# AERODROME OPERATING MINIMUMS - EASA AIR OPERATIONS - EFFECTIVE 30 OCTOBER 2022

**General and Aeroplane Specific Material**

## 1 GENERAL

On 5 October 2012 the Commission Regulation (EU) No 965/2012 and related documents were published, laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council.

The European Aviation Safety Agency (EASA) publishes Regulations on Air Operations with the associated Decisions containing Acceptable Means of Compliance (AMC) and Guidance Material (GM).

On JEPPESEN approach and airport charts an inverse printed **"Standard"** label in the upper left corner of the minimums band indicates that the minimums are derived according to the requirements described in EASA Air Operations documents.

From 2020 the **"Standard"** label will be replaced by a **"Std/State"** label to be aligned with the new Jeppesen Standard AOM policy. The label indicates that the minimums are determined according to a State Regulation, which is, in general, similar to the guidance from ICAO Doc 9365.

EASA AIR OPS minimums may be published on minimums listings (indexed as 10-9S, 10-9S1...) if requested by an operator. As the pages are created especially for EASA AIR OPS operators, an inversely printed "EASA AIR OPS" label is depicted in the upper right corner of this page.

TERPS change 20 was harmonized with the EASA Air Ops minimum tables for CAT I, APV and NPA (CAT C and D aircraft only). Those procedures with the TERPS label are therefore EASA AIR OPS compliant for CAT C and D aircraft operators.

The following explanation is an excerpt to summarize only the relevant parts of the EASA Air Operations (EASA Air OPS) regarding the method used to determine Aerodrome Operating Minimums (Rules, AMC or GM). It is **not** intended to provide aircraft or aircrew requirements or operationg procedures.

**The publication of EASA Air Ops landing and take-off minimums on Jeppesen charts does not constitute authority for their use by every operator. Each individual operator is responsible for validating that the appropriate approval has been obtained for their use.**

In addition, the minimums are only considered applicable if:

- the required ground equipment for the intended procedure is operative; and
- the required aircraft systems for the type of approach are operative; and
- the required aircraft performance criteria are met; and
- the crew is qualified accordingly.

## 2 TERMINOLOGY AND DEFINITIONS

**Acceptable Means of Compliance (AMC) —** means non-binding standards adopted by the Agency to illustrate means to establish compliance with Regulation (EC) No 216/2008 and its Implementing Rules.

**CAT.OP.MPA.xxx —** Implementing rule (IR) from regulation for PART-CAT (Commercial Air Transport Operations)

**SPA.LVO.xxx —** Implementing rule from regulation for PART-SPA (Specific Approvals)

**AMC1 CAT.OP.MPA.xxx —** Acceptable Means of Compliance to the related IR CAT.OP.MPA.xxx

**GM1 CAT.OP.MPA.xxx —** Guidance Material to the related IR CAT.OP.MPA.xxx

**Continuous descent final approach (CDFA) —** means a technique, consistent with stabilized approach procedures, for flying the final-approach segment (FAS) of an instrument non-precision approach (NPA) procedure as a continuous descent, without level-off, from an altitude/height at or above the final approach fix altitude/height:

(a) for straight-in approach operations, to a point approximately 15m (50ft) above the landing runway threshold or the point where the flare maneuver begins; or

(b) for circling approach operations, until MDA/H or visual flight maneuver altitude/height is reached.

**EFVS-A —** Enhanced flight vision system used for Approach

**EFVS-L —** Enhanced flight vision system used for Landing

**Instrument approach operations —** An approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for executing instrument approach operations:

(a) a two-dimensional (2D) instrument approach operation, using lateral navigation guidance only; and

(b) a three-dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance.

*NOTE 1: Lateral and vertical guidance refers to guidance provided either by ground-based radio navigation aids, or by computer-generated navigation data from ground-based, space-based, self-contained navigation aids or a combination of these.*

*NOTE 2: A non-precision approach (NPA) procedure flown as CDFA with vertical path guidance calculated by on-board equipment is considered to be a 3D instrument approach operation.*

*NOTE 3: CDFAs with manual calculation of the required rate of descent are considered 2D operations.*

## AERODROME OPERATING MINIMUMS - EASA AIR OPERATIONS - EFFECTIVE 30 OCTOBER 2022

**Low-visibility operations (LVO) —** means approach or take-off operations on a runway with a runway visual range less than 550m or with a decision height less than 200ft.

**Low-visibility procedures (LVP) —** means procedures applied by an aerodrome for the purpose of ensuring safety during low-visibility operations.

*NOTE: LVP can be very simple (like simply state that only one operation at the airport is allowed) or can be more complex.*

**Low-visibility take-off (LVTO) —** means a take-off with an RVR less than 550m. Only LVTO operations in an RVR of less than 400m require a specific approval. According AMC2 SPA.LVO.105(c)(b)(7)(ii) LVP are required for LVTOs with RVR less than 400m.

**Type A instrument approach operation —** means an operation with an MDH or a DH at or above 250ft (Note: According to GM3 CAT.OP.MPA.182(c) the DH of the specific instrument approach procedure determines the Type A or B, not the system minimum. An ILS with a DH >=250ft is always a Type A operation.)

**Type B instrument approach operation —** means an operation with a DH below 250ft

**Type of instrument approach operation on Jeppesen charts for States applying EASA AIR OPS**

| Approach Type | Flight Technique | Descent Limit Label | Type of Operation |
|---|---|---|---|
| Precision | --- | DA(H | 3D, type A or B |
| APV | --- | DA(H | 3D, type A |
| Non-precision | CDFA *(onboard equipment)* Descent angle depicted | DA/MDA(H) | 3D, type A |
| Non-precision | CDFA *(manual calculation)* No Descent angle depicted | DA/MDA(H) or MDA(H) | 2D, type A |
| Non-precision | Other than CDFA | MDA(H) | 2D, type A |

*NOTE: According to Table 10 from AMC5 CAT.OP.MPA.110 operating 2D or 3D is a contributing factor to determine the lowest RVR.*

*Flying the level segment up to the missed approach point or not flying a level segment determines whether an RVR add-on (200m or 400m) is required or not.*

## 3 OPERATOR RESPONSIBILITY

**CAT.OP.MPA.110 Aerodrome operating minimums**

a. The operator shall establish aerodrome operating minimums for each departure, destination or alternate aerodrome that is planned to be used in order to ensure separation of the aircraft from terrain and obstacles and to mitigate the risk of loss of visual references during the visual flight segment of instrument approach operations.

b. The method used to establish aerodrome operating minimums shall take all the following elements into account:
   1. the type, performance, and handling characteristics of the aircraft;
   2. the equipment available on the aircraft for the purpose of navigation, acquisition of visual references, and/or control of the flight path during take-off, approach, landing, and the missed approach;
   3. any conditions or limitations stated in the aircraft flight manual (AFM);
   4. the relevant operational experience of the operator;
   5. the dimensions and characteristics of the runways/final approach and take-off areas (FATOs) that may be selected for use;
   6. the adequacy and performance of the available visual and non-visual aids and infrastructure;
   7. the obstacle clearance altitude/height (OCA/H) for the instrument approach procedures (IAPs);
   8. the obstacles in the climb-out areas and necessary clearance margins;
   9. the composition of the flight crew, their competence and experience;
   10. the IAP;
   11. the aerodrome characteristics and the available air navigation services (ANS);
   12. any minimums that may be promulgated by the State of the aerodrome;
   13. the conditions prescribed in the operations specifications including any specific approvals for low-visibility operations (LVOs) or operations with operational credits;
   14. any non-standard characteristics of the aerodrome, the IAP or the environment.

c. The operator shall specify a method of determining aerodrome operating minimums in the operations manual.

d. The method used by the operator to establish aerodrome operating minimums and any change to that method shall be approved by the competent authority.

**GM6 CAT.OP.MPA.110 Aerodrome operating minimums**

INCREMENTS SPECIFIED BY THE COMPETENT AUTHORITY

Additional increments to the published minimums may be specified by the competent authority to take into account certain operations, such as downwind approaches and single-pilot operations or approaches flown not using the CDFA technique.

## AERODROME OPERATING MINIMUMS - EASA AIR OPERATIONS - EFFECTIVE 30 OCTOBER 2022

**GM7 CAT.OP.MPA.110 Aerodrome operating minimums**

USE OF COMMERCIALLY AVAILABLE INFORMATION

When an operator uses commercially available information to establish aerodrome operating minimums, the operator remains responsible for ensuring that the material used is accurate and suitable for its operation, and that aerodrome operating minimums are calculated in accordance with the method specified in Part C of its operations manual and approved by the competent authority. The procedures in ORO.GEN.205 'Contracted activities' apply in this case.

**GM8 CAT.OP.MPA.110 Aerodrome operating minimums**

LOW TEMPERATURE CORRECTION

a. An operator may determine the aerodrome temperature below which a correction should be applied to the DA/H.
b. Table 20 may be used to determine the correction that should be applied.
c. The calculations in the table are for a sea-level aerodrome; they are therefore conservative when applied at higher-level aerodromes.
d. Guidance on accurate corrections for specific conditions (if required) is available in PANS-OPS, Volume I (ICAO Doc 8168) Section 1 Chapter 4.

**GM8 CAT.OP.MPA 110 Table 20 - Temperature corrections to be applied to barometric DH/MDH**

| Aerodrome temperature ($^0$C) | Height above the elevation of the altimeter setting source (ft) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1500 | 2000 | 3000 | 4000 | 5000 |
| 0 | 20 | 20 | 30 | 30 | 40 | 40 | 50 | 50 | 60 | 90 | 120 | 170 | 230 | 280 |
| -10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 150 | 200 | 290 | 390 | 490 |
| -20 | 30 | 50 | 60 | 70 | 90 | 100 | 120 | 130 | 140 | 210 | 280 | 420 | 570 | 710 |
| -30 | 40 | 60 | 80 | 100 | 120 | 140 | 150 | 170 | 190 | 280 | 380 | 570 | 760 | 950 |
| -40 | 50 | 80 | 100 | 120 | 150 | 170 | 190 | 220 | 240 | 360 | 480 | 720 | 970 | 1210 |
| -50 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | 450 | 590 | 890 | 1190 | 1500 |

**SPA.LVO.110 Aerodrome-related requirements, including instrument flight procedures**

The operator shall ensure that only aerodromes, including instrument flight procedures, suitable for the intended operations are used for LVOs and operations with operational credits.

**AMC4 SPA.LVO.110 Aerodrome-related requirements, including instrument flight procedures**

COLLECT AND DEVELOP AIRPORT DATA NOT CONTAINED IN THE AIP — AEROPLANES

When the operator wishing to use an aerodrome where its relevant data for the purpose of LVO is not provided or some data is not provided, the operator should develop procedures to collect or develop the necessary data. The procedure should be specific to the State of the aerodrome or the area of operation and should be approved by competent authority.

## 4 APPROACH FLIGHT TECHNIQUE

**CAT.OP.MPA.115 Approach flight technique - aeroplanes**

a. All approach operations shall be flown as stabilized approach operations unless otherwise approved by the competent authority for a particular approach to a particular runway.
b. The continuous descent final approach (CDFA) technique shall be used for approach operations using non-precision approach (NPA) procedures except for such particular runways for which the competent authority has approved another flight technique.

## 5 MET VISIBILITY/RVR/CMV

**AMC10 CAT.OP.MPA.110 Aerodrome operating minimums**

CONVERSION OF VISIBILITY TO CMV – AEROPLANES

The following conditions apply to the use of converted meteorological visibility (CMV) instead of RVR:

a. If the reported RVR is not available, a CMV may be substituted for the RVR, except:
   1. to satisfy the take-off minimums; or
   2. for the purpose of continuation of an approach in LVOs.
b. If the minimum RVR for an approach is more than the maximum value assessed by the aerodrome operator, then CMV should be used.
c. In order to determine CMV from visibility:
   1. for flight planning purposes, a factor of 1.0 should be used.
   2. for purposes other than flight planning, the conversion factors specified in Table 16 should be used.

**AMC10 CAT.OP.MPA.110 Table 16 Conversion of reported VIS to RVR/CMV**

| Light elements in operation | RVR/CMV = reported VIS x factor | |
|---|---|---|
| | Day | Night |
| High intensity approach and runway lights | 1.5 | 2.0 |
| Any type of light installation other than above | 1.0 | 1.5 |
| No lights | 1.0 | Not applicable |

## 6 APPROACH LIGHTING SYSTEMS

**AMC5 CAT.OP.MPA.110 Aerodrome operating minimums**

APPROACH LIGHTING SYSTEMS

**AMC5 CAT.OP.MPA.110 Table 11 Approach lighting systems - Aeroplanes**

| Class of lighting facility | Length, configuration and intensity of approach lights |
|---|---|
| FALS | CAT I approach lighting system (HIALS ≥ 720m) distance coded centerline, Barrette centerline |
| IALS | Simple approach lighting system (HIALS 420-719m) single source, Barrette |
| BALS | Any other approach lighting system (HIALS or MIALS or ALS 210-419m) |
| NALS | Any other approach lighting system (HIALS, MIALS or ALS < 210m) or no approach lights |

## 7 DETERMINATION OF AOM FOR TAKE-OFF

**AMC1 CAT.OP.MPA.110 Aerodrome operating minimums**

TAKE-OFF OPERATIONS - AEROPLANES

a. Take-off minimums

Take-off minimums should be expressed as visibility (VIS) or runway visual range (RVR) limits, taking into account all relevant factors for each runway planned to be used and aircraft characteristics and equipment. Where there is a specific need to see and avoid obstacles on departure and/or for a forced landing, additional conditions, e.g. ceiling, should be specified.

b. Visual reference

2. For night operations, the prescribed runway lights should be in operation.

c. Required RVR or VIS

1. For multi-engined aeroplanes, with performance such that, in the event of a critical engine failure at any point during take-off, the aeroplane can either stop or continue the take-off to a height of 1500ft above the aerodrome while clearing obstacles by the required margins, the take-off minimums specified by the operator should be expressed as RVR or VIS values not lower than those specified in Table 1.

2. For multi-engined aeroplanes without the performance to comply with the conditions in c.1., in the event of a critical engine failure, there may be a need to re-land immediately and to see and avoid obstacles in the take-off area. Such aeroplanes may be operated to the following take-off minimums provided that they are able to comply with the applicable obstacle clearance criteria, assuming engine failure at the height specified. The take-off minimum specified by the operator should be based upon the height from which the one-engine-inoperative (OEI) net take-off flight path can be constructed. The RVR minimum used should not be lower than either of the values specified in Table 1 or Table 2.

**AMC1 CAT.OP.MPA.110 Table 1 Take-off - Aeroplanes (without LVTO Approval) RVR or VIS**

| Facilities | | Minimum RVR or VIS |
|---|---|---|
| **Day** | NIL | 500m |
| **Day** | Centerline markings (RCLM) **or** Runway edge lights (RL) **or** Runway centerline lights (CL) | 400m |
| **Night** | Runway end lights **and** Runway edge lights (RL) **or** Runway centerline lights (CL) | |

Notes:

– The reported RVR or VIS value representative of the initial part of the take-off run can be replaced by pilot assessment.

– During day with NIL facilities: The pilot is able to continuously identify the take-off surface and maintain directional control.

– During night: Runway end lights may be substituted by color-coded runway edge lights or color-coded runway centerline lights.

**AMC1 CAT.OP.MPA.110 Table 2 Take-off - Aeroplanes (without LVTO approval) Assumed engine failure height above the runway versus RVR or VIS**

| Assumed Engine Failure Height above the Take-off Runway | RVR or VIS |
|---|---|
| ≤ 50ft | 400m |
| 51ft-100ft | 400m |
| 101ft-150ft | 400m |
| 151ft-200ft | 500m |
| 201ft-300ft | 1000m |
| More than 300ft or if no positive take-off flight path can be constructed | 1500m |

*NOTE: The reported RVR or VIS value representative of the initial part of the take-off run can be replaced by pilot assessment.*

## AERODROME OPERATING MINIMUMS - EASA AIR OPERATIONS - EFFECTIVE 30 OCTOBER 2022

**SPA.LVO.100 Low visibility operations**

The operator shall conduct the following operations only if they are approved by the competent authority:

a. take-off operations with visibility conditions of less than 400m RVR;

**GM2 SPA.LVO.100 Low-visibility operations and operations with operational credits**

LOW-VISIBILITY CONDITIONS

a. Low-visibility conditions means meteorological conditions with a runway visual range (RVR) less than 550m.

**GM1 SPA.LVO.100(a) Low-visibility operations and operations with operational credits**

CLASSIFICATION OF LVTO OPERATIONS

Take-off operations are classified as 'normal take-off operations' with an RVR at or above 550m and 'LVTO operations' with an RVR below 550m. Only LVTO operations in an RVR of less than 400m require a specific approval.

**AMC1 SPA.LVO.100(a) Low-visibility operations and operations with operational credits**

LOW-VISIBILITY TAKE-OFF (LVTO) OPERATIONS – AEROPLANES IN AN RVR of LESS THAN 400m

a. Required RVR

1. For multi-engined aeroplanes which, in the event of a critical engine failure at any point during take-off, can either stop or continue the take-off to a height of 1500ft above the aerodrome while clearing obstacles by the required margins, the criteria in Table 1 should apply:

**AMC1 SPA.LVO.100(a) Table 1 LVTO Operations with aeroplanes - RVR versus facilities**

| Facilities | Minimum RVR |
|---|---|
| Centerline markings (RCLM) **and** Runway edge lights (RL) | 300m (day) |
| Centerline markings (RCLM) **and** Runway edge lights (RL) **and** Runway end lights or Runway centerline lights (CL) | 300m (night) |
| Centerline markings (RCLM) **and** Runway end lights **and** Runway edge lights (RL) **and** Runway centerline lights (CL) | 150m |
| Centerline markings (RCLM) **and** Runway end lights **and** Runway edge lights (RL) (spaced 60m or less) **and** Runway centerline lights (CL) (spaced 15m or less) | 125m |

2. For multi-engined aeroplanes not complying with the conditions in (a)(1), there may be a need to land immediately and to see and avoid obstacles. Such aeroplanes may be operated to the take-off minimums shown in Table 2 and the marking and lighting criteria shown in Table 1, provided that they are able to comply with the applicable obstacle clearance criteria, assuming engine failure at the height specified:

**AMC1 SPA.LVO.100(a) Table 2 LVTO operations with aeroplanes - Assumed engine failure height versus RVR**

| Assumed engine failure height above the take-off runway (ft) vs RVR (m) | |
|---|---|
| **Height** | **RVR** |
| Less than 50ft | Not less than 200m |
| More than 50ft but less than 100ft | Not less than 300m |

b. The reported RVR value representative of the initial part of the take-off run can be replaced by pilot assessment.

c. The minimum RVR value specified in Table 1 or 2 should be achieved for all reporting points representative of the parts of the runway from the point at which the aircraft commences the take-off until the calculated accelerate-stop distance from that point.

LVTO-OPERATIONS – AEROPLANES IN AN RVR OF LESS THAN 125m

d. For LVTO operations with an RVR of less than 125m, the following additional elements should apply:

1. The runway has centerline lights spaced at intervals of 15m or less;

2. If an ILS signal is used for lateral guidance, the ILS localizer signal meets the requirements for category III operations, unless otherwise stated in the AFM;

e. For LVTO operations with an RVR of less than 125m, the reported RVR should be not less than the minimum specified in the AFM or, if no such minimum is specified, not less than 75m.

f. The minimum required RVR should be achieved for all reporting points representative of the parts of the runway from the point at which the aircraft commences the take-off until the greater of the calculated take-off distance or accelerate-stop distance from that point.

g. The reported RVR value representative of the initial part of the take-off run can be replaced by pilot assessment.

## 8 DETERMINATION OF AOM FOR CIRCLING

**AMC7 CAT.OP.MPA.110 Aerodrome operating minimums**

CIRCLING OPERATIONS - AEROPLANES

a. Circling Minimums

The following standards should apply for establishing circling minimums for operations with aeroplanes:

1. The MDH for circling operation should not be lower than the highest of:

i. the published circling OCH for the aeroplane category;

ii. the minimum circling height derived from Table 15; or

iii. the DH/MDH of the preceding instrument approach procedure (IAP);

2. The MDA for circling should be calculated by adding the published aerodrome elevation to the MDH, as determined by (a).(1).; and

3. The minimum VIS for circling should be the higher of:

i. the circling VIS for the aeroplane category, if published; or

ii. the minimum VIS derived from Table 15.

**AMC7 CAT.OP.MPA.110 Table 15 Circling - Aeroplanes MDH and minimum VIS versus aeroplane category**

| | Aeroplane Category | | | |
|---|---|---|---|---|
| | A | B | C | D |
| MDH | 400ft | 500ft | 600ft | 700ft |
| VIS | 1500m | 1600m | 2400m | 3600m |

b. Conduct of flight - general

1. the MDH and OCH included in the procedure are referenced to aerodrome elevation;

2. the MDA is referenced to mean sea level;

3. for these procedures, the applicable visibility is the VIS; and

4. operators should provide tabular guidance of the relationship between height above threshold and the in-flight visibility required to obtain and sustain visual conduct during the circling maneuver.

## 9 VISUAL APPROACH OPERATIONS

**AMC9 CAT.OP.MPA.110 Aerodrome operating minimums**

VISUAL APPROACH OPERATIONS

The operator should not use an RVR of less than 800m for a visual approach operation.

## 10 DETERMINATION OF AOM FOR INSTRUMENT APPROACH OPERATIONS

**AMC3 CAT.OP.MPA.110 Aerodrome operating minimums**

DETERMINATION OF DH/MDH FOR INSTRUMENT APPROACH OPERATIONS - AEROPLANES

a. The decision height (DH) to be used for a 3D approach operation or a 2D approach operation flown using the continuous descent final approach (CDFA) technique should not be lower than the highest of:

1. the obstacle clearance height (OCH) for the category of the aircraft;

2. the published approach procedure DH or minimum descent height (MDH) where applicable;

3. the system minimum specified in Table 4;

4. the minimum DH permitted for the runway specified in Table 5; or

5. the minimum DH specified in the aircraft flight manual (AFM) or equivalent document, if stated.

b. The MDH for a 2D approach operation flown not using the CDFA technique should not be lower than the highest of:

1. the OCH for the category of aircraft;

2. the published approach procedure MDH where applicable;

3. the system minimum specified in Table 4;

4. the lowest MDH permitted for the runway specified in Table 5; or

5. the lowest MDH specified in the AFM, if stated.

**AMC3 CAT.OP.MPA.110 Table 4 System minimums - Aeroplanes**

| Facility | Lowest DH/MDH |
|---|---|
| ILS/MLS/GLS/PAR<br>GNSS/SBAS (LPV) | 200ft |
| GNSS/SBAS (LP)<br>GNSS (LNAV)<br>GNSS/Baro-VNAV (LNAV/VNAV)<br>LOC with or without DME<br>SRA (terminating at 0.5NM)<br>VOR/DME | 250ft |
| SRA (terminating at 1.0NM)<br>VOR<br>NDB/DME | 300ft |
| SRA (terminating at 2.0NM or more)<br>NDB<br>VDF | 350ft |

Localizer performance with vertical guidance (LPV): a DH of 200ft may be used only if the published FAS datablock sets a vertical alert limit not exceeding 35m. Otherwise, the DH should not be lower than 250ft.

**GM3 CAT.OP.MPA.110 Aerodrome operating minimums**

SBAS OPERATIONS

a. SBAS LPV operations with a DH of 200ft depend on an SBAS system approved for operations down to a DH of 200ft.

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**AMC3 CAT.OP.MPA.110 Table 5 Type of Runway versus minimum RVR or VIS - Aeroplanes**

| Runway type | | Lowest DH/MDH |
|---|---|---|
| Instrument Runway | (CAT I) Precision approach (PA) runway | 200ft |
| | NPA runway | 250ft |
| Non-Instrument Runway | Non-instrument Runway | Circling minimums as shown in Table 15 (circling minimums) |

c. Where a barometric DA/H or MDA/H is used, this should be adjusted where the ambient temperature is significantly below international standard atmosphere (ISA). GM8 CAT.OP.MPA.110 'Low temperature correction' provides a cold temperature correction table for adjustment of minimum promulgated heights/altitudes.

**AMC5 CAT.OP.MPA.110 Aerodrome operating minimums**

DETERMINATION OF RVR OR VIS FOR INSTRUMENT APPROACH OPERATIONS - AEROPLANES

a. The RVR or VIS for straight-in instrument approach operations should be not less than the greatest of:
   1. the minimum RVR or VIS for the type of runway used according to Table 8;
   2. the minimum RVR determined according to the MDH or DH and class of lighting facility according to Table 9; or
   3. the minimum RVR according to the visual and non-visual aids and on-board equipment used according to Table 10.

   If the value determined in (1) is a VIS, then the result is a minimum VIS. In all other cases, the result is a minimum RVR.

b. For Category A and B aeroplanes, if the RVR or VIS determined in accordance with (a) is greater than 1500m, then 1500m should be used.

c. If the approach is flown with a level flight segment at or above the MDA/H, then 200m should be added to the RVR calculated in accordance with (a) and (b) for Category A and B aeroplanes and 400m for Category C and D aeroplanes.

d. The visual aids should comprise standard runway day markings, runway edge lights, threshold lights, runway end lights and approach lights as defined in Table 11.

**AMC5 CAT.OP.MPA.110 Table 8 Runway Type Minimums - Aeroplanes**

| Type of runway | Minimum RVR or VIS |
|---|---|
| PA runway CAT I | RVR 550m |
| NPA runway | RVR 750m |
| Non-instrument runway | VIS according to Table 15 (circling minimums) |

**AMC5 CAT.OP.MPA.110 Table 9 RVR versus DH/MDH - Aeroplanes**

| DH or MDH (ft) | Class of lighting facilities | | | |
|---|---|---|---|---|
| | FALS | IALS | BALS | NALS |
| | RVR (m) | | | |
| 200 - 210 | 550 | 750 | 1000 | 1200 |
| 211 - 240 | 550 | 800 | 1000 | 1200 |
| 241 - 250 | 550 | 800 | 1000 | 1300 |
| 251 - 260 | 600 | 800 | 1100 | 1300 |
| 261 - 280 | 600 | 900 | 1100 | 1300 |
| 281 - 300 | 650 | 900 | 1200 | 1400 |
| 301 - 320 | 700 | 1000 | 1200 | 1400 |
| 321 - 340 | 800 | 1100 | 1300 | 1500 |
| 341 - 360 | 900 | 1200 | 1400 | 1600 |
| 361 - 380 | 1000 | 1300 | 1500 | 1700 |
| 381 - 400 | 1100 | 1400 | 1600 | 1800 |
| 401 - 420 | 1200 | 1500 | 1700 | 1900 |
| 421 - 440 | 1300 | 1600 | 1800 | 2000 |
| 441 - 460 | 1400 | 1700 | 1900 | 2100 |
| 461 - 480 | 1500 | 1800 | 2000 | 2200 |
| 481 - 500 | 1500 | 1800 | 2100 | 2300 |
| 501 - 520 | 1600 | 1900 | 2100 | 2400 |
| 521 - 540 | 1700 | 2000 | 2200 | 2400 |
| 541 - 560 | 1800 | 2100 | 2300 | 2400 |
| 561 - 580 | 1900 | 2200 | 2400 | 2400 |
| 581 - 600 | 2000 | 2300 | 2400 | 2400 |
| 601 - 620 | 2100 | 2400 | 2400 | 2400 |

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**AMC5 CAT.OP.MPA.110 Table 9 RVR versus DH/MDH - Aeroplanes (continued)**

| DH or MDH (ft) | Class of lighting facilities | | | |
|---|---|---|---|---|
| | FALS | IALS | BALS | NALS |
| | RVR (m) | | | |
| 621 - 640 | 2200 | 2400 | 2400 | 2400 |
| 641 - 660 | 2300 | 2400 | 2400 | 2400 |
| 661 and above | 2400 | 2400 | 2400 | 2400 |

**AMC5 CAT.OP.MPA.110 Table 10 Visual and non-visual aids and/or on-board-equipment versus minimum RVR - Aeroplanes**

| Type of approach | Facilities | Lowest RVR Multi-pilot operations | Lowest RVR Single-pilot operations |
|---|---|---|---|
| **3D operations** (Final approach track offset =<15° for CAT A and B aeroplanes or =<5° for CAT C and D aeroplanes) | Runway touchdown zone lights (TDZ) and runway centerline lights (CL) | No limitation | No limitation |
| | Without TDZ and/or CL but using HUDLS or equivalent system, autopilot or flight director to the DH | No limitation | 600m |
| | No TDZ and/or CL, not using HUDLS or equivalent system, autopilot or flight director to the DH | 750m | 800m |
| **3D operations** (Final approach track offset >15° for CAT A and B aeroplanes or final approach track offset >5° for CAT C and D aeroplanes) | Runway touchdown zone lights (TDZ) and runway centerline lights (CL) | 800 | 1000m |
| **3D operations** (Final approach track offset >15° for CAT A and B aeroplanes or final approach track offset >5° for CAT C and D aeroplanes) | Without TDZ and/or CL but using HUDLS or equivalent system, autopilot or flight director to the DH | 800m | 1000m |
| **2D operations** | Final approach track offset =<15° for CAT A and B aeroplanes or =<5° for CAT C and D aeroplanes | 750m | 800m |
| | Final approach track offset >15° for CAT A and B aeroplanes | 1000m | 1000m |
| | Final approach track offset >5° for CAT C and D aeroplanes | 1200m | 1200m |

e. For night operations or for any operation where credit for visual aids required, the lights should be on and serviceable except as provided for in Table 17.

f. Where any visual or non-visual aid specified for the approach and assumed to be available in the determination of operating minimum is unavailable, revised operating minimum will need to be determined.

## 11 LOW-VISIBILITY OPERATIONS AND OPERATIONS WITH OPERATIONAL CREDITS

**GM1 SPA.LVO.100(b) Low-visibility operations and operations with operational credits**

INSTRUMENT APPROACH OPERATIONS IN LOW-VISIBILITY CONDITIONS - CLASSIFICATION OF STANDARD APPROACH OPERATIONS

## AERODROME OPERATING MINIMUMS - EASA AIR OPERATIONS - EFFECTIVE 30 OCTOBER 2022

The different types of approach and landing operations are classified according to the lowest DH (or MDH) and RVR applicable to the approach type. The classification of approach types does not depend on the technology used for the approach.

The lowest minimums specified do not take account of 'operational credits' that may allow for lower operating minimums.

The classification does not subdivide CAT III operations into CAT IIIA, IIIB, and IIIC. The actual minimums applicable to any operation depends on the aircraft equipment and the specific LVO approval held by the air operator.

The AFM for aircraft certified for CAT III operations will state the lowest usable DH, or no DH. Some AFMs may refer to the previous ICAO classification as follows:

– CAT IIIA: a DH lower than 100ft or no DH and an RVR not less than 175m;
– CAT IIIB: a DH lower than 50ft or no DH and an RVR less than 175m but not less than 50m.

The minimum RVR in the EU regulations is 75m.

Where an operational credit allows operation to lower-than-standard minimums, this is not considered a separate approach classification.

**GM2 SPA.LVO.100(b) Low-visibility operations and operations with operational credits**

Legacy systems may be described as capable of 'CAT 3A' or 'CAT IIIA' operations. This implies a minimum DH of less than 100ft but not less than 50ft. Systems described as capable of 'CAT 3B' or 'CAT IIIB' may be certified for a DH of less than 50ft or no DH.

Operations to a DH of less than 100ft but not less than 50ft will typically require a fail-passive automatic landing system or a HUDLS or equivalent system.

Operations to a DH of less than 50ft will require a fail-operational landing system, a fail-passive go-around system, automatic thrust control and either automatic ground roll control or ground roll guidance using a HUDLS.

For no DH operations, a fail-passive or fail-operational ground roll control system is required.

The RVR required for SA CAT I, CAT II and SA CAT II approach operations is determined by the DH and the aircraft approach speed category.

The RVR required for CAT III approach operations is determined by the DH and the capability of the ground-roll control system. Operations with fail-passive roll control systems require a greater RVR than operations with fail-operational ground control systems because the pilots would need to have sufficient visibility to maintain lateral control in the event of a system failure.

## 12 DETERMINATION OF AOM FOR STANDARD CAT II OPERATIONS

**AMC1 SPA.LVO.100(b) Low-visibility operations and operations with operational credits**

INSTRUMENT APPROACH OPERATIONS IN LOW-VISIBILITY CONDITIONS - CAT II OPERATIONS

For CAT II operations, the following should apply:

a. The DH should be determined by the use of a radio altimeter or other device capable of providing equivalent performance and be not lower than the highest of:
   1. the minimum DH specified in the AFM, if stated;
   2. the applicable obstacle clearance height (OCH) for the category of aircraft;
   3. the DH to which the flight crew is qualified to operate; or
   4. 100ft.
b. The lowest RVR minimums to be used are specified in Table 4:

**AMC1 SPA.LVO.100(b) Table 4 - CAT II operations minimums: RVR (m) versus DH (ft)**

| Aircraft categories | | Auto-coupled or HUD to below DH* | |
|---|---|---|---|
| | | A, B, C | D |
| DH (ft) | 100-120 | 300 | 300/350* |
| | 121-140 | 400 | 400 |
| | 141-199 | 450 | 450 |

An RVR of 300m may be used for CAT D aeroplane conducting an autoland or using a HUDLS to touchdown.

## 13 DETERMINATION OF AOM FOR CAT III OPERATIONS

**AMC2 SPA.LVO.100(b) Low-visibility operations and operations with operational credits**

INSTRUMENT APPROACH OPERATIONS IN LOW-VISIBILITY CONDITIONS – CAT III OPERATIONS

For CAT III operations, the following should apply:

a. For operations in which a DH is used, the DH should be determined by the use of a radio altimeter or other device capable of providing equivalent performance and be not lower than:
   1. the minimum DH specified in the AFM, if stated;
   2. the DH to which the flight crew is qualified to operate.
b. Operations with no DH should only be conducted if:
   1. operation with no DH is specified in the AFM;
   2. there is no published information indicating that the approach aid or aerodrome facilities cannot support operations with no DH; and
   3. the flight crew is qualified to operate with no DH.
c. The lowest RVR to be used should be determined in accordance with Table 5:

**AMC2 SPA.LVO.100(b) Table 5 - CAT III operation minimums: RVR (m) versus DH (ft)**

| DH (ft) | Roll-out control/ guidance system | RVR (m) |
|---|---|---|
| 50-99 | Not required | 175 |
| 0-49 or no DH | Fail-passive | 125 |
| | Fail-operational | 75 |

For a fail-passive or HUD roll-out control system, a lower RVR value (no lower than 75 m) can be used if stated in the AFM provided that the equipment demonstrated such capability as part of the certification process. This is provided that the operator has implemented the appropriate operating procedures and training.

## 14 OPERATIONS WITH OPERATIONAL CREDITS

**GM1 SPA.LVO.100(c) Low-visibility operations and operations with operational credits**

THE CONCEPT OF OPERATIONS WITH OPERATIONAL CREDITS

For each specific class of standard take-off or approach operations, a standard combination of airborne equipment, aerodrome infrastructure and equipment, and procedures (system components) needs to be available to ensure the required performance of the total system.

System components may exceed the required standard performance. The aim of the concept of operations with operational credits is to exploit such enhanced performance to provide operational flexibility beyond the limits of standard operations.

For approach operations, an operational credit can be applied to the instrument or the visual segment or both.

Where an operational credit allows operation to lower-than-standard minimums, this is not considered a separate approach classification.

**GM2 SPA.LVO.100(c) Low-visibility operations and operations with operational credits**

OPERATIONS WITH OPERATIONAL CREDITS – SPECIAL AUTHORISATION CATEGORY I (SA CAT I) OPERATIONS

SA CAT I is an operational credit that exploits a navigation solution with superior performance to that required for standard CAT I by extending the instrument segment of CAT I approach operations. This navigation solution may be an ILS installation with the necessary performance coupled to a suitably certified autoland system or a HUD or equivalent display system or SVGS. The extended instrument segment means that the DH can be reduced from the standard minimum of 200ft down to 150ft. The lower DH allows a corresponding reduction in the RVR required for the approach.

**AMC1 SPA.LVO.100(c) Low-visibility operations and operations with operational credits**

OPERATIONS WITH OPERATIONAL CREDITS – SPECIAL AUTHORISATION CATEGORY I (SA CAT I)

For special authorisation category I (SA CAT I) operations, the following should apply:

a. The DH of an SA CAT I operation should not be lower than the highest of:
   1. the minimum DH specified in the AFM, if stated;
   2. the applicable OCH for the category of aeroplane;
   3. the DH to which the flight crew is qualified to operate; or
   4. 150ft.
b. Where the DH for an SA CAT I operation is less than 200ft, it should be determined by the use of a radio altimeter or other device capable of providing equivalent performance.
c. The following visual aids should be available:
   1. approach lights as specified in Table 8;
   2. precision approach (PA) runway markings;
   3. category I runway lights.
d. The lowest RVR should not be lower than the higher of:
   1. the minimum RVR specified in the AFM, if stated; or
   2. the RVR specified in Table 8.

**AMC1 SPA.LVO.100(c) Table 8 SA CAT I operation minimums RVR (m) versus approach lighting system**

| Class of light facility | | FALS | IALS | BALS | NALS |
|---|---|---|---|---|---|
| DH (ft) | 150 - 160 | 400 | 500 | 600 | 700 |
| | 161 - 200 | 450 | 550 | 650 | 750 |
| | 201 - 210 | 450 | 550 | 650 | 750 |
| | 211 - 220 | 500 | 550 | 650 | 800 |
| | 221 - 230 | 500 | 600 | 700 | 900 |
| | 231 - 240 | 500 | 650 | 750 | 1000 |
| | 241 - 249 | 550 | 700 | 800 | 1100 |

**GM3 SPA.LVO.100(c) Low-visibility operations and operations with operational credits**

OPERATIONS WITH OPERATIONAL CREDITS – SPECIAL AUTHORISATION CATEGORY II (SA CAT II) OPERATIONS

## AERODROME OPERATING MINIMUMS - EASA AIR OPERATIONS - EFFECTIVE 30 OCTOBER 2022

SA CAT II is an operational credit that applies to the visual segment of an approach conducted where aerodrome, runway and approach lighting systems do not meet the usual requirements for a CAT II precision lighting system. SA CAT II exploits the performance of a suitably certified HUDLS or autoland system. The DH will be the same as for standard CAT II, and the required RVR will depend on the class of light facility installed.

**AMC2 SPA.LVO.100(c) Low-visibility operations and operations with operational credits**

OPERATIONS WITH OPERATIONAL CREDITS – SPECIAL AUTHORISATION CATEGORY II (SA CAT II)

For special authorization category II (SA CAT II) operations, the following should apply:

a. The DH should be determined by the use of a radio altimeter or other device capable of providing equivalent performance, if so determined by the aircraft certification process, and be not lower than the highest of:
   1. the minimum DH specified in the AFM, if stated;
   2. the applicable OCH for the category of aeroplane;
   3. the DH to which the flight crew is qualified to operate; or
   4. 100ft.

b. The following visual aids should be available:
   1. approach lights as specified in Table 9;
   2. precision approach runway markings;
   3. category I runway lights.

c. The lowest RVR minimums to be used are specified in Table 9:

**AMC2 SPA.LVO.100(c) Table 9 SA CAT II operation minimums RVR (m) versus DH (ft)**

| Class of light facility | | FALS | IALS | BALS | NALS |
|---|---|---|---|---|---|
| DH (ft) | 100 - 120 | 350 | 450 | 600 | 700 |
| | 121 - 140 | 400 | 500 | 600 | 700 |
| | 141 - 160 | 400 | 500 | 600 | 750 |
| | 161 - 199 | 400 | 550 | 650 | 750 |

**AMC3 SPA.LVO.110 Aerodrome-related requirements, including instrument flight procedures**

SUITABLE AERODROMES — RUNWAY AND RUNWAY ENVIRONMENT — NAVIGATION FACILITIES — APPROACH OPERATIONS OTHER THAN EFVS OPERATIONS

(d) For SA CAT II operations:

(4) the following visual aids should be available:

(ii) for operations with an RVR of less than 400m, centerline lights.

## 15 FAILED OR DOWNGRADED EQUIPMENT

**AMC11 CAT.OP.MPA.110 Aerodrome Operating minimums**

EFFECT ON LANDING MINIMUMS OF TEMPORARILY FAILED OR DOWNGRADED GROUND EQUIPMENT

a. General:

These instructions are intended for use both before and during flight. It is, however, not expected that the commander would consult such instructions after passing 1000ft above the aerodrome. If failures of ground aids are announced at such a late stage, the approach could be continued at the commander's discretion. If failures are announced before such a late stage in the approach, their effect on the approach should be considered as described in Table 17, and the approach may have to be abandoned.

b. Conditions applicable to Table 17:
   1. multiple failures of runway/FATO lights other than those indicated in Table 17 should not be acceptable;
   2. failures of approach and runway/FATO lights are acceptable at the same time, and the most demanding consequence should be applied; and
   3. failures other than ILS, GLS, MLS affect the RVR only and not the DH.

**AMC11 CAT.OP.MPA.110 Table 17 Failed or downgraded equipment - Effect on landing minimums operations without LVO approval**

| Failed or downgraded equipment | Effect on landing minimums | |
|---|---|---|
| | Type B | Type A |
| Navaid stand-by transmitter | No effect | No effect |
| Outer marker (ILS only) | Not allowed, except if the required height versus glide path can be checked using other means, e.g. DME fix | APV - not applicable |
| | | NPA with final approach fix (FAF): no effect unless used as FAF |
| | | If the FAF cannot be identified (e.g. no method available for timing of descent), NPA operations cannot be conducted |

## AERODROME OPERATING MINIMUMS - EASA AIR OPERATIONS - EFFECTIVE 30 OCTOBER 2022

**AMC11 CAT.OP.MPA.110 Table 17 Failed or downgraded equipment - Effect on landing minimums operations without LVO approval (continued)**

| Failed or downgraded equipment | Effect on landing minimums | |
|---|---|---|
| | Type B | Type A |
| Middle marker (ILS only) | No effect | No effect unless used as MAPt |
| RVR assessment systems | No effect | |
| Approach lights | minimums as for NALS | |
| Approach lights except the last 210m | minimums as for BALS | |
| Approach lights except the last 420m | minimums as for IALS | |
| Stand-by power for approach lights | No effect | |
| Edge lights, threshold lights and runway end lights | Day: no effect;<br>Night: not allowed | |
| Centerline lights | Aeroplanes: No effect if flight director (F/D), HUDLS or autoland; otherwise RVR 750m<br>Helicopters: No effect on CAT I and HELI SA CAT I approach operations | No effect |
| Centerline lights spacing increased to 30m | No effect | |
| TDZ lights | Aeroplanes: No effect if F/D, HUDLS or autoland: otherwise RVR 750m<br>Helicopters: No effect | No effect |
| Taxiway lighting system | No effect | |

**AMC3 SPA.LVO.100(b) Low-visibility operations and operations with operational credits**

INSTRUMENT APPROACH OPERATIONS IN LOW-VISIBILITY CONDITIONS – EFFECT ON LANDING MINIMUMS OF TEMPORARILY FAILED OR DOWNGRADED EQUIPMENT FOR APPROACH OPERATIONS WITH A DH BELOW 200ft

a. Only those facilities mentioned in Table 6 should be acceptable to be used to determine the effect of temporarily failed or downgraded equipment on the required RVR for CAT II/III approach operations.

b. The following conditions should be applied to Table 6:

1. multiple failures of runway/FATO lights other than those indicated in Table 6 are not acceptable;
2. failures of both the approach and runway/FATO lights are acceptable at the same time and the most demanding consequence should be applied;
3. for approach operations with a DH below 200ft, a combination of deficiencies in runway/FATO lights and RVR assessment equipment are not permitted; and
4. failures other than ILS, GLS and MLS affect the RVR only and not the DH.

**AMC3 SPA.LVO.100(b) Table 6 Failed or downgraded equipment - Effect on landing minimums CAT II/III operations**

| Failed or downgraded equipment | Effect on landing minimums | | | |
|---|---|---|---|---|
| | CAT III (no DH) | CAT III (DH < 50ft | CAT III (DH >= 50ft) | CAT II |
| Navaid stand-by transmitter | Not allowed | RVR 200m | No effect | |
| Outer marker (ILS) | No effect if the required height versus glide path can be checked using other means, e.g. DME fix | | | |
| Middle marker (ILS) | No effect | | | |
| DME | No effect if replaced by RNAV (GNSS) information or the outer marker | | | |
| RVR assessment systems | At least one RVR value to be available on the aerodrome | On runways equipped with two or more RVR assessment units, one may be inoperative | | |
| Approach lights | No effect | Not allowed for operations with DH > 50ft | | Not allowed |
| Approach lights except the last 210m | No effect | | | Not allowed |

## AERODROME OPERATING MINIMUMS - EASA AIR OPERATIONS - EFFECTIVE 30 OCTOBER 2022

### AMC3 SPA.LVO.100(b) Table 6 Failed or downgraded equipment - Effect on landing minimums CAT II/III operations (continued)

| Failed or downgraded equipment | Effect on landing minimums | | | |
|---|---|---|---|---|
| | CAT III (no DH) | CAT III (DH < 50ft | CAT III (DH >= 50ft) | CAT II |
| Approach lights except the last 420m | No effect | | | |
| Standby power for approach lights | No effect | | | |
| Standby power for runway lights with 1-second switchover time | No effect | Not allowed | Day: RVR 550m | Day: RVR 550m |
| | | | Night: RVR 550m | Night: RVR 550m |
| Edge lights | No effect | Day: no effect | Day: no effect | Day: no effect |
| | | Night: RVR 550m | Night: RVR 550m | Night: not allowed |
| Threshold lights | No effect | No effect | Day: no effect | Day: no effect |
| | | | Night: RVR 550m | Night: not allowed |
| Runway end lights | No effect if centerline lights are serviceable | | | |
| Centerline lights | Day: RVR 200m | Not allowed | Day: RVR 300m | Day: RVR 350m |
| | Night: not allowed | | Night: RVR 400m | Night: RVR 550m (RVR 400m with HUD or auto-land) |
| Centerline lights spacing increased to 30m | RVR 150m | | No effect | |
| TDZ lights | No effect | Day: RVR 200m | Day: RVR 300m | |
| | | Night: RVR 300m | Night: RVR 550m (RVR 350m with HUD or auto-land) | |
| Taxiway light system | No effect | | | |

### AMC3 SPA.LVO.100(b) Table 7 Failed or downgraded equipment - Effect on landing minimums Operational credits

| Failed or downgraded equipment | Effect on landing minimums | | | |
|---|---|---|---|---|
| | SA CAT I | SA CAT II | EFVS-A | EFVS-L |
| Navaid stand-by transmitter | No effect | | | |
| Outer marker (ILS) | No effect if replaced by height check at 1000ft | | | |
| Middle marker (ILS) | No effect | | | |
| RVR assessment systems | On runways equipped with two or more RVR assessment units, one may be inoperative | | | |
| Approach lights | Not allowed | | As per IAP | |
| Approach lights except the last 210m | Not allowed | No effect | As per IAP | |
| Approach lights except the last 420m | No effect | | As per IAP | |
| Standby power for approach lights | No effect | | | |
| Edge lights, Threshold lights | Day: no effect | Day: no effect | As per IAP | |
| | Night: not allowed | Night: RVR 550m | | |
| Runway end lights | No effect if centerline lights are serviceable | | As per IAP | |
| Centerline lights | Day: RVR 400m | Day: RVR 300m | As per IAP | |
| | Night: RVR 550m | Night: RVR 400m | As per IAP | |
| Centerline lights spacing increased to 30m | No effect | | As per IAP | |
| TDZ lights | No effect | Day: RVR 300m | As per IAP | |
| | | Night: RVR 350m | | |
| Taxiway light system | No effect | | | |

## AERODROME OPERATING MINIMUMS - EASA AIR OPERATIONS - EFFECTIVE 30 OCTOBER 2022

## 16 ENHANCED FLIGHT VISION SYSTEMS – RVR REDUCTION

**GM4 SPA.LVO.100(c) Low-visibility operations and operations with operational credits**

OPERATIONS WITH OPERATIONAL CREDITS – EFVS OPERATIONS

a. EFVS operations, if approved, exploit the improved visibility provided by the EFVS to allow an operational credit applied to the visual segment of an instrument approach. An EFVS cannot be used to extend the instrument segment of an approach and thus the DH for operation with an EFVS is always the same as for the same approach conducted without an operational credit.

b. EFVS operations require specific approval from the competent authority in accordance with Part-SPA. However, other EFVS operations may be conducted by operators and without a specific approval if specifically covered in accordance with Part-CAT, Part-NCC or Part-SPO (e.g. 'EFVS 200').

**GM5 SPA.LVO.100(c) Low-visibility operations and operations with operational credits**

OPERATIONS WITH OPERATIONAL CREDITS – COMBINED VISION SYSTEM

A combined vision system (CVS) consisting of an EFVS and an SVS can be approved for EFVS operations if it meets all the certification requirements for an EFVS.

**AMC3 SPA.LVO.100(c) Low-visibility operations and operations with operational credits**

OPERATIONS WITH OPERATIONAL CREDITS – EFVS OPERATIONS TO A RUNWAY

When conducting EFVS operations to a runway:

a. the DA/H used should be the same as for operations without EFVS;

b. the lowest RVR minimums to be used should be determined:

1. in accordance with criteria specified in the AFM for the expected weather conditions; or

2. if no such criteria are specified, by reducing the RVR determined for operation without the use of EFVS/CVS in accordance with Table 10.

c. where the lowest RVR to be used, determined in accordance with b., is less than 550m, then this should be increased to 550m unless LVPs are established at the aerodrome of intended landing;

d. where the EFVS is part of a CVS, it is only the EFVS element that should provide the operational credits. The other part of the CVS, the synthetic vision system (SVS), should not provide operational credits.

**AMC3 SPA.LVO.100(c) Table 10 Operations using EFVS/CVS - RVR/CMV Reduction**

| RVR/CMV (m) required without the use of EFVS | RVR/CMV (m) required with the use of EFVS |
|---|---|
| 550 | 350 |
| 600 | 400 |
| 650 | 450 |
| 700 | 450 |
| 750 | 500 |
| 800 | 550 |
| 900 | 600 |
| 1000 | 650 |
| 1100 | 750 |
| 1200 | 800 |
| 1300 | 900 |
| 1400 | 900 |
| 1500 | 1000 |
| 1600 | 1100 |
| 1700 | 1100 |
| 1800 | 1200 |
| 1900 | 1300 |
| 2000 | 1300 |
| 2100 | 1400 |
| 2200 | 1500 |
| 2300 | 1500 |
| 2400 | 1600 |

*NOTE: For the RVR/CMV required with the use of EFVS of 350m – 500m: a reported RVR should be available (no CMV conversion).*

## 17 COMMENCEMENT AND CONTINUATION OF APPROACH

**AMC1 CAT.OP.MPA.305(a) Commencement and continuation of approach**

**MINIMUM RVR FOR CONTINUATION OF APPROACH — AEROPLANES**

(a) The touchdown RVR should be the controlling RVR.

(b) If the touchdown RVR is not reported, then the midpoint RVR should be the controlling RVR.

(c) Where the RVR is not available, CMV should be used except for the purpose of continuation of an approach in LVO.

## 18 PLANNING MINIMUMS

**AMC6 CAT.OP.MPA.182 Fuel/energy scheme - Aerodrome selection policy - aeroplanes**

BASIC FUEL SCHEME-PLANNING MINIMUMS

The operator should select an aerodrome as:

(a) destination alternate aerodrome;

(b) fuel ERA aerodrome; or

(c) isolated destination aerodrome

only when the appropriate weather reports and/or forecasts indicate that the weather conditions will be at or above the planning minimums of Table 2 below (any limitations related to OEI operations are also taken into account):

## AERODROME OPERATING MINIMUMS - EASA AIR OPERATIONS - EFFECTIVE 30 OCTOBER 2022

**AMC6 CAT.OP.MPA182 Table 2 - Basic fuel scheme - planning minimums - aeroplanes**
**Destination alternate aerodrome, fuel ERA aerodrome, isolated destination aerodrome**

| Type of approach operation | Aerodrome ceiling (cloud base or vertical visibility) | RVR/VIS |
|---|---|---|
| Type B instrument approach operations | DA/H + 200ft | RVR/VIS + 800m |
| Type A instrument approach operations | DA/H or MDA/H + 400ft | RVR/VIS + 1500m |
| Circling approach operations | MDA/H + 400ft | VIS + 1500m |
| Crosswind planning minimums: see Table 1 'Aerodrome forecasts (TAFs) and landing forecasts (TRENDs) to be used for pre-flight planning' of AMC3 CAT.OP.MPA.182. | | |
| Wind limitations should be applied taking into account the runway condition (dry, wet, contaminated). | | |

**AMC8 CAT.OP.MPA.182 Fuel/energy scheme - aerodrome selection policy - aeroplanes**

BASIC FUEL SCHEME WITH VARIATIONS - PLANNING MINIMUMS

(a) Variations to the basic fuel schemes in the selection of aerodromes in regard to the planning minimums are methods to reduce the meteorological margins based on the established mitigating measures.

(b) As a minimum, the operator should:

(1) use a suitable computerised flight-planning system; and

(2) have established an operational control system that includes flight monitoring.

(c) In addition:

(1) the duration of the planned flight from take-off to landing does not exceed 6 hours or, in the event of in-flight re-planning, in accordance with point CAT.OP.MPA.181(d), the remaining flying time to destination does not exceed 4 hours; and

(2) the planned flight should have a minimum flight crew of two pilots.

(d) Additionally, the operator should select an aerodrome as:

(1) a destination alternate aerodrome, or

(2) fuel ERA aerodrome,

only when the appropriate weather reports and/or forecasts indicate that the weather conditions will be at or above the planning minimums of Table 3 below.

**AMC8 CAT.OP.MPA182 Table 3 - Basic fuel scheme with variations- planning minimums - aeroplanes**
**Destination alternate aerodrome, fuel ERA aerodrome**

| Row | Type of approach operation | Aerodrome ceiling (cloud base or vertical visibility) | RVR/VIS |
|---|---|---|---|
| 1 | Type B instrument approach operations | DA/H + 200ft | RVR/VIS + 550m |
| 2 | 3D Type A instrument approach operations, based on a facility with a system minimum of 200ft or less | DA/H + 200ft | RVR/VIS[1] + 800m |
| 3 | Two or more usable type A instrument approach operations[2], each based on a separate navigation aid | DA/H or MDA/H [3]+ 200ft | RVR/VIS[1]+ 1000m |
| 4 | Other type A instrument approach operations | DA/H or MDA/H + 400ft | RVR/VIS + 1500m |
| 5 | Circling approach operations | MDA/H + 400ft | VIS + 1500m |
| Crosswind planning minimums: see Table 1 of AMC3 CAT.OP.MPA.182. | | | |
| Wind limitations should be applied taking into account the runway condition (dry, wet, contaminated). | | | |

[1] The higher of the usable RVR or VIS.

[2] Compliance with point CAT.OP.MPA.182(f) should be ensured.

[3] The higher of the usable DA/H or MDA/H.

*NOTE: The operator may select the most convenient planning minimums row. For example, aerodrome with two type A approaches: one ILS CAT I (DA 350ft/DH250ft/550m) another VOR/DME (MDA 650ft/1500m). The operator may use Row 2 instead of Row 3.*

**AMC9 CAT.OP.MPA.182 Fuel/energy scheme - aerodrome selection policy - aeroplanes**

## AERODROME OPERATING MINIMUMS - EASA AIR OPERATIONS - EFFECTIVE 30 OCTOBER 2022

BASIC FUEL SCHEME WITH VARIATIONS - PLANNING MINIMUMS

(a) Variations to the basic fuel schemes in the selection of aerodromes in regard to the planning minimums are methods to reduce the meteorological margins based on the established mitigating measures.

(b) As a minimum, the operator should:

(1) use a suitable computerised flight-planning system;

(2) hold an approval for low-visibility approach operations for that fleet; and

(3) have established an operational control system that includes flight monitoring.

(c) Additionally, the operator should select an aerodrome as:

(1) destination alternate aerodrome;

(2) fuel ERA aerodrome; or

(3) isolated destination aerodrome

only when the appropriate weather reports and/or forecasts indicate that the weather conditions will be at or above the planning minimums of Table 4 below.

**AMC9 CAT.OP.MPA182 Table 4 - Basic fuel scheme with variations - planning minimums Destination alternate aerodrome, fuel ERA aerodrome, isolated destination aerodrome**

| Row | Type of approach operation | Aerodrome ceiling (cloud base or vertical visibility) | RVR/VIS |
|---|---|---|---|
| 1 | Two or more usable type B instrument approach operations to two separate runways[1] | DA/H[2] + 100ft | RVR[3] + 300m |
| 2 | One usable type B instrument approach operation | DA/H + 150ft | RVR + 450m |
| 3 | 3D Type A instrument approach operations, based on a facility with a system minimum of 200ft or less | DA/H + 200ft | RVR/VIS[3]+ 800m |
| 4 | Two or more usable type A instrument approach operations[1], each based on a separate navigation aid | DA/H or MDA/H + 200ft | RVR/VIS[3]+ 1000m |
| 5 | One usable type A instrument approach operations | DA/H or MDA/H + 400ft | RVR/VIS + 1500m |
| 6 | Circling approach operations | MDA/H + 400ft | VIS + 1500m |
| Crosswind planning minimums: see Table 1 of AMC3 CAT.OP.MPA.182. | | | |
| Wind limitations should be applied taking into account the runway condition (dry, wet, contaminated). | | | |

[1] Compliance with point CAT.OP.MPA.182(f) should be ensured.

[2] The higher of the usable DA/H or MDA/H.

[3] The higher of the usable RVR or VIS.

*NOTE: The operator may select the most convenient planning minimums row. For example, aerodrome with two type B approaches: one CAT 3 (0ft/75m) another CAT 1 (200ft/550m). The operator may use Row 2 and use CAT 3 (0 + 150ft/75 + 450m) instead of Row 1 CAT 1 (200 + 100ft/550 + 300m).*

**SPA.ETOPS.115 ETOPS en-route alternate aerodrome planning minimums**

(a) The operator shall only select an aerodrome as an ETOPS en-route alternate aerodrome when the appropriate weather reports or forecasts, or any combination thereof, indicate that, between the anticipated time of landing until one hour after the latest possible time of landing, conditions will exist at or above the planning minima calculated by adding the additional limits of Table 1.

**SPA.ETOPS.115 Table 1- Planning minimums for the ETOPS en-route alternate aerodrome**

| Type of approach | Planning Minimums |
|---|---|
| Precision approach | DA/H + 200ft<br>RVR/VIS + 800m |
| Non-precision approach or Circling approach | MDA/H + 400ft<br>RVR/VIS + 1500m |