



Australian Government

Civil Aviation Safety Authority

Instrument number CASA EX115/13

I, GERARD JOHN CAMPBELL, Executive Manager, Operations Division, a delegate of CASA, make this instrument under regulation 11.160 of the *Civil Aviation Safety Regulations 1998* and subsection 33 (3) of the *Acts Interpretation Act 1901*.

[Signed G.J. Campbell]

Gerard J. Campbell
Executive Manager
Operations Division

29 October 2013

Exemption – from standard take-off and landing minima – Virgin Australia International Airlines Pty Ltd

1 Duration

This instrument:

- (a) commences on the day of registration; and
- (b) expires at the end of 30 September 2016, as if it had been repealed by another instrument.

2 Revocation

Instrument CASA EX61/13 is revoked.

3 Definitions

In this instrument:

ATC means air traffic control.

CAT means category and refers to Category I, Category II and Category III minima.

DH means decision height.

ICUS refers to a pilot and means in command under supervision.

low visibility operation or **LVO** means:

- (a) landing with less than CAT I minima; or
- (b) take-off with less than 550 m RV or RVR.

runway zone means the touchdown zone (**TDZ**), the mid-zone (**MID**) or the end zone (**END**) of a runway.

RV means runway visibility and is assessed by an approved observer and reported by ATC. RV only applies where the visibility is 350 m or more.

RVR means runway visual range and is measured by instrument and reported by ATC.

4 Application

This instrument applies only to aircraft mentioned in Schedule 1 operated by Virgin Australia International Airlines Pty Ltd, Aviation Reference Number 768593 (the **operator**), in LVO at an aerodrome when both of the following apply:

- (a) ATC is in operation; and
- (b) ATC has informed the pilot of the aircraft that low visibility procedures are in force.

5 Exemption

Each aircraft operated by the operator is exempt from compliance with regulation 257 of the *Civil Aviation Regulations 1988 (CAR 1988)* in relation to the standard take-off and landing minima determined by CASA under subregulation 257 (1) of CAR 1988.

Note Details of the determination are set out in AIP En Route 1.5, section 4.

6 Conditions

The exemption is subject to the following conditions:

- (a) each aircraft must use not less than the aerodrome minima mentioned for it in Schedule 1, in accordance with Schedule 1;
- (b) the requirements mentioned in Schedule 2 must be complied with.

Schedule 1 Aerodrome minima for LVO

- 1 At aerodromes that have the facilities required to support low visibility take-offs and CAT II and CAT III landings installed and in operation, the following are the minima that may be used by the aircraft mentioned.
- 2 Within Australia, an aerodrome's runways capable of supporting LVO will be shown in the AIP or by NOTAM.

Take-off minima

- 3 Take-off minima with TDZ, MID and END RVR measurements available for B777-300ER aircraft are:
 - 150 m RVR TDZ and 150 m RVR MID and 150 m RVR END.
- 4 Take-off minima with TDZ and either MID or END RVR measurements available for B777-300ER aircraft are:
 - (a) 200 m RVR TDZ and 200 m RVR MID or, if RVR MID is not available, then 200 m RVR END; and
 - (b) 350 m RV TDZ and 350 m RV MID or, if RV MID is not available, then 350 m RV END. For 350 m or greater RV TDZ, the pilot in command must act as the approved observer for the TDZ.

Note Also see Schedule 2, clause 11, for specific runway lighting and marking requirements.

Landing minima

- 5 CAT II minima for B777-300ER aircraft are:
 - (a) visibility: 300 m RVR TDZ and 125 m RVR MID or, if MID RVR is not available, then 125 m RVR END; and
 - (b) DH: 100 feet.

- 6 CAT III A minima for B777-300ER aircraft are:
 - (a) visibility: 175 m RVR TDZ and 125 m RVR MID or, if MID RVR is not available, then 125 m RVR END; and
 - (b) DH: 50 feet.
- 7 CAT III B minima for B777-300ER aircraft are:
 - (a) visibility: 100 m RVR TDZ and 100 m RVR MID and 100 m RVR END; and
 - (b) DH: No DH.

Schedule 2 Requirements for LVO

Training

- 1 The LVO training course syllabus covering ground training and flight simulator training must be approved in writing by CASA.
Note A sample training course syllabus is in Annex A.
- 2 The operator, or an approved training organisation, must certify that each pilot of the aircraft has successfully completed the LVO training course.

Experience

- 3 A pilot is authorised for LVO on the aircraft only if he or she has successfully:
 - (a) completed the aircraft type LVO training in accordance with the approved training syllabus; and
 - (b) for CAT II and CAT III landings — performed 2 autolands in the aircraft in at least CAT I conditions.
- 4 Subject to clause 5, the pilot experience required to operate to the minima shown in Schedule 1 is:
 - (a) for a captain:
 - (i) at least 300 hours on any aircraft type as a pilot in command; and
 - (ii) at least 100 hours as pilot in command or ICUS or dual in the left-hand seat on the aircraft type with the operator;
 - (b) for a co-pilot:
 - (i) at least 100 hours on any aircraft type as a co-pilot; and
 - (ii) at least 50 hours on the aircraft type with the operator.
- 5 However, if a pilot does not have the experience mentioned in clause 4, he or she is restricted to:
 - (a) for take-off — a cross-wind not exceeding 10 knots and a minima of at least 200 m RVR; and
 - (b) for landing — CAT II minima of 100 feet DH and 400 m RVR in the TDZ.

Recency

- 6 For recency, a captain must have completed the operator's 6 monthly recurrent training and competency assessment, which must include, as a minimum, 2 CAT II/III approaches and 1 autoland, within the 6 months before conducting a CAT II/III landing.

Competency

- 7 For competency, each pilot of the aircraft must have successfully completed, to the operator's operational and meteorological limits, a flight simulator competency check that includes:
 - (a) a take-off with a near V_1 engine failure (reject) and a V_1 engine failure (continue); and
 - (b) a CAT II or CAT III go-around; and
 - (c) a CAT II or CAT III landing.
- 8 Unless otherwise approved in writing by a Team Leader Certificate Management Team of CASA, a pilot mentioned in clause 7 must complete 2 checks every 12 months as follows:
 - (a) each check must demonstrate competency in each activity mentioned in paragraphs 7 (a), (b) and (c);
 - (b) for 1 of the 2 checks, competency must be demonstrated to an operational check captain of the relevant aircraft type;
 - (c) not less than 4 months and not more than 8 months may elapse between each check.

Note CASA will only approve otherwise in exceptional circumstances where prior testing, experience or other demonstration of competency is compelling evidence of equivalent safety.
- 9 A captain may not operate in an LVO from the right-hand seat unless, at least once in the preceding 12 months, he or she has demonstrated to an operational check captain competency in the LVO from the right-hand seat.

Operational restrictions

Take-offs and landings

- 10 For take-off and landing, the following restrictions apply:
 - (a) for minima — the pilot in command of the aircraft must use the most restrictive of the following:
 - (i) the minima mentioned in Schedule 1 that apply to the type of operation or procedure in which the aircraft is engaged;
 - (ii) the minima the aerodrome facilities will support at the time of the LVO;
 - (iii) the minima approved by the aircraft operator;
 - (iv) the minima approved by the relevant foreign aviation regulatory authority;
 - (v) the minima approved in the aircraft flight manual (as amended);
 - (b) the maximum cross-wind component for an aircraft conducting an LVO is:
 - (i) if any RVR is less than 200 m — 10 knots; or
 - (ii) otherwise — 15 knots;
 - (c) the pilot flying must:
 - (i) be a captain with the operator; and
 - (ii) not be undergoing initial command training with the operator; and
 - (iii) occupy the left-hand seat.

Take-offs — runway lighting and markings

- 11 For take-offs, the following runway lighting and markings are required:
 - (a) with RVR or RV at 350 m or more — runway edge lights spaced at not more than 60 m and either runway centreline lighting (**RCLL**) or runway centreline markings (**RCLM**) are required;

- (b) with less than 350 m RVR — high-intensity runway edge lights spaced at not more than 60 m, RCLL spaced at not more than 15 m and RCLM are required.

Landings

- 12 For landings, the following approach rules apply:
 - (a) when making an approach, the pilot in command of the aircraft must not continue beyond 1 000 feet above aerodrome elevation if a controlling zone RVR is reported by ATC as continually less than the specified minimum for the approach;
 - (b) if, after passing 1 000 feet above aerodrome elevation, a controlling zone RVR is reported by ATC as falling below the specified minimum, the approach may be continued to the minima.
- 13 For landings, the pilot in command of the aircraft must not continue an approach below the applicable minima unless visual reference is established and maintained in accordance with the following:
 - (a) for CAT II — at least:
 - (i) 3 consecutive longitudinally aligned lights, being the centreline of the approach lights, the TDZ lights, or the runway lights; and
 - (ii) a lateral element of lighting, being an approach lighting crossbar, landing threshold or a barrette of touchdown lighting;
 - (b) for CAT III A — at least 3 consecutive longitudinally aligned lights, being the centreline of the approach lights, the TDZ lights, or the runway lights;
 - (c) for CAT III B:
 - (i) with a DH — at least 1 centreline light; and
 - (ii) with no DH — no visual contact is required.
- 14 For landings, the braking action on the runway must not be reported by ATC as worse than “medium”.
- 15 The landing distance available for the aircraft must be the greater of:
 - (a) 2 200 m; or
 - (b) 1.15 times the landing distance required under subsection 11 of Civil Aviation Order 20.7.1B.
- 16 For a CAT II landing, until visual conditions are established, the aircraft must have and use at least a fail-passive automatic landing system.
- 17 For a CAT III A landing, the aircraft must have and use at least a fail-passive automatic landing system and an automatic go-around capability.
- 18 For a CAT III B landing, the aircraft must have and use a fail-operational automatic landing system with roll-out control guidance and an automatic go-around capability.

Aircraft equipment

- 19 The aircraft equipment required to conduct an LVO take-off or a CAT II or CAT III landing must be operating and must be maintained in accordance with the aircraft maintenance planning document.

Foreign approvals

- 20 An LVO may be conducted at an aerodrome outside Australia only if each of the following has been complied with:
 - (a) the operator has:

- (i) informed CASA that for landing operations, the aerodrome and runway terrain details and charts, including the data used to determine the applicable minima, have been checked; and
 - (ii) received approval to conduct the operation from the relevant foreign aviation regulatory authority; and
 - (iii) given CASA a copy of the approval; and
- (b) the LVO is conducted in accordance with the operator's relevant foreign aviation regulatory authority approval.

Document and procedure requirements

- 21 The operator must ensure that there is an operations manual on board each aircraft containing the following:
- (a) all necessary crew procedures required for a safe LVO, including a standard call for the pilot monitoring to advise the pilot flying of deviations from the runway centreline during take-off;
 - (b) a list of aerodromes and runways approved for LVO take-offs and CAT II and CAT III landings (the *list*);
 - (c) the minima for the approved aerodromes and runways in the list;
 - (d) a copy of this instrument;
 - (e) an abbreviated checklist which must include all relevant information for:
 - (i) briefing on low visibility take-offs and landings; and
 - (ii) identifying the aircraft equipment necessary for carrying out the LVO;
 - (f) the CAT II radio altimeter height that equates to the approved CAT II DH for each runway in the list approved for CAT II landings.
- Note* In Australia, the operator may determine the CAT II radio altimeter height (RA) from a study of the *Precision Approach Terrain Charts* available from the relevant aerodrome operator.
- 22 The operator's procedures for LVO must be in accordance with the following:
- (a) this instrument;
 - (b) if applicable, the operator's Safety Operational Specification – Approval to Conduct Autolands instrument issued by CASA.

Annex A — LVO training requirements

This is a sample training course syllabus as mentioned in clauses 1 and 3 of Schedule 2.

Training

(a) Ground training

Ground training must cover at least the following subjects:

- general concepts and appropriate definitions (see ICAO *Manual of All Weather Operations* Doc 9365-AN/910)
- the importance of Alert Height; actions in the event of failures above and below the Alert Height; a knowledge of aircraft or ground equipment failures not protected by the Alert Height concept
- aerodrome visual aids, markings and lighting systems
- the meaning of the phrase “clear of runway”, with respect to runway exit light colours
- use and limitations of different types of RVR systems
- ILS characteristics, limitations and Class of Performance classification (see ICAO Annex 10, Attachment C, paragraph 2.14)
- the principles of obstacle clearance requirements for landing
- factors affecting the determination of landing minima
- effect of terrain profiles on radio altimeter readings at DH and on the autoland system
- characteristics of fog – homogenous and non-homogenous
- effects of cold temperature on the barometric altimeter reading for the glide slope check
- effects of precipitation, ice accretion, low level windshear and turbulence
- actions to be taken in the event of airborne or ground equipment failures
- reversionary minima
- an understanding of any special aircraft maintenance requirements for LVO equipment
- correct seating and eye position.

(b) Flight simulator training

The session should be approximately 3 hours for a captain paired with a first officer, or 4 hours for 2 paired captains. The session should be a stand-alone exercise conducted after all endorsement training has been completed. The simulator must be at least level C and type specific with correct visual modelling.

Some exercises should be conducted at maximum take-off weight (to provide a maximum split between V_1 and V_R) and maximum landing weight, both take-off and landing at approved (or applied for) RVR minima with up to maximum cross-wind and where possible a mix of day and night environments.

Training must include the following:

- normal operation with no failures
- visual cues required for landings, especially CAT II
- checks of satisfactory functioning of ground and aircraft equipment
- correct use of MEL and the effect of known unserviceabilities
- effects on minima caused by changes in the status of ground installations
- correct monitoring of automatic flight control systems and annunciators
- any reduced operating limitations
- maximum deviation allowed for glide slope and localizer

- actions to be taken in the event of failures or malfunctions of the following:
 - ILS transmitter and ILS receiver(s)
 - radio altimeter(s)
 - autopilot(s) and autothrust system
 - engine, electrical, hydraulic, flight control and instrumentation systems
 - autoland system indicated by lack of expected FMA annunciations (flare, rollout)
- system failures pertinent to the aircraft type which would prevent an autoland when a failure occurs below the Alert Height
- engine-out autoland and engine-out missed approach
- loss of visibility during take-off and below the minima during approach
- pilot incapacitation during take-off and approach
- fail-passive automatic landing approach with further system failure below the minima.

Taxi exercise

Use of the aerodrome chart in following cleared taxi route to and from the runway and the terminal, identifying stop bars and CAT II and CAT III holding points and using all options to check line up on the correct runway.

Take-off exercises

There must be a minimum of 8 take-offs resulting in becoming airborne or in a RTO, covering the exercises below. Additional exercises should be conducted to cover operator requirements and the above training requirements.

Instructors should demonstrate in visual conditions the effectiveness of the localizer display or other lateral guidance equipment, as the aircraft deviates from the runway centreline.

Some suggested exercises are:

- normal take-offs (2) (RVR 200 m, X/wind 15 kts – RVR in accordance with the take-off minima for the aircraft type, X/wind 10 kts)
- engine failure near V_1 (RTO) and engine failure at V_1 (continue)
- loss of visibility at low speed (RTO) and after 100 kts (continue)
- pilot (PF) incapacitation
- deliberate runway centreline deviation.

Approach and landing, and go-around exercises

There must be a minimum of 8 approaches from at least 1 500 feet to either a landing or a go-around. However, additional exercises should be conducted to cover operator requirements and the above training requirements.

Instructors should demonstrate in the simulator the approach (Calvert and ALSF-2) and runway lighting and various visual segments that would permit a landing relating to CAT II, CAT III A, and CAT III B, before students commence LV landing exercises.

Instructors must provide varying RVR reports to the crew during some of the simulator exercises to ensure a correct understanding of approach bans.

Some suggested exercises are:

- normal operations
- approaches resulting in missed approaches due to either lack of visual reference at DH or loss of visibility below DH
- aircraft and ground system failures
- loss of visibility above and below DH
- pilot (PF) incapacitation

- reversion to manual flight at or below CAT II DH to control flare, landing and rollout or missed approach
 - reversion to higher minima
 - fail passive CAT III A approach with autopilot disconnect below minima
 - engine failure at various stages of the approach and during the missed approach.
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