Australian Government

Civil Aviation Safety Authority

I, BRUCE ROBERT GEMMELL, Acting Director of Aviation Safety, on behalf of CASA, make this instrument under subregulation 235 (2) of the *Civil Aviation Regulations 1988*.

[Signed B. Gemmell]
Bruce Gemmell
Acting Director of Aviation Safety and
Chief Executive Officer

2 June 2005

Civil Aviation Order 20.7.1B Amendment Order (No. 1) 2005

1 Name of instrument

This instrument is the *Civil Aviation Order 20.7.1B Amendment Order (No. 1) 2005*.

2 Commencement

This instrument commences on the day after it is registered on the Federal Register of Legislative Instruments.

3 Amendment

Schedule 1 amends Civil Aviation Order 20.7.1B.

Schedule 1 Amendment

[1] Heading

substitute

Aeroplane weight and performance limitations — specified aeroplanes above 5 700 kg — all operations (turbine and piston-engined)

[2] Subparagraphs 2.1 (a) and (b)

omit

permissible all-up

insert

take-off

[3] Paragraph 2.2

substitute

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.

[4] Paragraph 3.1, definition of *accelerate-stop distance available*

substitute

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.

[5] Paragraph 3.1, definition of clearway

omit

approved by CASA

insert

declared to be available

[6] Paragraph 3.1, definition of *landing distance available*

substitute

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

[7] Paragraph 3.1, definition of *speeds*

omit

V_1 means the decision speed;

insert

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;

[8] Paragraph 3.1, definition of *stopway*

omit

approved by CASA

insert

declared to be available

[9] Paragraph 3.1, definition of *take-off distance available*, including the note

substitute

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.

[10] Paragraph 3.1, new definitions

insert

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.

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

RNP containment means the distance:

(a) either side of the planned flight path within the limits of which the aeroplane will be contained; and

(b) not less than twice the selected RNP type.

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.

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

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.

[11] Paragraph 3.1, at the foot

insert

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.

[12] Paragraph 4.1

omit first mention of

weight at which

insert

weight that

[13] Subparagraph 4.1 (a)

after

elevation,

insert

ambient

[14] Subparagraph 4.1 (a)

omit

and surface

insert

and runway surface

[15] Subparagraph 4.1 (a)

omit

is equal

insert

are equal

[16] Subparagraph 4.1 (a)

omit

actual temperature

insert

ambient temperature and aerodrome elevation

[17] Subparagraph 4.1 (b)

substitute

(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) 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;

[18] Subparagraph 4.1 (d), first sentence

omit everything after

alternate aerodrome

insert

, will permit compliance with the landing weight limitations mentioned in subsection 5.

[19] Subparagraph 5.1 (a)

omit

temperature,

[20] Subparagraph 5.1 (a)

omit

surface

insert

runway surface

[21] Subparagraph 5.1 (a)

omit everything after

direction of

insert

landing;

[22] Subparagraphs 5.1 (b) and (c)

after

account

insert

forecast or

[23] Subsection 6

substitute

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.

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.

[24] Paragraph 7.1

omit

a critical engine

insert

the critical engine so that it is recognised

[25] Paragraph 7.2.1

omit everything before subparagraph (a), insert

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:

[26] Paragraph 7.2.1

renumber as paragraph 7.2

[27] Paragraph 7.2.2

omit

[28] Paragraph 7.3

substitute

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%.

[29] Paragraph 7.4

substitute

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.

[30] Paragraph 7.5

omit

7.4

insert

7.4.1

[31] Paragraph 7.5

omit

7.3

insert

7.3.1

[32] Paragraph 7.5, at the foot

insert

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.

[33] Paragraph 7.6, definition of *SFAR 41 aeroplane,* subparagraph (b)

omit

ICAO Annex 8

insert

Annex 8 to the Chicago Convention

[34] Paragraphs 7.7 and 7.8

omit

[35] Paragraph 8.1

after

with

insert

the

[36] Paragraph 9.1

substitute

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 Vs, 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%.

[37] Paragraph 11.1

substitute

11.1 For subparagraph 5.1 (a), the landing distance for a jet-engined aeroplane is:

(a) for an aeroplane engaged in regular public transport operations when landing on a dry runway, or in charter operations when landing on a dry or wet runway — 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 landing on a wet runway:

(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.

[38] Subparagraphs 11.1.1 (a) and (b)

substitute

(a) for a landing at a destination aerodrome:

(i) when the runway is dry — a distance equal to 1.43 times the distance required to bring the aeroplane to a stop; or

(ii) when the runway is wet — a distance equal to 1.67 times the distance required to bring the aeroplane to a stop; and

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

[39] Paragraph 11.1.2

substitute

11.1.2 Subject to paragraph 11.2, the landing distance required under paragraph 11.1 or 11.1.1 must be determined using information set out in the flight manual.

[40] Paragraph 11.2

substitute

11.2 For a landing on a contaminated runway, the landing distance required is:

(a) subject to paragraph 11.3, 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.

[41] Paragraph 11.3

substitute

11.3 For subparagraph 4.1 (d) and paragraph 5.1, an aeroplane engaged in private, or aerial work, operations must be operated so that compliance with the landing 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.

[42] Paragraph 11.4

omit

[43] Paragraph 12.1

omit

4.1 (b)

substitute

4.1 (ba)

[44] Paragraph 12.1

omit

at the critical point of the take-off run

insert

so that it is recognised at V_1 appropriate to a dry runway

[45] Paragraph 12.1

omit

until compliance with paragraph 12.4 is established and can be maintained

[46] Paragraph 12.1

omit

15°

insert

15°,

[47] Paragraph 12.1

omit each mention of

obstructions

insert

obstacles

[48] Paragraph 12.1

omit

in the planned take-off area

insert

in the take-off area

[49] Paragraph 12.1, at the foot

insert

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.

[50] After paragraph 12.1A

insert

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.

[51] Subparagraph 12.1.1 (a)

omit

20 000 kg

insert

22 700 kg

[52] Subparagraph 12.1.1 (a)

omit

all-up-weight

insert

take-off weight

[53] Subparagraph 12.1.1 (a)

omit

commencing from

insert

commencing at

[54] Subparagraph 12.1.1 (a)

omit

requirement

insert

requirement, the

[55] Subparagraph 12.1.1 (b)

omit

20 000 kg

insert

22 700 kg

[56] Subparagraph 12.1.1 (b)

omit

all-up-weight

insert

take-off weight

[57] Subparagraph 12.1.1 (b)

omit

commencing from

insert

commencing at

[58] Subparagraph 12.1.1 (b)

omit

in the planned take-off path,

[59] Subparagraph 12.1.1 (b)

add at the end

However, for an RNP-capable aeroplane engaged in an approved RNP operation, the lateral expansion of the take-off area may be discontinued when the take-off area intersects the RNP containment specified in the approval as appropriate for the RNP type that is:

(i) selected in the FMS by the flight crew; and

(ii) within the RNP capability specified in the flight manual for an operation of that kind.

[60] Paragraph 12.2

after

for the

insert

level flight

[61] Paragraph 12.2, at the foot

insert

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.

[62] Paragraph 12.3

substitute

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.

[63] Paragraph 12.4

after

4.1 (c),

insert

and subject to paragraph 12.5,

[64] Paragraph 12.4

omit

if the en-route

insert

if, in the en-route

[65] Paragraph 12.4

omit

a critical

insert

the critical

[66] Paragraph 12.4

omit

height

insert

altitude

[67] Paragraph 12.6

omit

configurations

insert

configuration

[68] Paragraph 12.7

omit

determining net flight paths

insert

determining the net flight path in the en-route configuration

[69] Subparagraph 12.7 (c)

substitute

(c) pressure altitude;

[70] Subsection 12A, heading

substitute

12A Alternative take-off area requirements

[71] Paragraph 12A.1

omit

[72] Paragraph 12A.2

omit

and 12A.4

insert

, 12A.4 and 12A.5

[73] After paragraph 12A.4

insert

12A.5 Despite paragraphs 12A.3 and 12A.4, for an RNP-capable aeroplane engaged in an approved RNP operation, the lateral expansion of the take-off area may be discontinued when the take-off area intersects the RNP containment specified in the approval as appropriate for the RNP type that is:

(a) selected in the FMS by the flight crew; and

(b) within the RNP capability specified in the flight manual for an operation of that kind.

[74] Paragraph 14.1

substitute

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*.