controls.
4. A glider pilot must hold an authorisation issued by the GFA that permits the pilot to carry out daily inspections on the type of glider used in charter operations.
5. A glider pilot must hold:
   (a) a class 2 medical certificate; or
   (b) a medical certificate issued by a medical practitioner which certifies that the pilot is not suffering from any medical condition that would make him or her unfit to fly a glider in charter operations.

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Notes to Civil Aviation Order 95.4.1

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 95.4.1 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R59	23 December 2004	23 December 2004 (*see* s. 2)	
CAO 95.4.1 2010 No. 1	FRLI 28 May 2010	3 June 2010 (*see* s. 2)	
CAO 95.4.1 2013 No. 1	FRLI 5 March 2013	6 March 2013 (*see* s. 2)	

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 95.4.1	rs. CAO 2004 No. R59
subs. 2	am. CAO 95.4.1 2010 No. 1; CAO 95.4.1 2013 No. 1

Australian Government

Civil Aviation Safety Authority

Civil Aviation Order 95.7 (as amended)

made under regulation 308 of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 19 October 2010 taking into account amendments up to *Civil Aviation Order 95.7 Amendment Order (No. 2) 2010*.

Prepared by the Legislative Drafting Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

Contents

Exemption from provisions of the *Civil Aviation Regulations 1988* — helicopters

Section 95.7

Exemption from provisions of the *Civil Aviation Regulations 1988* — helicopters

1 Interpretation

1.1 In this section:

air taxiing means airborne movement of a helicopter at low speeds and at heights normally associated with ground effect.

air transiting means airborne movement of a helicopter that is:

(a) for the purpose of going from one place within an aerodrome to another place within the aerodrome; and

(b) at or below 100 feet above the surface of the aerodrome; and

(c) at speeds greater than those used in air taxiing.

approved course of water rescue training, in relation to a helicopter, means a course of training in the techniques and normal and emergency procedures associated with helicopter water rescues, being a course:

(a) specified in the operations manual of the helicopter's operator; and

(b) approved by CASA.

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approved water rescue training means training in accordance with an approved course of water rescue training.

crew member, in relation to a helicopter, does not include a person receiving approved water rescue training.

exempted water rescue personnel, in relation to a helicopter being used in water rescue operations, means persons, other than the pilot, who are directly engaged in an actual water rescue or in approved water rescue training.

ground taxiing means movement of a helicopter under its own power and on its undercarriage wheels.

HLS or ***helicopter landing site*** means a place that is used as an aerodrome for helicopters to land at and take off from.

hover means flight at zero ground speed.

regulations means the *Civil Aviation Regulations 1988*.

special operations means:

(a) helicopter operations for search and rescue; or

(b) helicopter firefighting operations; or

(c) helicopter emergency medical services involving emplaning or deplaning; or

(d) related training operations in which, for the purposes of the operation or training, it is necessary for a person to leave or board the helicopter when the helicopter is in a hover or when landing is not possible or safe.

water rescue operations, in relation to a helicopter, means operations in which persons are picked up and carried in rescue equipment attached to the external load attachment of the helicopter, being operations in the course of:

(a) an actual water rescue; or

(b) approved water rescue training.

2 Exemptions in relation to water rescue operations

2.1 If the conditions set out in paragraph 2.2 are complied with, a helicopter is exempt from compliance with the following provisions of the regulations:

(a) regulation 151 and subregulation 250 (1);

(b) subregulation 251 (1) (but only in relation to exempted water rescue personnel).

2.2 The exemption given by paragraph 2.1, in relation to a helicopter, is subject to the following conditions:

(a) the helicopter must be being used in water rescue operations;

(b) any rescue harness used in operations must conform to an approved standard;

(c) the helicopter must be fitted with 2 means of releasing the rescue equipment, 1 of which must be capable of being operated manually by a crew member;

(d) the crew members must have completed an approved course of water rescue training.

2A Exemption in relation to special operations

2A.1 If the conditions mentioned in paragraph 2A.2 are complied with, an operator, the pilot in command, a crew member or a passenger of a helicopter involved in special operations are exempt from complying with the following provisions of the regulations:

(a) subregulation 151 (1);

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(b) subregulation 207 (2);

(c) subregulation 250 (1);

(d) subregulation 250 (1A);

(e) subregulation 251 (1).

2A.2 The exemption given by paragraph 2A.1, in relation to an operator and the pilot in command of a helicopter undertaking special operations, is subject to the following conditions:

(a) the operator of the helicopter must hold an AOC that authorises special operations;

(b) before undertaking the special operation, it must be authorised by the relevant State, Territory or Federal emergency control authority except where the special operation is for training purposes;

(c) the helicopter must only be occupied by any, or all, of the following:

(i) the operating crew;

(ii) a person who is emplaning or deplaning;

(iii) a person who is picked up by the aircraft;

(d) the special operation must only be carried out in accordance with the policies, risk assessment and management instructions and standard operating procedures approved by CASA and included in the operator's operations manual.

3 Exemptions in relation to helicopters hovering, air transiting, air taxiing or ground taxiing on or over aerodromes

3.1 If the conditions set out in paragraph 3.2 are complied with, a helicopter is exempt from compliance with paragraph 157 (1) (b) and subregulation 163 (1) of the regulations.

3.2 The exemption given by paragraph 3.1, in relation to a helicopter, is subject to the following conditions:

(a) the helicopter must be hovering, air transiting, air taxiing or ground taxiing on or over an aerodrome;

(b) the helicopter must maintain such horizontal separation from any other aircraft, person or obstruction as ensures that the helicopter does not constitute a hazard to the aircraft, person or obstruction;

(c) if the helicopter is hovering, air taxiing or ground taxiing — the distance between the helicopter's rotor tip path and any other aircraft, person or obstruction must be such distance as ensures that rotor downwash from the helicopter (including objects picked up by the downwash) does not constitute a hazard to the aircraft, person or obstruction.

4 Exemption from horizontal separation requirement

4.1 If the conditions set out in paragraph 4.2 are complied with, a helicopter is exempt from compliance with subregulation 163 (1) of the regulations, but only to the extent that that subregulation would otherwise require the helicopter to maintain at least 600 metres horizontal separation from another helicopter.

4.2 The exemption given by paragraph 4.1 is subject to the following conditions:

(a) the helicopters concerned must be flying within an access lane or access corridor, details of which have been published in the AIP or NOTAMS, for use by helicopters arriving at or departing from a specified place;

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(b) the helicopters concerned must be flying at an altitude, or within a range of altitudes, specified in the AIP or NOTAMS in relation to the access lane or access corridor;

(c) the helicopters concerned must maintain such horizontal separation from one another as ensures that the helicopters do not constitute a hazard to one another.

5 Exemption from requirements relating to landing at, and taking-off from, aerodromes

5.1 A helicopter is exempt from compliance with paragraphs 166A (2) (d), (e) and (f) of the regulations.

6 Exemption from requirement to use landing area of uncontrolled aerodrome

6.1 Subject to the conditions mentioned in paragraph 6.2, for a landing on, or take-off from, a part of an uncontrolled aerodrome that is outside the landing area of the aerodrome, a helicopter is exempt from compliance with paragraph 166A (2) (g) of the regulations.

6.2 The landing or take-off must:

(a) be at or from a place that the pilot in command is satisfied is a HLS; or

(b) for a landing — occur immediately after the helicopter has finished air transiting or air taxiing to the place from another place within the aerodrome; or

(c) for a take-off — occur immediately before the helicopter starts air transiting or air taxiing from the place to another place within the aerodrome.

Note Subparagraph 6.2 (c) mentions a take-off rather than a lift-off for consistency with subregulations 166A (2) and 167 (2) of the regulations. However, as the ordinary meaning of ***take-off*** is wide enough to include the concept of a lift-off, ***take-off*** can be read as a reference to ***lift-off***.

7 Exemption from general requirement for pilot to be at controls

7.1 If the condition set out in paragraph 7.2 is complied with, a helicopter is exempt from compliance with subregulation 225 (1) (but not subregulation 225 (2)) and subregulation 230 (2) of the regulations.

7.2 The exemption given by paragraph 7.1, in relation to a helicopter, is subject to the condition that a pilot must, from the time of starting the engine or engines until the time of stopping the engine or engines at the end of the flight, be at the controls of the helicopter unless:

(a) the helicopter is fitted with skid type landing gear; and

(b) the helicopter is fitted with a serviceable means of locking the cyclic and collective controls; and

(c) if a passenger occupies a control seat fitted with fully or partially functioning controls or is seated in a position where he or she is able to interfere with such controls, the controls are locked and the pilot is satisfied that the passenger will not interfere with the controls; and

(d) the pilot considers that his or her absence from the cockpit is essential to the safety of the helicopter or of the persons on, or in the vicinity of, the helicopter; and

(e) the pilot remains in the immediate vicinity of the helicopter.

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8 Exemption from requirement to make certain pre-flight tests

8.1 A helicopter is exempt from compliance with paragraph 244 (1) (a) of the regulations subject to the condition that the flight controls of the helicopter must be tested in accordance with the procedures approved in the relevant flight manual.

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Notes to Civil Aviation Order 95.7

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 95.7 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R60	23 December 2004	23 December 2004 (*see* s. 2)	
CAO 95.7 2006 No. 1	FRLI 21 April 2006	22 April 2006 (*see* s. 2)	
CAO 95.7 2007 No. 1	FRLI 31 October 2007	1 November 2007 (*see* s. 2)	
CAO 95.7 2010 No. 1	FRLI 28 May 2010	3 June 2010 (*see* s. 2)	
CAO 95.7 2010 No. 2	FRLI 19 October 2010	20 October 2010 (*see* s. 2)	

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 95.7	rs. CAO 2004 No. R60
subs. 1	am. CAO 95.7 2010 No. 1
subs. 2	am. CAO 95.7 2007 No. 1; CAO 95.7 2010 No. 2
subs. 2A	ad. CAO 95.7 2010 No. 2
subs. 5	am. CAO 95.7 2006 No. 1; CAO 95.7 2010 No. 1
subs. 6	rs. CAO 95.7 2006 No. 1; CAO 95.7 2010 No. 1

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Civil Aviation Amendment Order (No. R61) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R61) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.7.2 of the Civil Aviation Orders

Section 95.7.2 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Federal Register of Legislative Instruments F2005B00890

Schedule 1 Substitution of section 95.7.2 of the Civil Aviation Orders

SECTION 95.7.2

EXEMPTION OF HELICOPTERS ENGAGED IN RAPPELLING, SLING LOAD OR WINCHING OPERATIONS FROM COMPLIANCE WITH CERTAIN FLIGHT MANUAL LIMITATIONS

1 APPLICATION

1.1 This section applies to a helicopter:

(a) that has been issued with:

(i) a type approval certificate under regulation 21.13A of the *Civil Aviation Safety Regulations 1998*; and

(ii) a certificate of airworthiness under regulation 21.176 of the *Civil Aviation Safety Regulations 1998*;

for use as a transport category helicopter; and

(b) while the helicopter is engaged in:

(i) rappelling operations; or

(ii) sling load operations; or

(iii) winching operations.

2 INTERPRETATION

2.1 In this section:

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

rappelling operations has the same meaning as in section 29.11.

sling load operations means helicopter operations which:

(a) require an external sling to be attached to the sling load attachment point or points of the helicopter; and

(b) involves using the sling to pick up, carry and release objects.

winching operations has the same meaning as in section 29.11.

3 EXEMPTION UNDER REGULATION 308 OF THE CIVIL AVIATION REGULATIONS 1988

3.1 Subject to paragraph 3.2, a pilot in command operating a helicopter to which this section applies is exempt from compliance with the

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provisions of subregulation 138 (1) of the *Civil Aviation Regulations 1988* to the extent that the limitations set out in the helicopter's flight manual restrict the operation of the helicopter inside the avoid area delineated in the height-velocity envelope chart contained in the limitations section of the flight manual.

3.2 The exemption does not affect the application of the limitations in relation to the assessment of the performance of the helicopter.

Federal Register of Legislative Instruments F2005B00890

Civil Aviation Amendment Order (No. R62) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R62) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.7.3 of the Civil Aviation Orders

Section 95.7.3 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Federal Register of Legislative Instruments F2005B00892

Schedule 1 Substitution of section 95.7.3 of the Civil Aviation Orders

SECTION 95.7.3

EXEMPTION OF CERTAIN HELICOPTERS ENGAGED IN TRANSFER-RING MARINE PILOTS FROM COMPLIANCE WITH SUBREGULATION 174B (2) OF THE *CIVIL AVIATION REGULATIONS 1988*

1 APPLICATION

1.1 This section applies to a helicopter that:

(a) is engaged in charter operations at night for hire or reward for the purpose of transferring marine pilots from:

(i) land to ship; or

(ii) ship to land; or

(iii) ship to ship; and

(b) is equipped with flight instrumentation in accordance with subsection 2; and

(c) is crewed by flight crew members who comply with subsection 3.

2 SPECIAL EQUIPMENT REQUIREMENTS FOR A HELICOPTER ENGAGED IN MARINE PILOT TRANSFERS

2.1 The flight instrumentation of a helicopter engaged in marine pilot transfers must:

(a) meet the requirements specified in Appendix VIII of section 20.18; and

(b) include a radio or radar altimeter; and

(c) if the helicopter is required, under subparagraph 4.1 (c), to be crewed by 2 pilots — a second attitude indicator must be fitted instead of a turn indicator.

3 TRAINING THAT MUST HAVE BEEN UNDERTAKEN BY HELICOPTER FLIGHT CREW

3.1 The pilot of a helicopter engaged in marine pilot transfers must meet the requirements specified in the operator's operations manual relating to:

(a) additional night training, under the supervision of a pilot nominated by the operator, including the specified minimum number of:

(i) night transfers; and

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(ii) shipboard landings and take-offs; and

(b) recent aeronautical experience.

3.2 All helicopter flight crew engaged in marine pilot transfers must have undertaken helicopter underwater escape training.

4 OPERATIONAL REQUIREMENTS FOR HELICOPTERS ENGAGED IN MARINE PILOT TRANSFERS

4.1 While a helicopter is engaged in a marine pilot transfer at night:

(a) all flight crew must wear a serviceable life jacket fitted with:

(i) an integral electric light; and

(ii) a very high frequency emergency locator beacon; and

(b) the V.M.C. conditions specified in the helicopter's flight manual for flight at night must be followed; and

(c) if a helicopter is engaged in a transfer to or from, or between ships, at a distance of more than 10 nautical miles from land — the helicopter must be:

(i) crewed by 2 pilots; or

(ii) crewed by 1 pilot and must be fitted with an auto pilot and a compass system that are serviceable and have been approved by CASA for use in operations of that kind.

5 OPERATOR'S RESPONSIBILITIES

5.1 The operator of a helicopter engaged in marine pilot transfers at night must ensure that the operator has access to an appropriate search and rescue vessel or helicopter at all times while the helicopter is transferring a marine pilot.

5.2 A vessel is taken to be an appropriate search and rescue vessel if and only if:

(a) it can be underway on 30 minutes notice; and

(b) it is fitted with very high frequency homing equipment and radar.

5.3 A helicopter is taken to be an appropriate search and rescue helicopter if and only if:

(a) it can be under way on 30 minutes notice; and

(b) it is located within its safe range of operation from the marine pilot transfer; and

(c) in addition to having the equipment referred to in subparagraph 5.2 (b), it is equipped to carry out search and rescue operations at night in the prevailing meteorological conditions; and

(d) it is crewed by persons trained to carry out those operations.

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6 EXEMPTION UNDER REGULATION 308 OF THE CIVIL AVIATION REGULATIONS 1988

6.1 A helicopter to which this section applies is exempt from compliance with the provisions of subregulation 174B (2) of the *Civil Aviation Regulations 1988* if the requirements of subsections 4 and 5 are met in relation to the helicopter.

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Civil Aviation Amendment Order (No. R64) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R64) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.9 of the Civil Aviation Orders

Section 95.9 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Federal Register of Legislative Instruments F2005B00894

Schedule 1 Substitution of section 95.9 of the Civil Aviation Orders

SECTION 95.9

EXEMPTION OF AUSTRALIAN AEROPLANES FROM COMPLIANCE WITH CERTAIN PROVISIONS OF THE *CIVIL AVIATION REGULATIONS 1988* — DEMONSTRATION FLIGHTS OUTSIDE AUSTRALIA

1 DEFINITIONS

In this section, unless the contrary intention appears:

demonstration flights means flights for the purpose of demonstrating the flight and operational characteristics of the aeroplane to:

(a) persons who may be regarded as prospective purchasers of such aeroplanes or persons acting on their behalf; and

(b) other persons who wish to evaluate the aeroplane and who are deemed appropriate by the manufacturer or owner or a representative appointed by the manufacturer or owner for the purpose.

demonstration pilot means a pilot who is appointed by the manufacturer or owner and who holds a valid Australian commercial or higher category pilot licence and approval to conduct endorsement training on the aeroplane type or category.

2 APPLICATION

This section applies to all Australian aeroplanes during the conduct of demonstration flights outside Australia when a flight crew member is not the holder of a flight crew licence, special pilot licence or certificate of validation.

3 EXEMPTION

3.1 Under regulation 308 of the *Civil Aviation Regulations 1988* and subject to subsection 4, CASA exempts aeroplanes to which this section applies from compliance with the *Civil Aviation Regulations 1988* insofar as those regulations require each member of the flight crew to hold a flight crew licence, special pilot licence or certificate of validation.

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4 CONDITIONS

4.1 Dual control aeroplanes

Where the aeroplane is fitted with dual controls, the pilot in command shall be a demonstration pilot. Any other person who occupies a control seat and who manipulates the controls of the aircraft in flight shall hold at least a current private pilot licence (aeroplanes) granted or rendered valid by the State in which the aeroplane is flown, or shall be a qualified military pilot of that State.

4.2 Single control aeroplanes

Where the aeroplane is a single place aeroplane or is not fitted with dual controls, a person other than a demonstration pilot shall not act as pilot in command unless:

(a) he or she holds at least a current private pilot licence (aeroplanes) granted or rendered valid by the State in which the aeroplane is flown; or

(b) he or she is a qualified military pilot of that State and has received endorsement training conducted by a demonstration pilot.

4.3 Flight engineer control station

A flight engineer control station may not be occupied other than by a person who is either:

(a) the holder of an appropriately, endorsed Australian flight engine licence; or

(b) a flight engineer qualified under the law of the State in which the flight takes place, and is directly supervised by, the holder of an appropriately endorsed Australian flight engineer licence.

5 INTERNATIONAL FLIGHTS

5.1 This Order does not apply to those demonstration flights if CASA requires all flight crew members for that flight to hold a flight crew licence, special pilot licence or certificate of validation.

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Australian Government

Civil Aviation Safety Authority

Civil Aviation Amendment Order (No. R68) 2004 as amended

made under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 3 February 2015 taking into account amendments up to *Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)*.

Prepared by the Legislative Drafting Section, Legal Branch, Legal Services Division, Civil Aviation Safety Authority, Canberra.

1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R68) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.14 of the Civil Aviation Orders

Section 95.14 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Schedule 1 Substitution of section 95.14 of the Civil Aviation Orders

Section 95.14

Exemption from provisions of the regulations under the *Civil Aviation Act 1988* — parasails and gyrogliders

1 Application

This section applies to parasails and gyrogliders.

2 Definitions

In this section:

gyroglider means a non-power-driven heavier-than-air aircraft supported in flight by the reaction of the air on 1 or more rotors which rotate freely on substantially vertical axes.

parasail means a parachute tethered to a point or vehicle on the ground or to a watercraft and deriving lift chiefly from aerodynamic reactions on flexible surfaces remaining fixed under given conditions of flight.

3 Exemption

3.1 If the conditions set out in this Order are complied with, parasails and gyrogliders are exempt from compliance with Part 61 of the *Civil Aviation*

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Safety Regulations 1998 and the following provisions of the *Civil Aviation Regulations 1988*:

(a) Parts 3, 4, 4A, 4B, 4C, 4D and 7;

(b) subregulation 83 (1) in respect of VHF equipment;

(c) Part 11 (other than regulations 140, 143, 144, 145 and 156);

(d) Part 14.

3A Licence not required

3A.1 For the purposes of paragraph 20AB (1) (b) of the Act, a person is authorised to perform a duty essential to the operation of an aircraft to which this section applies without holding a flight crew licence if he or she complies with the conditions set out in subsection 4.

4 Conditions

4.1 Except with the permission in writing of CASA and in accordance with any conditions specified in the permit to minimize hazard to other aircraft or to persons or property on the ground or water, a person must not fly a parasail or gyroglider:

(a) during the launching phase — within a horizontal distance of 100 metres from:

(i) any person who is not directly associated with the operation of the parasail or gyroglider; or

(ii) any person who is not behind an imaginary horizontal line that is at right angles with the initial direction of flight and touches the rearmost part of the parasail or gyroglider immediately before the launch starts; or

(b) at any other time — within a horizontal distance of 100 metres from:

(i) any person who is not directly associated with the operation of the parasail or gyroglider; or

(ii) an occupied building; or

(c) at a height of more than 300 feet above ground level; or

(d) within a horizontal distance of 4 kilometres from the boundary of a licensed aerodrome; or

(e) otherwise than in V.M.C. by day.

4.2 Where it is proposed to fly a parasail or gyroglider in circumstances other than those specified in paragraph 4.1 of this section, it shall be the responsibility of the person operating the parasail or gyroglider or his agent, to submit a written application specifying the details of the proposed operation to CASA not less than 28 days prior to the proposed flight(s).

Note Attention is directed to the fact that the exemption granted by this section does not confer on the operator of a parasail or gyroglider any rights as against the owner or occupier of any land on or over which the operations are conducted, or prejudice in any way the rights and remedies which a person may have in respect of any injury to persons or damage to property caused directly or indirectly by the parasail or gyroglider.

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Notes to Civil Aviation Order 95.14

Note 1

The Civil Aviation Order (in force under the *Civil Aviation Regulations 1988*) as shown in this compilation comprises Civil Aviation Order 95.14 amended as indicated in the Tables below.

Table of Orders

Year and number	Date of notification in *Gazette*/ registration on FRLI	Date of commencement	Application, saving or transitional provisions
CAO 2004 No. R68	23 December 2004 (F2005B00901)	23 December 2004 (s. 2)	
CAO (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1)	FRLI 29 August 2014 (F2014L01177)	1 September 2014 (s. 2)	Sections 3 and 31 (Table A)

Table of Amendments

ad. = added or inserted am. = amended rep. = repealed rs. = repealed and substituted

Provision affected	How affected
s. 95.14	rs. CAO 2004 No. R68
Heading	rs. F2014L01177
subs. 3	rs. F2014L01177

Table A Application, saving or transitional provisions

Sections 3 and 31 of Civil Aviation Order (Flight Crew Licensing) Repeal and Amendment Instrument 2014 (No. 1) read as follows:

3 Definitions

(1) In this instrument:

continued authorisation has the meaning given by regulation 202.261 of the *Civil Aviation Safety Regulations 1998* (***CASR 1998***).

new authorisation has the meaning given by regulation 202.261 of CASR 1998.

(2) A reference in this instrument to a Civil Aviation Order identified by a specified number is taken to include a reference to the section of the Civil Aviation Orders with that number.

Note Some existing legislative instruments are referred to as a Civil Aviation Order followed by a number. Other instruments are referred to as a section of the Civil Aviation Orders. For consistency, in this instrument, all such instruments are referred to as a Civil Aviation Order followed by a number. For example, a reference to Civil Aviation Order 40.2.2 is taken to include a reference to section 40.2.2 of the Civil Aviation Orders.

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31 Transitional — application of Civil Aviation Orders

The Civil Aviation Orders apply to a continued authorisation as if it were the equivalent new authorisation.

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Civil Aviation Amendment Order (No. R69) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R69) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.19 of the Civil Aviation Orders

Section 95.19 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 95.19 of the Civil Aviation Orders

SECTION 95.19

EXEMPTION FROM PROVISIONS OF THE CIVIL AVIATION REGULATIONS 1988 — F/A 18 AIRCRAFT

1 APPLICATION

This section applies to the F/A-18 aircraft while it is undergoing production and acceptance testing in Australia.

2 DEFINITIONS

Terms used in this section shall have the following meanings:

production test flying means flying performed on behalf of the contractor for the purpose of establishing that the aircraft meets USN requirements.

acceptance test flying means flying performed on behalf of the USN or RAAF for the purpose of confirming that the aircraft meets USN and RAAF requirements.

3 EXEMPTIONS

3.1 Under regulation 308 of the *Civil Aviation Regulations 1988* and subject to compliance with subsection 4, F/A-18 aircraft are exempt from compliance with Parts 3, 4, 5, 7, 8, 9 (other than regulation 93), 10 (other than regulation 100), 11, 14, 16, 17, 18 and 19 of those Regulations.

3A LICENCE NOT REQUIRED

3A.1 For the purposes of paragraph 20AB (1) (b) of the Act, a person is authorised to perform a duty essential to the operation of an aircraft to which this section applies without holding a flight crew licence if he or she complies with the conditions set out in subsection 4.

4 CONDITIONS

4.1 The authorisation and control of all flight testing of F/A-18 aircraft to the extent necessary to ensure that the aircraft is airworthy and the aircrew have appropriate ratings, medical classification and flying

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experience shall be exercised by the RAAF in accordance with military standards.

4.2 Prior to all test flights, DQA-AF personnel shall conduct an inspection of the aircraft to determine its compliance or otherwise with defined USN/RAAF standards. DQA-AF staff shall issue a Certificate of Safety for Flight prior to all test flights.

4.3 Prior to commencement of test flying, the RAAF is to ensure that all RAAF pilots conducting production or acceptance test flights are subject to the provisions of DI(AF)OPS 6-10 and that the provisions of DI(AF) AAP 7001.008-1 are complied with.

4.4 Prior to commencement of production test flying McDonnell Douglas Corporation shall provide details required by DI(AF) AAP 7001.008-1 in respect of McDonnell Douglas test pilots conducting production test flights.

4.5 Prior to commencement of acceptance test flying, USN shall provide details of USN test pilots conducting acceptance test flying.

4.6 Flying operations conducted outside military controlled airspace shall be conducted in accordance with the provisions of Joint Aviation Standards and Procedures (JASAP).

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Civil Aviation Amendment Order (No. R70) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R70) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.20 of the Civil Aviation Orders

Section 95.20 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Federal Register of Legislative Instruments F2005B00903

Schedule 1 Substitution of section 95.20 of the Civil Aviation Orders

SECTION 95.20

EXEMPTION FROM PROVISIONS OF THE CIVIL AVIATION REGULATIONS 1988 — OPERATION OF MILITARY (STATE) AIRCRAFT BY CIVILIAN FLIGHT CREW

1 APPLICATION

This section applies to military aircraft being flown and operated by persons, other than members of the Defence Forces, holding commercial or higher category licences engaged in flight testing, search and rescue, support of aircraft development and flight test programs, and such other activities as are authorised by the appropriate military controlling authority.

2 DEFINITIONS

flight testing means flying performed on behalf of the contractor or military authority for the purpose of establishing that the aircraft meets all requirements of the contractor and/or military authority following manufacture or major servicing and inspection.

3 EXEMPTIONS

3.1 Under regulation 308 of the *Civil Aviation Regulations 1988* and subject to compliance with subsection 4, military aircraft are exempt from compliance with regulations 178, 195 and 196 and the provisions of Parts 3, 4, 9 (other than regulation 93), 10 (other than regulation 100), 11 (other than regulation 148), 14, 17 (other than regulations 281 and 282), 18 and 19 of those Regulations.

4 CONDITIONS

4.1 Prior to all flights, a Certificate of Safety for Flight shall be issued for the military aircraft in accordance with standards defined by the military authority.

4.2 The authorisation and control of flying of military aircraft shall be exercised by the appropriate military authority.

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4.3 Prior to the commencement of civilian pilots flying military aircraft, the contractor shall provide to the military authority such details of the pilots as the military authority requires.

4.4 Flying operations conducted outside military controlled airspace shall be conducted in accordance with the provisions of Joint Aviation Standards and Procedures (JASAP).

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Civil Aviation Amendment Order (No. R71) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R71) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.22 of the Civil Aviation Orders

Section 95.22 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Federal Register of Legislative Instruments F2005B00905

Schedule 1 Substitution of section 95.22 of the Civil Aviation Orders

SECTION 95.22

EXEMPTION FROM PROVISIONS OF THE CIVIL AVIATION REGULATIONS 1988 — FLOAT PLANES OPERATING IN PRESCRIBED ACCESS LANES

1 APPLICATION

This section applies to operations in transit lanes and access lanes by fixed wing float equipped aeroplanes.

2 DEFINITIONS

In this section:

transit lanes and ***access lanes*** mean transit and access lanes prescribed in Aeronautical Information Publications/En Route Supplement.

3 EXEMPTION

3.1 Under regulation 308 of the *Civil Aviation Regulations 1988*, CASA exempts fixed wing float equipped aeroplanes from compliance with subregulation 157 (1) when in operation in transit lanes and access lanes, subject to compliance with the procedures set out in Aeronautical Information Publications En Route Supplement.

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Civil Aviation Amendment Order (No. R72) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R72) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.23 of the Civil Aviation Orders

Section 95.23 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Federal Register of Legislative Instruments F2005B00906

Schedule 1 Substitution of section 95.23 of the Civil Aviation Orders

SECTION 95.23

EXEMPTION FROM SUBREGULATIONS 178 (1) AND (2) OF *THE CIVIL AVIATION REGULATIONS 1988* — FOR OFFSHORE AND COASTAL SURVEILLANCE AND SEARCH AND RESCUE OPERATIONS

1 APPLICATION

This section applies to offshore and coastal surveillance and search and rescue operations conducted on behalf of Australia.

2 DEFINITIONS

In this section:

coastal surveillance means littoral search and identification operations conducted up to 3 nautical miles seawards of the coast on behalf of Australia.

offshore surveillance means over water search and identification operations other than coastal surveillance operations.

3 EXEMPTION

3.1 Under regulation 308 of the *Civil Aviation Regulations 1988*, CASA exempts aircraft operated on behalf of Australia in offshore and coastal surveillance and search and rescue operations from compliance with subregulations 178 (1) and (2) of the *Civil Aviation Regulations 1988*.

4 CONDITIONS

4.1 Descent below lowest safe altitude shall not be commenced unless the pilot in command has determined that neither the Australian mainland nor obstacles having a greater height than 300 feet above sea level are within an area 20 nautical miles ahead of the aircraft along track and 5 nautical miles either side of track. Subsequent operations below lowest safe altitude at night shall be conducted no closer than 5 nautical miles from the Australian mainland and all obstacles having a height greater than 300 feet above sea level. These distances shall be in addition to tolerances applied to navigation equipment and techniques used to determine the aircraft's position before descent from lowest safe altitude.

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4.2 Conditions applied to night offshore surveillance operations are as follows:

(a) minimum altitude shall be 600 feet, derived from the lesser reading of:

(i) raft radar altimeter; and

(ii) the aircraft pressure altimeter set to the lowest forecast QNH for the area;

(b) the pilot in command shall be qualified for coastal surveillance operations. To conduct operations below lowest safe altitude, he shall have:

(i) a minimum of 100 hours experience as pilot in command or acting in command under supervision at night; and

(ii) a minimum of 10 hours experience as pilot in command or acting in command under supervision in night surveillance operations; and

(iii) conducted a night surveillance operation as pilot in command or acting in command under supervision within the preceding 60 days;

(c) the minimum crew for operations below lowest safe altitude at night shall consist of 2 pilots or 1 pilot and a trained radar observer;

(d) no persons, other than the operating crew, shall be carried during operations below lowest safe altitude. State and Commonwealth officers whose duties require them to take part in surveillance operations are included in the operating crew of the aircraft;

(e) before descent below lowest safe altitude, the pilot in command shall:

(i) establish the aircraft's position and ensure that it will remain clear of obstacles in accordance with paragraph 4.1 of this section; and

(ii) complete the low flying checklist; and

(iii) set the pressure altimeter to the lowest forecast QNH for the operating area;

(f) for operations below 1 500 feet above sea level:

(i) turns shall be limited to the lesser of 25 degrees angle of bank, rate one or radar altimeter unlock angle; and

(ii) maximum rate of descent shall be 500 feet per minute; and

(iii) minimum airspeed shall be 1.5 V_S for the aircraft configuration; and

(iv) flap setting shall be no greater than that recommended for take-off or manoeuvring;

(g) operations below lowest safe altitude shall not be conducted unless:

(i) instruments required in accordance with CAO section 20.18 Appendix IV are serviceable; and

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(ii) aircraft radar, radar altimeter and approved area navigation system are serviceable; and

(iii) a check of the accuracy of the approved area navigation system has been performed and, if necessary, the system updated over a radionavigation aid or visual waypoint within the preceding 60 minutes; and

(iv) V.M.C. exists below 2 000 feet above sea level;

(h) operations below lowest safe altitude shall not be conducted or shall be discontinued immediately if:

(i) any of the instruments required in accordance with CAO section 20.18 Appendix IV fail; and

(ii) the aircraft radar, radar altimeter or approved area navigation system fails; and

(iii) the approved area navigation system has reverted to dead reckoning since the last update waypoint or is found to exceed an 8 nautical mile tolerance at an update waypoint;

(i) after visual investigation of a target, the aircraft is to initiate a climb to lowest safe altitude immediately.

4.3 Conditions applied to operations in cloud below lowest safe altitude by day are:

(a) the minimum descent altitude for the purpose of obtaining visual reference below cloud shall be 1 000 feet above sea level, derived from the lesser reading of:

(i) the aircraft radar altimeter; and

(ii) the aircraft pressure altimeter set to the lowest forecast QNH for the operating area;

(b) if visual reference is not obtained at 1 000 feet above sea level, or visibility below cloud is reduced to less than 5 000 metres, an immediate climb to lowest safe altitude shall be carried out;

(c) the pilot in command shall be qualified for coastal surveillance operations;

(d) for descent below lowest safe altitude and operations in cloud below 1 500 feet above sea level, the provisions of paragraphs 4.2 (d), (e), (f), (g) (i), (ii), (iii) and (h) of this subsection shall apply.

4.4 Before operating below lowest safe altitude by night or in cloud by day under the provisions of this section, an operator shall include in his operations manual all procedures applicable to these operations. Approval of this operations manual supplement shall be subject to satisfactory flight checking of these procedures by officers of the CASA.

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Civil Aviation Amendment Order (No. R73) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R73) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.26 of the Civil Aviation Orders

Section 95.26 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 95.26 of the Civil Aviation Orders

SECTION 95.26

EXEMPTION FROM SUBREGULATIONS 178 (1) AND (2) OF THE *CIVIL AVIATION REGULATIONS 1988* — FOR TRIAL OPERATIONS OF SUPPLY DROPPING OF SEARCH AND RESCUE (SAR) STORES AT NIGHT

1 APPLICATION

This section applies to trial operations performed on behalf of CASA by the National Safety Council of Australia (NSCA).

2 EXEMPTION

2.1 Under regulation 308 of the *Civil Aviation Regulations 1988* and subject to compliance with subsection 3, CASA exempts aeroplanes and helicopters operated by NSCA engaged in the development of procedures for the supply dropping of SAR stores at night from compliance with subregulations 178 (3) and (4) of the *Civil Aviation Regulations 1988*.

3 CONDITIONS

3.1 Minimum altitude for trial operations shall be 500 feet AMSL.

3.2 The crew shall comprise 2 pilots and those persons required to conduct the SAR stores dropping operations.

3.2.1 Each pilot assigned for duty for trial operations shall be experienced in SAR stores dropping operations and:

(a) hold a current Class 1 instrument rating; and

(b) have a minimum of 100 hours experience as pilot in command on type; and

(c) have a minimum of 100 hours experience as pilot in command at night; and

(d) be specifically authorised by the NSCA Training and Checking Organisation for the task.

3.3 No persons, other than those having duties which require them to take part in the trial, shall be carried in the aircraft during operations conducted in accordance with this section.

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3.4 The aircraft shall be equipped with:

(a) an approved radio altimeter installed to meet the requirements of section 108.36, Appendix H; and

(b) life rafts and life jackets sufficient for and accessible to all crew members;

during operations conducted in accordance with this section.

3.5 Weather conditions during trial operations shall be V.M.C. below 2 000 feet AMSL but flight visibility shall be not less than 20 kilometres.Additionally, flight conditions shall be such that there is sufficient celestial illumination to provide a discernible true horizon.

3.6 Operations under the provisions of this section shall be conducted over water and at a minimum distance of 20 nautical miles from land (including islands) or obstacles having a height greater than 300 feet above sea level.

3.7 The following operating procedures and parameters shall apply:

(a) before descent below lowest safe altitude, the flight crew shall:

(i) complete the low flying checklist; and

(ii) disengage the autopilot; and

(iii) set pressure altimeters to the lowest forecast QNH in the operating area;

(b) turns below the lowest safe altitude shall be limited to the lesser of 25 degrees of bank, rate 1 or the radio altimeter unlock angle;

(c) for operations below 1 000 feet AMSL:

(i) the target is to be in sight before descent below 1 000 feet AMSL is initiated; and

(ii) maximum rate of descent shall be 500 feet per minute; and

(iii) for aeroplanes, flap setting shall be not greater than that recommended for take-off or manoeuvring; and

(iv) for aeroplanes, minimum speed shall be $1.5V_S$; and

(v) for helicopters, minimum speed shall be the minimum I.F.R. speed;

(d) for operations at 500 feet AMSL:

(i) the altitude reference for 500 feet AMSL shall be derived from the lesser reading of the aircraft radio altimeter and the pilot’s pressure altimeter set to the lowest forecast QNH for the operating area; and

(ii) visual contact with the target is to be maintained at all times;

(e) the pilot manipulating the flying controls shall concentrate on accurate flying and on accurate positioning of the aircraft for dropping operations;

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(f) a second pilot shall be assigned to monitor the pilot flying the aircraft, in accordance with appropriate crew coordination procedures established by the operator;

(g) operations below lowest safe altitude shall not be conducted or shall be discontinued if any of the instruments required in accordance with section 20.18, Appendix IV, or section 20.18, Appendix VII as applicable, or the radio altimeter, fail.

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Civil Aviation Amendment Order (No. R74) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R74) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.27 of the Civil Aviation Orders

Section 95.27 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 95.27 of the Civil Aviation Orders

SECTION 95.27

EXEMPTION FROM PROVISIONS OF THE *CIVIL AVIATION REGULATIONS 1988* — S-70A-9 HELICOPTER

1 APPLICATION

This section applies to the S-70A-9 helicopter during the period that the helicopter is undergoing production and acceptance flight testing in Australia.

2 DEFINITIONS

Terms used in this section shall have the following meanings:

production test flying means flying performed on behalf of the contractor for the purpose of establishing that the helicopter meets the United Technologies Corporation requirements.

acceptance test flying means flying performed on behalf of United Technologies Corporation or the RAAF for the purpose of confirming that the helicopter meets the United Technologies Corporation and RAAF requirements.

3 EXEMPTION

3.1 Under regulation 308 of the *Civil Aviation Regulations 1988* and subject to compliance with subsection 4, the S-70A-9 helicopter is exempt from compliance with the provisions of Parts 3, 4, 5, 7, 8, 9 (other than regulation 93), 10 (other than regulation 100), 11, 14, 16, 17, 18 and 19 of those Regulations.

3A LICENCE NOT REQUIRED

3A.1 For the purposes of paragraph 20AB (1) (b) of the Act, a person is authorised to perform a duty essential to the operation of an aircraft to which this section applies without holding a flight crew licence if he or she complies with the conditions set out in subsection 4.

4 CONDITIONS

4.1 The authorisation and control of all flight testing of the S-70A-9 helicopter to the extent necessary to ensure that the helicopter is

airworthy and the aircrew have appropriate ratings, medical classifications and flying experience shall be exercised by the RAAF in accordance with military standards.

4.2 Prior to all test flights, DQ-AF personnel shall conduct an inspection of the helicopter to determine its compliance or otherwise with defined United Technologies Corporation/RAAF standards. DQ-AF staff shall issue a Certificate of Safety for Flight prior to all test flights.

4.3 Prior to commencement of test flying, the RAAF is to ensure that all RAAF pilots conducting production or acceptance test flights are subject to the provisions of DI(AF)OPS6-10 and compliance with the provisions of DI(AF)AAP 7001.8-1.

4.4 Prior to the commencement of test flying, United Technologies Corporation shall provide details required by DI(AF)AAP 700.8-1 in respect of United Technologies Corporation test pilots conducting production test flights.

4.5 Flying operations conducted outside military controlled airspace shall be conducted in accordance with the provisions of Joint Aviation Standards and Procedures (JASAP).

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Civil Aviation Amendment Order (No. R75) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R75) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.28 of the Civil Aviation Orders

Section 95.28 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Federal Register of Legislative Instruments F2005B00911

Schedule 1 Substitution of section 95.28 of the Civil Aviation Orders

SECTION 95.28

EXEMPTION FROM PROVISIONS OF THE *CIVIL AVIATION REGULATIONS 1988* — S-70B-2 HELICOPTER

1 APPLICATION

This section applies to the S-70B-2 helicopter during the period that the helicopter is undergoing production and acceptance flight testing in Australia.

2 DEFINITIONS

Terms used in this section shall have the following meanings:

production test flying means flying performed on behalf of the contractor for the purpose of establishing that the helicopter meets the United Technologies Corporation requirements.

acceptance test flying means flying performed on behalf of United Technologies Corporation or the RAN for the purpose of confirming that the helicopter meets the United Technologies Corporation and RAN requirements.

3 EXEMPTION

3.1 Under regulation 308 of the *Civil Aviation Regulations 1988* and subject to compliance with subsection 4, the S-70B-2 helicopter is exempt from compliance with the provisions of Parts 3, 4, 5, 7, 8, 9 (other than regulation 93), 10 (other than regulation 100), 11, 14, 16, 17, 18 and 19 of those Regulations.

3A LICENCE NOT REQUIRED

3A.1 For the purposes of paragraph 20AB (1) (b) of the Act, a person is authorised to perform a duty essential to the operation of an aircraft to which this section applies without holding a flight crew licence if he or she complies with the conditions set out in subsection 4.

4 CONDITIONS

4.1 The authorisation and control of all flight testing of the S-70B-2 helicopter, to the extent necessary to ensure that the helicopter is

airworthy and the aircrew have appropriate ratings, medical classifications and flying experience, shall be exercised by the RAN in accordance with military standards.

4.2 Prior to all test flights, DQA-AF personnel shall conduct an inspection of the helicopter to determine its compliance or otherwise with defined United Technologies Corporation/RAN standards. DQA-AF staff shall issue a Certificate of Safety for Flight prior to all test flights.

4.3 Prior to commencement of test flying, the RAN is to ensure that all RAN pilots conducting production or acceptance test flights are subject to, and comply with, the provisions of AP (RAN) 10.

4.4 Prior to commencement of test flying, United Technologies Corporation shall provide details required by DI(AF)AAP 7001.008-1 in respect of United Technologies Corporation test pilots conducting test flights.

4.5 Flying operations conducted outside military controlled airspace shall be conducted in accordance with the provisions of Joint Aviation Standards and Procedures (JASAP).

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Civil Aviation Amendment Order (No. R76) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R76) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.29 of the Civil Aviation Orders

Section 95.29 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

Federal Register of Legislative Instruments F2005B00913

Schedule 1 Substitution of section 95.29 of the Civil Aviation Orders

SECTION 95.29

EXEMPTION FROM PROVISIONS OF THE CIVIL AVIATION REGULATIONS 1988 — PILATUS PC9 AIRCRAFT

1 APPLICATION

This section applies to the PC9 aircraft during the period that the aircraft is undergoing production and acceptance flight testing in Australia.

2 DEFINITIONS

Terms used in this section shall have the following meanings:

production test flying means flying performed on behalf of the contractor Hawker de Havilland for the purpose of establishing that the aircraft meets contractor requirements.

acceptance test flying means flying performed on behalf of the RAAF for the purpose of confirming that the aircraft meets RAAF requirements.

3 EXEMPTION

3.1 Under regulation 308 of the *Civil Aviation Regulations 1988* and subject to compliance with subsection 4, the Pilatus PC9 aircraft is exempt from compliance with the provisions of Parts 3, 4, 5, 7, 8, 9 (other than regulation 93), 10 (other than regulation 100), 11, 14, 16, 17, 18 and 19 of those Regulations.

3A LICENCE NOT REQUIRED

3A.1 For the purposes of paragraph 20AB (1) (b) of the Act, a person is authorised to perform a duty essential to the operation of an aircraft to which this section applies without holding a flight crew licence if he or she complies with the conditions set out in subsection 4.

4 CONDITIONS

4.1 The authorisation and control of all flight testing of PC9 aircraft to the extent necessary to ensure that the aircraft is airworthy and the aircrew

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have appropriate ratings, medical classifications and flying experience shall be exercised by the RAAF in accordance with military standards.

4.2 Prior to all test flights, Directorate of Quality Assurance — Air Force (DQA-AF) personnel shall conduct an inspection of the aircraft to determine its compliance or otherwise with defined RAAF standards. DQA-AF staff shall issue a Certificate of Safety for Flight prior to all test flights.

4.3 Prior to commencement of test flying, the RAAF is to ensure all RAAF pilots involved in the conduct of acceptance test flights are subject to the provisions of DI(AF)OPS6-10 and that the provisions of DI(AF)AAP 7001.008-1 are complied with.

4.4 Prior to the commencement of production test flying Hawker de Havilland Limited (HdH) shall provide details required by DI(AF)AAP 7001.008-1 in respect of HdH test pilots conducting production test flights.

4.5 Flying operations conducted outside military controlled airspace shall be conducted in accordance with the provisions of Joint Aviation Standards and Procedures (JASAP).

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Civil Aviation Amendment Order (No. R77) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R77) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.30 of the Civil Aviation Orders

Section 95.30 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 95.30 of the Civil Aviation Orders

SECTION 95.30

EXEMPTION FROM PROVISIONS OF THE *CIVIL AVIATION REGULATIONS 1988* AND THE *CIVIL AVIATION SAFETY REGULATIONS 1998* — BRITISH AEROSPACE MK 127 AIRCRAFT

1 APPLICATION

1.1 This section applies to BAe Hawk Mk 127 aircraft undergoing flight testing in Australia.

1.2 For the purposes of regulation 200.010 of the *Civil Aviation Safety Regulations 1998* (CASR 1998), this section sets out the conditions with which the aircraft to which this section applies must comply in order to be exempt from compliance with the *Civil Aviation Regulations 1988* and CASR 1998.

2 DEFINITIONS

2.1 In this section:

BAeA means British Aerospace Australia Ltd.

flight testing means production flight testing or acceptance flight testing as defined in regulation 200.010 of CASR 1998.

RAAF means Royal Australian Air Force.

Joint Aviation Standards and Procedures (JASAP) means the standards and procedures issued under that title by Airservices Australia and the Department of Defence.

3 CONDITIONS

3.1 The authorisation and control of all flight testing of BAe Hawk Mk 127 aircraft to the extent necessary to ensure that the aircraft is airworthy is to be exercised by BAeA.

3.2 The authorisation and control of all flight testing of BAe Hawk Mk 127 aircraft to the extent necessary to ensure that the aircrew have appropriate ratings, medical classification and flying experience must be exercised by the RAAF in accordance with the appropriate military standards.

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3.3 Before beginning any flight testing, BAeA personnel must conduct an inspection of the aircraft to determine:

(a) its compliance with the design standard; and

(b) its suitability for the flight test to be conducted.

3.4 Before beginning any flight testing, the RAAF must ensure that all RAAF pilots conducting the tests are properly authorised to do so.

3.5 All RAAF pilots conducting flight testing must do so in accordance with:

(a) the provisions of British Aerospace publication VH 101B-44A27 5M, Flight Test Schedule, RAAF Hawk Mk 127 Aircraft; and

(b) aircraft operating limitations issued from time to time by BAeA.

3.6 Flight testing operations conducted outside military airspace must be conducted in accordance with the provisions of JASAP as in force from time to time.

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Civil Aviation Amendment Order (No. R78) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 308 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]

Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 December 2004

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1 Name of Order

This Order is the Civil Aviation Amendment Order (No. R78) 2004.

2 Commencement

This Order commences on gazettal.

3 Replacement of section 95.31 of the Civil Aviation Orders

Section 95.31 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

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Schedule 1 Substitution of section 95.31 of the Civil Aviation Orders

SECTION 95.31

EXEMPTION FROM PROVISIONS OF THE *CIVIL AVIATION REGULATIONS 1988* AND THE *CIVIL AVIATION SAFETY REGULATIONS 1998* — KAMAN SUPER SEASPRITE SH-2G(A) AIRCRAFT

1 APPLICATION

1.1 This section applies to KAMAN Super Seasprite SH-2G(A) aircraft undergoing production flight testing or acceptance flight testing in Australia.

1.2 For the purposes of regulation 200.010 of the *Civil Aviation Safety Regulations 1998* (CASR 1998), this section sets out the conditions with which the aircraft to which this section applies must comply in order to be exempt from compliance with the *Civil Aviation Regulations 1988* and CASR 1998.

2 DEFINITIONS

2.1 In this section:

production flight testing means production flight testing as defined in regulation 200.010 of CASR 1998.

acceptance flight testing means acceptance flight testing as defined in regulation 200.010 of CASR 1998.

flight testing means production flight testing or acceptance flight testing.

RAN means Royal Australian Navy.

Joint Aviation Standards and Procedures (JASAP) means the standards and procedures issued under that title by Airservices Australia and the Department of Defence.

KAMAN AIC means KAMAN Aerospace International Corporation.

3 CONDITIONS

3.1 The authorisation and control of flight testing of KAMAN Super Seasprite SH-2G(A) aircraft to the extent necessary to ensure that the aircraft are airworthy is to be exercised by KAMAN AIC.

3.2 The authorisation and control of flight testing of KAMAN Super Seasprite SH-2G(A) aircraft to the extent necessary to ensure that the

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aircrew have appropriate ratings, medical classification and flying experience must be exercised by the RAN in accordance with military standards.

3.3 Before beginning flight testing, KAMAN AIC personnel must conduct an inspection of the aircraft to determine whether:

(a) it complies with the design standard; and

(b) it is suitable for flight testing.

3.4 Before beginning flight testing, the RAN must ensure that all RAN pilots conducting tests are properly authorised to do so.

3.5 Production flight testing must be conducted in accordance with:

(a) the publication known as NAVAIR 01-260HCG-1 dated 1 May 1995 and issued by the United States Navy; and

(b) the publication known as KAMAN Procedure KPP 6414 and issued by KAMAN AIC.

3.6 Acceptance flight testing must be conducted in accordance with:

(a) the publication known as ABR 5150 Naval Aviation Instructions and issued by the RAN; and

(b) the Flight Manual for the KAMAN Super Seasprite SH-2G(A) aircraft known as NAP 7210-029-1-1 and issued by the RAN; and

(c) the Operational Test and Evaluation Schedule for KAMAN Super Seasprite SH-2G(A) aircraft and issued by the RAN; and

(d) aircraft operating limitations issued from time to time by KAMAN AIC.

3.7 Flight testing conducted outside military airspace must be conducted in accordance with the provisions of JASAP as in force from time to time.

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Australian Government

Civil Aviation Safety Authority

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, make this instrument under regulation 200.010 of the *Civil Aviation Safety Regulations 1998*.

[Signed Bruce Byron]
Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 November 2007

Civil Aviation Order 95.34 Instrument 2007

1 Name of instrument

This instrument is the *Civil Aviation Order 95.34 Instrument 2007*.

2 Commencement

This instrument commences on 12 November 2007.

3 Civil Aviation Order 95.34

Schedule 1 makes Civil Aviation Order 95.34.

Schedule 1 Civil Aviation Order 95.34

NHIndustries NH90 Tactical Transport Helicopter

1 Application

1.1 This section applies to NHIndustries NH90 Tactical Transport Helicopter undergoing production flight testing or acceptance flight testing in Australia.

1.2 For regulation 200.010 of the *Civil Aviation Safety Regulations 1998* (***CASR 1998***), this Order sets out the conditions with which the aircraft to which this Order applies must comply in order to be exempt from compliance with the *Civil Aviation Regulations 1988* and CASR 1998.

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2 Definitions

In this Order:

production flight testing means production flight testing as defined in regulation 200.010 of CASR 1998.

acceptance flight testing means acceptance flight testing as defined in regulation 200.010 of CASR 1998.

flight testing means production flight testing or acceptance flight testing.

ADF means the Australian Defence Force.

Australian Aerospace means Australian Aerospace Limited.

3 Conditions

3.1 Australian Aerospace must exercise authorisation and control of flight testing of the NHIndustries NH90 Tactical Transport Helicopter to the extent necessary to ensure that the aircraft are airworthy.

3.2 The ADF must exercise the authorisation and control of the flight testing necessary to ensure that the aircrew of the NHIndustries NH90 Tactical Transport Helicopter have appropriate ratings, medical classification and flying experience to the extent necessary and in accordance with military standards.

3.3 Before beginning flight testing, Australian Aerospace personnel must conduct an inspection of the aircraft to determine whether:

(a) it complies with the design standard; and

(b) it is suitable for flight testing.

3.4 Before beginning flight testing, the ADF must ensure that all ADF pilots conducting tests are properly authorised to do so.

3.5 Production flight testing must be conducted in accordance with the applicable publication issued by Australian Aerospace or NHIndustries.

3.6 Acceptance flight testing must be conducted in accordance with:

(a) the applicable publications issued by Australian Aerospace or NHIndustries; and

(b) the aircraft operating limitations issued from time to time by Australian Aerospace or NHIndustries; and

(c) the applicable flight manual and airworthiness directives issued by the ADF.

Federal Register of Legislative Instruments F2007L04300

Australian Government

Civil Aviation Safety Authority

I, PHILIPPA JILLIAN SPENCE, Director of Aviation Safety, on behalf of CASA, make this instrument under regulation 5 of the *Civil Aviation Regulations 1988* and regulations 11.160, 11.205 and 11.245 of the *Civil Aviation Safety Regulations 1998*.

[Signed P. Spence]
Pip Spence
Director of Aviation Safety

15 February 2024

Civil Aviation Order 95.55 Amendment Instrument 2024 (No. 1)

1 Name of instrument

This instrument is *Civil Aviation Order 95.55 Amendment Instrument 2024 (No. 1)*.

2 Commencement

This instrument commences on the day after it is registered.

3 Amendment of Civil Aviation Order 95.55

Schedule 1 amends *Civil Aviation Order 95.55 (Exemptions from CAR and CASR — Certain Light Sport Aircraft, Lightweight Aeroplanes and Ultralight Aeroplanes) Instrument 2021*.

Schedule 1 Amendments

[1] Subsection 5, the Note

after

These include:

insert (in their respective alphabetical positions)

modification/repair design approval, ***type certificated***,

[2] Paragraphs 8.7 and 8.8

repeal and substitute

8.7 A person must not operate a type certificated ultralight aeroplane that has been repaired, or modified to differ from its type design, unless the repair or modification is:

(a) designed in accordance with 1 of the following:

(i) an approval under regulation 35 of CAR, as in force before 27 June 2011;

(ii) a modification/repair design approval;

(iii) an approval mentioned in regulation 21.475 of CASR;

(iv) an approval under regulation 21.465 or 21.470 of CASR;

(v) a CASA specification in or under an airworthiness directive;

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(vi) a specification in the aeroplane's approved maintenance data;

(vii) an RAAus approval in accordance with a process for the approval of modifications and repairs specified in the RAAus exposition — but only if:

(A) RAAus is the relevant sport aviation body; and

(B) a certificate of airworthiness under regulation 21.176 of CASR is not in force for the aeroplane (other than because of the operation of paragraph 21.181 (4) (a) of CASR); and

(b) carried out in accordance with the approval or the specified design.

Note Sub-subparagraph 8.7 (a) (vii) does not apply to the modification or repair of a type certificated ultralight aeroplane if a certificate of airworthiness under regulation 21.176 of CASR is in force or would be in force but for the operation of paragraph 21.181 (4) (a) of CASR.

8.8 A person must not operate a type certificated lightweight aeroplane that has been repaired, or modified to differ from its type design, unless the repair or modification is:

(a) designed in accordance with:

(i) an approval under regulation 35 of CAR, as in force before 27 June 2011; or

(ii) a modification/repair design approval; or

(iii) an approval mentioned in regulation 21.475 of CASR; or

(iv) an approval under regulation 21.465 or 21.470 of CASR; or

(v) a CASA specification in or under an airworthiness directive; or

(vi) a specification in the aeroplane's approved maintenance data; and

(b) carried out in accordance with the approved or specified design.

[3] Paragraph 8.10

omit

ultralight aeroplane *(first occurring)*

insert

ultralight aeroplane (other than a type certificated ultralight aeroplane)

Authorised Version F2024L00264 registered 01/03/2024

Australian Government
Civil Aviation Safety Authority

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, make this instrument under regulation 308 of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]
Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

14 March 2006

Civil Aviation Order 95.56 Instrument 2006

1 Name of instrument

This instrument is the *Civil Aviation Order 95.56 Instrument 2006.*

2 Commencement

This instrument commences on the day after it is registered.

3 Civil Aviation Order 95.56

Schedule 1 makes Civil Aviation Order 95.56.

Federal Register of Legislative Instruments F2006L00838

Schedule 1 Civil Aviation Order 95.56

Exemption from provisions of the *Civil Aviation Regulations 1988* — light sport aircraft

1 Application

This Order applies to each aircraft:

(a) for which a special certificate of airworthiness has been issued under regulation 21.186 of CASR 1998; and

(b) that is registered under Part 47 of CASR 1998.

2 Definitions

In this Order:

CAR 1988 means the *Civil Aviation Regulations 1988*.

CASR 1998 means the *Civil Aviation Safety Regulations 1998*.

3 Exemption under regulation 308 of CAR 1988

3.1 The aircraft is exempt from compliance with the following provisions of CAR 1988:

(a) regulations 36A, 37, 41, 42, 42A, 42B, 42C, 42K, 42L, 42Q, 42W, 42WA, 42X, 42Y and 42ZA;

(b) Parts 4B and 4C.

3.2 The exemption is subject to the conditions mentioned in subsection 4.

4 Conditions

4.1 The manufacturer of the aircraft must approve all modifications and major repairs to the aircraft.

4.2 If the aircraft is fitted with a type certificated engine or propeller, the registered operator of the aircraft must ensure that:

(a) paragraph 4.1 has been complied with for the engine or propeller; and

(b) maintenance records for the aircraft show that the engine or propeller has not been maintained in accordance with Part 4A of CAR 1988.

Federal Register of Legislative Instruments F2006L00838

Australian Government
Civil Aviation Safety Authority

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, make this instrument under regulation 200.010 of the *Civil Aviation Safety Regulations 1998*.

[Signed Bruce Byron]
Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

12 August 2008

Civil Aviation Order 95.57 Instrument 2008

1 Name of instrument

This instrument is the *Civil Aviation Order 95.57 Instrument 2008*.

2 Commencement

This instrument commences on the day after it is registered.

3 Civil Aviation Order 95.57

Schedule 1 makes Civil Aviation Order 95.57.

Schedule 1 Civil Aviation Order 95.57

EADS CASA Airbus A330 multi-role transport tanker

1 Definitions

In this Order:

acceptance flight testing means acceptance flight testing as defined in regulation 200.010 of CASR 1998.

ADF means the Australian Defence Force.

CAR 1988 means the *Civil Aviation Regulations 1988*.

CASR 1998 means the *Civil Aviation Safety Regulations 1998*.

EADS CASA means the Spanish Branch of the European Aeronautic Defence and Space Company.

flight testing means production flight testing or acceptance flight testing.

production flight testing means production flight testing as defined in regulation 200.010 of CASR 1998.

Federal Register of Legislative Instruments F2008L02849

2 Application

2.1 This instrument applies to the EADS CASA Airbus A330 multi-role transport tanker (the ***aircraft***) undergoing production flight testing, or acceptance flight testing, in Australia after modification by Qantas Airways Limited, Aviation Reference Number 216147, at their facilities at Brisbane airport.

2.2 For the purposes of regulation 200.010 of CASR 1998, this Order sets out the conditions with which the aircraft must comply in order to be exempt from compliance with CAR 1988 and CASR 1998.

3 Conditions

3.1 EADS CASA must exercise authorisation and control of flight testing of the aircraft to the extent necessary to ensure that the aircraft are airworthy.

3.2 The ADF must exercise authorisation and control of the flight testing necessary to ensure that the aircrew of the aircraft have appropriate ratings, medical classification and flying experience to the extent necessary and in accordance with military standards.

3.3 Before beginning flight testing, EADS CASA personnel must conduct an inspection of the aircraft to determine whether the aircraft:

(a) complies with the design standard; and

(b) is suitable for flight testing.

3.4 Before beginning flight testing, the ADF must ensure that all ADF pilots conducting tests are properly authorised to do so.

3.5 Production flight testing must be conducted in accordance with the applicable publication issued by EADS CASA.

3.6 Acceptance flight testing must be conducted in accordance with:

(a) the applicable publications issued by EADS CASA; and

(b) the aircraft operating limitations issued from time to time by EADS CASA; and

(c) the applicable flight manual and airworthiness directives issued by the ADF.

Federal Register of Legislative Instruments F2008L02849