Annex VII to ED Decision 2022/012/R

'AMC & GM to Annex VII (Part-NCO) to Commission Regulation (EU) No 965/2012 — Issue 2, Amendment 13'

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

(a) deleted text is ~~struck through~~;

(b) new or amended text is highlighted in blue;

(c) an ellipsis '[…]' indicates that the rest of the text is unchanged.

Note to the reader

In amended, and in particular in existing (that is, unchanged) text, 'Agency' is used interchangeably with 'EASA'. The interchangeable use of these two terms is more apparent in the consolidated versions. Therefore, please note that both terms refer to the 'European Union Aviation Safety Agency (EASA)'.

The Annex to Decision 2014/016/R of 24 April 2014 of the Executive Director of the Agency is amended as follows:

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

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 on first contact with an ATS unit.

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

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/final approach and take-off area (FATO)/operating site 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, 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~~an engine failure after rotation.

(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.

(3) For point-in-space (PinS) departures to an initial departure fix (IDF), the take-off minima should be selected to ensure sufficient guidance to see and avoid obstacles and return to the heliport if the flight cannot be continued visually to the IDF. The minimum VIS should be 800 m and the minimum ceiling should be 250 ft.

(4) For helicopters outside of a runway environment, the minimum VIS should be 800 m, and for offshore helideck operations, the minimum VIS should be 500 m.

AMC2 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters

RVR OR VIS FOR INSTRUMENT APPROACH OPERATIONS — DETERMINATION OF DH/MDH FOR INSTRUMENT APPROACH OPERATIONS — AEROPLANES

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

(1) the minimum RVR (or for non-instrument runways, VIS) for the type of runway used according to Table 1;

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

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

(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 GM5 NCO.OP.110.

Table 1

Type of runway versus minimum RVR or VIS — aeroplanes

Type of runway	Minimum RVR or VIS (m)
Precision approach (PA) runway, category I	550
Non-precision approach (NPA) runway	750
Non-instrument runway	Visibility according to Table 1 in NCO.OP.112 (Circling minima)

Table 2

RVR versus 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
641		660	2 300	2 400	2 400	2 400
661	and above		2 400	2 400	2 400	2 400

Table 3

Visual and non-visual aids and/or on-board equipment versus minimum RVR — aeroplanes

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

	Final approach track offset ≥ 5° for category C or D aeroplanes	1 200

DETERMINATION OF RVR FOR INSTRUMENT APPROACH OPERATIONS — HELICOPTERS

(a) For IFR operations, 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; or

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

(3) for PinS operations with instructions to 'proceed visually', the distance between the MAPt of the PinS and the FATO/approach light system.

(b) For PinS operations with instructions to 'proceed VFR', the VIS should be compatible with visual flight rules.

(c) 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.

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

Table 4

Type of runway/FATO versus minimum RVR — helicopters

Type of runway / FATO	Minimum RVR or VIS (m)
PA runway, category I NPA runway Non-instrument runway	RVR 550
Instrument FATO FATO	RVR 550 RVR or VIS 800

Table 5

DH/MDH versus minimum RVR — helicopters

DH / MDH (ft)	Facilities versus. RVR (m) *			
	FALS	IALS	BALS	NALS
200	550	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 centre line, barrette centre line
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

~~AMC2~~ AMC3 NCO.OP.110 Aerodrome operating minima – aeroplanes and helicopters

VISUAL APPROACH

[…]

~~AMC3 NCO~~.OP.110 Aerodrome operating minima – aeroplanes and helicopters

~~**EFFECT ON LANDING MINIMA OF TEMPORARILY FAILED OR DOWNGRADED GROUND EQUIPMENT**~~

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

~~**COMMERCIALLY AVAILABLE INFORMATION**~~

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

~~**VERTICAL PATH CONTROL**~~

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

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), according to which, the pilot-in-command shall 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.

~~GM3 NCO.OP.110 Aerodrome operating minima — aeroplanes and helicopters~~

~~**CRITERIA FOR ESTABLISHING RVR/CMV**~~

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

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

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

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 up to 3.77° and then remaining constant. An upper RVR limit of 2 400 m has been applied to the table.

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

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

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

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

USE OF THIRD-PARTY INFORMATION

If a pilot-in-command uses information provided by a third party for aerodrome operating minima, the pilot-in-command verifies that the method for calculating minima is in accordance with this Regulation.

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

~~**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~~

EFFECT OF TEMPORARILY FAILED OR DOWNGRADED GROUND EQUIPMENT ON LANDING MINIMA

(a) Lighting in Table 5 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.

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

AIRCRAFT CATEGORIES

[…]

(b) […]

Table 7~~6:~~

Aircraft categories corresponding to V_{AT} values

[…]

(c) Helicopters are also eligible for Category H where applicable.

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

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

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

~~ONSHORE AERODROME DEPARTURE PROCEDURES — HELICOPTERS~~

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

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.

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

~~NPA FLOWN WITH THE CDFA TECHNIQUE~~

AMC1 NCO.OP.111 Aerodrome operating minima — 2D and 3D approach operations

DETERMINATION OF DH/MDH FOR INSTRUMENT APPROACH OPERATIONS AND RUNWAY

When determining the DH/MDH in accordance with the obstacle clearance hight (OCH) for the category of aircraft and the published approach procedure DH or minimum descent height (MDH), the pilot should determine whether the obstacle limitation surface is appropriate for the type of instrument approach flown and runway as this matter may have an impact on the calculation of the

OCH and DH/MDH. When this information is not available (e.g. not mentioned in the AIP, etc.), then the pilot should take into account Table 8 or 9 below, as applicable, when determining the DH/MDH:

Table 8

Runway type minima — aeroplanes

Runway type	Lowest DH/MDH (ft)
PA runway, category I	200
NPA runway	250
Non-instrument runway	Circling minima as shown in Table 1 in NCC.OP.112

Table 9

Type of runway/FATO minima — helicopters

Type of runway/FATO	Lowest DH/MDH (ft)
PA runway, category I NPA runway Non-instrument runway	200
Instrument FATO FATO	200 250

Table 8 does not apply to helicopter PinS approaches with instructions to 'proceed VFR'.

GM1 NCO.OP.111 Aerodrome operating minima — 2D and 3D approach operations

APPROACH OPERATIONS — VERTICAL PATH CONTROL FOR NPA

(a) 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 DA/H, at which point a missed approach must be initiated if visual reference is not acquired.

(b) During a 2D instrument approach operation (using lateral navigation guidance only) flown using the continuous descent final approach (CDFA) technique, the vertical path should be approximated continuously by:

(1) choosing an appropriate vertical speed;

(2) cross-checking level against position along the approach; and

(3) adapting the vertical speed as required.

The approach may be continued to DA/H or the missed approach point (MAPt) (whichever is reached first), at which point a missed approach must be initiated if visual reference is not acquired. There is no MDH for an NPA flown using the CDFA technique. An aircraft may descend

briefly below the DH on an NPA flown using the CDFA technique, in the same way as it may on a PA or APV.

(c) During a 2D instrument approach operation (using lateral navigation guidance only) flown using the step-down (non-CDFA) technique, the vertical path consists of a sequence of one or more descents to the next published level (i.e. the MDA/H or height at the next stepdown fix). The aircraft may fly level at the MDA/H 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.

GM2 NCO.OP.111 Aerodrome operating minima — 2D and 3D approach operations

DH/MDH — CALCULATION OF DA/MDA

NCO.OP.111 refers to DH and MDH because the rule compares heights with other heights (system minima, minimum DH in the AFM, etc.). Usually, the DH or MDH will be converted to DA or MDA for operational use by adding the threshold elevation.

GM3 NCO.OP.111 Aerodrome operating minima — 2D and 3 D approach operations

DH/MDH — PinS APPROACHES WITH VIRTUAL DESTINATION

For PinS approaches with instructions to 'proceed VFR' that are not associated with a runway/FATO/operating site, DH/MDH can be established with reference to the ground below the MAPt.

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

SUPPLEMENTAL INFORMATION

[…]

(b) Conduct of flight — general:

[…]

(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 established, but not below MDA/H — the aeroplane should follow the corresponding instrument approach procedure (IAP) 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:

[…]

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

[…]

GM2 NCO.OP.112 Aerodrome operating minima — circling operations with aeroplanes

DH/MDH — CALCULATION OF DA/MDA

NCO.OP.112 refers to MDH because the rule compares heights with other heights (minimum circling height, OCH, etc.). Usually, the MDH will be converted to MDA for operational use by adding the aerodrome elevation.

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

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. This may be achieved, for example, by climbing or descending visually when below a minimum altitude at which obstacle clearance is known to exist.

When operating IFR in uncontrolled airspace, separation from other aircraft remains the responsibility of the pilot-in-command. The pilot-in-command should also comply with any flight planning and communication requirements designated by the competent authority under SERA.4001(b)(3) and SERA.5025(b). Any ATC clearance required to enter controlled airspace must be obtained prior to entry.

AMC1 NCO.OP.142(b)(1) Destination alternate aerodromes – instrument approach operations

SBAS-CAPABLE GNSS EQUIPMENT

GNSS system which are (E)TSO-C145() or (E)TSO-C146() are SBAS-capable. Aircraft certified for RNP APCH to LPV minima (see AMC1 NCO.IDE.A/H.195(l)) are considered compliant.

AMC2 NCO.OP.142(b)(3) Destination alternate aerodromes – instrument approach operations

USE OF RAIM FOR SBAS

Where a receiver with RAIM is used to meet the requirement for SBAS, its availability should be predicted by a pre-flight RAIM check, in accordance with AMC1 NCO.GEN.105(c).

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

~~**PBN OPERATIONS**~~

GM1 NCO.OP.142(b)(4) Destination alternate aerodromes – instrument approach operations

IAPs THAT DO NOT RELY ON SBAS

This instrument approach can be an RNP APCH to LNAV minima. It can also be an RNP APCH to LNAV/VNAV minima using Baro VNAV if the aircraft is equipped with a Baro VNAV function certified for APV.

This requirement is only used for planning purposes to cover the possibility of an SBAS loss; it does not prevent the pilot from flying an approach relying on SBAS if SBAS is available.

AMC1 NCO.OP.142(b)(5) Destination alternate aerodromes – instrument approach operations

APPROPRIATE CONTINGENCY ACTION

An appropriate contingency action is an alternative offered in NCO.OP.142(b)(5) to completion of the planned flight to a safe landing, either at the planned destination or a destination alternate, using normal procedures and using navigation equipment meeting the requirements of NCO.IDE.A/H.100, installed for redundancy or as a backup.

The contingency action should be considered before flight and take into account the information identified by flight preparation according to NCO.OP.135. It may depend on the flight and availability of navigation solutions (satellites, ground navaids, etc.) and weather conditions (IMC, VMC) along the flight.

The contingency action addresses partial loss of navigation capability, such as:

— loss of the stand-alone GNSS equipment;

— local loss of GNSS signal-in-space (e.g. local jamming at destination);

— loss of GNSS signal-in-space.

It should take into account what options remain in case of loss of GNSS signal; for instance, (non-GNSS-based) radar vectoring by ATC, non-GNSS-based navigation systems or the possibility to reach VMC.

Examples of contingency actions include:

— seeking navigational assistance from ATS, using communication and surveillance systems that remain operational, to enable safe descent to VMC;

— the emergency use of navigation equipment not meeting the requirements of NCO.IDE.A/H.100 by making use of the provisions in NCO.OP.105(e);

— descent over water or very flat terrain to levels with reduced (but reasonable) obstacle clearance; and

— unusually long periods of dead reckoning.

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

MINIMUM SAFE IFR HEIGHT

For the purpose of NCO.OP.143, 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.

GM1 NCO.OP.144 Destination alternate aerodromes planning minima — helicopters

MINIMUM SAFE IFR HEIGHT

For the purpose of NCO.OP.144, 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.

AMC1 NCO.OP.175 Take-off conditions — aeroplanes and helicopters

METEOROLOGICAL CONDITIONS FOR TAKE-OFF — AEROPLANES

(a) When the reported 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.

(b) When no reported 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.

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

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

(a) For a straight-in approach, a~~A~~t 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 path ~~slope~~ indicator;

(7) the touchdown zone (TDZ) or ~~touchdown zone~~ TDZ markings;

(8) the ~~touchdown zone~~ TDZ 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 and visual ground reference;

(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 the conditions for VFR are met.

(b) For a circling approach, the required visual reference is the runway environment.

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

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.

(c) If neither the touchdown RVR nor the midpoint RVR is reported, then NCO.OP.210(a) is not applicable.

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

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 (FAS) as applicable.

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

1.

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

NAVIGATION EQUIPMENT — RNAV SUBSTITUTION

An RNAV system may be used to substitute for conventional navigation aids and radio equipment, without monitoring of the raw data from conventional navigation aids, under the following conditions:

SCOPE OF RNAV SUBSTITUTION

(a) RNAV substitution may be used in all the phases of flight except:

(1) to provide lateral guidance in the FAS of an IAP; and

(2) to substitute for DME, if a DME transceiver is either not installed on the aircraft or found to be unserviceable before flight.

SUITABILITY OF THE RNAV SYSTEM FOR RNAV SUBSTITUTION

(b) The RNAV system should meet:

(1) at least the requirements of (E)TSO-C129/-C196/-C145/-C146 (or later equivalent standards); and

(2) the requirements of NCO.OP.116(a) for RNAV 1, RNP 1 or RNP APCH as regards its installation in the aircraft.

OPERATING PROCEDURE

(c) The pilot-in-command is responsible for:

(1) ensuring that any procedure and waypoints used are retrieved from a navigation database which meets the requirements of NCO.IDE.A.205;

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

(3) applying pre-flight procedures associated with GNSS use (e.g. RAIM check if applicable); and

(4) complying with any limitation on RNAV substitution in the AFM.

PILOT COMPETENCE

(d) The pilot-in-command should be aware of the limitations of RNAV substitution.

AIRSPACE LIMITATIONS

(e) RNAV substitution should not be applied on any procedure where RNAV substitution has been indicated as 'not authorised' by an AIP entry or a notice to airmen (NOTAM).

CONTINGENCY PLANNING

(f) Nothing in this AMC relieves the pilot-in-command from compliance with NCO.IDE.A.195(b) which requires sufficient navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment shall allow safe navigation according to the flight plan, or an appropriate contingency action, to be completed safely.

GM1 NCO.IDE.A.195(a) Navigation equipment

NAVIGATION EQUIPMENT — SCOPE OF RNAV SUBSTITUTION

(a) Applications of RNAV substitution include use to:

(1) determine aircraft position relative to or distance from a VOR, marker, DME fix or a named fix defined by a VOR radial or NDB bearing;

(2) navigate to or from a VOR, or NDB, except as lateral guidance in the FAS of an IAP;

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

(4) fly an arc based upon DME;

(5) fly an overlay of a conventional departure, arrival, approach or route except as lateral guidance in the FAS of an IAP.

(b) RNAV substitution for ADF, marker and VOR may be used where airborne and/or ground-based equipment is not available.

(c) RNAV substitution for DME may be used where the ground-based DME transponder is unserviceable or the airborne DME transceiver is found to be unserviceable in flight. Caution must be exercised by the pilot-in-command when calculating and using GNSS distances to the active waypoint as reference points are often different.

GM2 NCO.IDE.A.195(a) Navigation equipment

NAVIGATION EQUIPMENT — SUITABILITY OF THE RNAV SYSTEM FOR RNAV SUBSTITUTION

GNSS (E)TSOs are referenced in AMC1 NCO.IDE.A.195(a) since most of the aircraft conducting NCO are equipped with an RNAV stand-alone system which exclusively bases its positioning on GNSS.

GM3 NCO.IDE.A.195(a) Navigation equipment

NAVIGATION EQUIPMENT — RNAV SUBSTITUTION — OPERATING PROCEDURE

Although RNAV substitution may not be used for lateral guidance in the FAS, this does not preclude the use of the RNAV system to fly the FAS, provided that raw data from the associated conventional navigation aids is monitored.

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

APPROPRIATE CONTINGENCY ACTION

An appropriate contingency action is an alternative offered in NCO.IDE.A.195(b) to completion of the planned flight to a safe landing, either at the planned destination or a destination alternate, using normal procedures and using navigation equipment meeting the requirements of NCO.IDE.A.100, installed for redundancy or as a backup.

The contingency action should be considered before flight and take into account the information identified by flight preparation according to NCO.OP.135. It may depend on the flight and availability of navigation solutions (satellites, ground navaids, etc.) and weather conditions (IMC, VMC) along the flight.

The contingency action addresses partial loss of navigation capability. An appropriate contingency action to meet the requirements of NCO.IDE.A.195(b) does not rely on the performance of any function of the item of equipment whose potential failure is being considered. For example, in

considering the failure of a VOR/LOC/DME receiver, none of the functions of that receiver should be relied upon in the contingency action.

Examples of contingency actions include:

— seeking navigational assistance from ATS, using communication, navigation and surveillance systems that remain operational, to enable a safe instrument approach or a safe descent to VMC;

— unusually long periods of dead reckoning.

A contingency action is required such that the failure of one item of navigation equipment has a reasonable likelihood of a safe outcome to the flight, consistent with other risks to which the operation is exposed.

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

NAVIGATION EQUIPMENT — RNAV SUBSTITUTION

An RNAV system may be used to substitute for conventional navigation aids and radio equipment, without monitoring of the raw data from conventional navigation aids, under the conditions defined in AMC1 NCO.IDE.A.195(a).

GM1 NCO.IDE.H.195(a) Navigation equipment

NAVIGATION EQUIPMENT — SCOPE OF RNAV SUBSTITUTION

(a) Applications of RNAV substitution include use to:

(1) determine aircraft position relative to or distance from a VOR, marker, DME fix or a named fix defined by a VOR radial or NDB bearing;

(2) navigate to or from a VOR, or NDB, except as lateral guidance in the FAS of an IAP;

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

(4) fly an arc based upon DME;

(5) fly an overlay of a conventional departure, arrival, approach or route except as lateral guidance in the FAS of an IAP.

(b) RNAV substitution for ADF, marker and VOR may be used where airborne and/or ground-based equipment is not available.

(c) RNAV substitution for DME may be used where the ground-based DME transponder is unserviceable or the airborne DME transceiver is found to be unserviceable in flight. Caution must be exercised by the pilot-in-command when calculating and using GNSS distances to the active waypoint as reference points are often different.

GM2 NCO.IDE.H.195(a) Navigation equipment

NAVIGATION EQUIPMENT — SUITABILITY OF THE RNAV SYSTEM FOR RNAV SUBSTITUTION

GNSS (E)TSOs are referenced in AMC1 NCO.IDE.A.195(a) since most of the aircraft conducting NCO are equipped with an RNAV stand-alone system which exclusively bases its positioning on GNSS.

GM3 NCO.IDE.H.195(a) Navigation equipment

NAVIGATION EQUIPMENT — RNAV SUBSTITUTION — OPERATING PROCEDURE

Although RNAV substitution may not be used for lateral guidance in the FAS, this does not preclude the use of the RNAV system to fly the FAS, provided that raw data from the associated conventional navigation aids is monitored.

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

APPROPRIATE CONTINGENCY ACTION

An appropriate contingency action is an alternative offered in NCO.IDE.H.195(b) to completion of the planned flight to a safe landing, either at the planned destination or a destination alternate, using normal procedures and using navigation equipment meeting the requirements of NCO.IDE.H.100, installed for redundancy or as a backup.

The contingency action should be considered before flight and take into account the information identified by flight preparation according to NCO.OP.135. It may depend on the flight and availability of navigation solutions (satellites, ground navaids, etc.) and weather conditions (IMC, VMC) along the flight.

The contingency action addresses partial loss of navigation capability. An appropriate contingency action to meet the requirements of NCO.IDE.H.195(b) does not rely on the performance of any function of the item of equipment whose potential failure is being considered. For example, in considering the failure of a VOR/LOC/DME receiver, none of the functions of that receiver should be relied upon in the contingency action.

Examples of contingency actions include:

— seeking navigational assistance from ATS, using communication, navigation and surveillance systems that remain operational, to enable a safe instrument approach or a safe descent to VMC;

— unusually long periods of dead reckoning.

A contingency action is required such that the failure of one item of navigation equipment has a reasonable likelihood of a safe outcome to the flight, consistent with other risks to which the operation is exposed.

AMC1 NCO.SPEC.115(a) Crew responsibilities

PILOT DUTIES — RECORDING OF FLIGHT TIME

(a) The pilot should only record flight time for the purpose of meeting experience requirements in specialised operations defined in AMC1 ORO.FC.146(f) and AMC1 SPO.SPEC.HESLO.100 if NCO.SPEC applies.

(b) The list of specialised operations in GM1 NCO.SPEC.100 may be used for the purpose of (a).