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*.

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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

(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.

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.

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;

(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.

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.

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.

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.

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

(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.

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.

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.

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

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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