European Union Aviation Safety Agency

Notice of Proposed Amendment 2020-02

All-weather operations

Non-commercial operations with other than complex motor-powered aircraft

RMT.0379

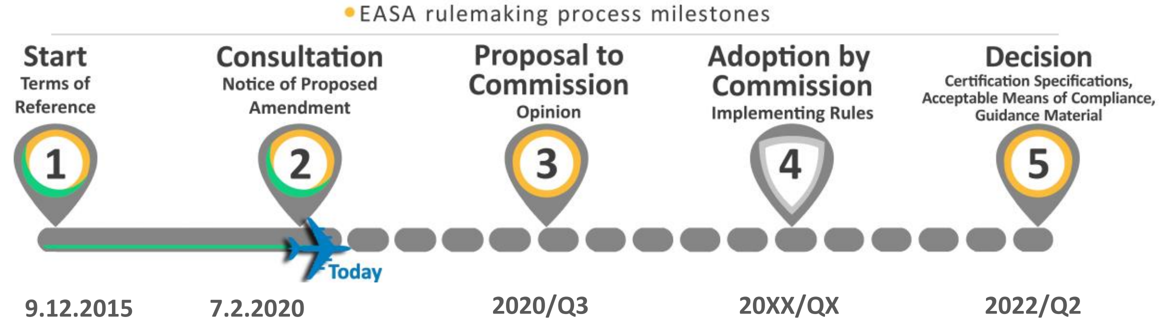
EXECUTIVE SUMMARY

The objective of this NPA is to provide cost-efficient rules in the field of all-weather operations for non-commercial operations of other than complex motor-powered (NCO) aircraft.

This NPA proposes to improve Part-NCO by making it more consistent with the principles of the General Aviation (GA) Roadmap and the Basic Regulation (BR), and update Part-NCO to achieve consistency with changes proposed in the other Annexes of the Air Ops Regulation by NPA 2018-06, where appropriate.

The proposed changes are expected to improve access to instrument flight rules (IFR) for GA pilots.

Action area:	New technologies and concepts		
Affected rules:	Annex VII (Part-NCO) of Commission Regulation (EU) No 965/2012 AMC and GM to Part-NCO		
Affected stakeholders:	aircraft operators; approved training organisations (ATOs); aerodrome operators; providers of ATM/ANS; national aviation authorities (NAAs)		
Driver:	Safety	**Rulemaking group:**	No
Impact assessment:	Light	**Rulemaking Procedure:**	Standard



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1. About this NPA

1.1. How this NPA was developed

The European Aviation Safety Agency (EASA) developed this NPA in line with Regulation (EU) 2018/1139[1] (the 'Basic Regulation') and the Rulemaking Procedure[2]. This rulemaking activity is included in the European Plan for Aviation Safety (EPAS) 2020-2024 under rulemaking task (RMT).0379.

The text of this NPA has been developed by EASA based on the input of a subgroup of the Experts Task Force comprised of airspace users and National Aviation Authority (NAA) representatives. It is hereby submitted to all interested parties[3] for consultation.

1.2. How to comment on this NPA

Please submit your comments and your answer to the question in Chapter 3.1 using the automated **Comment-Response Tool (CRT)** available at **http://hub.easa.europa.eu/crt/**[4].

The deadline for submission of comments is **9 March 2020.**

1.3. The next steps

Following the closing of the public commenting period, EASA will review all the comments received, group them by topic, and address them in a workshop with the Advisory Bodies (ABs).

Based on the comments received and the conclusions of the workshop, EASA will consider the need for amendments to Regulation (EU) No 965/2012[5] and, if necessary, issue an opinion. The opinion will be submitted to the European Commission, which will use it as a technical basis in order to prepare an EU regulation.

The opinion would be submitted to the European Commission, which will use it as a technical basis in order to take a decision on whether or not to amend Commission Regulation (EU) No 965/2012.

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[1] Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535612134845&uri=CELEX:32018R1139)

[2] EASA is bound to follow a structured rulemaking process as required by Article 115(1) of Regulation (EU) 2018/1139. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the 'Rulemaking Procedure'. See MB Decision No 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by EASA for the issuing of opinions, certification specifications and guidance material (http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure).

[3] In accordance with Article 115 of Regulation (EU) 2018/1139 and Articles 6(3) and 7 of the Rulemaking Procedure.

[4] In case of technical problems, please contact the CRT webmaster (crt@easa.europa.eu).

[5] Commission Regulation (EU) No 965/2012 of 5 October 2012 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 (OJ L 296, 25.10.2012, p. 1) (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012R0965&qid=1564647406994&from=EN).

A summary of the comments received and the responses to them, as well as a summary of the conclusions of the workshop will be reflected in a comment-response document (CRD). The CRD will be published on the EASA website[6]

If the European Commission decides that the Regulation should be amended, EASA will issue a decision that amends the acceptable means of compliance (AMC) and/or guidance material (GM) to comply with the amendments introduced into the related regulation.

[6] https://www.easa.europa.eu/document-library/comment-response-documents

2. In summary — why and what

2.1. Why we need to change the rules — issue/rationale

GA is a high priority for EASA. EASA is dedicating effort and resources towards creating simpler, lighter, and better rules for GA. Recognising the importance of GA and its contribution to a safe European aviation system, EASA, in partnership with the European Commission (EC) and other stakeholders, has created the GA roadmap.

One of the enablers for improving safety against loss of control and controlled flight into terrain hazards is 'Easier access of general aviation pilots to instrument flight rules (IFR) flying', the objective of RMT.0677. EPAS 2020-24 identifies Staying in Control (Section 8.1.2), Coping with Weather (8.1.3) and Managing the Flight (8.1.5) as three of the key mitigations of risk in GA which easier access to IFR flying intends to address. While RMT.0677 focused mainly on the rating qualifying pilots to fly under IFR, the Concept Paper included in its Terms of Reference identified many other enablers, including, in its Section 2.4, proportionate operational rules.

For a more detailed analysis of the issues addressed by this proposal, please refer to the impact assessment (IA) in Section 4.1.

No exemptions[7] in accordance with Article 70 'Safeguard provisions'/Article 71 'Flexibility provisions' and/or Article 76 'Agency measures' of Regulation (EU) 2018/1139 are pertinent to the scope of this RMT. Nor are there relevant alternative means of compliance (AltMoC).

There have not been any AltMoC having an impact on the development of this RMT content.

This RMT does not directly address any issue from the relevant safety risk portfolio or any particular safety recommendations (SRs).

2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 1 of the Basic Regulation. This proposal will contribute to the achievement of the overall objectives by addressing the issues outlined in Section 2.1.

The specific objective of this proposal is to enhance the safety of modern GA operations by improving access to IFR. To achieve this, it is necessary to:

— improve proportionality in Part-NCO by making it more consistent with the principles of the GA Roadmap, and of the Basic Regulation, as amplified in the subsections below;

— ensure that the operational rules in Part-NCO associated with IFR:

[7] Exemptions having an impact on the development of this RMT content and referring to:
- — Article 70(1): Measures taken as an immediate reaction to a safety problem
- — Article 71(1): Limited in scope and duration exemptions from substantive requirements laid down in the Basic Regulation and its implementing rules in the event of urgent unforeseeable affecting persons or urgent operational needs of those persons
- — Article 71(3): Derogation from the rule(s) implementing the Basic Regulation where an equivalent level of protection to that attained by the application of the said rules can be achieved by other means
- — Article 76(7): Individual flight time specifications schemes deviating from the applicable certification specifications which ensure compliance with essential requirements and, as appropriate, the related implementing rules

  - are tailored for the safety of GA stakeholders, without making assumptions more relevant to commercial air transport (CAT) operations, and the aerodromes it uses;
  - address the main practical risks for GA operations, rather than theoretical hazards;
  - offer pilots a realistic choice to operate under IFR rather than visual flight rules (VFR) where there is a net safety benefit in doing so; and
  - avoid complexity that is not justified by a regulatory need.
- achieve consistency with changes proposed in the other Annexes of the Air Ops Regulation by NPA 2018-06[8], where appropriate. EASA believes that consistency in terminology and wording between the Annexes of Commission Regulation (EU) No 965/2012[9] (the Air Ops Regulation) is helpful, unless there is a substantive reason for differences between the Annexes, justified by the principles of Art 4 of the BR and the GA Roadmap.

2.3. How we want to achieve it — overview of the proposals

This NPA proposes changes to Annex VII (Part-NCO) of the Air Ops Regulation.

Section 4.3 gives more detail of specific measures, and the references in 4.3.1 to 4.3.8 point to the relevant subsections.

2.3.1. Net Safety Benefit approach and alignment with NCO acceptable level of safety

Section 4.1 sets out in detail the background of EASA's initiative to provide easier access to IFR in the interests of overall safety. A key element of this is to tailor requirements to be consistent with the acceptable level of safety for NCO. It is tempting to believe that increasing the requirements for IFR will increase safety by improving the safety of IFR operations themselves. However, if the requirements are so burdensome as to encourage the pilot-in-command to choose to fly VFR in circumstances where IFR with lighter requirements would nevertheless be safer than VFR, a net safety benefit can be achieved by having those lighter requirements.

The US FAA's IFR regime for Part 91[10] operations is a useful benchmark. A significant proportion of the world's GA IFR operates under the FAA Part 91 rules, with an acceptable level of safety performance. All the amendments proposed in this document converge towards the FAA's Part 91, which has proven, over decades of operation in the field, to be safe enough for non-commercial operations.

All the proposals (detailed in Section **Error! Reference source not found.**) address net safety benefit a nd alignment with the NCO acceptable level of safety.

2.3.2. Consistency with VFR

EASA has considered consistency with VFR requirements as an important benchmark with which to compare IFR operational requirements. If, for example, a VFR flight may be conducted in a flight visibility of 1 500 m, it makes little sense for a higher minimum to be applied for an instrument approach procedure. Similarly, if the pilot can make a judgement of the visibility of a VFR flight from the cockpit, it is inconsistent to use a visibility reported elsewhere as a requirement for a circling

[8] NPA 2018-06 'All-weather operations'

[9] Commission Regulation (EU) No 965/2012 of 5 October 2012 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 (OJ L296, 25 October 2012, page 1). Regulation as last amended by Commission Regulation (EU) 379/2014 of 7 April 2014 (OJ L 123, 24/04/2014, p. 1–94)

[10] FAA Part 91 'General Operations'

approach. This latter example also illustrates the principle that the pilot is able to assess and control the risk associated with operation in that visibility as set out in Article 4(2)(f) of the Basic Regulation.

The proposals designed to achieve consistency with VFR are:

— Application of a cut-off for the maximum runway visual range (RVR) required for an instrument approach (4.3.2);

— Removal of reference to converted meteorological visibility (CMV) (4.3.7); and

— Use of flight visibility not reported visibility as the criterion for circling approach operations.

2.3.3. Consistency with the environments in which NCOs are conducted

In order to encourage access to IFR in the interest of safety, the requirements for IFR must take account of what is reasonably practical from the environments in which it is conducted. In the context of aerodromes and operating sites, this may mean, for example, that limited meteorological information is provided, or that it is not cost effective to design and validate a comprehensive set of instrument flight procedures. Provided the risks introduced by IFR can be mitigated, it may not be appropriate to require the same infrastructure typically available for CAT operations.

The proposals designed to achieve consistency with the NCO operating environment are:

— Removal of the reference to single-pilot operations (4.3.3);

— Simplification of 'the approach ban' (4.3.6); and

— Tailoring guidance on vertical path control for NCO (4.3.4).

2.3.4. Proportionality

Another objective of this NPA is to simplify unnecessary complexity in the regulations where the safety benefit is insignificant in comparison to the complexity introduced. Furthermore, the aim is to clarify those rules that are ambiguous or not well understood.

Proportionality is addressed in:

— Removal of the requirement for an approval for low visibility take-off (LVTO) operations down to 150 m RVR (4.3.1); and

— Simplification of 'the approach ban' (4.3.6).

2.4. What are the expected benefits and drawbacks of the proposals

The expected benefits and drawbacks of the proposal are summarised below. For the full impact assessment of alternative options, please refer to Chapter 4.

The benefits of the regulatory changes proposed by this NPA are to improve Part-NCO by making it more consistent with the principles of the GA Roadmap, and of the Basic Regulation.

Improving accessibility of IFR to GA pilots will also mitigate safety risks that are associated with loss of control in flight (LOC-I) and controlled flight into terrain (CFIT) in poor weather, which will result in a positive safety impact.

While not an objective in itself, the proposed changes will bring Part-NCO closer into alignment with 14 CFR Part-91, the FAA's operating rules for non-commercial operations. ICAO Annex 6, Part II, Section 2 (General Aviation Operations) has also been considered in the development of this NPA.

For the full impact assessment of alternative options, please refer to Chapter 4.

3. Proposed amendments and rationale in detail

The text of the amendment is arranged to show deleted text, new or amended text as shown below:

— deleted text is ~~struck through~~;

— new or amended text is highlighted in blue;

— an ellipsis '[…]' indicates that the rest of the text is unchanged.

3.1. Draft regulation (Draft EASA opinion)

Draft text

Annex V Specific Approvals (Part-SPA)

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

Draft text

~~The operator shall only conduct the following low visibility operations (LVO) when approved by the competent authority:~~

~~(a) low visibility take-off (LVTO) operation;~~

~~(b) lower than standard category I (LTS CAT I) operation;~~

~~(c) standard category II (CAT II) operation;~~

~~(d) other than standard category II (OTS CAT II) operation;~~

~~(e) standard category III (CAT III) operation;~~

~~(f) approach operation utilising enhanced vision systems (EVS) for which an operational credit is applied to reduce the runway visual range (RVR) minima by no more than one third of the published RVR.~~

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

(a) take-off operations with visibility conditions less than 400 m RVR, except for operations under Annex VII, which may be conducted with visibility conditions of not less than 150 m RVR without approval by the competent authority;

(b) instrument approach operations with visibility conditions less than:

(1) 550 m RVR for aeroplanes

(2) 500 m RVR for helicopters; and

(c) operations with operational credits.

Rationale

Approval is not to be required for LVTO for Part-NCO operations with RVR between 150 and 400 m. See Section 4.3.1.

Annex VII
Non-Commercial operations with other-than complex motor-powered aircraft (Part-NCO)

NCO.OP.101 Altimeter check and settings

Draft text

(a) The pilot-in-command shall check the proper operation of the altimeter before each departure.

(b) The pilot-in-command shall use appropriate altimeter settings for all phases of flight, taking into account any procedure prescribed by the State of the aerodrome or the State of the airspace.

Rationale

As currently neither the Air OPS Regulation nor Regulation (EU) No 923/2012 (SERA) covers the requirement to establish procedures for altimeter check and settings, which are essential for instrument flight rules (IFR) operations, a new requirement, NCO.OP.101 'Altimeter check and settings,' has been introduced for this purpose. This rule is similar to the new one proposed for CAT in NPA 2018-06(C), but it is modified to fit the NCO operating environment.

AMC1 NCO.OP.101(a) Altimeter check and settings

Draft text

PRE-FLIGHT ALTIMETER CHECK

A serviceable altimeter indicates the elevation of the point selected, plus the height of the altimeter above this point, within a tolerance of ± 60 ft.

If the altimeter does not indicate the reference elevation or height exactly but is within the specified tolerances, no adjustment of this indication should be made at any stage of a flight. Also, any error which is within tolerance on the ground should be ignored by the pilot during flight.

If no altimeter setting is available at the aerodrome or operating site of departure, the altimeter should be set using the elevation of the aerodrome or operating site, and the altimeter setting should be verified with a local ATS unit as soon as practicable after departure.

Rationale

This text is a simplified version of the pre-flight procedures set out in ICAO Doc 8168 1st edition (PANS OPS) Volume III, Section 2, Chapter 3.2.

NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

Draft text

~~(a) For instrument flight rules (IFR) flights, the pilot-in-command shall select and use aerodrome operating minima for each departure, destination and alternate aerodrome. Such minima shall:~~

~~(1) not be lower than those established by the State in which the aerodrome is located, except when specifically approved by that State; and~~

~~(2) when undertaking low visibility operations, be approved by the competent authority in accordance with Annex V (Part-SPA), Subpart E to Regulation (EU) No 965/2012.~~

~~(b) When selecting the aerodrome operating minima, the pilot-in-command shall take the following into account:~~

~~(1) the type, performance and handling characteristics of the aircraft;~~

~~(2) his/her competence and experience;~~

~~(3) the dimensions and characteristics of the runways and final approach and take-off areas (FATOs) that may be selected for use;~~

~~(4) the adequacy and performance of the available visual and non-visual ground aids;~~

~~(5) the equipment available on the aircraft for the purpose of navigation and/or control of the flight path, during the take-off, the approach, the flare, the landing, the rollout and the missed approach;~~

~~(6) the obstacles in the approach, the missed approach and the climb-out areas necessary for the execution of contingency procedures;~~

~~(7) the obstacle clearance altitude/height for the instrument approach procedures;~~

~~(8) the means to determine and report meteorological conditions; and~~

~~(9) the flight technique to be used during the final approach.~~

~~(c) The minima for a specific type of approach and landing procedure shall only be used if:~~

~~(1) the ground equipment required for the intended procedure is operative;~~

~~(2) the aircraft systems required for the type of approach are operative;~~

~~(3) the required aircraft performance criteria are met; and~~

~~(4) the pilot is qualified appropriately.~~

(a) For instrument flight rules (IFR) flights, the pilot-in-command shall establish aerodrome operating minima 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 operations.

(b) The aerodrome operating minima shall take the following elements into account, if relevant:

(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 missed approach;

(3) any conditions or limitations stated in the aircraft flight manual;

(4) the dimensions and characteristics of the runways / final approach and take-off area (FATO) that may be selected for use;

(5) the adequacy and performance of the available visual and non-visual aids and infrastructure;

(6) the obstacle clearance altitude/height (OCA/H) for the instrument approach procedures, if established;

(7) the obstacles in the climb-out areas and clearance margins;

(8) any non-standard characteristics of the aerodrome, the instrument approach procedure or the environment;

(9) the competence and experience of the pilot-in-command;

(10) the instrument approach procedure, if established;

(11) the aerodrome characteristics and the type of air navigation service (ANS) available, if any;

(12) any minima that may be promulgated by the State of the aerodrome;

(13) the conditions prescribed in any specific approvals for low visibility operations (LVO) or operations with operational credits;

(14) relevant operational experience of the pilot-in-command.

Rationale

It is proposed in NPA 2018-06 that the corresponding rule in Part-CAT be updated to better reflect the safety objectives of establishing aerodrome operating minima. The rule in Part-NCO reflects the updated Part-CAT rule, but with some modifications to fit the NCO operating environment.

Correspondence table for NCO.OP.110 AMC and GM

The AMC and GM to NCO.OP.110 have been extensively restructured. The following table is intended to assist the reader in following the changes to the rule structure.

Topic	**Current AMC/GM**	**New AMC/GM**	**Note**
TAKE-OFF OPERATIONS	AMC1 NCO.OP.110	AMC1 NCO.OP.110	Amended
VISUAL APPROACH	AMC2 NCO.OP.110	AMC2 NCO.OP.110	Unchanged
EFFECT ON LANDING MINIMA OF TEMPORARILY FAILED OR DOWNGRADED GROUND EQUIPMENT	AMC3 NCO.OP.110	AMC4 NCO.OP.110	Amended
COMMERCIALLY AVAILABLE INFORMATION	GM1 NCO.OP.110	GM4 NCO.OP.110	Amended and retitled 'USE OF THIRD-PARTY INFORMATION'.
VERTICAL PATH CONTROL	GM2 NCO.OP.110	GM1 NCO.OP.111	Rewritten and moved to the more relevant implementing rule.
CRITERIA FOR ESTABLISHING RVR/CMV	GM3 NCO.OP.110	None	Combined GM3 and GM4 NCO.OP.110 into AMC3 NCO.OP.110
DETERMINATION OF RVR/CMV/VIS MINIMA	GM4 NCO.OP.110	AMC3 NCO.OP.110	Retitled and amended

FOR NPA, APV, CAT I — AEROPLANES			
CONVERSION OF REPORTED METEOROLOGICAL VISIBILITY TO RVR/CMV	GM5 NCO.OP.110	None	Deleted.
AIRCRAFT CATEGORIES	GM6 NCO.OP.110	GM1 NCO.OP.110	Content unchanged
CONTINUOUS DESCENT FINAL APPROACH (CDFA) — AEROPLANES	GM7 NCO.OP.110	None	Deleted and relevant content included in GM1 NCO.OP.111
ONSHORE AERODROME DEPARTURE PROCEDURES — HELICOPTERS	GM8 NCO.OP.110	Not included in this NPA	
FLIGHTS WITH VFR AND IFR SEGMENTS	None	GM2 NCO.OP.110	New GM
MEANS TO DETERMINE THE REQUIRED RVR BASED ON DH AND LIGHTING FACILITIES	None	GM3 NCO.OP.110	New GM
VISUAL AND NON-VISUAL AIDS AND INFRASTRUCTURE	None	GM1 NCO.OP.110(b)(5)	New GM

AMC1 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

Draft text

TAKE-OFF OPERATIONS

(a) General:

(1) Take-off minima should be expressed as visibility (VIS) or runway visual range (RVR) limits, taking into account all relevant factors for each ~~aerodrome~~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~~cloud conditions, it should be specified.

(2) When the reported ~~meteorological~~ visibility is below that required for take-off and RVR is not reported, a take-off should only be commenced if the pilot-in-command can determine that the visibility along the take-off runway/area is equal to or better than the required minimum.

(3) When no reported ~~meteorological~~ visibility or RVR is available, a take-off should only be commenced if the pilot-in-command can determine that the RVR/VIS along the take-off runway/area is equal to or better than the required minimum.

(b) Visual reference:

(1) The take-off minima should be selected to ensure sufficient guidance to control the aircraft in the event of both a rejected take-off in adverse circumstances and a continued take-off after failure of the critical engine.

(2) For night operations, ~~ground lights should be available to illuminate the runway/final approach and take-off area (FATO) and any obstacles~~ sufficient lighting should be in operation to illuminate the runway/final approach and take-off area (FATO) and any relevant obstacles.

(c) Low visibility take-off:

(1) Runway centreline markings should be available for any take-off in an RVR or visibility less than 400 m by day.

(2) Runway edge lights or centreline lights should be available for any take-off in an RVR less than 400 m by night.

(3) Runway centreline lights should be available for any take-off in an RVR less than 300 m.

Rationale

Editorial changes are made for consistency with other Annexes to the Air Ops Regulation and adapted, where necessary, for proportionality. Paragraph (c) is introduced because it is proposed elsewhere that take-offs in RVRs between 150 m and 400 m be allowed for NCO without an LVO approval.

AMC3 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

Draft text

DETERMINATION OF RVR FOR INSTRUMENT APPROACH OPERATIONS – AEROPLANES

(a) The RVR for straight-in instrument approach operations should not be less than the greatest of the following:

(1) The minimum RVR for the type of runway used according to Table 1.A; or

(2) The minimum RVR determined according to the MDH or DH and class of lighting facility according to Table 2.A; or

(3) The minimum RVR according to the visual and non-visual aids and on-board equipment used according to Table 3.A.

(b) For Category A and B aeroplanes, if the RVR determined in accordance with (a) is greater than 1 500 m, then 1 500 m should be used.

(d) The visual aids, if available, may comprise standard runway day markings, runway edge lights, threshold lights, runway end lights and approach lights as defined in Table 6.

(e) For night operations or for any operation where credit for visual aids is required, the lights should be on and serviceable except as provided for in AMC4 NCO.OP.110.

Table 1.A Type of runway vs minimum RVR

Type of runway	**Minimum RVR or flight visibility**
Precision approach runway, category I	RVR 550 m
Non-precision approach runway	RVR 750 m
Non-instrument runway	According to Table 1 in NCO.OP.112 (Circling minima)

Table 2.A: RVR vs DH/MDH

DH or MDH			**Class of lighting facility**			
			FALS	**IALS**	**BALS**	**NALS**
ft			**RVR (m)**			
200	-	210	550	750	1 000	1 200
211	-	240	550	800	1 000	1 200
241	-	250	550	800	1 000	1 300
251	-	260	600	800	1 100	1 300
261	-	280	600	900	1 100	1 300
281	-	300	650	900	1 200	1 400
301	-	320	700	1 000	1 200	1 400
321	-	340	800	1 100	1 300	1 500
341	-	360	900	1 200	1 400	1 600
361	-	380	1 000	1 300	1 500	1 700
381	-	400	1 100	1 400	1 600	1 800
401	-	420	1 200	1 500	1 700	1 900
421	-	440	1 300	1 600	1 800	2 000
441	-	460	1 400	1 700	1 900	2 100
461	-	480	1 500	1 800	2 000	2 200
481		500	1 500	1 800	2 100	2 300
501	-	520	1 600	1 900	2 100	2 400
521	-	540	1 700	2 000	2 200	2 400
541	-	560	1 800	2 100	2 300	2 400
561	-	580	1 900	2 200	2 400	2 400
581	-	600	2 000	2 300	2 400	2 400
601	-	620	2 100	2 400	2 400	2 400
621	-	640	2 200	2 400	2 400	2 400

DH or MDH			**Class of lighting facility**			
			FALS	**IALS**	**BALS**	**NALS**
ft			**RVR (m)**			
641		660	2 300	2 400	2 400	2 400
661	and above		2 400	2 400	2 400	2 400

Table 3.A: Visual and non-visual aids and/or on-board equipment vs minimum RVR

Type of approach	**Facilities**	**Lowest RVR**
Precision approach and APV procedure	RTZL and RCLL	*[no limitation]*
	without RTZL and RCLL but using HUDLS or equivalent system; coupled auto-pilot or flight director to DH	*[no limitation]*
	No RTZL and RCLL, not using HUDLS or equivalent system or auto-pilot to DH.	750 m
Non-precision approach procedure	Final approach track offset <15 ° for category A and B aeroplanes or <5 ° Category C and D aeroplanes	750 m
	Final approach track offset ≥ 15° for category A or B aeroplanes	1 000 m
	Final approach track offset ≥ 5° for category C or D aeroplanes	1 200 m

DETERMINATION OF RVR FOR INSTRUMENT APPROACH OPERATIONS – HELICOPTERS

(a) The RVR should not be less than the greatest of the following:

(1) The minimum RVR for the type of runway/FATO used according to Table 4.H; or

(2) The minimum RVR determined according to the MDH or DH and class of lighting facility according to Table 5.H; or

(b) The visual aids, if available, may comprise standard runway day markings, runway edge lights, threshold lights, runway, end lights and approach lights as defined in Table 6 of AMC3 NCO.OP.110.

(c) For night operations or for any operation where credit for visual aids is required, the lights should be on and serviceable.

Table 4.H Type of runway/FATO vs minimum RVR – helicopters

Type of runway / FATO	**Minimum RVR or VIS**
Precision approach runway, category I Non-precision approach runway Non-instrument runway	RVR 500 m
Instrument FATO FATO	RVR 500 m RVR/VIS 800 m

Note: A helicopter point in space (PinS) with instructions to 'proceed VFR' is not directly related to the nearest FATO or runway, because the flight can continue VFR to any destination after the point in space.

Table 4.H does not apply to helicopter point in space approaches with instructions to 'proceed VFR'.

Table 5.H DH/MDH vs minimum RVR – helicopters

DH / MDH (ft)	**Facilities vs. RVR (m) ***			
	FALS	**IALS**	**BALS**	**NALS**
200	500	600	700	1 000
201 – 249	550	650	750	1 000
250 – 299	600*	700*	800	1 000
300 and above	750*	800	900	1 000

* Minima on 2D approach operations should be no lower than 800 m.

APPROACH LIGHTING SYSTEMS – AEROPLANES AND HELICOPTERS

Table 6: Approach lighting systems

Class of lighting facility	**Length, configuration and intensity of approach lights**
FALS	CAT I lighting system (HIALS ≥720 m) distance coded centreline, barrette centreline
IALS	Simple approach lighting system (HIALS 420–719 m) single source, barrette
BALS	Any other approach lighting system (HIALS, MALS or ALS 210–419 m)
NALS	Any other approach lighting system (HIALS, MALS or ALS <210 m) or no approach lights

Rationale

The new AMC3 NCO.OP.110 contains parts of the current GM4 NCO.OP.110.

The current AMC3 is renumbered 'AMC4' and amended as shown below.

The determination of RVR is simplified version of the corresponding AMC proposed for Part-CAT, simplified for proportionality. A cut-off (maximum RVR required) of 1 500/2 400 m (Cat AB/CD respectively) is applied regardless of the nature of the approach. This is particularly important for NCO, because in many cases there is a realistic choice for the pilot-in-command to choose to fly VFR or special visual flight rules (SVFR) when the flight visibility exceeds 1 500 m. To apply a higher minimum to an instrument approach procedure would not be consistent. See also Section 4.3.2.

The structure of the section applicable to helicopters is similar to the section applicable to aeroplanes, except that:

(a) there is no need for a cut-off at 1 500 m because all RVRs resulting from the calculations are 1 000 m or lower;

(b) there is no need for a helicopter equivalent of Table 6.A, because Table 6.A provides limitations that are aeroplane specific:

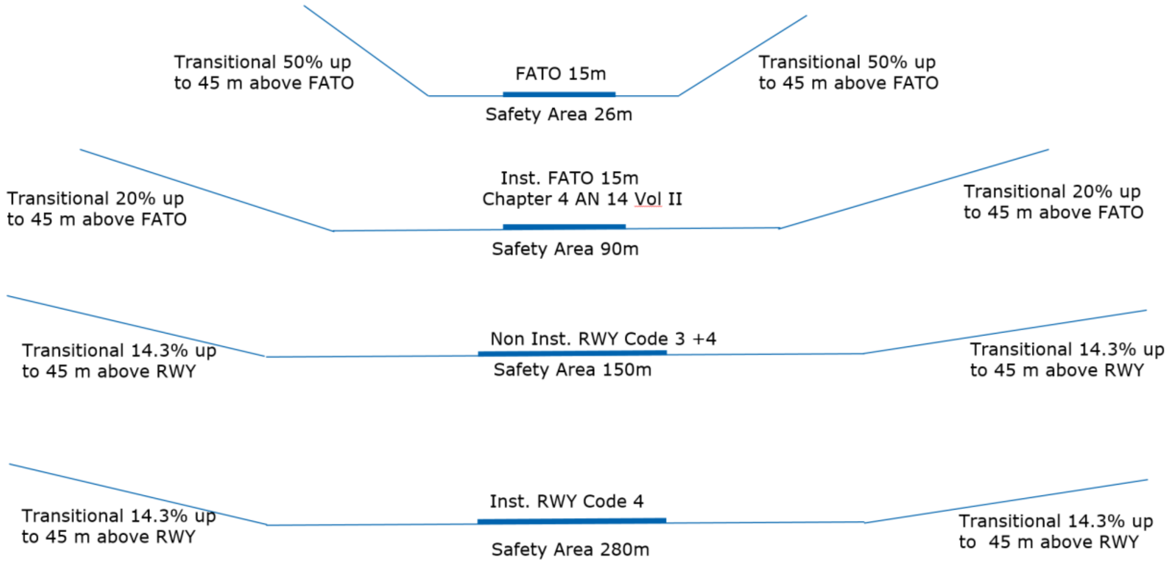
  (i) Helicopters do not require a runway and, therefore, do not require runway touchdown zone lights (RTZL) and runway centreline lights (RCLL).

  (ii) Helicopters can deal with final approach track offsets of more than 15 degrees with no influence on the minima due to lower speeds, better visibility, and manoeuvrability. The impact of track offsets of more than 30 degrees is taken into account in the procedure design.

Regarding Table 4.H:

(a) For an instrument FATO, the obstacle protection, lighting, and minimum dimensions of an instrument heliport should be sufficient to avoid any increase to operating minima. No increase in operating minima should apply. The minimum RVR for helicopters is 500 m.

(b) For runways, the obstacle protection of a non-instrument runway is far greater than the obstacle protection of an instrument FATO. Therefore, there should be no increase in minima based on the type of runway. Any runway is also much bigger than an instrument FATO. No increase in operating minima should apply. The minimum RVR for helicopters is 500 m.



For a non-instrument FATO, a helicopter point in space approach can be designed to a non-instrument FATO with instructions to 'proceed visually'. The minimum distance from the missed approach point to the heliport is 1 000 m, in order to provide enough distance for the helicopter to decelerate from IFR speed and land. The minimum RVR is therefore 1 000 m to cover any deficiency in lighting or heliport dimensions.

Regarding Table 5.H:

The table is created by merging previous Tables 4.1.H and 4.2.H. For DH/MDH of 250 ft or above, the lowest minima are kept in the table, but minima not lower than 800 m are for 2D approach operations are mentioned in a footnote below the table. Minima are also not lower than 800 m on helicopter point in space approaches for the purpose of harmonisation with CAT, NCC and SPO. The merged table has the added benefit of simplicity and compatibility with the new definitions of type A and B approaches, and 3D and 2D approach operations. The merge has marginally lowered the operating minima on 2D approach operations. The resulting minima remain within 800 m – 1 000 m RVR, which is not very different to 800 m visibility (VIS) under VFR by day and is therefore sufficiently safe. A footnote restricting the descent angle to 4 degrees unless visual aids were available in the visual segment was deleted, taking into account a helicopter's ability to fly steeper descent angles with and without visual aids.

AMC~~3~~4 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

Draft text

EFFECT ON LANDING MINIMA OF TEMPORARILY FAILED OR DOWNGRADED GROUND EQUIPMENT

~~(a) Non-precision approaches requiring a final approach fix (FAF) and/or missed approach point (MAPt) should not be conducted where a method of identifying the appropriate fix is not available.~~

~~(b) A minimum RVR of 750 m should be used for CAT I approaches in the absence of centreline lines and/or touchdown zone lights.~~

~~(c) Where approach lighting is partly unavailable, minima should take account of the serviceable length of approach lighting.~~

(a) Lighting in Table 5.A should be considered only if the relevant lighting is operating. For example, if components of a FALS have failed leaving only the last 250 m operating normally, the lighting facilities should be treated as BALS.

(b) Failures of standby equipment, standby power systems, middle markers and RVR assessment systems have no effect on minima.

(c) Where an outer marker is used to determine the final approach fix, an alternative means may be used if the outer marker is not available.

Rationale

The previous AMC3 has been rewritten to be more useful for NCO.

~~GM1 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters~~

Draft text

~~COMMERCIALLY AVAILABLE INFORMATION~~

~~An acceptable method of selecting aerodrome operating minima is through the use of commercially available information.~~

Rationale

The current GM1 was not considered helpful. There are many commercially available products supporting the establishment of aerodrome operating minima (AOM). This GM is replaced by new GM4.

~~GM6~~ GM1 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

Draft text

AIRCRAFT CATEGORIES

(a) Aircraft categories should be based on the indicated airspeed at threshold (V_{AT}), which is equal to the stalling speed (V_{SO}) multiplied by 1.3 or where published 1-g (gravity) stall speed (V_{S1g}) multiplied by 1.23 in the landing configuration at the maximum certified landing mass. If both V_{SO} and V_{S1g} are available, the higher resulting V_{AT} should be used.

(b) The aircraft categories specified in the Table 7 should be used.

Table 7: Aircraft categories corresponding to V_{AT} values

Aircraft category	V_{AT}
A	Less than 91 kt
B	From 91 to 120 kt
C	From 121 to 140 kt

D	From 141 to 165 kt
E	From 166 to 210 kt

Rationale

Transposed from previous GM6 without changes.

~~GM2 NCO.OP.110 Aerodrome operating minima – aeroplanes and helicopters~~

Draft text

~~VERTICAL PATH CONTROL~~

~~Due consideration should be given to the selection of an appropriate technique for vertical path control on non-precision approaches (NPAs). Where appropriate instrumentation and/or facilities are available, a continuous descent final approach technique (CDFA) usually offers increased safety and a lower workload compared to a step-down approach.~~

Rationale

Current GM2 NCO.OP.110 is deleted. Its content is incorporated into the more relevant implementing rule and to GM1 NCO.OP.111 and further amended.

GM2 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

Draft text

FLIGHTS WITH VFR AND IFR SEGMENTS

Where a flight contains VFR and IFR segments, aerodrome operating minima need be established only as far as relevant to the IFR segments. Attention is drawn to NCO.OP.160(a) and (c), which requires that the pilot-in-command be satisfied that the VFR segments will be conducted in conditions at or above the applicable VFR operating minima. For example, for a VFR departure changing to IFR at a transition point en-route and an IFR arrival at destination, the pilot-in-command should be satisfied that VMC will exist up to the transition point, and aerodrome operating minima should be established for the destination and any alternate destinations required.

Rationale

New GM.

GM3 NCO.OP.110 Aerodrome operating minima – aeroplanes and helicopters

Draft text

~~CRITERIA FOR ESTABLISHING RVR/CMV~~

~~(a) In order to qualify for the lowest allowable values of RVR/CMV specified in Table 3.A, the instrument approach should meet at least the following facility requirements and associated conditions:~~

~~(1) Instrument approaches with designated vertical profile up to and including 4.5° for Category A and B aeroplanes, or 3.77° for Category C and D aeroplanes, where the facilities are:~~

~~(i) instrument landing system (ILS)/microwave landing system (MLS)/GBAS landing system (GLS)/precision approach radar (PAR); or~~

~~(ii) approach procedure with vertical guidance (APV); and~~

~~where the final approach track is offset by not more than 15° for Category A and B aeroplanes or by not more than 5° for Category C and D aeroplanes.~~

~~(2) Instrument approach operations flown using the CDFA technique with a nominal vertical profile, up to and including 4.5° for Category A and B aeroplanes, or 3.77° for Category C and D aeroplanes, where the facilities are non-directional beacon (NDB), NDB/distance measuring equipment (DME), VHF omnidirectional radio range (VOR), VOR/DME, localiser (LOC), LOC/DME, VHF direction finder (VDF), surveillance radar approach (SRA) or global navigation satellite system (GNSS)/lateral navigation (LNAV), with a final approach segment of at least 3 NM, which also fulfil the following criteria:~~

~~(i) the final approach track is offset by not more than 15° for Category A and B aeroplanes or by not more than 5° for Category C and D aeroplanes;~~

~~(ii) the final approach fix (FAF) or another appropriate fix where descent is initiated is available, or distance to threshold (THR) is available by flight management system (FMS)/area navigation (NDB/DME) or DME; and~~

~~(iii) the missed approach point (MAPt) is determined by timing, the distance from FAF to THR is ≤ 8 NM.~~

~~(3) Instrument approaches where the facilities are NDB, NDB/DME, VOR, VOR/DME, LOC, LOC/DME, VDF, SRA or GNSS/LNAV, not fulfilling the criteria in (a)(2), or with an minimum descent height (MDH) ≥ 1 200 ft.~~

~~(b) The missed approach operation, after an approach operation has been flown using the CDFA technique, should be executed when reaching the decision height/altitude (DH/A) or the MAPt, whichever occurs first. The lateral part of the missed approach procedure should be flown via the MAPt unless otherwise stated on the approach chart.~~

MEANS TO DETERMINE THE REQUIRED RVR BASED ON DH AND LIGHTING FACILITIES

(a) The values in Table 2.A are derived from the formula below:

Required RVR (m) = [(DH/MDH (ft) x 0.3048)/tanα] — length of approach lights (m),

where α is the calculation angle, being a default value of 3.00° increasing in steps of 0.10° for each line in Table 2.A up to 3.77° and then remaining constant.

(b) The lighting system classes in Table 2.A have the meaning specified in Table 6.

Rationale

This new text of GM3 explains the construction of Table 2.A.

Current GM3 NCO.OP.110 is incorporated into AMC3 NCO.OP.110 and further amended.

GM4 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

Draft text

~~DETERMINATION OF RVR/CMV/VIS MINIMA FOR NPA, APV, CAT I — AEROPLANES~~

~~(a) The minimum RVR/CMV/VIS should be the highest of the values specified in Table 2 and Table 3.A but not greater than the maximum values specified in Table 3.A, where applicable.~~

~~(b) The values in Table 2 should be derived from the formula below:~~

~~required RVR/VIS (m) = [(DH/MDH (ft) x 0.3048) / tanα] – length of approach lights (m);~~

~~where α is the calculation angle, being a default value of 3.00° increasing in steps of 0.10° for each line in Table 2 up to 3.77° and then remaining constant.~~

~~(c) If the approach is flown with a level flight segment at or above MDA/H, 200 m should be added for Category A and B aeroplanes and 400 m for Category C and D aeroplanes to the minimum RVR/CMV/VIS value resulting from the application of Table 2 and Table 3.A.~~

~~(d) An RVR of less than 750 m, as indicated in Table 2, may be used:~~

~~(1) for CAT I operations to runways with full approach lighting system (FALS), runway touchdown zone lights (RTZL) and runway centreline lights (RCLL);~~

~~(2) for CAT I operations to runways without RTZL and RCLL when using an approved head-up guidance landing system (HUDLS), or equivalent approved system, or when conducting a coupled approach or flight-director-flown approach to a DH. The instrument landing system (ILS) should not be published as a restricted facility; and~~

~~(3) for approach procedure with vertical guidance (APV) operations to runways with FALS, RTZL and RCLL when using an approved head-up display (HUD).~~

~~(e) Lower values than those specified in Table 2 may be used for HUDLS and auto-land operations if approved in accordance with SPA.LVO.~~

~~(f) The visual aids should comprise standard runway day markings and approach and runway lights as specified in Table 1. The competent authority may approve that RVR values relevant to a basic approach lighting system (BALS) are used on runways where the approach lights are restricted in length below 210 m due to terrain or water, but where at least one cross-bar is available.~~

~~(g) For night operations or for any operation where credit for runway and approach lights is required, the lights should be on and serviceable, except as provided for in Table 1.~~

~~(h) For single-pilot operations, the minimum RVR/VIS should be calculated in accordance with the following additional criteria:~~

~~(1) an RVR of less than 800 m, as indicated in Table 2, may be used for CAT I approaches provided any of the following is used at least down to the applicable DH:~~

~~(i) a suitable autopilot, coupled to an ILS, microwave landing system (MLS) or GBAS landing system (GLS) that is not published as restricted; or~~

~~(ii) an approved HUDLS, including, where appropriate, enhanced vision system (EVS), or equivalent approved system;~~

~~(2) where RTZL and/or RCLL are not available, the minimum RVR/CMV should not be less than 600 m; and~~

(3) an RVR of less than 800 m, as indicated in Table 2, may be used for APV operations to runways with FALS, RTZL and RCLL when using an approved HUDLS, or equivalent approved system, or when conducting a coupled approach to a DH equal to or greater than 250 ft.

Table 1: Approach lighting systems

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

Note: HIALS: high intensity approach lighting system;

MIALS: medium intensity approach lighting system;

ALS: approach lighting system.

Table 2: RVR/CMV vs. DH/MDH

DH or MDH			Class of lighting facility			
			FALS	IALS	BALS	NALS
			See (d), (e), (h), above for RVR < 750/800 m			
ft			RVR/CMV (m)			
200	-	210	550	750	1 000	1 200
211	-	220	550	800	1 000	1 200
221	-	230	550	800	1 000	1 200
231	-	240	550	800	1 000	1 200
241	-	250	550	800	1 000	1 300
251	-	260	600	800	1 100	1 300
261	-	280	600	900	1 100	1 300
281	-	300	650	900	1 200	1 400
301	-	320	700	1 000	1 200	1 400
321	-	340	800	1 100	1 300	1 500
341	-	360	900	1 200	1 400	1 600
361	-	380	1 000	1 300	1 500	1 700
381	-	400	1 100	1 400	1 600	1 800
401	-	420	1 200	1 500	1 700	1 900
421	-	440	1 300	1 600	1 800	2 000
441	-	460	1 400	1 700	1 900	2 100
461	-	480	1 500	1 800	2 000	2 200
481		500	1 500	1 800	2 100	2 300
501	-	520	1 600	1 900	2 100	2 400
521	-	540	1 700	2 000	2 200	2 400
541	-	560	1 800	2 100	2 300	2 500
561	-	580	1 900	2 200	2 400	2 600
581	-	600	2 000	2 300	2 500	2 700
601	-	620	2 100	2 400	2 600	2 800
621	-	640	2 200	2 500	2 700	2 900
641	-	660	2 300	2 600	2 800	3 000
661	-	680	2 400	2 700	2 900	3 100
681	-	700	2 500	2 800	3 000	3 200
701	-	720	2 600	2 900	3 100	3 300
721	-	740	2 700	3 000	3 200	3 400
741	-	760	2 700	3 000	3 300	3 500

DH or MDH			Class of lighting facility			
			FALS	IALS	BALS	NALS
			See (d), (e), (h), above for RVR < 750/800 m			
ft			RVR/CMV (m)			
761	-	800	2 900	3 200	3 400	3 600
801	-	850	3 100	3 400	3 600	3 800
851	-	900	3 300	3 600	3 800	4 000
901	-	950	3 600	3 900	4 100	4 300
951	-	1 000	3 800	4 100	4 300	4 500
1 001	-	1 100	4 100	4 400	4 600	4 900
1 101	-	1 200	4 600	4 900	5 000	5 000
1 201 and above			5 000	5 000	5 000	5 000

Table 3.A: CAT I, APV, NPA — aeroplanes
Minimum and maximum applicable RVR/CMV (lower and upper cut-off limits)

Facility/conditions	RVR/CMV (m)	Aeroplane category			
		A	B	C	D
ILS, MLS, GLS, PAR, GNSS/SBAS, GNSS/VNAV	Min	According to Table 2			
	Max	1 500	1 500	2 400	2 400
NDB, NDB/DME, VOR, VOR/DME, LOC, LOC/DME, VDF, SRA, GNSS/LNAV with a procedure that fulfils the criteria in GM3 NCO.OP.110(a)(2)	Min	750	750	750	750
	Max	1 500	1 500	2 400	2 400
For NDB, NDB/DME, VOR, VOR/DME, LOC, LOC/DME, VDF, SRA, GNSS/LNAV: — not fulfilling the criteria in GM3 NCO.OP.110(a)(2), or — with a DH or MDH ≥ 1 200 ft	Min	1 000	1 000	1 200	1 200
	Max	According to Table 2 if flown using the CDFA technique, otherwise an add-on of 200/400 m applies to the values in Table 2 but not to result in a value exceeding 5 000 m.			

DETERMINATION OF RVR/CMV/VIS MINIMA FOR NPA, CAT I — HELICOPTERS

(a) For non-precision approach (NPA) operations, the minima specified in Table 4.1.H should apply:

(1) where the missed approach point is within ½ NM of the landing threshold, the approach minima specified for FALS may be used regardless of the length of approach lights available. However, FATO/runway edge lights, threshold lights, end lights and FATO/runway markings are still required;

(2) for night operations, ground lights should be available to illuminate the FATO/runway and any obstacles; and

(3) for single-pilot operations, the minimum RVR is 800 m or the minima in Table 2, whichever is higher.

(b) For CAT I operations, the minima specified in Table 4.2.H should apply:

(1) for night operations, ground light should be available to illuminate the FATO/runway and any obstacles;

(2) for single-pilot operations, the minimum RVR/VIS should be calculated in accordance with the following additional criteria:

(i) an RVR of less than 800 m should not be used except when using a suitable autopilot coupled to an ILS, MLS or GLS, in which case normal minima apply; and

(ii) the DH applied should not be less than 1.25 times the minimum use height for the autopilot.

Table 4.1.H: Onshore NPA minima

MDH (ft) *	Facilities vs. RVR/CMV (m) **, ***			
	FALS	IALS	BALS	NALS
250 – 299	600	800	1 000	1 000
300 – 449	800	1 000	1 000	1 000
450 and above	1 000	1 000	1 000	1 000

*: The MDH refers to the initial calculation of MDH. When selecting the associated RVR, there is no need to take account of a rounding up to the nearest 10 ft, which may be done for operational purposes, e.g. conversion to MDA.

**: The tables are only applicable to conventional approaches with a nominal descent slope of not greater than 4°. Greater descent slopes will usually require that visual glide slope guidance (e.g. precision path approach indicator (PAPI)) is also visible at the MDH.

***: FALS comprise FATO/runway markings, 720 m or more of high intensity/medium intensity (HI/MI) approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.
IALS comprise FATO/runway markings, 420 – 719 m of HI/MI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.
BALS comprise FATO/runway markings, < 420 m of HI/MI approach lights, any length of low intensity (LI) approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.
NALs comprise FATO/runway markings, FATO/runway edge lights, threshold lights, FATO/runway end lights or no lights at all.

Table 4.2.H: Onshore CAT I minima

DH (ft) *	Facilities vs. RVR/CMV (m) **, ***			
	FALS	IALS	BALS	NALS
200	500	600	700	1 000
201 – 250	550	650	750	1 000
251 – 300	600	700	800	1 000
301 and above	750	800	900	1 000

*: The DH refers to the initial calculation of DH. When selecting the associated RVR, there is no need to take account of a rounding up to the nearest 10 ft, which may be done for operational purposes, e.g. conversion to DA.

**: The table is applicable to conventional approaches with a glide slope up to and including 4°.

***: FALS comprise FATO/runway markings, 720 m or more of HI/MI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.
IALS comprise FATO/runway markings, 420 – 719 m of HI/MI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.
BALS comprise FATO/runway markings, < 420 m of HI/MI approach lights, any length of LI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights to be on.
NALS comprise FATO/runway markings, FATO/runway edge lights, threshold lights, FATO/runway end lights or no lights at all.

USE OF THIRD-PARTY INFORMATION

When a pilot-in-command uses information provided by a third party for aerodrome operating minima, the pilot-in-command remains responsible for compliance with the implementing rules.

Rationale

This new text of GM4 replaces the currently applicable GM1 'Commercially available information', which was considered to be of too little help. There are many commercially available products that support the establishment of AOM. New GM4 reminds the pilot-in-command that, in the absence of certification of these products, the pilot remains responsible for ensuring the AOM used is compliant with the implementing rule.

The current text of GM4 NCO.OP.110 'Determination of RVR/CMV/VIS minima for NPA, APV, CAT I — aeroplanes' is incorporated in the new AMC3 NCO.OP.110 and further amended.

~~GM5 NCO.OP.110 Aerodrome operating minima – aeroplanes and helicopters~~

Draft text

~~CONVERSION OF REPORTED METEOROLOGICAL VISIBILITY TO RVR/CMV~~

~~(a) A conversion from meteorological visibility to RVR/CMV should not be used:~~

~~(1) when reported RVR is available;~~

~~(2) for calculating take-off minima; and~~

~~(3) for other RVR minima less than 800 m.~~

~~(b) If the RVR is reported as being above the maximum value assessed by the aerodrome operator, e.g. 'RVR more than 1 500 m', it should not be considered as a reported value.~~

~~(c) For all other circumstances, Table 5 should be used.~~

~~***Table 5: Conversion of reported meteorological visibility to RVR/CMV***~~

~~Lighting elements in operation~~	~~RVR/CMV = reported meteorological visibility x~~	
	~~Day~~	~~Night~~
~~High intensity (HI) 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~~

Rationale

Current GM5 NCO.OP.110 'Conversion of reported meteorological visibility to RVR/CMV' is deleted.

~~GM6 NCO.OP.110 Aerodrome operating minima – aeroplanes and helicopters~~

Draft text

~~AIRCRAFT CATEGORIES~~

~~(a) Aircraft categories should be based on the indicated airspeed at threshold (V_{AT}), which is equal to the stalling speed (V_{SO}) multiplied by 1.3 or where published 1-g (gravity) stall speed (V_{S1g}) multiplied by 1.23 in the landing configuration at the maximum certified landing mass. If both V_{SO} and V_{S1g} are available, the higher resulting V_{AT} should be used.~~

~~(b) The aircraft categories specified in the Table 6 should be used.~~

~~***Table 6: Aircraft categories corresponding to VAT values***~~

~~Aircraft category~~	~~V_{AT}~~
~~A~~	~~Less than 91 kt~~
~~B~~	~~from 91 to 120 kt~~

~~C~~	~~from 121 to 140 kt~~
~~D~~	~~from 141 to 165 kt~~
~~E~~	~~from 166 to 210 kt~~

Rationale

Current GM6 NCO.OP.110 'Aircraft categories' is deleted and its content is incorporated into GM1 NCO.OP.110.

~~GM7 NCO.OP.110 Aerodrome operating minima – aeroplanes and helicopters~~

Draft text

~~CONTINUOUS DESCENT FINAL APPROACH (CDFA) — AEROPLANES~~

~~(a) Introduction~~

~~(1) Controlled flight into terrain (CFIT) is a major hazard in aviation. Most CFIT accidents occur in the final approach segment of non-precision approaches; the use of stabilised-approach criteria on a continuous descent with a constant, predetermined vertical path is seen as a major improvement in safety during the conduct of such approaches. The following techniques are adopted as widely as possible, for all approaches.~~

~~(2) The elimination of level flight segments at MDA close to the ground during approaches, and the avoidance of major changes in attitude and power/thrust close to the runway that can destabilise approaches, are seen as ways to reduce operational risks significantly.~~

~~(3) The term CDFA has been selected to cover a flight technique for any type of NPA operation.~~

~~(4) The advantages of CDFA are as follows:~~

~~(i) the technique enhances safe approach operations by the utilisation of standard operating practices;~~

~~(ii) the technique is similar to that used when flying an ILS approach, including when executing the missed approach and the associated missed approach procedure manoeuvre;~~

~~(iii) the aeroplane attitude may enable better acquisition of visual cues;~~

~~(iv) the technique may reduce pilot workload;~~

~~(v) the approach profile is fuel efficient;~~

~~(vi) the approach profile affords reduced noise levels; and~~

~~(vii) the technique affords procedural integration with APV operations.~~

~~(b) CDFA~~

~~(1) Continuous descent final approach is defined in Annex I to the Regulation on Air operations.~~

~~(2) An approach is only suitable for application of a CDFA technique when it is flown along a nominal vertical profile; a nominal vertical profile is not forming part of the approach procedure design, but can be flown as a continuous descent. The nominal vertical profile~~

~~information may be published or displayed on the approach chart to the pilot by depicting the nominal slope or range/distance vs. height. Approaches with a nominal vertical profile are considered to be:~~

~~(i) NDB, NDB/DME (non-directional beacon/distance measuring equipment);~~

~~(ii) VOR (VHF omnidirectional radio range), VOR/DME;~~

~~(iii) LOC (localiser), LOC/DME;~~

~~(iv) VDF (VHF direction finder), SRA (surveillance radar approach); and~~

~~(v) GNSS/LNAV (global navigation satellite system/lateral navigation).~~

~~(3) Stabilised approach (SAp) is defined in Annex I to the Regulation on Air operations.~~

~~(i) The control of the descent path is not the only consideration when using the CDFA technique. Control of the aeroplane's configuration and energy is also vital to the safe conduct of an approach.~~

~~(ii) The control of the flight path, described above as one of the requirements for conducting an SAp, should not be confused with the path requirements for using the CDFA technique.~~

~~(iii) The predetermined approach slope requirements for applying the CDFA technique are established by the following:~~

~~(A) the published 'nominal' slope information when the approach has a nominal vertical profile; and~~

~~(B) the designated final-approach segment minimum of 3 NM, and maximum, when using timing techniques, of 8 NM.~~

~~(iv) An SAp will never have any level segment of flight at DA/H or MDA/H, as applicable. This enhances safety by mandating a prompt missed approach procedure manoeuvre at DA/H or MDA/H.~~

~~(v) An approach using the CDFA technique will always be flown as an SAp, since this is a requirement for applying CDFA. However, an SAp does not have to be flown using the CDFA technique, for example a visual approach.~~

Rationale

Current GM7 NCO.OP.110 'Continuous descent final approach (CDFA) – aeroplanes' is deleted and relevant parts of it are incorporated into GM1 NCO.OP.111.

~~GM8~~ GM5 NCO.OP.110 Aerodrome operating minima – aeroplanes and helicopters

ONSHORE AERODROME DEPARTURE PROCEDURES — HELICOPTERS

(…)

Rationale

Current GM8 NCO.OP.110 'Onshore aerodrome departure procedures — helicopters' is renumbered to GM5. Its content remains unchanged.

GM1 NCO.OP.110(b)(5) Aerodrome operating minima — aeroplanes and helicopters

Draft text

VISUAL AND NON-VISUAL AIDS AND INFRASTRUCTURE

'Visual and non-visual aids and infrastructure' refers to all equipment and facilities required for the procedure to be used for the intended instrument approach operation. This includes, but is not limited to, lights, markings, ground or space-based radio aids, etc.

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

Rationale

New GM to explain an aspect of the new rule.

NCO.OP.111 Aerodrome operating minima — ~~NPA, APV, CAT I operations~~ 3D and 2D approach operations

Draft text

~~(a) The decision height (DH) to be used for a non-precision approach (NPA) flown with the continuous descent final approach (CDFA) technique, approach procedure with vertical guidance (APV) or category I (CAT I) operation shall not be lower than the highest of:~~

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

~~(1) the minimum height to which the approach aid can be used without the required visual reference;~~

(~~2~~1) the obstacle clearance height (OCH) for the category of aircraft;

(~~3~~2) the published approach procedure DH or minimum descent height (MDH) where applicable;

(~~4~~3) the system minimum specified in Table 1;

(~~5~~4) the minimum DH specified in the aircraft flight manual (AFM) or equivalent document, if stated.

~~(b) The minimum descent height (MDH) for an NPA operation flown without the CDFA technique shall not be lower than the highest of:~~

(b) The MDH for a 2D approach operation flown without 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;

(~~2~~3) the system minimum specified in Table 1; or

(~~3~~4) the minimum MDH specified in the AFM, if stated.

~~***Table 1***~~
~~**System minima**~~

~~Facility~~	~~Lowest DH/MDH (ft)~~
~~Instrument landing system (ILS)~~	~~200~~
~~Global navigation satellite system (GNSS)/Satellite-based augmentation system (SBAS) (Lateral precision with vertical guidance approach (LPV))~~	~~200~~
~~GNSS (Lateral Navigation (LNAV))~~	~~250~~
~~GNSS/Baro-vertical navigation (VNAV) (LNAV/VNAV)~~	~~250~~
~~Localiser (LOC) with or without distance measuring equipment (DME)~~	~~250~~
~~Surveillance radar approach (SRA) (terminating at ½ NM)~~	~~250~~
~~SRA (terminating at 1 NM)~~	~~300~~
~~SRA (terminating at 2 NM or more)~~	~~350~~
~~VHF omnidirectional radio range (VOR)~~	~~300~~
~~VOR/DME~~	~~250~~
~~Non-directional beacon (NDB)~~	~~350~~
~~NDB/DME~~	~~300~~
~~VHF direction finder (VDF)~~	~~350~~

Table 1: System minima

Facility	**Lowest DH/MDH (ft)**
ILS/MLS/GLS	200
GNSS/SBAS (LPV)	200
GNSS (LNAV)	250
GNSS/Baro-VNAV (LNAV/ VNAV)	250
Helicopter point in space approach	250*
LOC with or without DME	250
SRA (terminating at ½ NM)	250
SRA (terminating at 1 NM)	300
SRA (terminating at 2 NM or more)	350
VOR	300
VOR/DME	250
NDB	350
NDB/DME	300
VDF	350

* For PinS approaches with instructions to 'proceed VFR', (minimum) decision height should be with reference to the ground below the missed approach point.

Rationale

Changes in wording and terminology are made for consistency with the changes in the other Annexes of the Air Ops Regulation. EASA considered introduction of a minimum DH/MDH based on runway type, but considered this to be unnecessarily complex for NCO, particularly since for NCO the DH/MDH is introduced in the implementing rule rather than in AMC. Logically, the runway type influences the visibility required, not the height at which that visibility must be acquired.

Table 2 is extended to helicopters because the system minima are not aircraft-category related. Helicopter PinS approaches are a separate kind of approach in PANS OPS so they need to be introduced in the list of approach types.

Helicopter PinS with instructions to 'proceed VFR' are cloud-breaking procedures that may be used to continue flight under VFR to an unspecified destination. As opposed to other IFR procedures, it may not be possible to determine the DH/MDH with reference to a given heliport or runway threshold. An alternative solution is proposed in a footnote below the table.

~~AMC1 NCO.OP.111 Aerodrome operating minima — NPA, APV, CAT I operations~~

~~NPA FLOWN WITH THE CDFA TECHNIQUE~~

Draft text

~~When flying a non-precision approach operation using the CDFA technique, the pilot-in-command should ensure that when executing a missed approach, the initiation of the go-around is done at or above the DA/H to avoid flying below the MDA/H.~~

Rationale

AMC1 NCO.OP.111 contains a significant conceptual error, and conflicts with the implementing rule. It is deleted for consistency with NPA 2018-06(C)— 'AWO'.

GM1 NCO.OP.111 Aerodrome operating minima — ~~NPA, APV, CAT I operations~~ 3D and 2D approach operations

Draft text

VERTICAL PATH CONTROL FOR NPA

During a 3D instrument approach operation (using both lateral and vertical navigation guidance), the displayed vertical path should be followed continuously. The approach may be continued to DH, at which point a missed approach must be initiated if visual reference is not acquired.

During a 2D instrument approach operation (using lateral navigation guidance only) flown, using the CDFA technique, the vertical path should be approximated continuously by choosing an appropriate vertical speed, crosschecking level against position along the approach, and adapting the vertical speed as required. The approach may be continued to DH or the missed approach point (MAPt) (whichever earlier), at which point a missed approach must be initiated if visual reference is not acquired. There is no MDH for a non-precision approach (NPA) flown using CDFA. An aircraft may descend briefly below the DH on an NPA flown using CDFA, in the same way as it may on a precision approach or APV.

During a 2D instrument approach operation (using lateral navigation guidance only) flown, using the step-down (non-CDFA) technique, the aircraft descends to the next published level (e.g. the MDH or height at the next stepdown fix). The aircraft may fly level at the MDH until reaching the MAPt, where a missed approach must be initiated if visual reference is not acquired.

The CDFA technique has substantially improved safety performance in commercial air transport operations with complex motor-powered aircraft. In lighter, more manoeuvrable aircraft, operated by a single pilot, which may be accustomed to shorter and steeper visual approaches, there may sometimes be advantages to a step-down technique. Due consideration should be given to the choice of vertical path control at the planning stage of flight.

Rationale

This new GM has been written specifically for NCO, incorporating elements of the existing material that was originally written for CAT. See also Section 4.3.4.

NCO.OP.112 Aerodrome operating minima — circling operations with aeroplanes

Draft text

(a) The MDH for a circling approach operation with aeroplanes shall not be lower than the highest of:

(1) the published circling OCH for the aeroplane category;

(2) the minimum circling height derived from Table 1; or

(3) the DH/MDH of the preceding instrument approach procedure.

(b) The minimum flight visibility for a circling approach operation with aeroplanes shall be the highest of:

(1) the circling visibility for the aeroplane category, if published; or

(2) the minimum visibility derived from Table ~~2~~1.

Table 1

MDH and minimum visibility for circling vs aeroplane category

	Aeroplane category			
	A	B	C	D
MDH (ft)	400	500	600	700
Minimum flight visibility (m)	1 500	1 500~~1600~~	2 400	3 600

Rationale

Terminology is changed to 'circling approach operation' throughout the regulation, together with introducing the term in Annex I. A minor change is made to the visibility requirement for Cat B aeroplanes, for consistency with VFR minima in Part-SERA. The term 'flight visibility' is used for consistency with Part-SERA.

GM1 NCO.OP.112 Aerodrome operating minima — circling operations with aeroplanes

Draft text

SUPPLEMENTAL INFORMATION

(a) The purpose of this Guidance Material is to provide pilots with supplemental information regarding the application of aerodrome operating minima in relation to circling approaches.

(b) Conduct of flight — general:

(1) the MDH and obstacle clearance height (OCH) included in the procedure are referenced to aerodrome elevation;

(2) the MDA is referenced to mean sea level; and

(3) for these procedures, the applicable visibility is the ~~meteorological~~ flight visibility.

(c) Instrument approach followed by visual manoeuvring (circling) without prescribed tracks:

(1) When the aeroplane is on the initial instrument approach, before visual reference is stabilised, but not below MDA/H — the aeroplane should follow the corresponding instrument approach procedure until the appropriate instrument MAPt is reached.

(2) At the beginning of the level flight phase at or above the MDA/H, the instrument approach track ~~determined by radio navigation aids, RNAV, RNP or ILS, microwave landing system (MLS) or GBAS landing system (GLS)~~ should be maintained until the pilot:

(i) estimates that, in all probability, visual contact with the runway of intended landing or the runway environment will be maintained during the entire circling procedure;

(ii) estimates that the aeroplane is within the circling area before commencing circling; and

(iii) is able to determine the aeroplane's position in relation to the runway of intended landing with the aid of the appropriate external references.

(…)

Rationale

Editorial changes are made, and 'meteorological visibility' (which is not anymore used in any of the Annexes) is replaced by 'flight visibility' for consistency with VFR operations.

AMC1 NCO.OP.115 Departure and approach procedures — aeroplanes and helicopters

Draft text

ARRIVALS AND DEPARTURES UNDER IFR WHERE NO INSTRUMENT FLIGHT PROCEDURES ARE PUBLISHED

When arriving or departing under IFR to/from an aerodrome or operating site with no published instrument flight procedure, the pilot-in-command should ensure that sufficient obstacle clearance is available for safe operation, and that any clearance required to enter controlled airspace is obtained prior to entry.

Rationale

NCO.OP.115 is amplified to clarify that IFR operations *are* permitted in the absence of instrument flight procedures, but the pilot is responsible for ensuring that the trajectory chosen is safe.

NCO.OP.140 Destination alternate aerodromes — aeroplanes

Draft text

For IFR flights, the pilot-in-command shall specify at least one ~~weather-permissible~~ destination alternate aerodrome in the flight plan, unless~~:~~

~~(a)~~ the available current meteorological information for the destination indicates~~ that~~, for the period from 1 hour before until 1 hour after the estimated time of arrival, or from the actual time of departure to 1 hour after the estimated time of arrival, whichever is the shorter period, ~~the approach and landing may be made under visual meteorological conditions (VMC); or~~

~~(b) the place of intended landing is isolated and:~~

~~(1) an instrument approach procedure is prescribed for the aerodrome of intended landing; and~~

~~(2) available current meteorological information indicates that the following meteorological conditions will exist from 2 hours before to 2 hours after the estimated time of arrival:~~

~~(i) a cloud base of at least 300 m (1 000 ft) above the minimum associated with the instrument approach procedure; and~~

~~(ii) visibility of at least 5,5 km or of 4 km more than the minimum associated with the procedure.~~

a ceiling of at least 1 000 ft above the DH/MDH for an available instrument approach procedure and a visibility of at least 1 500 m by day or 5 000 m by night.

Rationale

See Section 4.3.5.

NCO.OP.141 Destination alternate aerodromes — helicopters

Draft text

For IFR flights, the pilot-in-command shall specify at least one ~~weather-permissible~~ destination alternate aerodrome in the flight plan, unless~~:~~

~~(a)~~ the available current meteorological information for the destination indicates~~ that~~, for the period from 1 hour before until 1 hour after the estimated time of arrival, or from the actual time of departure to 1 hour after the estimated time of arrival, whichever is the shorter period, ~~the approach and landing may be made under visual meteorological conditions (VMC); or~~

~~(b) the place of intended landing is isolated and:~~

~~(1) an instrument approach procedure is prescribed for the aerodrome of intended landing; and~~

~~(2) available current meteorological information indicates that the following meteorological conditions will exist from 2 hours before to 2 hours after the estimated time of arrival:~~

~~(i) a cloud base of at least 300 m (1 000 ft) above the minimum associated with the instrument approach procedure; and~~

~~(ii) visibility of at least 5,5 km or of 4 km more than the minimum associated with the procedure.~~

a ceiling of at least 1 000 ft above the DH/MDH for an available instrument approach procedure and a visibility of at least 1 500 m by day or 3 000 m by night.

Rationale

See Section 4.3.5.

GM1 NCO.OP.142 Destination aerodromes — instrument approach operations

Draft text

PBN OPERATIONS

(a) By 'sufficient means' it is understood that the pilot-in-command should only select an aerodrome as a destination alternate aerodrome if an instrument approach procedure that does not rely on GNSS is available either at that destination aerodrome or at the destination alternate aerodrome, or, for helicopters, the GNSS provides sufficient reliability and integrity.

GNSS RELIABILITY AND INTEGRITY – HELICOPTERS

(b) The pilot-in-command may demonstrate sufficient reliability and integrity if all of the following criteria are met:

(1) SBAS or GBAS are available and used;

(2) Redundancy of on-board systems should ensure that no single on-board equipment; failure (e.g. Antenna, GNSS receiver, FMS, or navigation display failure) should result in the loss of GNSS capability;

(3) The temporary jamming of one frequency should not compromise the navigation capability. A procedure to deal with such cases or other sensors should be available (eg. Inertial coasting);

(4) The pilot-in-command should use the available space weather information to ensure that no space weather phenomenon is predicted to disrupt GNSS reliability and integrity at both the destination aerodrome and the alternate destination aerodrome; and

(5) The pilot-in-command should verify the availability of the receiver autonomous integrity monitoring (RAIM) for all phases of the flight based on GNSS, including navigation to the alternate designation aerodrome.

(c) When available, GNSS based on more than one constellation and more than one frequency may provide better integrity and redundancy regarding failures in the space segment of GNSS, jamming, and resilience to space weather events.

Rationale

Helicopter onshore IFR operations are expected to be mainly supported by GNSS-based helicopter PinS approaches to a non-aerodrome destination. The current GM proposes a destination alternate aerodrome with a conventional navigation aid, which can be a limiting factor when considering the fuel range of a helicopter, which is very low compared to an aeroplane. A destination alternate aerodrome may or may not be available.

The current GM may lead helicopter operators to fly VFR in marginal conditions and take unnecessary risks.

Helicopter low-level routes (LLR) routes are PinS approaches, are currently based on RNP 0.3, and are below the minimum altitude required to receive conventional navigation aids. The go-around on a PinS approach may be based solely on GNSS. Compared to aeroplanes, helicopters flying IFR rely solely on GNSS during extensive parts of the flight, without additional reliability or integrity criteria.

The NPA proposes to amend the GM, in order to achieve both of the following goals:

– To provide options for helicopters to rely solely on GNSS for the approach at destination aerodrome and at the destination alternate aerodrome, and increase the proportion of helicopter flights that can be planned under IFR;

– To increase the reliability and integrity standards of GNSS for helicopters, with obvious safety benefits in the en-route phase and in case of a go-around.

The NPA proposes that the increased reliability and integrity of GNSS should be the condition to obtaining the desired operational credit under IFR.

NCO.OP.143 Destination alternate aerodromes planning minima — aeroplanes

Draft text

An aerodrome shall not be specified as a destination alternate aerodrome unless the available current meteorological information indicates, for the period from 1 hour before until 1 hour after the estimated time of arrival, or from the actual time of departure to 1 hour after the estimated time of arrival, whichever is the shorter period,

(a) for an alternate aerodrome with an instrument approach procedure,

(1) a ceiling of at least 400 ft above the decision height or minimum descent height associated with an available type A instrument approach operation or at least 200 ft

above the decision height associated with an available type B instrument approach operation; and

(2) a visibility of at least 1 500 m by day or 5 000 m by night; or

(b) for an alternate aerodrome without an instrument approach procedure,

(1) a ceiling of at least the higher of 2 000 ft and the minimum safe IFR height and

(2) a visibility of at least 1 500 m by day or 5 000 m by night.

Rationale

See Section 4.3.5.

GM1 NCO.OP.143 Destination alternate aerodromes planning minima — aeroplanes

MINIMUM SAFE IFR HEIGHT

For the purpose of this rule, the minimum safe IFR height is the height above the aerodrome of the lowest level compatible with SERA.5015(b) for en-route flight at a point from which visual flight to the aerodrome could reasonably be commenced.

Rationale:

This new GM was created in order to clarify that the pilot-in-command can commence the approach without applying the instrument approach procedure.

NCO.OP.144 Destination alternate aerodromes planning minima — helicopters

Draft text

An aerodrome shall not be specified as a destination alternate aerodrome unless the available current meteorological information indicates, for the period from 1 hour before until 1 hour after the estimated time of arrival, or from the actual time of departure to 1 hour after the estimated time of arrival, whichever is the shorter period,

(a) for an alternate aerodrome with an instrument approach procedure,

(1) a ceiling of at least 200 ft above the decision height or minimum descent height associated with the instrument approach procedure and

(2) a visibility of at least 1 500 m by day or 3 000 m by night; or

(b) for an alternate aerodrome without an instrument approach procedure,

(1) a ceiling of at least the higher of 2 000 ft and the minimum safe IFR height and

(2) a visibility of at least 1 500 m by day or 3 000 m by night.

Rationale

See Section 4.3.5.

NCO.OP.175 Take-off conditions — aeroplanes and helicopters

Draft text

Before commencing take-off, the pilot-in-command shall be satisfied that:

(a) according to the information available, ~~the weather~~ the meteorological conditions at the aerodrome or the operating site and the condition of the runway ~~or~~/FATO intended to be used ~~would~~ will not prevent a safe take-off and departure; and

~~(b) the applicable aerodrome minima will be complied with.~~

(b) the selected aerodrome operating minima are consistent with:

(1) the operative ground equipment;

(2) the operative aircraft systems;

(3) the aircraft performance, and

(4) flight crew qualifications.

Rationale

Changes are made for consistency with changes to the other Annexes of the Air Ops Regulation. In the first sentence, the phrase 'be satisfied' is retained as a more proportionate requirement for NCO than 'verify'.

NCO.OP.205 Approach and landing conditions – aeroplanes

Draft text

~~Before commencing an approach to land, the pilot-in-command shall be satisfied that, according to the information available, the weather at the aerodrome or the operating site and the condition of the runway or FATO intended to be used would not prevent a safe approach, landing or missed approach.~~

Before commencing an approach to land, the pilot-in-command shall be satisfied that:

(a) according to the information available, the meteorological conditions at the aerodrome or the operating site, and the condition of the runway intended to be used will not prevent a safe approach, landing, or missed approach; and

(b) the selected aerodrome operating minima are consistent with:

(1) the operative ground equipment;

(2) the operative aircraft systems;

(3) the aircraft performance, and

(4) flight crew qualifications.

Rationale

Changes are made for consistency with changes to the other Annexes of the Air Ops Regulation. In the first sentence, the phrase 'be satisfied' is retained as a more proportionate requirement for NCO than 'verify'.

NCO.OP.206 Approach and landing conditions — helicopters

Draft text

~~Before commencing an approach to land, the pilot-in-command shall be satisfied that, according to the information available, the weather at the aerodrome or the operating site and the condition of the final approach and take-off area (FATO) intended to be used do not prevent a safe approach, landing or missed approach.~~

Before commencing an approach to land, the pilot-in-command shall be satisfied that:

(a) according to the information available, the meteorological conditions at the aerodrome or the operating site, and the condition of the final approach and take-off area (FATO) intended to be used, will not prevent a safe approach, landing or missed approach; and

(b) the selected aerodrome operating minima are consistent with all of the following:

(1) the operative ground equipment;

(2) the operative aircraft systems;

(3) the aircraft performance;

(4) flight crew qualifications.

Rationale

Changes are made for consistency with changes to the other Annexes of the Air Ops Regulation. In the first sentence, the phrase 'be satisfied' is retained as a more proportionate requirement for NCO than 'verify'.

NCO.OP.210 Commencement and continuation of approach – aeroplanes and helicopters

Draft text

~~(a) The pilot-in-command may commence an instrument approach regardless of the reported runway visual range/visibility (RVR/VIS).~~

~~(b) If the reported RVR/VIS is less than the applicable minimum, the approach shall not be continued:~~

~~(1) below 1 000 ft above the aerodrome; or~~

~~(2) into the final approach segment in the case where the decision altitude/height (DA/H) or minimum descent altitude/height (MDA/H) is more than 1 000 ft above the aerodrome.~~

~~(c) Where the RVR is not available, RVR values may be derived by converting the reported visibility.~~

~~(d) If, after passing 1 000 ft above the aerodrome, the reported RVR/VIS falls below the applicable minimum, the approach may be continued to DA/H or MDA/H.~~

~~(e) The approach may be continued below DA/H or MDA/H and the landing may be completed provided that the visual reference adequate for the type of approach operation and for the intended runway is established at the DA/H or MDA/H and is maintained.~~

~~(f) The touchdown zone RVR shall always be controlling.~~

(a) If the controlling RVR for the runway to be used for landing is less than 550 m (or any lower value established in accordance with an approval under SPA.LVO), then an instrument approach operation shall not be continued:

(1) past a point at which the aircraft is 1 000 ft above the aerodrome elevation; or

(2) if the DH or MDH is higher than 1 000 ft, into the final approach segment.

(b) If the required visual reference is not established, a missed approach shall be executed at or before descent below DA/H or MDA/H.

(c) If the required visual reference is not maintained after DA/H or MDA/H, a go-around shall be executed promptly.

Rationale

Editorial changes are made for consistency with changes to the other Annexes of the Air Ops Regulation.

NCO.OP.110(a) requires that RVR and/or visibility minima for instrument approach operations are established to mitigate risk to achieve an acceptable level of safety appropriate to operations under Part-NCO. It is acknowledged that the complexity of the methodology in the AMC to NCO.OP.110 (which are set in order to make it unlikely that a missed approach from DH/MDH will be required), may be disproportionate for NCO operators. By implementing rule, use of a minimum RVR of less than 550 m requires the operator to hold an approval according to SPA.LVO.110. Otherwise, NCO.GEN.101 establishes the right of a pilot-in-command under Part-NCO to use alternative means of compliance, without any other conditions or obligations, and, therefore, to use RVR minima less than those calculated according to AMC3 NCO.OP.110. Therefore, it is equivalent to use 550 m explicitly in NCO.OP.230(a) as the value of RVR below which an approach must not be continued. Attention is drawn to the guidance in GM1 NCO.OP.230(d). See also Section 4.3.6.

AMC1 NCO.OP.210 Commencement and continuation of approach – aeroplanes and helicopters

VISUAL REFERENCES ~~FOR NPA, APV AND CAT I OPERATIONS~~

(a) At DH or MDH, at least one of the visual references specified below should be distinctly visible and identifiable to the pilot:

(1) elements of the approach lighting system;

(2) the threshold;

(3) the threshold markings;

(4) the threshold lights;

(5) the threshold identification lights;

(6) the visual glide slope indicator;

(7) the touchdown zone or touchdown zone markings;

(8) the touchdown zone lights;

(9) FATO/runway edge lights; or

~~(10) other visual references specified in the operations manual.~~

(10) for helicopter PinS approaches, the identification beacon light;

(11) for helicopter PinS approaches, the identifiable elements of the environment defined on the instrument chart; or

(12) for helicopter PinS approaches with instructions to 'proceed VFR', sufficient visual cues to determine that VMC conditions are met.

Rationale

Revised to remove unnecessary reference to the operations manual.

The visual references for helicopter PinS approaches are included to reflect the design of these procedures.

Helicopter PinS with instructions to 'proceed VFR' are cloud-breaking procedures that may be used to continue flight under VFR to an unspecified destination. By design, a visual reference to thresholds or approach lights may never be available at the missed approach point, even in good weather. As the flight should only continue under VFR, the pilot should first ensure that VMC conditions are met.

AMC2 NCO.OP.210 Commencement and continuation of approach – aeroplanes and helicopters

Draft text

RVR MINIMA FOR CONTINUED APPROACH

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

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

Rationale

New AMC that corresponds to the proposed wording in Part-CAT, but without the requirement to use CMV.

GM1 NCO.OP.210 Commencement and continuation of approach — aeroplanes and helicopters

Draft text

APPLICATION OF RVR REPORTS

(a) There is no prohibition on the commencement of an approach based on reported RVR. The restriction in NCO.OP.210 applies only if the RVR is reported and applies to the continuation of the approach past a point where the aircraft is 1 000 ft above the aerodrome elevation or into the final approach segment as applicable.

(b) If a deterioration in RVR is reported once the aircraft is below 1 000 ft on in the final approach segment, as applicable, then there is no requirement for the approach to be discontinued. In this situation, the normal visual reference requirements would apply at DA/H.

(c) Where additional RVR information is provided (e.g. midpoint and stop end), this is advisory; such information may be useful to the pilot in order to determine whether there will be sufficient visual reference to control the aircraft during roll-out and taxi.

(d) If the RVR is less than the RVR calculated in accordance with AMC3 NCO.OP.110, a go-around is likely to be necessary since visual reference may not be established at the DH, or at the MDH at a point where a stable approach to landing in the TDZ remains possible. Similarly, in the absence of an RVR report, the reported visibility may indicate that a go-around is likely. The pilot-in-command should consider available options, based on a thorough assessment of risk, such as diverting to an alternate, before commencing the approach.

Rationale

Equivalent to the text proposed for Part-CAT, but adapted to the principles set out in Section 4.3.7.

AMC1 NCO.IDE.A.195(a) Navigation equipment

Draft text

FIX SUBSTITUTION

(a) Area navigation systems that meet the requirements of (E)TSO-C129/-C145/-C146 (or later equivalent standards) installed in aircraft that meet the requirements of NCO.OP.116(a) for RNAV 5, RNAV 1, RNP 1 or RNP APCH, may be used as a substitute for conventional navigation equipment to:

(1) determine aircraft position relative to or distance from a VOR, marker, DME fix (including a DME distance in the final approach segment); or a named fix defined by a VOR radial, TACAN course, or NDB bearing.

(2) navigate to or from a VOR, TACAN, or NDB.

(3) hold over a VOR, TACAN, NDB, or DME fix.

(4) fly an arc based upon DME.

(b) The ground-based navigation aid need not be operative, and the corresponding airborne equipment need not be installed (or, if installed, need not be operative) unless otherwise required by the minimum equipment list (MEL).

(c) Where an overlay procedure (for a departure, arrival, or approach procedure) can be retrieved from the area navigation system's database, it may be loaded and used in place of the conventional navigation equipment, except as noted below.

(d) The area navigation system should not be used:

(1) for substitution of the navigation aid (for example, a VOR or NDB) providing lateral guidance for the final approach segment (although this does not preclude use of the area navigation system, for example through the use of an overlay procedure retrieved from its database, if the data from conventional aid is also continuously monitored); or

(2) for lateral navigation on LOC-based courses (including LOC back-course guidance) without reference to raw LOC data; or

(3 on any procedure where fix substitution has been indicated as 'not authorised' by an aeronautical information publication (AIP) entry or Notice(s) to Airmen (NOTAM).

(e) When using fix substitution, the pilot-in-command is responsible for:

(1) ensuring the correctness of the coordinates of any fix for which the area navigation system is used to determine the position; and

(2) verifying waypoint sequence, reasonableness of track angles, and distances of any overlay procedure used.

(f) Particular attention should be paid to:

(1) DME fixes where an offset is used (e.g. zero-range to a threshold);

(2) where the fix used for lateral navigation is not the same as the origin of a DME distance (e.g. a DME distance used on a LOC approach to determine the final approach fix (FAF) based on an off-aerodrome VOR/DME);

(3) lateral deviation indicator scaling (full-scale deflection) to ensure suitability for the application;

(4) conventional aids with the same or similar identifiers in different locations; and

(5) pre-flight procedures associated with GNSS use (e.g. RAIM check if applicable).

Rationale

This new AMC allows the use of GNSS based systems to substitute for conventional navigation aids in certain circumstances. See Section 4.3.8. This AMC is a means of compliance with point (a)(1) of NCO.IDE.A.195 (the equipment necessary to proceed in accordance with the ATS flight plan, if applicable), with the ATS flight plan being defined in terms of conventional routes and procedures. The RNAV system clearly enables the aircraft to proceed in accordance with its ATS flight plan.

AMC1 NCO.IDE.H.195(a) Navigation equipment

Draft text

FIX SUBSTITUTION

(a) Area navigation systems that meet the requirements of (E)TSO-C129/-C145/-C146 (or later equivalent standards) installed in aircraft that meet the requirements of NCO.OP.116(a) for RNAV 5, RNAV 1, RNP 1 or RNP APCH, may be used as a substitute for conventional navigation equipment to:

(1) determine the aircraft position relative to or distance from a VOR, marker, DME fix (including a DME distance in the final approach segment); or a named fix defined by a VOR radial, TACAN course, or NDB bearing.

(2) navigate to or from a VOR, TACAN, or NDB.

(3) hold over a VOR, TACAN, NDB, or DME fix.

(4) fly an arc based upon DME.

(b) The ground-based navigation aid need not be operative, and the corresponding airborne equipment need not be installed (or, if installed, need not be operative), unless otherwise required by the MEL.

(c) Where an overlay procedure (for a departure, arrival, or approach procedure) can be retrieved from the area navigation system's database, it may be loaded and used in place of the conventional navigation equipment, except as noted below.

(d) The area navigation system should not be used:

(1) for substitution of the navigation aid (for example, a VOR or NDB) providing lateral guidance for the final approach segment (although this does not preclude use of the area navigation system, for example through the use of an overlay procedure retrieved from its database, if the data from conventional aid is also continuously monitored); or

(2) for lateral navigation on LOC-based courses (including LOC back-course guidance) without reference to raw LOC data; or

(3) on any procedure where fix substitution has been indicated as 'not authorised' by AIP entry or NOTAM.

(e) When using fix substitution, the pilot-in-command is responsible for:

(1) ensuring the correctness of the coordinates of any fix for which the area navigation system is used to determine the position; and

(2) verifying waypoint sequence, reasonableness of track angles, and distances of any overlay procedure used.

(f) Particular attention should be paid:

(1) to DME fixes where an offset is used (e.g. zero-range to a threshold);

(2) where the fix used for lateral navigation is not the same as the origin of a DME distance (e.g. a DME distance used on a LOC approach to determine the FAF based on an off-aerodrome VOR/DME);

(3) to lateral deviation indicator scaling (full-scale deflection) to ensure suitability for the application;

(4) to conventional aids with the same or similar identifiers in different locations; and

(5) pre-flight procedures associated with GNSS use (e.g. RAIM check if applicable).

Rationale

This new AMC allows the use of GNSS-based systems to substitute for conventional navigation aids in certain circumstances. See Section 4.3.8.

4. Impact assessment (IA)

4.1. What is the issue

Annex VII (Part-NCO) to Regulation (EU) No 965/2012 was originally developed by EASA in 2010-11, published by the Commission in 2013, and became applicable in most EASA Member States in 2016.

In 2012, the Commission published its GA Roadmap , which set out a new approach to the regulation of general aviation. In particular, it emphasised:

– focus on the main risks, including controlled flight into terrain (CFIT);

– acceptable risk levels and risk differentiation, according to the ability of the stakeholders exposed to risk to assess and control that risk; and

– the limits of prescriptive regulation, and the value of safety promotion.

This approach has subsequently been introduced into law in the principles of the Basic Regulation.

In 2014, at the EASA - GA Safety Conference in Rome, EASA made a commitment, based on the evidence presented by the US National Transportation Safety Board (NTSB), to enable easier access to instrument flight rules (IFR) operations for GA pilots with the objective to improve safety. EASA's activities in implementing this include:

– the development of a new, more accessible instrument qualification intended for GA pilots;

– the support of the deployment of instrument approach procedures at smaller aerodromes, to improve the safety of operations there;

– a review of the operating rules associated with IFR operations under Part-NCO, to ensure proportionality, consistency and efficiency.

This NPA is the result of the last of these activities.

Since the majority of CAT operations are conducted under IFR, and the majority of GA operations under VFR, some stakeholders associate the very high acceptable levels of safety of CAT with IFR and the lower acceptable levels of safety of GA with VFR. This is unhelpful because it fails to recognise the safety benefit of permitting GA operations under IFR where they are safer than performing similar operations under VFR, even if the much higher levels of safety associated with CAT cannot be achieved.

GA stakeholders have also noted that IFR regulation tends to be complex and difficult to apply. The safety benefit of IFR is founded on precision and procedure, so it is inevitable that IFR regulation is, to an extent, more complex than VFR. However, reduction of complexity is desirable.

4.1.1. Safety risk assessment

The key hazards that are relevant to this NPA are Loss of Control In Flight (LOC-I) and Controlled Flight Into Terrain (CFIT). These were identified as the two top occurrence categories in EASA's Safety Risk Portfolio – General Aviation Fixed Wing Aircraft in 2015. Those LOC-I occurrences that take place in instrument meteorological conditions are relevant to this NPA and will be referred to in what follows.

The relationship between the regulatory environment and the operational risks can in each case be described as a balance between the safety level of IFR operations themselves and the safety benefit delivered by the choice of IFR over VFR, as follows:

– In the case of LOC-I, fatal accidents may occur when a pilot (who may not be qualified to fly under IFR) of a VFR flight encounters conditions in which it is no longer possible to control the aircraft using external visual reference. On the one hand, the regulatory environment must ensure that the alternative means of controlling the aircraft are reasonably safe, for example by requiring the aircraft to be equipped with an attitude indicator of a certain standard and requiring pilot competence in using it to control the aircraft without external visual reference. On the other hand, if the requirements are unnecessarily burdensome, access to potentially life-saving IFR may be unavailable to the pilot.

– Similarly, in the case of CFIT, fatal accidents may occur when a pilot of a VFR flight encounters conditions in which it is no longer possible to avoid obstacles or terrain visually. The regulatory environment must ensure that the alternatives used for IFR flight and navigation along pre-defined trajectories (instrument flight procedures) are obstacle-free and that the aircraft equipment is capable of sufficiently precise navigation along them. On the other hand, the requirements must ensure that the cost of deploying and using such instrument flight procedures is kept to a level at which they remain accessible to the pilots for whom they represent a net safety benefit.

Net safety is therefore optimised by ensuring that regulation makes IFR flight acceptably safe compared to the VFR alternative, but does not impose requirements and standards so high that the pilot is motivated to choose to fly VFR instead.

4.1.2. Who is affected

The stakeholders primarily affected by operational regulations on IFR are the pilots and passengers of GA aircraft. It is important to note here that in the case of non-commercial operations, the operator and the pilot are typically one and the same (hence Part-NCO uses ‘pilot-in-command’ in contexts where the other Annexes of the Air Ops Regulation use the term ‘operator’). This is significant as the person responsible for managing the risks of the operation is usually exposed to the risk, and, according to Article 4(2)(f) of the Basic Regulation, it is reasonable to give the pilot-in-command of such an operation significant discretion to assess the risks and make decisions accordingly. By contrast, in a CAT operation, where the policies of the organisation are established by management, greater caution must be applied to ensure that pilots are not exposed to pressures to making optimistic decisions in flight.

Other airspace users are also potentially exposed to risks by any operation, including a Part-NCO operation. However, this is primarily a matter to be addressed under the rules of the air. There is weak interaction with the operational rules through, for example, the requirements to meet the performance necessary for performance based navigation (PBN) where it is used to ensure separation. However, there is no proposal to modify these requirements in this NPA.

There is also a weak interaction with the operational rules associated with the use of aerodromes, for example in what concerns the risk to other users of the aerodrome when low-visibility procedures are in effect.

The operators of aerodromes are also affected by IFR operational rules, and, in particular, the cost and difficulty associated with enabling IFR operations to increase the operational utility of aerodromes is expected to have a significant economic and social impact.

4.1.3. How could the issue/problem evolve

Although the risks and hazards associated with VFR flight in marginal conditions will not change, the difficulty and cost of mitigating the risks through access to IFR is decreasing.

The issue of aligning operational rules with GA needs has become more significant as technology develops, and will continue to do so. Historically, IFR operations relied on the deployment of expensive ground-based navigation aids, which dominated the costs associated with IFR. The availability of GNSS, and particularly the satellite-based augmentation system (SBAS) through the European Geostationary Navigation Overlay Service (EGNOS), has transformed the possibilities for GA IFR.

Within EGNOS coverage, the deployment of precision approaches is now possible to almost any aerodrome, no matter how simple or small. While historically it was reasonable to make regulation that assumes IFR operations would be conducted to aerodromes with ATC, instrument runways, and meteorological observers, today it is necessary to re-evaluate these assumptions to ensure that the net safety benefit associated with IFR can be achieved in practice for GA. While such assumptions may still be appropriate to CAT operations, the level of safety achieved by GA IFR operations at smaller aerodromes only need to improve on GA VFR operations at those aerodromes.

In parallel, an increase in CAT traffic volumes reduce the accessibility of larger airports to GA, as they become busier and less willing to accommodate GA traffic. Thus, the ability of GA to mitigate risks associated with VFR flight in marginal conditions is reducing as airports that have historically accommodated GA no longer do so. If GA operations are to migrate to other aerodromes, it is important that some of those aerodromes are able to support IFR.

Without the changes described in this NPA, some of the benefits associated with using technology to enable IFR at smaller aerodromes will be lost.

4.2. What we want to achieve — objectives

The high-level objectives of this NPA are set out in paragraph 2.2.

To achieve these, the technical objective of this NPA is to improve Part-NCO by making it more consistent with the principles of the GA Roadmap and of the Basic Regulation.

Another objective is to achieve consistency of Part-NCO with the updates that have been proposed in the other Annexes of the Air Ops Regulation in NPA 2018-06(C). An assessment of the impact of these updates is set out in Section 3 of NPA 2018-06(A) and is not repeated here. EASA believes that consistency in terminology and wording between the Annexes of the Air Ops Regulation is helpful, unless there is a substantive reason for differences between the Annexes, justified by the principles of Article 4 of the Basic Regulation and the GA Roadmap .

4.3. How it could be achieved — options

Option 0 – 'do nothing'

No policy change: No change in Part-NCO rules on IFR. The rules will remain complex and disproportionate to GA operations. The risks remain as outlined in the issue analysis.

Option 1

A package of changes is proposed to meet the objectives. The package (collectively, Option 1) of measures to achieve the primary objective includes:

4.3.1. Removal of the requirement for an approval for LVTO in RVRs between 150 m and 400 m

Prior to the introduction of Part-NCO, national regulation varied, but some Member States (notably the UK and France) permitted non-commercial operations to take-off in an RVR of 150 m or more. The 400 m minimum without an approval, required by the definition of LVO in Part-SPA, was the result of an alignment of the non-commercial requirements with the requirements for CAT in EU OPS[11], which never previously applied to non-commercial operations.

The system for LVO approvals under Part-SPA integrates well with the oversight of CAT operators, their flight crew training programs, and their operations manuals. NCO operators have, in general, no approvals from their NAA, no operations manual, and no recurrent training based only on the proficiency check for the instrument rating. Competent authorities have therefore found it difficult to consider requests for LVTO approvals for operators under Part-NCO, as they have no risk baseline against which to assess.

Furthermore, few training courses for LVO are designed only with LVTO in mind. Awareness of airport low visibility procedures is, of course, important when taxying, but little training in low visibility procedures is provided to CAT flight crew: rather, it is a question of following the published airport specific procedures.

It is notable that the difficulty of LVTO is likely to scale with the speed of the aircraft. A take-off in an RVR of 300 m in an aircraft with a 65-knot rotation speed might be compared to a take-off in an RVR of 600 m in an aircraft with a 130-knot rotation speed.

Therefore, it is proposed to remove the requirement for an approval for LVTO in RVRs between 150 m and 400 m.

4.3.2. Application of a cut-off (maximum required) RVR for all instrument approaches and consistency with VFR minima

In the current Part-NCO, calculation of the RVR required for an approach is set out in GM3 NCO.OP.110. It applies, via Table 3.A, a maximum required RVR (1 500 m for Cat A and B) for the vast majority of approaches, based on a set of criteria in points (a)(2) and (3) of the GM. Only approaches with final approach track offset by > 15 degrees, no FAF, a long-timed final approach segment, or an MDH > 1 200 ft escape the maximum required RVR.

The flight visibility typically required for low speed VFR in class G airspace or SVFR in CTRs is 1 500 m. To require a higher RVR for the last 40 seconds of a final approach along a well-defined obstacle-free trajectory is not consistent with this. The complexity introduced by the criteria is significant and considered disproportionate for Part-NCO.

EASA, therefore, proposes to simplify the procedure and apply a maximum RVR requirement of 1 500 m for Cat A and B, and 2 400 m for Cat C, and D. Furthermore, as the procedure has the nature of an AMC (to NCO.OP.110), it is therefore re-established as such.

4.3.3. Removal of the reference to single-pilot operations

Almost all Part-NCO operations are single-pilot operations. The increments on RVR in GM4 NCO.OP.110(h), like the LVTO approval requirement, were introduced in JAR OPS 1 and EU OPS, which did not apply to non-commercial operations. While they may be necessary to meet the higher

[11] Commission Regulation (EC) No 859/2008 of 20 August 2008 amending Council Regulation (EEC) No 3922/91 as regards common technical requirements and administrative procedures applicable to commercial transportation by aeroplane.

target levels of safety in CAT, and offer an incentive to use multi-pilot operations, they are not proportionate in Part-NCO, and their omission is proposed.

4.3.4. Tailoring guidance on vertical path control for operations involving non-complex motor powered aircraft

The continuous descent final approach (CDFA) technique has undoubtedly improved safety performance in CAT operations using 2D approaches. The alternative 'conventional' or step-down method of vertical path control requires intermediate level-off manoeuvres that are awkward and error-prone in a large jet-powered aircraft. Glidepath angles are typically limited to close to 3 degrees, for stability and to meet field performance needs.

By contrast, light aircraft are much more accustomed to visual manoeuvring, including level segments, in the visual circuit, and tend to be capable of steeper final approaches. A typical visual circuit within an aerodrome traffic pattern might involve a turn on to final approach at approximately 1 mile from and 500 ft above the threshold. Note that in a flight visibility of 1 500 m under VFR, it might need to be a tighter manoeuvre in order to remain visual with the runway. In addition, many instrument runways are long, and touchdowns of 500 or 1 000 m beyond the threshold may be normal. A level segment at or above the MDH may improve situational awareness.

All of these factors lead to a need to consider the options for vertical path control from a different perspective, which EASA suggests in the revised GM.

4.3.5. Introduction of planning minima in Part-NCO

The safety driver for many of the alleviating amendments proposed in this document is the net safety benefit of easier access to IFR for GA pilots. The US FAA's IFR Part 91 is in general simpler and lighter than the current Part-NCO rules. One important exception is the requirement for planning minima for alternate aerodromes for IFR, which are considerably more restrictive in Part 91 than in Part-NCO.

Under Part-NCO (and Part-NCC), a flight can depart towards its destination, where that destination aerodrome is below the aerodrome operating minima and a forecast for a single alternate aerodrome is at or just above the aerodrome operating minima. A minor deterioration in the weather could leave the flight with no safe landing options. While no accidents or incidents appear to have been caused by applying the permissive rules in Part-NCO, it may simply be that pilots already exercise sensible risk management and add safety margins to their alternate weather planning.

EASA considers a change in alternate planning requirements in alignment with the Part 91 requirements to be proportionate and not unduly restrictive. It proposes a planning requirement for a forecast ceiling of at least 400 ft above the decision height or minimum descent height associated with the instrument approach procedure and a visibility of at least 1 500 m at the alternate aerodrome.

4.3.6. Simplification of the 'approach ban'

The approach ban (NCO.OP.210) prohibits the continuation of an instrument approach below 1 000 ft when the reported RVR is below the operator's aerodrome operating minimum. It is intended to avoid an unacceptable rate of go-arounds when visual reference cannot be acquired and maintained at DH/MDH. The target rate is a go-around rate of no more than 5 % in the marginal case, set for the needs of CAT.

Adherence to DH/MDH is fundamental to the execution of the instrument segment of a procedure with a reasonable level of safety. However, the safety of the visual segment is primarily achieved by a pilot assessment at or before DH/MDH that visual reference has been acquired and the conditions are such that it can be maintained. The minimum RVR/CMV/VIS serves as a diagnostic aid as to whether these conditions are likely to be met, but offers no high-probability assurance in marginal cases that visual reference will or will not be acquired.

For CAT, a go-around, if visual reference is not acquired, bears some additional risk, and also an objective metric to decide whether an approach should be attempted is necessary to avoid the erosion of safety in a competitive environment. For typical NCO, a go-around, if visual reference is not acquired, does not present an unacceptable risk: in fact, instrument training, including the missed approach procedure, typically takes place in an aircraft rather than a simulator. In the same way that the pilot needs to assess conditions from the cockpit during a VFR flight, allowing the pilot to do so at DH on an IFR flight is consistent and reasonable.

It is clear that, from the point of view of the acceptable level of safety in the go-around manoeuvre itself, a higher rate is likely to be acceptable for NCO. It is instructive to note that the corresponding operational rules in the USA (14 CFR Part 121) for CAT apply an approach ban, while those (14 CFR Part 91) for NCO do not. An acceptable level of safety in Part-91 operations is maintained.

The secondary reason for avoidance of unexpected go-arounds is its disruptive effect on the ATM system. An operator flying repeated go-arounds to Cat I minima (e.g. RVR 550 m) at an airport capable of serving Cat II and III operations (RVR 300 m and below) is likely to have a significant disruptive effect. The effect with higher DH and therefore RVR minima is less obvious, and there is less likelihood of variability between operators.

The arguments for application of the approach ban to Part-NCO are strongest when applied to low RVRs:

- Low RVRs are more likely to be representative of the slant visual range apparent to the pilot at DH/MDH, and, therefore a more specific and sensitive diagnostic for the acquisition of visual reference.
- Low RVRs are more likely to be supported at those airports at which variations in operator capability might cause ATM disruption.
- Low RVRs present a qualitatively different landing challenge that go beyond the acquisition of visual reference and subsequent visual flight at DH.

For those reasons, EASA believes that the use of RVRs below 550 m for the purposes of the approach ban should continue to be subject to an LVO approval under Part-SPA (specific approvals). However, a more flexible approach to instrument approach operations under Part-NCO is possible for operations at higher RVRs, and where the RVR is reported as 550 m or more, an approach to DH/MDH should be permitted. Therefore, EASA proposes to amend NCO.OP.210(a) accordingly and create appropriate supporting GM.

4.3.7. Removal of reference to CMV

Converted meteorological visibility (CMV) relies on a methodology for approximating the RVR when RVR sensors or other measurements are not available. It uses a multiple of the reported ground visibility (typically observed from the control tower), where the multiple depends on the day/night status and lighting intensity.

CMV is used as a metric to compare to the minimum RVR for an approach when RVR itself is not available. Like RVR, it is only an indication as to whether visual reference is likely to be acquired at DH/MDH. However, the remoteness of the measurement from the approach and runway environment makes it even less reliable than RVR as a diagnostic.

While the majority of approaches and landings by CAT operators are to well-lit runways with precision approach facilities where RVR minima are typically less than 1 000 m, a significant proportion of approaches by NCO operators are to higher minima and to unlit runways at airfields with no RVR reporting facilities. If the approach ban included a requirement to use CMV where RVR is not available, it would be used much more frequently at those airfields used by NCO than the airports used by CAT; thus, the poor performance of CMV as a predictor for RVR would cause a high proportion of unnecessary diversions, which are also risky. By contrast, a situation where the pilot flies an approach and the slant visual range proves to be unsuitable for continuation below DH/MDH can be resolved by a go-around. The pilot can and should make this assessment at or before DH/MDH.

Therefore, it seems disproportionate to require that CMV be used for NCO. EASA therefore proposes that NCO.OP.210(a) prohibits the continuation of an approach only if RVR is available and below the required minimum.

4.3.8. Introduction of AMC on GNSS fix substitution

In the USA, the FAA introduced the possibility of substituting a GPS waypoint or fix for a conventional navigation aid or fix. While the policy has not been without issues, the overall effect over 25 years appears to be the adoption of Performance Based Navigation (PBN) by almost all IFR equipped aircraft, simplifying the migration from conventional to PBN, reducing unnecessary cockpit workload, and avoiding the need for trivial replication of existing conventional routes. There is also ample anecdotal evidence that GNSS is used as the primary means of en-route and terminal navigation in Europe, with little attention paid to conventional aids, even on routes that are, technically, conventional routes.

Any requirement to install and maintain conventional equipment that is not used in practice has a safety disbenefit. The positive experience of fix substitution in the USA together with the higher risk tolerance of NCO operators leads EASA to propose an AMC on fix substitution, with the condition that it should not be used to substitute for the primary means of lateral guidance in the final approach segment of an instrument approach procedure.

Table 1: Selected policy options

Option No	***Short title***	**Description**
0	Do nothing	No policy change (no change to the rules; risks remain as outlined in the issue analysis).
1	Easier access to IFR for GA pilots	The package of proposals (section **Error! Reference source not f ound.**) developed to address easier access to IFR for GA pilots, while maintaining an acceptable level of safety.

4.4. What are the impacts

4.4.1. Safety impact

Option 0

GA operations under IFR are possible, however, the regulatory environment remains tailored to the level of safety expected of CAT. The development of IFR operations at smaller aerodromes is hampered by the regulatory environment, because GA operators see little operational advantage in IFR. In the absence of change, the GA accidents associated with the decision to fly VFR in adverse weather will persist. The safety risks highlighted in the safety risk assessment, including outcomes as LOC-I and CFIT due to lack of IFR in GA, would continue to exist.

Option 1

Option 1 makes the IFR ruleset for GA more permissive. The ability of GA operators to choose to conduct flight under IFR in adverse weather conditions would improve, and would deliver a safety benefit compared to conducting flight under VFR in the same conditions. Overall, low positive safety impacts are expected compared to Option 0.

4.4.2. Environmental impact

Option 0

GA operators requiring IFR capability use the existing network of IFR-capable aerodromes, to the extent that they are prepared to accommodate GA. Reduction in the number of aerodromes accommodating IFR GA (see Section 4.1.3) leads to a small increase in distances travelled by air and on the ground, with a small negative environmental impact. Smaller aerodromes will remain less accessible under IFR and therefore unavailable for use on occasions when meteorological conditions are unfavourable.

Option 1

Option 1 creates a small positive environmental impact when broadening the network of IFR capable aerodromes and enabling GA aircraft to use aerodromes closer to their intended destination. Overall, low positive environmental impacts are expected compared to Option 0.

4.4.3. Social impact

Option 0

GA with IFR capability remains as a small minority. No social impact.

Option 1

Option 1 is expected to enable a small increase in overall GA flying and therefore a small positive social impact.

4.4.4. Economic impact

Option 0

Smaller aerodromes will remain less accessible under IFR and therefore unavailable for use on occasions when meteorological conditions are unfavourable. The aerodromes remain restricted to VFR operations.

Option 1

Option 1 is expected to enable a small increase in activity at smaller GA aerodromes through improved IFR capability and therefore have a low positive economic impact compared to Option 0.

4.4.5. General Aviation and proportionality issues

Option 0 fails to take account of GA proportionality issues.

Option 1 is specifically intended to address the needs of GA and deliver proportionality. It breaks the connection between IFR flight and the acceptable level of safety of CAT, by proposing a set of rules that is tailored for GA. This makes the rules proportionate to GA operations and the acceptable level of safety of GA. This option is expected to have medium positive proportionality impacts compared to Option 0.

Stakeholders are invited to provide:

– quantified justification elements on the possible economic and safety impacts of the options proposed, or, alternatively, to propose another justified solution to the issue;

– any other information they may find necessary to bring to the attention of EASA; as a result, the relevant parts of the impact assessment might be modified on a case-by-case basis.

4.5. Conclusion

4.5.1. Comparison of options

Type of impact	*Option 0* *No change*	*Option 1* *Easier access to IFR for GA pilots*
Safety	0	Low positive
Environment	0	Low positive
Social	0	Low positive
Economic	0	Low positive
GA and Proportionality	0	Medium positive
Total	0	Low positive

* Impact is rated on a scale ranging from very high negative to very high positive

Compared with Option 0, Option 1 is expected to have a net safety benefit, and to deliver low positive environmental, social, and economic impacts, and medium positive proportionality impacts. EASA's preferred option is therefore Option 1.

4.6. Monitoring and evaluation

Monitoring is a continuous and systematic process of data collection and analysis with regard to the implementation/application of a rule/activity. It generates information for future possible evaluations and impact assessments and helps to identify actual implementation issues. For this NPA, EASA proposes the following monitoring plan:

The safety efficacy of the changes proposed in Option 1 can be monitored through GA accident rates associated with CFIT and LOC-I. Since the accident numbers are low and the overall safety impact is expected to be modest, it may take many years for data to be sufficient to observe significant changes.

The environmental, social and economic effects of the changes proposed in Option 1 can be monitored through GA IFR activity (e.g. movement rates) at small aerodromes. It may be difficult to separate this from a general decline in GA activity associated with increased costs and competing uses of the land that is currently used for aerodromes.

What to monitor	**How to monitor**	**Who should monitor**	**How often to monitor**
Number of accidents with other-than complex aircraft under VFR in marginal VMC	Reports in ECCAIRS and information collected at Member State level	EASA and NAAs	Every 2 years
Number of NCO operators implementing the proposed option	Survey to NAAs/NCO operators	EASA/ NAAs	To be defined
Number of NCO flights taking place under IFR that might otherwise have been flown under VFR.	Survey to NCO operators	EASA/ NAAs	To be defined

5. Proposed actions to support implementation

— focused communication for advisory body meeting(s) (TeB, TEC);

— providing supporting clarifications in electronic communication tools EASA – NAAs.

6. References

6.1. Affected regulations

Commission Regulation (EU) No 965/2012 of 5 October 2012 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 (OJ L 296, 25.10.2012, p. 1).

6.2. Affected decisions

Decision N°2014/016/Directorate R of the Executive Director of the Agency of 24 April 2014 on adopting Acceptable Means of Compliance and Guidance Material for non-commercial operations with complex motor-powered aircraft (Part-NCO).

6.3. Other reference documents

— ICAO Annex 6 — Operation of Aircraft (9th Edition, July 2010)

— FAA Part 91

— European Plan for Aviation Safety 2019 - 2023

— Notice of Proposed Amendment 2018-06 (A-D), All Weather Operations

— Easier access of General Aviation (GA) pilots to instrument flight rules (IFR) flying RMT.0677 — Issue 2 — 18.12.2015

7. Appendix

N/a

8. Quality of the document

If you are not satisfied with the quality of this document, please indicate the areas that you believe could be improved and provide a short justification/explanation:

— technical **quality** of the draft proposed rules and/or regulations and/or the draft proposed amendments to them

— text clarity and readability

— quality of the impact assessment (IA)

— application of the better regulation principles [DELETE IF NOT APPLICABLE TO THIS NPA]

— others (please specify)

Note: Your replies and/or comments to this section shall be considered for internal quality assurance and management purposes only and will not be published in the related CRD.