NOTICE OF PROPOSED AMENDMENT 2024-10

Issue 01
Date of Issue: 20th December 2024

SUBJECT:
CIVIL AVIATION REGULATIONS – AIR OPERATIONS (CAR-AIR OPS)-INOVATIVE AIR MOBILITY CONCEPTS

REFERENCE PUBLICATIONS:
ICAO Annex 6
CAR AIR-OPS
(EU) 2018/1139, (EC) No 216/2008, (EU) No 965/2012 and related AMCs/GMs/CSs.

REASON:
This consultation is lauched to seek comments from the aviation industry and the public with regards to the new regulatory framework related to the operations of aircraft with vertical take-off and landing (VTOL) capability.

Below is a brief description of the amendments:

1) New PART IAM: this is a new PART to be added to CAR AIR-OPS and it introduces new concepts related to innovative Air mobility and operation of aircraft with VTOL capability.
2) Amendment to PART CR, PART DEF, PART ORO and PART SPA: the proposal of amendment to these PARTs addresses the new concepts based on innovative technologies and reflects the inclusion of new PART IAM. Changes to these PARTs shall be considered additional to the changes proposed in NPA 2024-09.

AFFECTED STAKEHOLDERS:
All UAE operators issued with an AOC or an Authorisation to conduct flight operations and Approved Training Organisations where applicable.

NOTES ON THE PRESENTATION OF THE AMENDMENT TO CAR-AIR OPS
The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~	text to be deleted
New text to be inserted is highlighted with grey shading.	new text to be inserted
~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	new text to replace existing text
an ellipsis '[...]'	the rest of the text is unchanged."

Simple changes like typos are not highlighted in this NPA

SUBMISSION OF COMMENTS:

This NPA is published to announce to the public the proposal of a new issue of regulation and to entitle all concerned parties to:

a) Review the attached proposed regulation;
b) Agree on the date of applicability to the proposed change as 6 months from the date of issue of the final rule; and
c) Submit their comments together with their position regarding the date of entry into force online through the GCAA website by 20 January 2025.

Comments must be submitted through the GCAA Website – e-Publication – Notice of Proposed Amendment, using the action of "Submit NPA Feedback Request". Any comments submitted using other means will not be considered.

Comments without reference to the rule will not be considered unless generic in nature.

Comments and responses may be viewed in the Comments Response Document CRD pertaining to this NPA on the GCAA website.

Contact

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COVER REGULATION

[...]

ARTICLE 1 – SUBJECT MATTER AND SCOPE

1. This Regulation lays down detailed rules for air operations with aeroplanes and helicopters, including ramp inspections.

1a. This Regulation lays down detailed rules for innovative air mobility operations in accordance with visual flight rules by day conducted with the surface in sight with single pilot manned aircraft with a vertical take-off and landing capability referred to in points (b)(i) and (ii) of Article 2(1) of CAR-BR.

[...]

ARTICLE 2 – DEFINITIONS

For the purposes of this Regulation:

(1) 'aeroplane' means an engine-driven fixed-wing aircraft heavier than air that is supported in flight by the dynamic reaction of the air against its wings;

(1a) '~~helicopter~~rotorcraft' means a power-driven, heavier-than-air aircraft that depends principally for its support in flight on the lift generated by up to two rotors;

(1aa) 'helicopter' means a type of rotorcraft supported in flight chiefly by the reactions of the air on ~~one or more~~up to two power-driven rotors on substantially vertical axes;

[...]

'innovative air mobility (IAM) operations' means any operation with vertical take-off and landing (VTOL)-capable aircraft in congested and non-congested areas;

(2) 'vertical take-off and landing (VTOL)-capable aircraft' (VCA) means a power-driven, heavier-than-air aircraft other than aeroplane or rotorcraft, capable of performing vertical take-off and landing by means of lift and thrust units used to provide lift during the take-off and landing;

(3) 'VEMS flight' means a flight with a VCA that operates under a VEMS approval, where immediate and rapid transportation is essential and the purpose of which is either to:

(a) facilitate emergency medical assistance by carrying one or more of the following:

(i) medical personnel;

(ii) medical supplies (equipment, blood, organs, drugs);

(iii) ill or injured persons and other persons directly involved,

or

(b) perform any operation where a person is at imminent or anticipated health risk from the environment and either:

(i) needs to be rescued or provided with supplies; or

(ii) persons, animals or equipment need to be transported to/from the VEMS operating site.

[...]

GM1 Article 2(14) Definitions

VEMS FLIGHT

(a) A VEMS flight (also referred to as 'VEMS mission') normally starts and ends at the VEMS operating base following tasking by the 'VEMS dispatch centre'. Tasking can also occur when either airborne or on the ground at locations other than the VEMS operating base.

(b) The following elements can be regarded as integral parts of the VEMS mission:

(1) flights to/from a VEMS operating site when initiated by the VEMS dispatch centre;

(2) flights to/from a vertiport/VEMS operating site for the delivery or pick-up of medical supplies and/or persons required for completion of the VEMS mission; and

(3) flights to/from a vertiport/VEMS operating site for refuelling or battery recharging as required for the completion of the VEMS mission.

[...]

ARTICLE 5 – AIR OPERATIONS

[...]

1. a. Operators shall only operate VCA in the context of IAM operations as specified in Part-ORO and Part-IAM.

~~1.~~2. Operators shall comply with the relevant provisions of Part-SPA when operating:

(a) aeroplanes and helicopters used for:

(i) operations using performance-based navigation (PBN);

(ii) operations in accordance with minimum navigation performance specifications (MNPS);

(iii) operations in airspace with reduced vertical separation minima (RVSM);

(iv) low-visibility operations (LVOs) or operations with operational credits;

(b) aeroplanes and helicopters used for the transport of dangerous goods (DG);

(c) two-engined aeroplanes used for extended range operations (ETOPS) in commercial air transport;

(d) helicopters used for commercial air transport operations with the aid of night vision imaging systems (NVIS);

(e) helicopters used for commercial air transport hoist operations (HHO);

(f) helicopters used for commercial air transport emergency medical service operations

(HEMS);

(g) Helicopters used for offshore operations (HOFO)

(h) VCA used for:

(i) the transport of dangerous goods (DGs);

(ii) VEMS.

~~2.~~3. Operators of complex motor-powered aeroplanes and helicopters involved in non-commercial operations shall declare their capability and means to discharge their responsibilities associated with the operation of aircraft and operate the aircraft in accordance with the provisions specified in Part-ORO and Part-NCC. Such operators when engaged in non-commercial specialised operations shall operate the aircraft in accordance with the provisions specified in Part-ORO and Part-SPO instead.

~~3.~~4. Operators of other-than-complex motor-powered aeroplanes and helicopters involved in non-commercial operations, including non-commercial specialised operations, shall operate the aircraft in accordance with the provisions set out in Part-NCO.

~~4.~~5. Training organisations referred to in Subpart B of CAR-ORA and having their principal place of business in the territory of the UAE shall, when conducting flight training into, within or out of the UAE, operate:

(a) complex motor-powered aeroplanes and helicopters in accordance with the provisions specified in Part-NCC;

(b) other aeroplanes and helicopters in accordance with the provisions specified in Part-NCO.

(c) VCA in accordance with the requirements specified in Part-IAM.

In the case of points (a), (b) and (c) of the first subparagraph, the training organisations shall comply with the requirements laid down in Part-ORA instead of Part-ORO. Training for VCA shall only be provided by approved training organisations.

[...]

PART - DEFINITIONS

[...]

PART–DEF

Part Definitions for terms used in this Regulation

For the purpose of this Regulation, the following definitions shall apply:

[...]

(21) 'clearway' means a defined rectangular area on the ground or water under the control of the appropriate authority, selected or prepared as a suitable area over which an ~~aeroplane~~aircraft may make a portion of its initial climb to a specified height;

[...]

(26) 'contingency fuel/energy' means the fuel/energy required to compensate for unforeseen factors that could have an influence on the fuel/energy consumption to the destination aerodrome~~;'~~ or vertiport;

[...]

(31) 'critical phases of flight' ~~in the case of~~means:

(a) for helicopters ~~means~~, taxiing, hovering, take-off, final approach, missed approach, ~~the~~ landing and any other phases of flight as determined by the pilot-in-command or the commander;

(b) for VCA, ground taxiing with passengers for the purpose of flight or after landing, air taxiing, hovering, take-off, final approach, missed approach (go-around), landing and any other phase of flight as determined by the pilot-in-command;

[...]

(39) 'distance DR' means the horizontal distance that the helicopter or the VCA has travelled from the end of the take-off distance available;

[...]

(48) 'final approach and take-off area (FATO)' means a defined area for helicopter or VCA operations over which the final phase of the approach manoeuvre to hover or land is completed, and from which the take-off manoeuvre is commenced~~. In~~; in the case of helicopters operating in performance class 1~~,~~ and VCA operating in the category enhanced or equivalent, the defined area includes the rejected take-off area available;

[...]

(50a) 'flight time' means:

(a) for aeroplanes, the total time from the moment an aeroplane first moves for the purpose of taking off until the moment the aeroplane finally comes to rest at the end of the flight;

(b) for helicopters, the total time between the moment a helicopter's rotor blades start turning for the purpose of taking off until the moment the helicopter finally comes to rest at the end of the flight, and the rotor blades are stopped;

(c) for VCA, the total time between the moment the lift and thrust units are powered on for the purpose of taking off until the moment the aircraft finally comes to rest at the

end of the flight and the lift and thrust units are powered off;

[...]

(53) "ground emergency service personnel" means any ground emergency service personnel~~(~~, such as ~~policemen, firemen~~police officers, firefighters, etc.~~)~~., involved in helicopter emergency medical services (HEMSs) or in emergency medical services with VCA (VEMSs) and whose tasks are to any extent pertinent to ~~helicopter operations;~~the operation;

[...]

(69) 'hostile environment' means:

(a) an area in which:

(i) a safe forced landing cannot be accomplished because the surface is inadequate; or

(ii) the helicopter occupants or VCA occupants cannot be adequately protected from the elements; or

(iii) search and rescue response/capability is not provided consistent with anticipated exposure; or

(iv) there is an unacceptable risk of endangering persons or property on the ground;

(b) in any case, the following areas:

(i) for overwater operations, the open sea areas North of 45N and South of 45S, unless any part is designated as non-hostile by the responsible authority of the State in which the operations take place; and

(ii) those parts of a congested area without adequate safe forced landing areas;

[...]

(70) 'landing decision point (LDP)' means:

(a) for helicopters, the point used to determine landing performance from which, an engine failure having been recognised at this point, the landing may be safely continued or a balked landing initiated;

(b) for VCA, the point used to determine landing performance from which the landing may be safely continued or a balked landing initiated, following a CFP;

(70a) 'landing distance at time of arrival (LDTA)' means a landing distance that is achievable in normal operations based on landing performance data and associated procedures determined for the prevailing conditions at the time of landing;

(71) 'landing distance ~~available (LDA)~~'available' means:

(a) for aeroplanes (LDAA), the length of the runway which is declared available by the State of the aerodrome and suitable for the ground run of an aeroplane landing;

(b) for helicopters (LDAH), the length of the FATO plus any additional area declared

available by the State of the aerodrome and suitable for the helicopter to complete the landing manoeuvre from a defined height; and

(c) for VCA (LDAV), the length of the FATO plus any additional area declared available and suitable for the VCA to complete the landing manoeuvre from a defined height;

(71a) 'landing distance required (LDR)' means:

(a) for helicopters (LDRH), the horizontal distance required to land and come to a full stop from a point of 15 m (50 ft) above the landing surface; and

(b) for VCA (LDRV), the horizontal distance required to land and come to a full stop from a point of 15 m (50 ft) above the landing surface;

[...]

(78) 'medical passenger' means a medical person carried in a helicopter during a HEMS flight or in a VCA during a VEMS flight, including but not limited to doctors, nurses and paramedics;

[...]

(82) 'non-hostile environment' means an environment in which:

(a) a safe forced landing can be accomplished;

(b) the helicopter occupants or the VCA occupants can be protected from the elements; and

[...]

(95b) 'simple personnel carrying device system (simple 'PCDS')' means a PCDS that complies with the following conditions:

(a) Complies with an acceptable standard to the competent authority;

(b) is designed to restrain no more than a single person (for instance, hoist or cargo hook operator, task specialist or photographer) inside the cabin, or to restrain no more than two persons outside the cabin;

(c) is not a rigid structure such as a cage, a platform or a basket;

(96) 'pilot-in-command (PIC)' means the pilot designated as being in command and charged with the safe conduct of the flight; for the purpose of commercial air transport operations with aeroplanes and helicopters, the 'pilot-in-command' shall be termed the 'commander';

[...]

(102) 'rejected take-off distance available (~~RTODAH~~RTODA)' means:

(a) for helicopters (RTODAH), the length of the final approach and take-off area declared available and suitable for helicopters operated in performance class 1 to complete a rejected take-off; or

(b) for VCA (RTODAV), the length of the final approach and take-off area declared available and suitable for VCA to complete a rejected take-off in accordance with the category in which they are operated;

(103) 'rejected take-off distance required (~~RTODRH~~RTODR)' means:

(a) for helicopters (RTODRH), the horizontal distance required from the start of the take-off to the point where the helicopter comes to a full stop following an engine failure and rejection of the take-off at the take-off decision point;

(b) for VCA (RTODRV), the horizontal distance required from the start of the take-off to the point where the VCA comes to a full stop by completing a rejected take-off following a CFP being recognised at the take-off decision point;

[...]

(104a) 'safe landing' means, in the context of the fuel/energy policy or fuel/energy schemes, a landing at an adequate aerodrome or operating site ~~with~~ or at an adequate vertiport or diversion location with no less than the final reserve fuel/energy remaining and in compliance with the applicable operational procedures and aerodrome operating minima;

[...]

(111) 'take-off decision point (TDP)' means:

(a) for helicopters, the point used to determine take-off performance from which, an engine failure having been recognised at this point, either a rejected take-off may be made or a take-off safely continued;

(b) for VCA, the first point defined by the combination of speed and height from which a continued take- off may be performed meeting the certified minimum performance (CMP) following a CFP and is the last point in the take-off path from which a rejected take-off is assured;

(112) 'take-off distance available (TODA)' in the case of aeroplanes means the length of the take-off run available plus the length of the clearway, if provided;

(113) 'take-off distance available (~~TODAH~~TODA)' ~~in the case of helicopters~~ means:

(a) for helicopters (TODAH), the length of the final approach and take-off area plus, if provided, the length of the helicopter clearway declared available and suitable for ~~helicopters~~ the helicopter to complete the take-off;

(b) for VCA (TODAV), the length of the final approach and take-off area plus, if provided, the length of the clearway declared available and suitable for the VCA to complete the take-off;

(114) 'take-off distance required (~~TODRH~~TODR)' ~~in the case of helicopters~~ means:

(a) for helicopters (TODRH), the horizontal distance required from the start of the take-off to the point at which the take-off safety speed (VTOSS), ~~a~~the selected height and a positive climb gradient are achieved, following failure of the critical engine being recognised at the TDP, the remaining engines operating within approved operating limits;

(b) for VCA (TODRV), the horizontal distance required from the start of the take-off to the point at which the safe obstacle clearance and a positive climb gradient are achieved, following a critical failure for performance (CFP) recognised at the TDP;

(115) 'take-off flight path' means~~-~~:

(a) the vertical and horizontal path, with the critical engine inoperative, from a specified point in the take- off for aeroplanes to 1 500ft above the surface, and for helicopters to 1 000ft above the surface;

(b) for VCA, the vertical and horizontal path with a critical failure for performance (CFP), which extends from the take-off point to a point at which the VCA is at a height above the take-off elevation that is compatible with the en-route profile and not higher than 305 m (1 000ft);

~~(113)~~(116) 'take-off mass' means the mass including everything and everyone carried on board at the commencement of the take-off for helicopters or for VCA, and during take-off run for aeroplanes;

~~(114)~~(117) 'take-off run available (TORA)' means the length of runway that is declared available by the State of the aerodrome and suitable for the ground run of an aeroplane taking off;

(117a) 'task specialist' means a person assigned by the operator or a third party, or acting as an undertaking, who performs tasks on the ground directly associated with a specialised task or performs specialised tasks on board or from the aircraft;

~~(115)~~(118) 'technical crew member' means a crew member in commercial air transport HEMS, ~~HEMS HEC~~VEMS, HHO or NVIS operations~~,~~ other than a flight or cabin crew member, assigned by the operator to duties in the aircraft or on the ground for the purpose of assisting the pilot during HEMS, ~~HEMS HEC,~~ VEMS, HHO or NVIS operations, which may require the operation of specialised on-board equipment;

[...]

(130) 'ground movement' means the movement of an aircraft on the movement area of an aerodrome or a vertiport with the aid of external equipment or accessory that is not powered by the aircraft;

(131) 'ground personnel' means the personnel other than flight crew members or technical crew members that are assigned to tasks related to the ground movement of the VCA or any other ground assistance provided to aircraft, and have received training in the relevant operational and safety procedures;

(132) 'category Enhanced' means a category for VCA certification and operation according to which the aircraft meets the requirements for continued safe flight and landing following a critical failure for performance (CFP);

(133) 'certified minimum performance (CMP)' means, in relation to VCA, the set of performance data obtained by considering the effect of single failures and combinations of failures that are not extremely improbable on nominal performance parameters;

(134) 'continued safe flight and landing (CSFL)' means, in relation to a VCA operated in the category Enhanced, that the aircraft is capable of continued controlled flight and landing at a vertiport, possibly using emergency procedures, without requiring exceptional piloting skills or strength;

(135) 'critical failure for performance (CFP)' means, in relation to VCA, a failure or a combination of failures that results in the maximum degradation for a given flight phase and performance parameter; the set of critical failures for performance is used to establish the certified

minimum performance (CMP);

(136) 'limited overwater operation' means an IAM operation with a VCA that is conducted for a limited flight time over water;

(137) 'VEMS technical crew member' means a technical crew member (TCM) that is assigned to a VEMS flight for the purpose of assisting the pilot during the flight operation and attending to any person in need of medical assistance;

(138) 'VEMS operating base' means a vertiport at which the VCA, its flight crew and VEMS crew members are on standby for VEMS operations;

(139) 'VEMS operating site' means an operating site selected by the pilot-in-command for VEMS operations, landings and take-offs;

(140) 'vertiport' means an area of land, water, or structure used or intended to be used for the landing and take- off of VCA, and for the movement of VCA;

(141) 'adequate vertiport' means a vertiport at which the VCA may be operated, taking account of the aircraft dimensions, weight, approach and departure paths, and which is provided with services and facilities necessary for the intended operation and is available at the expected time of use;

(142) 'VTOL take-off safety speed (VTOSS)' means the minimum speed at which climb shall be achieved with a CFP recognised at the TDP in the case of VCA operated in the category Enhanced;

(143) 'manned VCA' means a VCA piloted by at least one pilot on board;

[...]

GM36 Part Definitions

GROUND TAXIING OF VCA (Definition (31(b))

Ground taxiing of VCA using a carriage system or equivalent is not considered a critical phase of the flight, as the risk of inadvertent take-off is not present.

GM37 Part Definitions

FLIGHT TIME IN THE CASE OF VCA (Definition (50a)(c))

The conditions 'until the moment the aircraft finally comes to rest at the end of the flight and the lift and thrust units are powered off' are cumulative and 'comes to rest' means that the aircraft should be 'parked' and, for example, towing has ended.

GM38 Part Definitions

VEMS OPERATING SITE (Definition (139))

Operating sites used in VEMS training are considered VEMS operating sites.

GM39 Part Definitions

VERTIPORT (Definition (140))

A vertiport is considered a type of aerodrome.

The terms aerodrome, operating site, heliport, and vertiport are used collectively or independently, as appropriate, in any applicable rules that refer to these terms.

Organisation requirements for Air Operations

[…]

PART - ORO

ORO.GEN.005 Scope

This Part establishes the requirements to be ~~followed~~met by an air operator ~~conducting~~that conducts:

(a) commercial air transport (CAT) operations ~~(CAT);~~;

(b) commercial specialised operations;

(c) non-commercial operations with complex motor-powered aircraft;

(d) non-commercial specialised operations with complex motor-powered aircraft.

(e) innovative air mobility (IAM) operations.

SUBPART GEN — GENERAL REQUIREMENTS

SECTION 1 — GENERAL

[…]

ORO.GEN.140 Access

(a) For the purpose of determining compliance with the relevant requirements of CAR-BR and its applicable rules, the operator shall grant access at any time to any facility, aircraft, document, records, data, procedures or any other material relevant to its activity subject to certification, SPO authorisation or declaration, whether it is contracted or not, to any person authorised by the competent authority.

(b) Access to the aircraft ~~mentioned under~~referred to in point (a) shall~~, in the case of~~:

(i) for CAT~~,~~ operations with aeroplanes and helicopters, include the possibility to enter and remain in the aircraft during flight operations unless otherwise decided by the commander for the flight crew compartment in accordance with point CAT.GEN.MPA.135 in the interest of safety~~.~~;

(ii) for IAM operations with VCA, include the possibility to enter and remain in the aircraft during flight operations unless otherwise decided by the pilot-in-command in accordance with point IAM.GEN.MVCA.135 in the interest of safety.

[…]

SECTION 2 — MANAGEMENT

[…]

GM1 ORO.GEN.200A.G Information security management system

Cybersecurity

More information on cybersecurity is provided in the GCAA National Civil Aviation Cybersecurity Guidelines.

[…]

SECTION 3 — ADDITIONAL ORGANISATIONAL REQUIREMENTS

ORO.GEN.310 Use of ~~aircraft~~aeroplanes or helicopters listed on an AOC for non-commercial operations and specialised operations

(a) ~~Aircraft~~An aeroplane or a helicopter listed on an ~~operator's~~operator's AOC may remain on the AOC if it is operated in any of the following situations:

(1) by the AOC holder itself, for specialised operations in accordance with Part-SPO;

(2) by other operators, for non-commercial operations with motor-powered aircraft or for specialised operations ~~performed~~conducted in accordance with Part-NCC, Part-NCO or Part-SPO, provided that the aircraft is used for a continuous period not exceeding 30 days.

(b) When ~~the aircraft~~an aeroplane or a helicopter is used in accordance with point (a)(2), the AOC holder ~~providing the aircraft~~that provides the aeroplane or helicopter and the operator ~~using~~that uses the ~~aircraft~~aeroplane or helicopter shall establish a procedure:

(1) clearly identifying which operator is responsible for the operational control of each flight, and to describe how the operational control is transferred between them;

(2) describing the handover procedure of the ~~aircraft~~aeroplane or helicopter upon its return to the AOC holder.

That procedure shall be included in the operations manual of each operator or in a contract concluded between the AOC holder and the operator ~~using~~that uses the ~~aircraft~~aeroplane or the helicopter in accordance with point (a)(2). The AOC holder shall establish a template ~~of~~for such a contract. Point ORO.GEN.220 shall apply to ~~the record-keeping of~~ those contracts.

The AOC holder and the operator ~~using~~that uses the ~~aircraft~~aeroplane or the helicopter in accordance with point (a)(2) shall ensure that the procedure is communicated to the relevant personnel.

(c) The AOC holder shall submit to the competent authority the procedure referred to in point (b) for prior approval.

The AOC holder shall agree with the competent authority on the means and on the frequency of providing it with information about transfers of operational control in accordance with point ORO.GEN.130 (c).

(d) ~~The~~the continuing airworthiness of the ~~aircraft~~aeroplane or the helicopter used in accordance with point (a) shall be managed by the organisation responsible for the continuing airworthiness of the ~~aircraft~~aeroplane or helicopter included in the AOC, in accordance with CAR PART V.

(e) The AOC holder ~~providing~~that provides the ~~aircraft~~aeroplane or the helicopter in accordance with point (a) shall:

(1) indicate in its operations manual the registration marks of the aeroplane or helicopter provided ~~aircraft~~, and the type of operations conducted with ~~those aircraft~~that aeroplane or helicopter;

(2) remain informed at all times and keep record of each operator that holds the operational control of the ~~aircraft~~aeroplane or helicopter at any given moment until the ~~aircraft~~aeroplane or helicopter is returned to the AOC holder;

(3) ensure that ~~its~~the hazard identification, risk assessment and mitigation measures it has put in place address all the operations conducted with ~~those aircraft~~that aeroplane or helicopter.

(f) For operations conducted under Part-NCC and Part-SPO, the operator ~~using the aircraft~~that uses the aeroplane or the helicopter in accordance with point (a) shall ensure all ~~of~~ the following:

(1) that every flight conducted under its operational control is recorded in the ~~aircraft~~aeroplane's or helicopter's technical log system;

(2) that no changes are made to the ~~aircraft~~aeroplane's or helicopter's systems or its configuration ~~are made~~;

(3) that any defect or technical malfunction occurring while the ~~aircraft~~aeroplane or helicopter is under its operational control is reported to the organisation referred to in point (d);

(4) that the AOC holder receives a copy of any occurrence report related to the flights ~~performed~~conducted with the ~~aircraft~~aeroplane or helicopter, completed in accordance with CAR SMS and AMC-22~~.~~.

GM1 ORO.GEN.310 Use of ~~aircraft~~aeroplanes or helicopters listed on an AOC for non-commercial operations and specialised operations

EXAMPLES ~~OF~~ POSSIBLE SCENARIOS FOR THE USE OF ~~AIRCRAFT~~AEROPLANES OR HELICOPTERS LISTED ON AN AOC

Aeroplanes and helicopters are referred to in here below as aircraft.

[…]

GM2 ORO.GEN.310 Use of ~~aircraft~~aeroplanes or helicopters listed on an AOC for non-commercial operations and specialised operations

SPECIFIC APPROVALS

Aeroplanes and helicopters are referred to in here below as aircraft.

(a) Specific approvals (SPA) of the AOC holder using its aircraft for non-commercial operations and specialised operations

(1) When the AOC holder performs operations in accordance with Part-NCC or Part-NCO, the SPA granted for the AOC extend over these operations, as in such cases the provisions of ORO.AOC.125 apply.

(2) When the AOC holder performs operations in accordance with Part-SPO, as a declared operator, either:

(i) the SPA applicable to its SPO activities for the same aircraft are already granted within its AOC. In this case, the operator does not need to apply for them again; or

(ii) the SPA applicable to its SPO activities for the same aircraft are partially different from the SPA already granted within its AOC. In this case, the specific approval will cover all the different aspects involved in SPO operation or training of relevant personnel; or

(iii) the SPA are not granted within its AOC. In this case, the operator applies for the relevant SPA to its competent authority, in accordance with Part-SPA. This means that all the elements required for a SPA will be provided to the competent authority~~:~~ , such as:

(A) evidence of the relevant airworthiness approval~~,~~;

(B) specific equipment approval, operational procedures~~, and~~ ;

~~(A)~~(C) training programme specific for each of the SPA applied for.

(b) SPA of any other operator, regardless of whether it also holds an AOC, using the aircraft as a declared operator or as a(n) ATO/DTO. The declared operator performing NCC operations or SPO or the ATO/DTO has to comply with Part-SPA and apply for the SPA required for the type of operation it intends to conduct with that aircraft.

MINIMUM EQUIPMENT LIST (MEL)

The operator that uses the aircraft listed on the AOC of another operator is still responsible for obtaining the approval of the MEL for its own operations, to cover all the aircraft that it operates.

GM1 ORO.GEN.310(a)(2) Use of ~~aircraft~~aeroplanes or helicopters listed on an AOC for non-commercial operations and specialised operations

EXCEEDING 30 DAYS OF CONTINUOUS OPERATION

Aeroplanes and helicopters are referred to in here below as aircraft.

[…]

AMC1 ORO.GEN.310(b);(e) Use of ~~aircraft~~aeroplanes or helicopters listed on an AOC for non-commercial operations and specialised operations

RESPONSIBILITIES OF THE AOC HOLDER

Aeroplanes and helicopters are referred to in here below as aircraft.

[…]

GM1 ORO.GEN.310(d) Use of ~~aircraft~~aeroplanes or helicopters listed on an AOC for non-commercial operations and specialised operations

CONTINUING AIRWORTHINESS MANAGEMENT

Aeroplanes and helicopters are referred to in here below as aircraft.

[…]

AMC1 ORO.GEN.310(b);(d);(f) Use of ~~aircraft~~aeroplanes or helicopters listed on an AOC for non-commercial operations and specialised operations

RESPONSIBILITIES OF THE OTHER OPERATOR

Aeroplanes and helicopters are referred to in here below as aircraft.

[…]

SUBPART AOC — AIR OPERATOR CERTIFICATION

ORO.AOC.100 Application for an air operator certificate (AOC)

(a) Prior to commencing ~~commercial air transport~~CAT operations with aeroplanes or helicopters or IAM operations with VCA, the operator shall apply for and obtain an ~~air operator certificate (~~AOC~~)~~ issued by the competent authority.

(b) The operator shall provide the following information to the competent authority:

(1) the official name and business name, address~~,~~ and mailing address of the applicant;

(2) a description of the proposed operation, including the type(s~~),~~) and number of aircraft to be operated;

(3) a description of the management system, including organisational structure;

(4) the name of the accountable manager;

(5) the names of the nominated persons as required ~~by~~under point ORO.AOC.135(a~~)~~), together with their qualifications and experience;

(6) a copy of the operations manual as required ~~by~~under point ORO.MLR.100;

(7) a statement that all the documentation ~~sent~~submitted to the competent authority ~~have~~has been verified by the applicant and found ~~in compliance~~to comply with the applicable requirements.

(c) Applicants shall demonstrate to the competent authority that:

(1) ~~they~~the CAT operations with aeroplanes and helicopters comply with ~~all~~ the essential requirements of Annex II to CAR-BR, this Part-ORO, Part-CAT and Part-SPA to this Regulation, and the applicable Airworthiness requirements;

(1a) for IAM operations with VCA, they comply with the essential requirements of Annex II to CAR-BR, this Part-ORO, Part-SPA and Part-IAM to this Regulation~~.~~, and the applicable Airworthiness requirements;

~~(1)~~(2) a

ll aircraft operated have been issued with a certificate of airworthiness (CofA) in accordance with CAR~~–~~-21 or equivalent, or are dry~~–~~-leased in accordance with point ORO.AOC.110-(d); and

~~(2)~~(3) ~~i~~

~~ts~~their organisation and management ~~are~~is suitable and properly matched to the scale and scope of the intended operation.

[…]

AMC1 ORO.AOC.110(c) Leasing agreement

WET LEASE-IN AGREEMENT WITH A FOREIGN OPERATOR

If the operator is not intending to apply UAE safety requirements for air operations and continuing airworthiness when wet leasing-in an aircraft registered in another State, it should demonstrate to the competent authority that the standards complied with are equivalent to the following requirements:

~~(a) Part-CAT;~~

(a) Part-CAT; for aeroplanes and helicopters, or Part-IAM for VCA, as applicable;

(b) Part-ORO for aeroplanes, helicopters or VCA, as applicable:

[…]

ORO.AOC.125 Non-commercial operations of ~~aircraft listed in the operations specifications by the holder of an AOC~~ an AOC holder with aeroplanes or helicopters listed on its AOC

(a) The AOC holder may conduct non-commercial operations in accordance with Part-NCC or Part-NCO with ~~aircraft~~aeroplanes or helicopters listed in the operations specifications of its AOC or in its operations manual, provided that the AOC holder describes such operations in detail in the operations manual, including the following:

(1) an identification of the applicable requirements;

(2) a description of any differences between the operating procedures used when conducting CAT operations and non-commercial operations;

(3) means of ensuring that all personnel involved in the operations are fully familiar with the associated procedures~~;~~.

(b) An AOC holder shall comply with:

(1) Part-SPO when conducting maintenance check flights with complex motor-powered aircraft;

(2) Part-NCO when conducting maintenance check flights with other than complex motor-powered aircraft.

(c) An AOC holder ~~conducting~~that conducts operations referred to in points (a) and (b) shall not be required to submit a declaration in accordance with this Part.

(d) The AOC holder shall specify the type of flight, as listed in its operations manual, in the flight-related documents (operational flight plan, ~~loadsheet~~load sheet and other ~~equivalent~~relevant documents).

AMC1 ORO.AOC.125(a) Non-commercial operations of an AOC holder with ~~aircraft~~aeroplanes or helicopters listed on its AOC

[…]

AMC2 ORO.AOC.125(a) Non-commercial operations of an AOC holder with ~~aircraft~~aeroplanes or helicopters listed on its AOC

[…]

APPLICABLE REQUIREMENTS

Aeroplanes and helicopters are referred to in here below as aircraft.

[…]

AMC1 ORO.AOC.125(a)(2) Non-commercial operations of an AOC holder with ~~aircraft~~aeroplanes or helicopters listed on its AOC

DIFFERENT OPERATING PROCEDURES FOR NON-COMMERCIAL OPERATIONS

Aeroplanes and helicopters are referred to in here below as aircraft.

[…]

AMC2 ORO.AOC.125(a)(2) Non-commercial operations of an AOC holder with ~~aircraft~~aeroplanes or helicopters listed on its AOC

[…]

GM1 ORO.AOC.125(a)(2) Non-commercial operations of an AOC holder with ~~aircraft~~aeroplanes or helicopters listed on its AOC

[…]

SUBPART DEC — DECLARATION

[…]

SUBPART SPO — COMMERCIAL SPECIALISED OPERATIONS

[…]

SUBPART MLR — MANUALS, LOGS AND RECORDS

ORO.MLR.100 Operations manual — general

(a) The operator shall establish an operations manual (OM) as specified under 8.2. of Annex II to CAR-BR.

(b) The content of the OM shall reflect the requirements set out in this Part, in Part-CAT, Part-SPA, Part-NCC, Part-SPO and Part-~~SPO~~IAM, as applicable, and shall not contravene the conditions contained in the operations specifications to the air operator certificate (AOC), the SPO authorisation or the declaration and the list of specific approvals, as applicable.

[…]

AMC1 ORO.MLR.100 Operations manual — general

GENERAL

(a) The operations manual (OM) may vary in detail according to the complexity of the operation and of the type and number of aircraft operated.

(b) The OM or parts thereof may be presented in any form, including electronic form. In all cases, the accessibility, usability and reliability should be assured.

(c) The OM should be such that:

(1) all parts of the manual are consistent and compatible in form and content;

(2) the manual can be readily amended; and

(3) the content and amendment status of the manual is controlled and clearly indicated.

(d) The OM should include a description of its amendment and revision process specifying:

(1) the person(s) who may approve amendments or revisions;

(2) the conditions for temporary revisions and/or immediate amendments or revision required in the interest of safety; and

(3) the methods by which operator personnel are advised of the changes.

(e) The OM content may be based on, or may refer to, industry codes of practice.

(f) When compiling an OM, the operator may take advantage of the contents of other relevant documents. Material produced by the operator for the type-related part of the OM may be supplemented with, or substituted by, applicable parts of the aircraft flight manual (AFM) or, where such a document exists, by an aircraft operating manual produced by the manufacturer of the aircraft.

(g) ~~In the case of~~Except for IAM operations, for commercial operations with other-than-complex motor-powered aircraft or non-commercial operations with aeroplanes or helicopters, a 'pilot operating handbook' (POH), or equivalent document, may be used as the type-related part of the OM, provided that the POH covers the normal and abnormal/emergency operating procedures.

[..]

AMC2 ORO.MLR.100 Operations manual — general

CONTENTS OF THE OPERATIONS MANUAL FOR CERTAIN TYPES OF OPERATION

~~For~~Except for IAM operations, for non-commercial operations with complex motor-powered aircraft, or CAT operations with either single-engined propeller-driven aeroplanes with an MOPSC of 5 or less, or single-engined non-complex helicopters with an MOPSC of 5 or less, taking off and landing at the same aerodrome or operating site, under VFR by day, the OM should contain at least the following information, where applicable:

(a) Table of contents;

(b) Amendment control status and list of effective pages or paragraphs, unless the entire manual is re-issued and the manual has an effective date on it;

(c) Duties, responsibilities and succession of management and operating personnel;

(d) Description of the management system;

(e) Operational control system;

(f) Flight time limitations;

(g) Standard operating procedures (SOPs);

(h) Weather limitations;

(i) Emergency procedures;

(j) Accidents/incidents considerations;

(k) Security procedures;

(l) Minimum equipment list (MEL);

(m) Personnel qualifications and training;

(n) Record-keeping;

(o) Normal flight operations;

(p) Performance operating limitations;

(q) Procedures for the preservation of recordings of the flight recorders in order to prevent inadvertent reactivation, repair or reinstallation of the flight recorders following an accident or a serious incident or when this preservation is directed by the investigating authority;

(r) Handling of dangerous goods;

(s) Procedures for aircraft operated whenever required cosmic or solar radiation detection equipment is carried.

AMC3 ORO.MLR.100 Operations manual — general

CONTENTS — CAT OPERATIONS WITH AEROPLANES AND HELICOPTES AND IAM OPERATIONS WITH VCA

(a) The OM should contain at least the following information, where applicable, as relevant for the area and type of operation:

A GENERAL/BASIC

0 ADMINISTRATION AND CONTROL OF THE OPERATIONS MANUAL

0.1 Introduction:

(a) A statement that the manual complies with all applicable regulations

and with the terms and conditions of the applicable AOC.

(b) A statement that the manual contains operational instructions that are to be complied with by the relevant personnel.

(c) A list and brief description of the various parts, their contents, applicability and use.

(d) Explanations and definitions of terms and words needed for the use of the manual.

0.2 System of amendment and revision:

(a) Details of the person(s) responsible for the issuance and insertion of amendments and revisions.

(b) A record of amendments and revisions with insertion dates and effective dates.

(c) A statement that handwritten amendments and revisions are not permitted, except in situations requiring immediate amendment or revision in the interest of safety.

(d) A description of the system for the annotation of pages or paragraphs and their effective dates.

(e) A list of effective pages or paragraphs.

(f) Annotation of changes (in the text and, as far as practicable, on charts and diagrams).

(g) Temporary revisions.

(h) A description of the distribution system for the manuals, amendments and revisions.

1 ORGANISATION AND RESPONSIBILITIES

1.1. Organisational structure. A description of the organisational structure, including the general organogram and operations departments' organograms. The organogram should depict the relationship between the operations departments and the other departments of the operator. In particular, the subordination and reporting lines of all divisions, departments, etc., which pertain to the safety of flight operations, should be shown.

1.2. Nominated persons. The name of each nominated person responsible for flight operations, crew training and ground operations, as prescribed in ORO.AOC.135. A description of their function and responsibilities should be included.

1.3. Responsibilities and duties of operations management personnel. A description of the duties, responsibilities and authority of operations

management personnel pertaining to the safety of flight operations and the compliance with the applicable regulations.

1.4. Authority, duties and responsibilities of the pilot-in-command/commander. A statement defining the authority, duties and responsibilities of the pilot-in-command/commander.

1.5. Duties and responsibilities of crew members other than the pilot-in-command/commander.

2 OPERATIONAL CONTROL AND SUPERVISION

2.1 Supervision of the operation by the operator. A description of the system for supervision of the operation by the operator (see ORO.GEN.110(c)). This should show how the safety of flight operations and the qualifications of personnel are supervised. In particular, the procedures related to the following items should be described:

(a) licence and qualification validity,

(b) competence of operations personnel,

(c) control, analysis and storage of the required records.

2.2 System and responsibility for promulgation of additional operational instructions and information. A description of any system for promulgating information which may be of an operational nature, but which is supplementary to that in the OM. The applicability of this information and the responsibilities for its promulgation should be included.

2.3 Operational control. A description of the procedures and responsibilities necessary to exercise operational control with respect to flight safety.

2.4 Powers of the authority. A description of the powers of the competent authority and guidance to staff on how to facilitate inspections by authority personnel.

3 MANAGEMENT SYSTEM

A description of the management system, including at least the following:

(a) safety policy;

(b) the process for identifying safety hazards and for evaluating and managing the associated risks;

(c) compliance monitoring system;

(d) allocation of duties and responsibilities;

(e) documentation of all key management system processes.

4 CREW COMPOSITION

4.1 Crew composition. An explanation of the method for determining crew compositions, taking account of the following:

(a) the type of aircraft being used;

(b) the area and type of operation being undertaken;

(c) the phase of the flight;

(d) the minimum crew requirement and flight duty period planned;

(e) experience (total and on type), recency and qualification of the crew members;

(f) the designation of the pilot-in-command/commander and, if necessitated by the duration of the flight, the procedures for the relief of the pilot-in-command/commander or other members of the flight crew (see ORO.FC.105);

(g) the designation of the senior cabin crew member and, if necessitated by the duration of the flight, the procedures for the relief of the senior cabin crew member and any other member of the cabin crew.

4.2 Designation of the pilot-in-command/commander. The rules applicable to the designation of the pilot-in-command/commander.

4.3 Flight crew incapacitation. ~~Instructions~~For multi-pilot operation, instructions on the succession of command in the event of flight crew incapacitation.

4.4 Operation on more than one type. A statement indicating which aircraft are considered as one type for the purpose of:

(a) flight crew scheduling; and

(b) cabin crew scheduling.

5 QUALIFICATION REQUIREMENTS

5.1 A description of the required licence, rating(s), qualification/competency (e.g. for routes and aerodromes), experience, training, checking and recency for operations personnel to conduct their duties. Consideration should be given to the aircraft type, kind of operation and composition of the crew.

5.2 Flight crew:

(a) pilot-in-command/commander,

(b) pilot relieving the pilot-in-command/commander,

(c) co-pilot,

(d) pilot relieving the co-pilot,

(e) pilot under supervision,

(f) system panel operator,

(g) operation on more than one type or variant.

5.3 Cabin crew:

(a) senior cabin crew member,

(b) cabin crew member:

(i) required cabin crew member,

(ii) additional cabin crew member and cabin crew member during familiarisation flights,

(c) operation on more than one type or variant.

5.4 Training, checking and supervision personnel:

(a) for flight crew; and

(b) for cabin crew.

5.5 Other operations personnel (including technical crew and crew members other than flight, cabin and technical crew).

6 CREW HEALTH PRECAUTIONS

6.1 Crew health precautions. The relevant regulations and guidance to crew members concerning health, including the following:

(a) alcohol and other intoxicating liquids,

(b) narcotics,

(c) drugs,

(d) sleeping tablets,

(e) anti-depressants,

(f) pharmaceutical preparations,

(g) immunisation,

(h) deep-sea diving,

(i) blood/bone marrow donation,

(j) meal precautions prior to and during flight,

(k) sleep and rest,

(l) surgical operations.

7 FLIGHT TIME LIMITATIONS

7.1 Flight and duty time limitations and rest requirements.

7.2 Exceedance of flight and duty time limitations and/or reductions of rest periods. Conditions under which flight and duty time may be exceeded or rest periods may be reduced and the procedures used to report these modifications.

7.3 A description of the fatigue risk management, including at least the following:

(a) the philosophy and principles;

(b) documentation of processes;

(c) scientific principles and knowledge;

(d) hazard identification and risk assessment processes;

(e) risk mitigation process;

(f) FRM safety assurance processes; and

(g) FRM promotion processes.

8 OPERATING PROCEDURES

8.1 Flight preparation instructions. As applicable to the operation:

8.1.1. Minimum flight altitudes. A description of the method of determination and application of minimum altitudes including:

(a) a procedure to establish the minimum altitudes/flight levels for visual flight rules (VFR) flights; and

(b) a procedure to establish the minimum altitudes/flight levels for instrument flight rules (IFR) flights.

8.1.2. Criteria and responsibilities for determining the adequacy of aerodromes to be used. For IAM operations, criteria and responsibilities for determining the adequacy of vertiports and diversion locations. For VEMS operations, instructions for the assessment of VEMS operating sites (elevation, landing direction, and obstacles in the area) and for surveillance of those sites.

8.1.3. Methods and responsibilities for establishing aerodrome/vertiport operating minima. Reference should be made to procedures for the determination of the visibility and/or runway visual range (RVR) and for the applicability of the actual visibility observed by the pilots, the reported visibility and the reported RVR.

8.1.4. En-route operating minima for VFR flights or VFR portions of a flight and, where single-engined aircraft are used, instructions for route selection with respect to the availability of surfaces that permit a safe forced landing. For IAM operations, instructions for route selection with respect to the availability of vertiports or diversion locations that permit a continued safe flight and landing (CSFL).

8.1.5. Presentation and application of aerodrome–/vertiport and en-route operating minima.

8.1.6. Interpretation of meteorological information. Explanatory material on the decoding of meteorological (MET) forecasts and MET reports relevant to the area of operations, including the interpretation of conditional expressions. For IAM operations including VEMS, instructions for the assessment of the weather conditions at vertiports, diversion locations and VEMS operating sites

8.1.7. Determination of the quantities of fuel or amount of energy, oil and water methanol carried. The methods by which the quantities of fuel or amount of energy, oil and water methanol to be carried are determined and monitored in-flight. This section should also include instructions on the measurement and distribution of the fluid carried on board. Such instructions should take account of all circumstances likely to be encountered on the flight, including the possibility of in-flight ~~re-planning~~replanning and of failure of one or more of the aircraft's power plants~~.~~ or lift and thrust units. The system for maintaining fuel/energy and oil records should also be described.

8.1.8. Mass and centre of gravity. The general principles of mass and centre of gravity including the following:

(a) definitions;

(b) methods, procedures and responsibilities for preparation and acceptance of mass and centre of gravity calculations;

(c) the policy for using standard and/or actual masses;

(d) the method for determining the applicable passenger, baggage and cargo mass;

(e) the applicable passenger and baggage masses for various types of operations and aircraft type;

(f) general instructions and information necessary for verification of the various types of mass and balance documentation in use;

(g) last-minute changes procedures;

(h) specific gravity of fuel, oil and water methanol;

(i) seating policy/procedures;

(j) for helicopter operations, standard load plans.

8.1.9. Air traffic services (ATS) flight plan. Procedures and responsibilities for the preparation and submission of the ATS flight plan. Factors to be considered include the means of submission for both individual and repetitive flight plans.

8.1.10. Operational flight plan. Procedures and responsibilities for the preparation and acceptance of the operational flight plan. The use of the operational flight plan should be described, including samples of the operational flight plan formats in use.

8.1.11. Operator's aircraft technical log. The responsibilities and the use of the operator's aircraft technical log should be described, including samples of the format used.

8.1.12. List of documents, forms and additional information to be carried.

8.1.13. For commercial air transport operations with single-engined turbine aeroplanes in instrument meteorological conditions or at night (CAT SET-IMC) approved in accordance with Subpart L (SET-IMC) of Part-SPA:

(a) the procedure for route selection with respect to the availability of surfaces, which permits a safe forced landing;

(b) the instructions for the assessment of landing sites (elevation, landing direction, and obstacles in the area); and

(c) the instructions for the assessment of the weather conditions at those landing sites.

8.2 Ground handling instructions. As applicable to the operation:

8.2.1. Fuelling procedures. A description of fuelling procedures, including:

(a) safety precautions during refuelling and defuelling including when ~~an aircraft auxiliary power unit is in operation or, for helicopters, when rotors are turning or, for aeroplanes, when an engine is running;~~:

(1) ~~refuelling and defuelling~~an aircraft auxiliary power unit is in operation; or

(2) for helicopters, when ~~passengers~~rotors are ~~embarking,~~turning; or

(3) for aeroplanes, when an engine is running; or

~~(1)~~(4) for VCA, when the lift and thrust units are powered on ~~board or disembarking; and~~;

~~(b) precautions to be taken to avoid mixing fuels.~~

8.2.2. Aircraft, passengers and cargo handling procedures related to safety. A description of the handling procedures to be used when allocating seats, embarking and disembarking passengers and when loading and unloading the aircraft. Further procedures, aimed at achieving safety whilst the aircraft is on the ramp, such as charging or swapping of VCA batteries while passengers embark, are on board, or disembark, should also be given. Handling procedures should include:

(a) special categories of passengers, including children/infants, persons

with reduced mobility, inadmissible passengers, deportees and persons in custody;

(b) permissible size and weight of hand baggage;

(c) loading and securing of items in the aircraft;

(d) positioning of ground equipment;

(e) operation of aircraft doors;

(f) safety on the aerodrome/operating site or vertiport/diversion location, including fire prevention and safety in blast and suction areas;

(g) start-up, ramp departure and arrival procedures, including, for aeroplanes, push-back and towing operations~~;~~ and, for VCA, ground movement;

(h) servicing of aircraft;

(i) documents and forms for aircraft handling;

(j) special loads and classification of load compartments; and

(k) multiple occupancy of aircraft seats.

8.2.3. Procedures for the refusal of embarkation. Procedures to ensure that persons who appear to be intoxicated, or who demonstrate by manner or physical indications that they are under the influence of drugs, are refused embarkation. This does not apply to medical patients under proper care.

8.2.4. De-icing and anti-icing on the ground. A description of the de-icing and anti-icing policy and procedures for aircraft on the ground. These should include descriptions of the types and effects of icing and other contaminants on aircraft whilst stationary, during ground movements and during take-off. In addition, a description of the fluid types used should be given, including the following:

(a) proprietary or commercial names,

(b) characteristics,

(c) effects on aircraft performance,

(d) hold-over times,

(e) precautions during usage.

8.3 Flight Procedures:

8.3.1. VFR/IFR Policy. A description of the policy for allowing flights to be made under VFR, or for requiring flights to be made under IFR, or for changing from one to the other.

8.3.2. Navigation Procedures. A description of all navigation procedures, relevant to the type(s) and area(s) of operation. Special consideration should be given to:

(a) standard navigational procedures, including policy for carrying out independent cross-checks of keyboard entries where these affect the flight path to be followed by the aircraft; and

(b) performance-based navigation (PBN), minimum navigation performance specification (MNPS) and polar navigation and navigation in other designated areas;

(c) in-flight re-planning;

(d) procedures in the event of system degradation; and

(e) reduced vertical separation minima (RVSM), for aeroplanes.

8.3.3. Altimeter setting procedures, including, where appropriate, use of:

(a) metric altimetry and conversion tables; and

(b) QFE operating procedures.

8.3.4. Altitude alerting system procedures for aeroplanes or audio voice alerting devices for helicopters~~.~~ or height determination equipment for VCA;

8.3.5. Ground proximity warning system (GPWS)/terrain avoidance warning system (TAWS), for aeroplanes or VCA, where applicable. Procedures and instructions required for the avoidance of controlled flight into terrain, including limitations on high rate of descent near the surface (the related training requirements are covered in OM-D 2.1).

8.3.6. Policy and procedures for the use of traffic collision avoidance system (TCAS)/airborne collision avoidance system (ACAS) for aeroplanes and, when applicable, for helicopters~~.~~ or VCA.

8.3.7. Policy and procedures for in-flight fuel/energy management. For VCA, the fuel/energy scheme comprising policy and procedures for fuel/energy planning and in-flight replanning, selection of vertiports, diversion locations or VEMS operating sites, and in- flight fuel/energy management.

8.3.8. Adverse and potentially hazardous atmospheric conditions. Procedures for operating in, and/or avoiding, adverse and potentially hazardous atmospheric conditions, including the following:

(a) thunderstorms,

(b) icing conditions,

(c) turbulence,

(d) windshear,

(e) jet stream,

(f) volcanic ash clouds,

(g) heavy precipitation,

(h) sand storms,

(i) mountain waves,

(j) significant temperature inversions.

8.3.9. Wake turbulence. Wake turbulence separation criteria, taking into account aircraft types, wind conditions and runway/final approach and take-off area (FATO) location. For helicopters, consideration should also be given to rotor downwash. For VCA, consideration should be given to the radial component of the downwash (outwash) around the VCA.

8.3.10. Crew members at their stations. The requirements for crew members to occupy their assigned stations or seats during the different phases of flight or whenever deemed necessary in the interest of safety and, for aeroplane operations, including procedures for controlled rest in the flight crew compartment.

8.3.11. Use of restraint devices for crew and passengers. The requirements for crew members and passengers to use safety belts and/or restraint systems during the different phases of flight or whenever deemed necessary in the interest of safety.

8.3.12. Admission to flight crew compartment. The conditions for the admission to the flight crew compartment of persons other than the flight crew. The policy regarding the admission of inspectors from an authority should also be included.

8.3.13. Use of vacant crew seats. The conditions and procedures for the use of vacant crew seats.

8.3.14. Incapacitation of crew members. Procedures to be followed in the event of incapacitation of crew members in-flight~~.~~, including in single-pilot operations. Examples of the types of incapacitation and the means for recognising them should be included.

8.3.15. Cabin safety requirements. Procedures:

(a) covering cabin preparation for flight, in-flight requirements and preparation for landing, including procedures for securing the cabin and galleys;

(b) to ensure that passengers are seated where, in the event that an emergency evacuation is required, they may best assist and not hinder evacuation from the aircraft;

(c) to be followed during passenger embarkation and disembarkation;

(d) when refuelling/defuelling with passengers embarking, on board or disembarking;

(d1) when charging or swapping VCA batteries while passengers embark, are on board, or disembark;

(e) covering the carriage of special categories of passengers;

(f) covering smoking on board;

(g) covering the handling of suspected infectious diseases.

8.3.16. Passenger briefing procedures. The contents, means and timing of passenger briefing in accordance with Part-CAT~~.~~ or Part-IAM, as applicable.

8.3.17. Procedures for aircraft operated whenever required cosmic or solar radiation detection equipment is carried.

8.3.18. Policy on the use of autopilot and autothrottle for aircraft fitted with these systems.

8.4 Low visibility operations (LVO). A description of the operational procedures associated with LVO.

8.5 Extended-range operations with two-engined aeroplanes (ETOPS). A description of the ETOPS operational procedures. (Refer to the EASA AMC 20-6)

8.6 Use of the minimum equipment and configuration deviation list(s).

8.7 Non-commercial operations. Information as required by ORO.AOC.125 for each type of non-commercial flight performed by the AOC holder. A description of the differences from CAT operations. Procedures and limitations, for example, for the following:

(a) training flights,

(b) test flights,

(c) delivery flights,

(d) ferry flights,

(e) demonstration flights,

(f) positioning flights,

(g) other non-commercial flights.

8.8 Oxygen requirements:

8.8.1. An explanation of the conditions under which oxygen should be provided and used.

8.8.2. The oxygen requirements specified for the following persons:

(a) flight crew;

(b) cabin crew;

(c) passengers.

8.9 Procedures related to the use of type B EFB applications:

9 DANGEROUS GOODS AND WEAPONS

9.1 Information, instructions and general guidance on the transport of dangerous goods, in accordance with CAT.OP.MPA.200 and Subpart G of Part-SPA (SPA.DG), including:

(a) operator's policy on the transport of dangerous goods;

(b) guidance on the requirements for acceptance, labelling, handling, stowage and segregation of dangerous goods;

(c) special notification requirements in the event of an accident or occurrence when dangerous goods are being carried;

(d) procedures for responding to emergency situations involving dangerous goods;

(e) duties of all personnel involved; and

(f) instructions on the carriage of the operator's personnel on cargo aircraft when dangerous goods are being carried.

9.2 The conditions under which weapons, munitions of war and sporting weapons may be carried.

10 SECURITY

Security instructions, guidance, procedures, training and responsibilities, taking into account CAR PART VII Aviation Security Regulations. Some parts of the security instructions and guidance may be kept confidential.

11 HANDLING, NOTIFYING AND REPORTING ACCIDENTS, INCIDENTS AND OCCURRENCES AND USING THE CVR RECORDING

Procedures for handling, notifying and reporting accidents, incidents and occurrences. This section should include the following:

(a) definition of accident, incident and occurrence and of the relevant responsibilities of all persons involved;

(b) illustrations of forms to be used for reporting all types of accident, incident and occurrence (or copies of the forms themselves), instructions on how they are to be completed, the addresses to which they should be sent and the time allowed for this to be done;

(c) in the event of an accident, descriptions of which departments, authorities and other organisations have to be notified, how this will be done and in what sequence;

(d) procedures for verbal notification to air traffic service units of incidents involving ACAS resolution advisories (RAs), bird hazards, dangerous goods and hazardous conditions;

(e) procedures for submitting written reports on air traffic incidents, ACAS RAs, bird strikes, dangerous goods incidents or accidents, and unlawful interference;

(f) reporting procedures. These procedures should include internal safety-related reporting procedures to be followed by crew members, designed to ensure that the pilot-in-command/commander is informed immediately of any incident that has endangered, or may have endangered, safety during the flight, and that the pilot-in-command/commander is provided with all relevant information.

(g) Procedures for the preservation of recordings of the flight recorders following an accident or a serious incident or when so directed by the investigating authority. These procedures should include:

(1) a full quotation of point (a) of CAT.GEN.MPA.195; and

(2) instructions and means to prevent inadvertent reactivation, repair or reinstallation of the flight recorders by personnel of the operator or of third parties, and to ensure that flight recorder recordings are preserved for the needs of the investigating authority.

(h) Procedures required by CAT.GEN.MPA.195 or IAM.GEN.VCA.195 for using the ~~CVR recording~~recordings or ~~its transcript~~transcripts without prejudice to Accident Investigation Regulations, when applicable.

(i) for IAM operations, procedures for the preservation of recorder recordings following an accident or a serious incident or when so directed by the investigating authority. These procedures should include:

(1) a full quotation of point (a) of IAM.GEN.VCA.195; and

(2) instructions and means to prevent inadvertent manipulations that can impair the preservation of recorder recordings by operator personnel or by third parties, and to ensure that recorder recordings are preserved for the needs of the investigating authority.

12 RULES OF THE AIR

(a) Visual and instrument flight rules,

(b) Territorial application of the rules of the air,

(c) Communication procedures, including communication-failure procedures,

(d) Information and instructions relating to the interception of civil aircraft,

(e) The circumstances in which a radio listening watch is to be maintained,

(f) Signals,

(g) Time system used in operation,

(h) ATC clearances, adherence to flight plan and position reports,

(i) Visual signals used to warn an unauthorised aircraft flying in or about to enter a restricted, prohibited or danger area,

(j) Procedures for flight crew observing an accident or receiving a distress transmission,

(k) The ground/air visual codes for use by survivors, and description and use of signal aids,

(l) Distress and urgency signals.

13 LEASING/CODE-SHARE

A description of the operational arrangements for leasing and code-share, associated procedures and management responsibilities.

B AIRCRAFT OPERATING MATTERS — TYPE RELATED

Taking account of the differences between types/classes, and variants of types, under the following headings:

0 GENERAL INFORMATION AND UNITS OF MEASUREMENT

0.1 General information (e.g. aircraft dimensions), including a description of the units of measurement used for the operation of the aircraft type concerned and conversion tables.

1 LIMITATIONS

1.1. A description of the certified limitations and the applicable operational limitations should include the following:

(a) certification status (e.g. (supplemental) type certificate, environmental certification, etc.);

(b) passenger seating configuration for each aircraft type, including a pictorial presentation;

(c) types of operation that are approved (e.g. VFR/IFR, CAT II/III, RNP, flights in known icing conditions, etc.);

(d) crew composition;

(e) mass and centre of gravity;

(f) speed limitations;

(g) flight envelope(s);

(h) wind limits, including operations on contaminated runways;

(i) performance limitations for applicable configurations;

(j) (runway) slope;

(k) for aeroplanes~~,~~ or, if applicable, for VCA, limitations on wet or contaminated runways;

(l) airframe contamination;

(m) system limitations.

2 NORMAL PROCEDURES

The normal procedures and duties assigned to the crew, the appropriate checklists, the system for their use and a statement covering the necessary coordination procedures between flight and cabin/other crew members. The normal procedures and duties should include the following:

(a) pre-flight,

(b) pre-departure,

(c) altimeter setting and checking,

(d) taxi, take-off and climb,

(e) noise abatement,

(f) cruise and descent,

(g) approach, landing preparation and briefing,

(h) VFR approach,

(i) IFR approach,

(j) visual approach and circling,

(k) missed approach,

(l) normal landing,

(m) post-landing,

(n) for aeroplanes or, if applicable, for VCA, operations on wet and contaminated runways.

3 ABNORMAL AND/OR EMERGENCY PROCEDURES

The abnormal and/or emergency procedures and duties assigned to the crew, the appropriate checklists, the system for their use and a statement covering the necessary coordination procedures between flight and cabin/other crew members. The abnormal and/or emergency procedures and duties should include the following:

(a) crew incapacitation,

(b) fire and smoke drills,

(c) for aeroplanes, un-pressurised and partially pressurised flight,

(d) for aeroplanes, exceeding structural limits such as overweight landing,

(e) lightning strikes,

(f) distress communications and alerting ATC to emergencies,

(g) engine/burner failure,

(h) system failures,

(i) guidance for diversion in case of serious technical failure or CFP,

(j) ground proximity warning, including for helicopters audio voice alerting device (AVAD) warning,

(k) ACAS/TCAS warning for aeroplanes or for VCA if applicable/audio voice alerting device (AVAD) warning for helicopters,

(l) windshear,

(m) emergency landing/ditching,

(n) for aeroplanes or for VCA, departure contingency procedures.

4 PERFORMANCE

4.0 Performance data should be provided in a form that can be used without difficulty.

4.1 Performance data. Performance material that provides the necessary data for compliance with the performance requirements prescribed in Part-CAT~~.~~ or in Part-IAM. For aeroplanes, this performance data should be included to allow the determination of the following:

(a) take-off climb limits — mass, altitude, temperature;

(b) take-off field length (for dry, wet and contaminated runway conditions);

(c) net flight path data for obstacle clearance calculation or, where applicable, take-off flight path;

(d) the gradient losses for banked climb-outs;

(e) en-route climb limits;

(f) approach climb limits;

(g) landing climb limits;

(h) landing field length (for dry, wet and contaminated runway conditions) including the effects of an in-flight failure of a system or device, if it affects the landing distance;

(i) brake energy limits;

(j) speeds applicable for the various flight stages (also considering dry, wet and

contaminated runway conditions).

4.1.1 Supplementary data covering flights in icing conditions. Any certified performance related to an allowable configuration, or configuration deviation, such as anti-skid inoperative.

4.1.2 If performance data, as required for the appropriate performance class, are not available in the AFM, then other data should be included. The OM may contain cross-reference to the data contained in the AFM where such data are not likely to be used often or in an emergency.

4.1.3 If performance data, as required for the VCA operations, is not available in the AFM, then other data should be included.

4.2 Additional performance data for aeroplanes. Additional performance data, where applicable, including the following:

(a) all engine climb gradients,

(b) drift-down data,

(c) effect of de-icing/anti-icing fluids,

(d) flight with landing gear down,

(e) for aircraft with 3 or more engines, one-engine-inoperative ferry flights,

(f) flights conducted under the provisions of the configuration deviation list (CDL).

5 FLIGHT PLANNING

5.1 Data and instructions necessary for pre-flight and in-flight planning including, for aeroplanes, factors such as speed schedules and power settings. Where applicable, procedures for engine(s)-out operations, ETOPS (particularly the one-engine-inoperative cruise speed and maximum distance to an adequate aerodrome determined in accordance with Part-CAT) and flights to isolated aerodromes should be included.

5.2 The method for calculating fuel-/energy needed for the various stages of flight.

5.3 When applicable, for aeroplanes, performance data for ETOPS critical fuel reserve and area of operation, including sufficient data to support the critical fuel reserve and area of operation calculation based on approved aircraft performance data. The following data should be included:

(a) detailed engine(s)-inoperative performance data, including fuel flow for standard and non-standard atmospheric conditions and as a function of airspeed and power setting, where appropriate, covering:

(i) drift down (includes net performance), where applicable;

(ii) cruise altitude coverage including 10 000 ft;

(iii) holding;

(iv) altitude capability (includes net performance); and

(v) missed approach;

(b) detailed all-engine-operating performance data, including nominal fuel flow data, for standard and non-standard atmospheric conditions and as a function of airspeed and power setting, where appropriate, covering:

(i) cruise (altitude coverage including 10 000 ft); and

(ii) holding;

(c) details of any other conditions relevant to ETOPS operations which can cause significant deterioration of performance, such as ice accumulation on the unprotected surfaces of the aircraft, ram air turbine (RAT) deployment, thrust-reverser deployment, etc.; and

(d) the altitudes, airspeeds, thrust settings, and fuel flow used in establishing the ETOPS area of operations for each airframe-engine combination should be used in showing the corresponding terrain and obstruction clearances in accordance with Part-CAT.

6 MASS AND BALANCE

Instructions and data for the calculation of the mass and balance, including the following:

(a) calculation system (e.g. index system);

(b) information and instructions for completion of mass and balance documentation, including manual and computer generated types;

(c) limiting masses and centre of gravity for the types, variants or individual aircraft used by the operator;

(d) dry operating mass and corresponding centre of gravity or index.

7 LOADING

Procedures and provisions for loading and unloading and securing the load in the aircraft.

8 CONFIGURATION DEVIATION LIST

The CDL(s), if provided by the manufacturer, taking account of the aircraft types and variants operated, including procedures to be followed when an aircraft is being dispatched under the terms of its CDL.

9 MINIMUM EQUIPMENT LIST (MEL)

The MEL for each aircraft type or variant operated and the type(s)/area(s) of operation. The MEL should also include the dispatch conditions associated with operations required for a specific approval (e.g. RNAV, RNP, RVSM, ETOPS). Consideration should be given to using the ATA number system when allocating chapters and numbers.

10 SURVIVAL AND EMERGENCY EQUIPMENT INCLUDING OXYGEN

10.1 A list of the survival equipment to be carried for the routes to be flown and the procedures for checking the serviceability of this equipment prior to take-off. Instructions regarding the location, accessibility and use of survival and emergency equipment and its associated checklist(s) should also be included.

10.2 The procedure for determining the amount of oxygen required and the quantity that is available. The flight profile, number of occupants and possible cabin decompression should be considered.

11 EMERGENCY EVACUATION PROCEDURES

11.1 Instructions for preparation for emergency evacuation, including crew coordination and emergency station assignment.

11.2 Emergency evacuation procedures. A description of the duties of all members of the crew for the rapid evacuation of an aircraft and the handling of the passengers in the event of a forced landing, ditching or other emergency.

12 AIRCRAFT SYSTEMS

A description of the aircraft systems, related controls and indications and operating instructions. Consideration should be given to use the ATA number system when allocating chapters and numbers.

C ROUTE/ROLE/AREA AND AERODROME/OPERATING SITE OR VERTIPORT/DIVERSION LOCATION INSTRUCTIONS AND INFORMATION

1 Instructions and information relating to communications, navigation and aerodromes/ operating sites or vertiports/diversion locations, including minimum flight levels and altitudes for each route to be flown and operating minima for each aerodrome/operating site or vertiport/diversion location planned to be used, including the following:

(a) minimum flight level/altitude;

(b) operating minima for departure, destination and alternate aerodromes or for IAM operations, operating minima for departure, destination and en-route vertiports and diversion locations;

(c) communication facilities and navigation aids;

(d) runway/final approach and take-off area (FATO) data and aerodrome/operating site or vertiport/diversion location facilities;

(e) approach, missed approach and departure procedures including noise abatement procedures;

(f) communication-failure procedures;

(g) search and rescue facilities in the area over which the aircraft is to be flown;

(h) a description of the aeronautical charts that should be carried on board in relation to

the type of flight and the route to be flown, including the method to check their validity;

(i) availability of aeronautical information and MET services;

(j) en-route communication/navigation procedures;

(k) aerodrome/operating site categorisation for flight crew competence qualification;

(l) special aerodrome/operating site limitations (performance limitations and operating procedures, etc.).

2 Information related to landing sites available for operations approved in accordance with Subpart L (SET-IMC) of Part-SPA, including:

(a) a description of the landing site (position, surface, slope, elevation, etc.);

(b) the preferred landing direction; and

(c) obstacles in the area.

D TRAINING

1 Description of scope: Training syllabi and checking programmes for all operations personnel assigned to operational duties in connection with the preparation and/or conduct of a flight.

2 Content: Training syllabi and checking programmes should include the following:

2.1 for flight crew, all relevant items prescribed in Part-CAT, Part-IAM, Part-SPA and ORO.FC;

2.2 for cabin crew, all relevant items prescribed in Part CAT, CAR-CC and ORO.CC;

2.3 for technical crew, all relevant items prescribed in Part-CAT, Part-IAM, Part-SPA and ORO.TC;

2.4 for operations personnel concerned, including crew members:

(a) all relevant items prescribed in SPA.DG Subpart G of Part-SPA (SPA.DG); and

(b) all relevant items prescribed in Part-~~ORO~~CAT, Part-IAM and ~~Part-CAT~~ORO.SEC; and

2.5 for operations personnel other than crew members (e.g. dispatcher, handling personnel, etc.), all other relevant items prescribed in Part-CAT~~-~~, Part-IAM and in this Part pertaining to their duties.

3 Procedures:

3.1 Procedures for training and checking.

3.2 Procedures to be applied in the event that personnel do not achieve or maintain the required standards.

3.3 Procedures to ensure that abnormal or emergency situations requiring the

application of part or all of the abnormal or emergency procedures, and simulation of instrument meteorological conditions (IMC) by artificial means are not simulated during commercial air transport operations~~.~~ with aeroplanes or helicopters or IAM operations with VCA.

4 Description of documentation to be stored and storage periods.

(b) Reserved.

(c) If there are sections that, because of the nature of the operation, do not apply, it is recommended that operators maintain the numbering system described in ORO.MLR.101 and above and insert 'Not applicable' or 'Intentionally blank' where appropriate.

[…]

ORO.MLR.101 Operations manual ~~—~~ structure for ~~commercial air transport~~CAT and IAM operations

Except for operations with single~~-~~-engined propeller-driven aeroplanes with an MOPSC of 5 or less or single~~-~~-engined non-complex helicopters with an MOPSC of 5 or less, taking off and landing at the same aerodrome or operating site, under VFR by day, the main structure of the ~~OM~~operations manual (OM) shall be as follows:

(a) Part A: General/Basic, comprising all non-type-related operational policies, instructions and procedures;

(b) Part B: Aircraft operating matters, comprising all type-related instructions and procedures, taking into account differences between types/classes, variants or individual aircraft used by the operator;

(c) Part C: ~~Commercial air transport~~CAT operations with aeroplanes and helicopters, comprising route/role/area and aerodrome/~~-~~operating site instructions and information or, IAM operations with VCA, comprising route/role/area and vertiport/diversion location/operating site instructions and information;

(d) Part D: Training, comprising all training instructions for personnel required ~~for a~~to ensure safe ~~operation.~~operations.

[…]

ORO.MLR.115 Record-keeping

(a) The following records shall be stored for at least 5 years:

(1) for CAT operators of aeroplanes and helicopters and IAM operators of VCA, records of the activities referred to in point ORO.GEN.200;

(2) for declared operators, a copy of the operator's declaration, details of approvals held and operations manual~~.~~;

(3) for SPO authorisation holders, in addition to point (a)(2), records related to the risk assessment conducted in accordance with point SPO.OP.230 and related standard operating procedures.

[…]

SUBPART SEC — SECURITY

ORO.SEC.100 Flight crew compartment security – aeroplanes

(a) In an aeroplane which is equipped with a secure flight crew compartment door, that door shall be capable of being locked, and means shall be provided by which the cabin crew can notify the flight crew in the event of suspicious activity or security breaches in the cabin.

(b) All passenger-carrying aeroplanes that are engaged in the commercial transportation of passengers shall be equipped with an approved secure flight crew compartment door that is capable of being locked and unlocked from either pilot's station and designed to meet the applicable airworthiness requirements, where such ~~airplanes~~aeroplanes fall within any of the following categories:

(1) aeroplanes with an MCTOM that exceeds 54 500 kg;

(2) aeroplanes with an MCTOM that exceeds 45 500 kg and have an MOPSC of more than 19; or

(3) aeroplanes with an MOPSC of more than 60.

(c) In all aeroplanes which are equipped with a secure flight crew compartment door in accordance with point (b):

(1) that door shall be closed prior to engine start for take-off and shall be locked when required so by security procedures or by the pilot-in-command until engine shutdown after landing, except when deemed to be necessary for authorised persons to access or egress in compliance with the national civil aviation security programmes;

(2) means shall be provided for monitoring from either pilot's station the entire door area outside the flight crew compartment to identify persons that request to enter and to detect suspicious behaviour or potential threat.

[…]

SUBPART FC — FLIGHT CREW

ORO.FC.005 Scope

This Subpart establishes the requirements ~~to be met by the operator related to~~for flight crew training, experience and ~~qualification~~qualifications to be met by an air operator, and comprises:

(a) SECTION 1, specifying common requirements ~~applicable to both non-commercial operations of~~

~~complex motor-powered aircraft and any commercial operation;~~.

(b) SECTION 2, specifying additional requirements applicable to ~~commercial air transport~~CAT operations with aeroplanes and helicopters, with the exception of ~~commercial air transport~~CAT operations ~~of~~with passengers conducted under VFR by day, starting and ending at the same aerodrome or operating site and within a local area specified by the competent authority, with:

(1) single- engined propeller-driven aeroplanes ~~having~~that have an MCTOM of 5 700 kg or less and an MOPSC of 5 or less; or

(2) other- than-complex motor-powered helicopters, single-engined, with an MOPSC of 5 or less.

(c) SECTION 3, specifying additional requirements for commercial specialised operations and for those operations referred to in points (b~~(~~)(1) and (2).

(d) Section 4, specifying additional requirements for IAM operations with manned VTOL-capable aircraft (VCA).

[…]

SECTION 1 — COMMON REQUIREMENTS

[…]

ORO.FC.105 Designation as pilot-in-command/commander

(a) In accordance with point 8.6~~.~~ of Annex II to CAR-BR, one pilot amongst the flight crew, qualified as pilot-in-command in accordance with CAR-FCL~~,~~ shall be designated by the operator as pilot-in-command or, for ~~commercial air transport~~CAT operations with aeroplanes and helicopters, as commander.

(b) The operator shall only designate a flight crew member to act as pilot-in-command~~/~~ or commander if all ~~of~~ the following apply:

(1) the flight crew member has the minimum level of experience specified in the operations manual;

(2) the flight crew member has adequate knowledge of the route or area to be flown and of the aerodromes, including alternate aerodromes, vertiports, facilities and procedures to be used;

(3) ~~in the case of~~For multi-crew operations, the flight crew member has completed an operator's command course if ~~upgrading~~promoted from co-pilot to pilot-in-command/commander.

(c) ~~In the case of~~For both commercial operations ~~of~~with aeroplanes and helicopters and IAM operations with VCA, the pilot-in- command~~/~~ or commander or the pilot to whom the conduct of the flight may be delegated shall have ~~had~~received initial familiarisation training ~~on~~in the route or area to be flown and ~~on~~in the aerodromes, vertiports, diversion locations, facilities

and procedures to be used, and shall maintain this knowledge as follows:

(1) ~~The validity of the aerodrome~~ Aerodromes or vertiport knowledge shall be maintained by operating at least once ~~on the~~at an aerodrome or a vertiport within a 12-~~-~~calendar ~~months'~~ month period~~.~~;

(2) ~~The~~ route or area knowledge or diversion location knowledge shall be maintained by operating at least once ~~to the~~on a route or an area or at a diversion location within a 36 ~~months'~~ calendar-month period~~. In~~; in addition, refresher training is required regarding route or area knowledge if not operating on a route or an area for 12 months within the 36-calendar-month period.

(d) Notwithstanding point (c), ~~in the case of~~for operations conducted under VFR by day with performance class B and C aeroplanes and helicopters, familiarisation training ~~on the route~~in routes and aerodromes may be replaced by area familiarisation training.

AMC1 ORO.FC.105(b)(2);(c) Designation as pilot-in-command/commander

~~**ROUTE, AREA AND AERODROME KNOWLEDGE FOR COMMERCIAL OPERATIONS**~~

GENERAL

The operator should comply with the ~~national~~applicable training and checking requirements published in the aeronautical information publication (AIP).

ROUTE, AREA AND AERODROME KNOWLEDGE FOR COMMERCIAL OPERATIONS WITH AEROPLANES AND HELICOPTERS

[…]

AMC2 ORO.FC.105(b)(2);(c) Designation as pilot-incommand/commander

~~**ROUTE, AREA AND AERODROME KNOWLEDGE FOR NON-COMMERCIAL OPERATIONS**~~

GENERAL

The operator should comply with the national training and checking requirements published in the ~~aeronautical information publication (~~AIP~~).~~.

ROUTE, AREA AND AERODROME KNOWLEDGE FOR NON-COMMERCIAL OPERATIONS WITH AEROPLANES AND HELICOPTERS

[…]

GM2 ORO.FC.105(b)(2) Designation as pilot-incommand/commander

AERODROME KNOWLEDGE FOR NON-COMMERCIAL OPERATIONS WITH AEROPLANES AND HELICOPTERS

[…]

AMC3 ORO.FC.105(b)(2);(c) Designation as pilot-in-command/commander

GENERAL

The operator should comply with the training and checking requirements published in the AIP.

ROUTE, AREA AND VERTIPORT KNOWLEDGE FOR IAM OPERATIONS

The knowledge of the area and route to be flown and of the vertiport facilities and procedures to be used should include the following:

(a) Area and route knowledge

(1) Area and route familiarisation training should ensure that the pilot has knowledge of:

(i) terrain and minimum applicable altitudes/heights;

(ii) seasonal meteorological conditions;

(iii) meteorological, communication and air traffic facilities, services and procedures;

(iv) search and rescue procedures where available; and

(v) navigational facilities associated with the route along which the flight is to take place, as applicable.

(2) Area and route familiarisation training should also ensure that the pilots are aware of the most significant underlying risks and threats of a route that could affect their operations following the 'threat and error management model' or an alternative risk model agreed with the authority.

(3) The area and route familiarisation training should be conducted:

(i) as initial training before operating to a route and area;

(ii) as refresher training after not operating to a route and area for 12 months.

(4) The OM should describe appropriate methods and tools of area and route familiarisation depending on the complexity of the route , the type of risk or threat that needs to be trained and the experience of the pilot-in-command.

(b) Vertiport knowledge

(1) Vertiport familiarisation training should include knowledge of obstacle limitation surfaces, physical layout, lighting, take-off and landing profiles, hover, applicable visibility and distance from cloud minima, unusual local weather conditions, as well as taxiing and ground movement.

(2) The OM should describe appropriate methods of familiarisation depending on the complexity of the vertiport.

(3) If the competent authority of the vertiport requires specific training or familiarisation, the operator should maintain all records of this training or familiarisation in accordance with ORO.GEN.220.

(4) Where floating installations/surfaces are used, the limitations determined in accordance with the approval for operations on floating surfaces should be taken into account.

(c) Diversion locations knowledge

(1) The OM should describe appropriate methods of familiarisation with diversion locations depending on their complexity and/or risks associated with landing at diversion locations. Methods of familiarisation may include briefing or self-briefing by means of programmed instruction, instruction in a suitable FSTD or other means.

(2) Diversion locations familiarisation should include knowledge of overall dimensions, the location and height of relevant obstacles, the approach and take-off flight paths, surface condition, and means indicating wind speed and direction.

[…]

AMC1 ORO.FC.105(c) Designation as pilot-in-command/commander

ROUTE/AREA AND AERODROME-/VERTIPORT/DIVERSION LOCATION RECENCY

(a) The 12-month period of validity of the aerodrome/vertiport knowledge should be counted from the last day of the month:

(1) when the initial familiarisation training was undertaken; or

(2) of the latest operation on the route or area to be flown and of the aerodromes/vertiports, facilities and procedures to be used.

(b) The 36-month period of validity of the route or area knewledge or diversion location knewledge should be counted from the last day of the month:

(1) -when the initial familiarisation training was undertaken; ~~-or~~

(2) when the latest operation on the route or area was flown; or

(3) when the latest operation at a diversion location was flown.

[…]

GM1 ORO.FC.105(c) Designation as pilot-in-command/commander

AREA AND ROUTE FAMILIARISATION TRAINING DELIVERY

When developing the area and route familiarisation training, the operator may apply the following methodology:

(a) Internal evidence

(1) Operator assessment by conducting an operational risk evaluation according to the following criteria:

(i) terrain and minimum ~~safe~~ applicable flight altitudes/heights ;

(ii) seasonal meteorological conditions;

(iii) meteorological, communication and air traffic facilities, services and procedures;

(iv) search and rescue procedures where available; ~~and~~

(v) diversion locations associated with the route along which the flight is to take place, as applicable; and

~~(v)~~(vi) navigational facilities associated with the area or route along which the flight is to take place~~.~~, as applicable.

[…]

AMC2 ORO.FC.115 Crew resource management (CRM) training

CRM TRAINING — SINGLE-PILOT OPERATIONS

(a) For single-pilot helicopter operations with technical crew or single-pilot VEMS operations with technical crew, AMC1 ORO.FC.115 should be applied.

(b) For single-pilot operations other than those specified in (a), AMC1 ORO.FC.115 should be applied with the following differences:

[…]

ORO.FC.120 Operator conversion training

(a) ~~In the case of aeroplane or helicopter operations,~~ the flight crew member shall complete the operator conversion training course before commencing unsupervised line flying:

(1) when changing to an aircraft for which a new type or class rating is required;

(2) ~~when joining~~each time the flight crew member joins an operator.

(b) The operator conversion training course shall include training on the equipment installed on the aircraft as relevant to flight crew members' roles.

AMC1 ORO.FC.120 Operator conversion training

OPERATOR CONVERSION TRAINING FOR NON-COMMERCIAL OPERATIONS WITH COMPLEX MOTORPOWERED AIRCRAFT (NCC) — AEROPLANES AND HELICOPTERS

[…]

AMC1 ORO.FC.125 Differences training, familiarisation, equipment and procedure training

GENERAL

(a) Differences training requires additional knowledge and training on the aircraft or an appropriate training device. It should be carried out:

(1) in the case of aeroplanes, when operating another variant of an aeroplane of the same type or another type of the same class currently operated; ~~or~~

(2) in the case of helicopters, when operating a variant of a helicopter currently operated~~.~~;

(3) in the case of VCA, when operating a variant of a VCA different from the VCA currently operated.

(b) Familiarisation requires only the acquisition of additional knowledge. It should be carried out when operating another ~~helicopter or aeroplane~~ aircraft of the same type.

[…]

AMC1 ORO.FC.130 Recurrent training and checking

RECURRENT TRAINING AND CHECKING TO DEMONSTRATE COMPETENCE FOR NON-COMMERCIAL OPERATIONS WITH COMPLEX MOTOR-POWERED AIRCRAFT (NCC) — AEROPLANES AND HELICOPTERS

[…]

GM1 ORO.FC.130 Recurrent training and checking

PERIODIC CHECKS

(a) For CAT operations with aeroplanes and helicopters and IAM operations with VCA, the operator proficiency checks and the line checks are both part of the periodic checks. For EBT operators, the EBT module and the line evaluations of competence are both part of the periodic checks.

(b) For SPO operations with aeroplanes and helicopters, the operator proficiency checks are part of the periodic checks.

(c) For non-CAT operations with aeroplanes and helicopters, the periodic checks may include a line check.

[…]

AMC1 ORO.FC.135 Pilot qualification to operate in either pilot's seat

GENERAL

The training and checking for pilot qualification to operate in either pilot's seat should include any safety-critical items as specified in the operations manual where the action to be taken by the pilot is different depending on which seat they occupy.

NON-COMMERCIAL OPERATIONS WITH COMPLEX MOTOR-POWERED AIRCRAFT (NCC) —

AEROPLANES AND HELICOPTERS

Training should be arranged so that all such items will have been covered in the preceding 3-year period.

ORO.FC.140 Operation on more than one type or variant

(a) Flight crew members operating more than one type or variant of aircraft shall comply with the requirements prescribed in this Subpart for each type or variant, unless credits related to the training, checking, and recent experience requirements are defined in the mandatory part of the operational suitability data, or equivalent, established in accordance with CAR 21 for the relevant types or variants.

(b) The operator may define groups of single-engined helicopter types. An operator proficiency check on one type shall be valid for all the other types within the group if both of the following conditions are met:

(1) the group either includes only single-engined turbine helicopters operated under VFR or it includes only single-engined piston helicopters operated under VFR;

(2) for CAT operations, at least two operator proficiency checks per type shall be conducted within a 3-year cycle.

(c) For specialised operations, elements of the aircraft/FSTD training and operator proficiency check that cover the relevant aspects associated with the specialised task and are not related to the type or group of types may be credited towards the other groups or types, based on a risk assessment performed by the operator.

(d) For operations ~~on~~with more than one helicopter type or variant ~~that are~~or VCA type or variant used for conducting sufficiently similar operations, if line checks rotate between types or variants, each line check shall revalidate the line check for the other helicopter types or variants~~.~~ or VCA types or variants.

(e) Appropriate procedures and any operational restrictions shall be specified in the operations manual for any operation on more than one type or variant.

[...]

AMC1 ORO.FC.140(d) Operation on more than one type or variant

LINE CHECKS — HELICOPTERS AND VCA

(a) Prior to using a line check on one helicopter type or variant or one VCA type or variant to revalidate the line check on other helicopter types or variants or VCA types or variants, the operator should consider whether the ~~type~~types of operations are sufficiently similar in terms of:

(1) use of aerodromes or operating sites~~;~~ or, in the case of IAM operations with VCA, vertiports or diversion locations;

(2) day VFR or night VFR;

(3) use of operational approvals and specific approvals;

(4) normal procedures, including flight preparation, take-off and landing procedures; and

(5) use of automation.

(b) For IFR operations of helicopters, an operation should only be considered sufficiently similar to allow a line check on one type or variant to revalidate the line check for the other type or variant if such credits are defined in the operational suitability data established in accordance with CAR 21 or equivalent, as determined in point (a) of ORO.FC.140.

(c) Line check cross-crediting should be defined in the operations manual.

ORO.FC.145 Provision of training, checking and assessment

(a) All training, checking and assessment required in this Subpart shall be conducted in accordance with the training programmes and syllabi established by the operator in the operations manual.

(b) When establishing the training programmes and syllabi, the operator shall include the relevant elements defined in the mandatory part of the operational suitability data established in accordance with CAR-21 or equivalent.

(c) ~~In the case of~~For both CAT operations~~,~~ with aeroplanes and helicopters and IAM operations with VCA, the training and checking programmes, including the syllabi and ~~the use of the~~ means to deliver the programme such as individual flight simulation training devices (FSTDs) and other training solutions, shall be approved by the competent authority.

(d) The FSTD used to meet the requirements of this Subpart shall be qualified in accordance with the European CS-FSTD (A)/(H) and it shall replicate the aircraft used by the operator, as far as practicable. Differences between the FSTD and the aircraft shall be described and addressed through a briefing or training, as appropriate.

(e) The operator shall establish a system to adequately monitor changes to the FSTD and to ensure that those changes do not affect the adequacy of the training programmes.

(f) The operator shall monitor the validity of each recurrent training and checking.

(g) The validity periods required in this Subpart shall be counted from the end of the month in which the recency, training or check was completed.

AMC1 ORO.FC.145 Provision of training, checking and assessment

ACCEPTANCE OF PREVIOUS TRAINING FOR NON-COMMERCIAL OPERATIONS WITH COMPLEX MOTOR-POWERED AIRCRAFT (AEROPLANES AND HELICOPTERS), INCLUDING NON-COMMERCIAL SPECIALISED OPERATIONS

[…]

If the operator chooses to make use of previous training received by the pilot, the operator should

GM1 ORO.FC.145 Provision of training, checking and assessment

POLICY FOR ACCEPTANCE OF PREVIOUS TRAINING AND CHECKING FOR OTHER THAN COMMERCIAL AIR TRANSPORT OPERATIONS (NCC) — AEROPLANES AND HELICOPTERS

If the operator chooses to make use of previous training received by the pilot, in accordance with AMC1 ORO.FC.145, the operator may wish to enter into arrangements with other operators in order to satisfy the requirements of ORO.GEN.205 in relation to contracted training providers or other aircraft operators.

AMC1 ORO.FC.145(a) Provision of training, checking and assessment

TRAINING AND CHECKING PROGRAMMES AND SYLLABI

(a) Training and checking programmes and syllabi should include as a minimum:

(1) when training and checking take place during the same session, the distinction between the two;

(2) a list of the items covered;

(3) the minimum time allocation (duration);

(4) the means of delivery (e.g. FSTD, OTD, computer-based, VR, etc.);

(5) the personnel providing the training and conducting the checks.

(b) Further details on the training and checking programmes and syllabi should be included in the operations manual depending on the complexity of the operations (e.g. further contextualisation of the training programme, details of the airport/vertiport in which some items will be covered, time allocation to brief and debrief, whether the item to be trained is a legal requirement or an SMS item, etc.).

[…]

GM1 ORO.FC.145(d) Provision of training, checking and assessment

CONFIDENTIALITY AND PROTECTION OF TRAINING DATA IN ~~COMMERCIAL AIR TRANSPORT~~ CAT OPERATIONS WITH AEROPLANES AND HELICOPTERS AND IAM OPERATIONS WITH VCA

(a) Without prejudice to ~~applicable national legislation~~ any law on the protection of individuals with regard to the processing of personal data, for the training conducted in accordance with ORO.FC.145 the operator may have a training data access and security policy (including the procedure to prevent disclosure of crew identity).

(b) If the operator decides to have such a policy, it should:

(1) be agreed by all parties involved (~~airline~~ operator management and flight crew member representatives nominated by the flight crew themselves);

(2) be in line with the organisation's safety policy in order to not make available or to not make use of the training data to attribute blame or liability.

(c) The training data access and security policy may include a policy for access to information only to specifically authorised persons identified by their position in order to perform their duties.

[…]

ORO.FC.146 Personnel providing training, checking and assessment

(a) All training, checking and assessment required in this Subpart shall be conducted by appropriately qualified personnel.

(b) In the case of flight and flight simulation training, checking and assessment, the personnel that provide the training and conduct the checking or assessment shall be qualified in accordance with CAR-FCL. Additionally, the personnel providing training and conducting checking towards specialised operations shall be suitably qualified for the relevant operation.

(c) For an EBT programme, the personnel that performs assessment and provides training shall:

(1) hold a CAR-FCL instructor or examiner certificate;

(2) complete the operator's EBT instructor standardisation programme. This shall include an initial standardisation programme and a recurrent standardisation programme.

Completion of the operator's EBT initial standardisation will qualify the instructor to perform EBT practical assessment.

(d) Notwithstanding point (b), the line evaluation of competence may be conducted by a suitably qualified commander nominated by the operator that is standardised in EBT concepts and the assessment of competencies (line evaluator).

(e) Notwithstanding point (b), the aircraft/FSTD training and the operator proficiency check may be conducted by a suitably qualified commander ~~holding a~~, or pilot-in-command for IAM operations, that holds an FI/TRI/SFI certificate and is nominated by the operator for any of the following operations:

(1) CAT operations ~~of~~with helicopters ~~meeting~~that meet the criteria defined in point ORO.FC.005(b)(2);

(2) CAT operations ~~of~~with other than complex motor-powered helicopters by day and over routes navigated by reference to visual landmarks;

(3) CAT operations ~~of~~with performance class B aeroplanes that do not meet the criteria defined in point ORO.FC.005(b)(1~~).~~);

(4) IAM operations with VCA by day and over routes navigated by reference to visual landmarks.

[…]

AMC1 ORO.FC.146(b) Personnel providing training, checking and assessment

PERSONNEL PROVIDING AIRCRAFT/FSTD TRAINING AND CONDUCTING OPERATOR PROFICIENCY CHECKING AND QUALIFIED UNDER CAR-FCL

Training and checking should be provided by the following personnel:

(a) Flight training by a type rating instructor (TRI) or class rating instructor (CRI), flight instructor (FI) or, in the case of the FSTD content, a synthetic flight instructor (SFI). ~~For commercial air transport~~For CAT operations with aeroplanes and helicopters and, if applicable, for IAM operations with VCA , the FI, TRI, CRI or SFI should satisfy the operator's experience and knowledge requirements sufficiently to instruct on aircraft systems and operational procedures and requirements.

[…]

AMC1 ORO.FC.146(e);(f)&(g) Personnel providing training, checking and assessment

SUITABLY QUALIFIED PIC OR COMMANDER NOMINATED BY THE OPERATOR — GENERAL

(a) The nominated PIC/commander conducting training should either be qualified as an instructor under CAR-FCL or receive training which should cover at least:

(1) techniques of briefing and debriefing;

(2) CRM concepts and CRM assessment;

(3) for SPO with aeroplanes or helicopters, which manoeuvres the nominated PIC/commander should not train or check unless qualified as an instructor.

(b) In addition, the nominated PIC/commander conducting operator proficiency checks or line checks should either be qualified as an examiner under CAR-FCL or receive additional training which should cover at least:

(1) how to perform a check;

(2) flight techniques applicable to checks performed in flight;

(3) the assessment of CRM skills.

(c) The nominated PIC/commander conducting aircraft/FSTD training, line flying under supervision, operator proficiency checks or line checks taking place under multi-pilot operations in helicopters should have 350 hours flying experience in multi-pilot operations.

(d) The nominated PICs/commanders, or the criteria for nominating PICs/commanders, should be included in the operations manual.

(e) The nominated PIC/commander should be type rated or class rated in the type or class where he or she provides the training, checking or assessment.

CAT —OPERATIONS WITH AEROPLANES AND HELICOPTERS AND IAM OPERATIONS WITH VCA - SUITABLY QUALIFIED PIC OR COMMANDER OR INSTRUCTOR NOMINATED BY THE OPERATOR

(f) For CAT operations with aeroplanes or helicopters under VFR by day, the minimum experience of the nominated commander should be more than 750 hours total flight time with at least 50 hours on the type, class or the aircraft variant.

(f1) For IAM operations with VCA under VFR by day, the minimum experience of the nominated PIC should be more than 350 hours total flight time with at least 25 sectors on the type, class or the aircraft variant.

(g) For CAT operations in performance class B aeroplanes under night VFR or under IFR, the minimum experience of the nominated commander should be more than 1 000 hours total flight time with at least 100 hours on the type, class or the aircraft variant.

(h) In the case of CAT operations in helicopters, the 350 hours flying experience in multi-pilot operations defined in (c) may be reduced on an individual basis, as part of the approval of the training and checking programmes. The operator may apply for such a reduced flying experience based on the unavailability of experienced pilots in both multi-pilot operations and in their types of operations. An FI/TRI/SFI rating and MCC training in helicopters should be a prerequisite for any reduced flying experience in multi-pilot operations. In addition, the operator should define mitigation measures after having performed a risk assessment. The following should be taken into account:

(1) flying experience criteria in single-pilot operations in the types of operations;

(2) any other training, checking, recency and experience criteria; and

(3) robustness and maturity of multi-pilot SOPs.

(i) ORO.FC.220 (f) and ORO.FC.420 (e) allows the operator to develop a specific conversion course to address an operational circumstance, when the operator intends to have pilots temporally joining the operator to conduct line checks. The content of the specific operator's conversion course is included in AMC1 ORO.FC.220(f~~).~~) or AMC1 ORO.FC.420(e) as applicable .

[…]

SECTION 2 — ADDITIONAL REQUIREMENTS FOR COMMERCIAL AIR TRANSPORT OPERATIONS EXCEPT CAT OPERATIONS REFERED TO IN ORO.FC.005 POINTS (B)(1) AND (2)

[…]

AMC2 ORO.FC.230 Recurrent training and checking

FLIGHT ENGINEERS

(a) The recurrent training and checking for flight engineers should meet the requirements for pilots and any additional specific duties, omitting those items that do not apply to flight engineers.

(b) Recurrent training and checking for flight engineers should, whenever possible, take place concurrently with a pilot undergoing recurrent training and checking.

(c) The line check should be conducted by a commander or by a flight engineer nominated by the operator, in accordance with ~~national~~relevant rules, if applicable.

[…]

SECTION 3 — ADDITIONAL REQUIREMENTS FOR COMMERCIAL SPECIALISED OPERATIONS AND CAT OPERATIONS REFERRED TO IN ORO.FC.005 B(1) AND (2)

[…]

SECTION 4 — ADDITIONAL REQUIREMENTS FOR IAM OPERATIONS WITH MANNED VTOL-CAPABLE AIRCRAFT (VCA)

ORO.FC.400 Flight crew composition

The minimum flight crew composition for IAM operations with manned VTOL-capable aircraft (VCA) shall correspond to that specified in the operations manual, considering the minimum number specified in the flight manual or in other documents associated with the certificate of airworthiness (CofA) of the particular aircraft.

ORO.FC.415 Initial operator's crew resource management (CRM) training

(a) The flight crew member shall complete an initial CRM training course before commencing unsupervised line flying.

(b) The initial CRM training course shall be conducted by at least one suitably qualified CRM trainer who may be assisted by experts in order to address specific training areas.

AMC1 ORO.FC.415 Initial operator's crew resource management (CRM) training

TRAINING ELEMENTS AND TRAINER QUALIFICATION

The initial operator's CRM training should:

(a) cover the applicable provisions of AMC1 ORO.FC.115, including the training elements as specified in Table 1 thereof; and

(b) be conducted by a flight crew CRM trainer who is qualified as specified in AMC2 ORO.FC.146.

ORO.FC.420 Operator conversion training and checking

(a) CRM training shall be integrated into the operator conversion training course.

(b) Once an IAM operator conversion training course starts, the flight crew member shall not be assigned to flying duties on another type or class of aircraft until the training course is completed or terminated.

(c) The amount of training required by the flight crew member for the IAM operator's conversion course shall be determined in accordance with the standards of qualification and experience specified in the operations manual, taking into account the flight crew member's previous

training and experience.

(d) The flight crew member shall complete:

(1) the IAM operator proficiency check and the emergency and safety equipment training and checking before commencing line flying under supervision (LIFUS); and

(2) the line check upon completion of LIFUS.

(e) If operational circumstances, such as applying for a new AOC or adding a new aircraft type or class to the fleet, do not allow the IAM operator to comply with the requirements in point (d), that operator may develop a specific conversion course to be used temporarily for a limited number of flight crew members.

AMC1 ORO.FC.420 Operator conversion training and checking

OPERATOR CONVERSION TRAINING SYLLABUS FOR IAM OPERATIONS

(a) General

(1) The operator conversion training should include, in the following order:

(i) ground training, including the following:

(A) VCA systems;

(B) normal procedures, including but not limited to flight planning, ground-handling, flight operations, fuel/energy schemes, selection of vertiports and diversion locations, VCA performance, mass and balance;

(C) abnormal and emergency procedures, which include pilot incapacitation;

(D) a review of the occurrences that may be relevant for the intended operation;

(ii) emergency and safety equipment training and checking, including survival equipment training (completed before any flight training in a VCA commences);

(iii) flight training and checking (aircraft and/or FSTD); and

(iv) line flying under supervision and line check.

(2) When the pilot has not previously completed an operator's conversion course, he or she should undergo general first-aid training and, if applicable, ditching procedures training using the equipment in water.

(3) The operator conversion course may be combined with a new type rating course, as required by CAR-FCL.

(4) The operator should ensure that:

(i) applicable elements of CRM training, as specified in Table 1 of AMC1 ORO.FC.115, are integrated into all appropriate phases of the conversion training;

(ii) the personnel integrating elements of CRM into conversion training are suitably qualified, as specified in AMC2 ORO.FC.146.

(b) Ground training

(1) Ground training should comprise a properly organised programme of ground instruction supervised by training staff with adequate facilities, including any necessary audio, mechanical and visual aids. Self-study using appropriate electronic learning aids, computer-based training (CBT), etc., may be used with adequate supervision of the standards achieved. However, if the aircraft concerned is relatively simple , unsupervised private study may be adequate if the operator provides suitable manuals and/or study notes.

(2) The course of ground instruction should incorporate formal tests.

(c) Emergency and safety equipment training

(1) Emergency and safety equipment training should take place in conjunction with technical crew undergoing similar training, as far as applicable and practicable; emphasis should be placed on the importance of effective coordination and two-way communication between crew members in various emergency situations.

(2) On the initial conversion course and on subsequent conversion courses as applicable, the following should be addressed:

(i) Instruction on first aid in general (initial conversion course only; instruction on first aid as relevant to the type of operation (initial and subsequent).

(ii) Aero-medical topics, as relevant to the type of operation.

(iii) The effect of smoke in an enclosed area and actual use of all relevant equipment in a simulated smoke-filled environment.

(iv) Actual firefighting, using equipment representative of that carried in the VCA on an actual or simulated fire except that, with Halon extinguishers, an alternative extinguisher may be used.

(v) The operational procedures of security, rescue and emergency services.

(vi) Survival information appropriate to the areas of operation and training in the use of any survival equipment required to be carried.

(vii) A comprehensive drill to cover all ditching procedures where flotation equipment is carried. This should include practice of the actual donning and inflation of a life jacket, together with a demonstration or audiovisual presentation of the inflation of life rafts and/or slide rafts and associated equipment. This practice should, on an initial conversion course, be conducted using the equipment in water, although previous certified training with another operator or the use of similar equipment will be accepted in lieu of further wet-drill training.

(viii) Instruction on the location of emergency and safety equipment, correct use of all appropriate drills, and procedures that could be required of flight crew in different

emergency situations. Evacuation of the aircraft (or a representative training device) by use of a slide where fitted should be included when the operations manual procedure requires the early evacuation of flight crew to assist on the ground.

(3) Passenger handling

(i) Other than general training on dealing with people, emphasis should be placed on the following:

(A) advice on the recognition and management of passengers who appear to be or are intoxicated with alcohol, under the influence of drugs or aggressive;

(B) methods used to motivate passengers and the crowd control necessary to expedite an aircraft evacuation; and

(C) the importance of correct seat allocation with reference to aircraft mass and balance. Particular emphasis should also be given on the seating of special categories of passengers.

(ii) Discipline and responsibilities

Emphasis should be placed on discipline and an individual's responsibilities in relation to:

(A) his or her ongoing competence and fitness to operate as a crew member with special regard to flight and duty time limitation (FTL) requirements; and

(B) security procedures.

(iii) Passenger briefing/safety demonstrations

Training should be given in the preparation of passengers for normal and emergency situations.

(d) Flight training

(1) Flight training should be conducted to familiarise the flight crew member thoroughly with all aspects of limitations and normal, abnormal and emergency procedures associated with the VCA and should be carried out by suitably qualified type rating instructors and/or examiners or a suitably qualified PIC holding a FI/TRI/SFI certificate and nominated by the operator, as applicable.

(2) In planning flight training on VCA with a flight crew of two or more, particular emphasis should be placed on the practice of LOFT with emphasis on CRM, and the use of crew coordination procedures, including coping with incapacitation.

(3) Normally, the same training and practice in the flying of the VCA should be given to all flight crew members. The 'flight handling' sections of the syllabus should include all the requirements of the operator proficiency check required by ORO.FC.430.

(4) The training should include at least three take-offs and landings in the VCA.

(e) Operator proficiency check

(1) For VCA, the operator proficiency check that is part of the operator's conversion checking should include at least the following emergency/abnormal procedures as relevant to the VCA and the operations, as applicable:

(i) lift and thrust system fire;

(ii) interior VCA fire or smoke;

(iii) emergency operation of undercarriage;

(iv) hydraulic failure;

(v) electrical failure;

(vi) malfunctions of the flight and lift and thrust units control system;

(vii) recovery from unusual attitudes;

(viii) landing with one or more lift and thrust unit(s) inoperative;

(ix) pilot incapacitation;

(x) directional control failures and malfunctions;

(xi) other system failures;

(xii) CFP during take-off before decision point;

(xiii) CFP during take-off after decision point;

(xiv) CFP during landing before decision point; and

(xv) CFP during landing after decision point.

(2) The flight crew should be assessed on their CRM skills in accordance with the methodology described in AMC1 ORO.FC.115 and as specified in the operations manual.

(3) The use of FSTDs, composition of the flight crew, and the possible combinations with training or with the licence proficiency check should be defined as per AMC1 ORO.FC.430.

(f) Line flying under supervision (LIFUS)

(1) Following completion of flight training and checking as part of the operator's conversion course, each flight crew member should operate a minimum number of sectors and/or flight hours under the supervision of a flight crew member nominated by the operator.

(2) The minimum flight sectors/hours should be specified in the operations manual and should be determined by all the following:

(i) previous experience of the flight crew member;

(ii) complexity of the operation, taking into consideration the type of aircraft as well as the type and area of operation.

AMC2 ORO.FC.420 Operator conversion training and checking

TRAINING PROGRAMMES

The operator should ensure that training programmes include the relevant de-identified feedback from the management system, including occurrence reporting.

GM1 ORO.FC.420 Operator conversion training and checking

SINGLE PILOT INCAPACITATION IN IAM OPERATIONS WITH VCA

Pilot incapacitation is the term used to describe a sudden degradation of medical fitness of an operating flight crew member, rendering the flight crew member unable to carry out their normal duties because of the onset, during flight, of the effects of physiological factors.

Incapacitation may have different severity states. Death is the most extreme example of incapacitation (typically due to cardiovascular disease). By far the most common cause of flight crew incapacitation is gastroenteritis. Other causes may include:

- hypoxia at altitudes above 10 000 ft;
- smoke or fumes associated with contamination of the air conditioning system;
- food poisoning or food allergy;
- falling asleep;
- heart attack, stroke due to cardiovascular disease;
- physical injury;
- a hostile act by an unruly passenger, terrorist action.

The single pilot and/or the technical crew member (e.g. in VEMS operations with a technical crew member) should undergo initial and recurrent training to be able to (self-)detect the early stages of pilot incapacitation and handle it, including by activating the relevant operator's procedure. The recurrent training should be conducted every year and can form part of other recurrent training. It should take the form of classroom instruction, discussion, audiovisual presentation or other similar means.

If an FSTD is available for the type of aircraft operated, practical training on flight crew incapacitation should be carried out at intervals not exceeding 3 years.

The pilot incapacitation training objectives for single-pilot operations and for operations with a technical crew member should include:

- (self-)detection of pilot incapacitation;

- taking appropriate actions including correct stop/go decision;
- applying the appropriate operator's procedure correctly;
- maintaining aircraft control, as applicable (e.g. in single-pilot operations with a technical crew member);
- managing consequences for non-incapacitated crew member, as applicable (e.g. in single-pilot operations with a technical crew member).

GM1 ORO.FC.420(b) Operator conversion training and checking

COMPLETION OF AN OPERATOR'S CONVERSION COURSE

(a) The operator conversion course is deemed to have started when the flight training has begun. The theoretical element of the course may be undertaken ahead of the practical element.

(b) Under certain circumstances the course may have started and reached a stage where, for unforeseen reasons, it is not possible to complete it without a delay. In these circumstances, the operator may allow the pilot to revert to the original type.

(c) Before the resumption of the operator conversion course, the operator should evaluate how much of the course needs to be repeated before continuing with the remainder of the course.

GM2 ORO.FC.420(d) Operator conversion training and checking

LINE FLYING UNDER SUPERVISION

(a) Line flying under supervision provides the opportunity for a flight crew member to put into practice the procedures and techniques he or she has been made familiar with during the ground and flight training of an operator conversion course. This is accomplished under the supervision of a flight crew member specifically nominated and trained for the task. At the end of line flying under supervision the respective crew member should be able to perform a safe and efficient flight.

(b) A variety of reasonable combinations may exist with respect to:
  (1) a flight crew member's previous experience; and
  (2) the complexity of the operation, taking into consideration the type of aircraft as well as the type and area of operation.

(c) The operator defines the details to be flown under supervision in the operations manual.

AMC1 ORO.FC.420(e) Operator conversion training and checking

SPECIFIC CONVERSION COURSE

(a) In some cases, operational circumstances may require the operator to develop a specific

conversion course to nominate pilots as suitably qualified PIC to conduct line checks in accordance with the requirements of ORO.FC.146. In such cases, the operator conversion training should include training as follows:

(1) normal procedures, including but not limited to flight planning, ground handling, flight operations, including performance, mass and balance, fuel/energy schemes, selection of vertiports and/or diversion locations, VCA performance, mass and balance;

(2) abnormal and emergency procedures, which include pilot incapacitation.

(b) The operator should ensure that the line checker is familiar with:

(1) the operating procedures and the use of checklists used by the operator;

(2) the emergency and safety equipment installed or carried on the operated aircraft.

(c) After the completion of the specific conversion course, the following apply:

(1) The line checker should not exercise duties at the controls of the aircraft.

(2) The line checker should only conduct recurrent line checks of pilots whose previous line check has not expired, in accordance with ORO.FC.430.

(d) The validity of the specific conversion course should be limited to 6 months.

ORO.FC.430 Recurrent training and checking

(a) Each flight crew member shall complete recurrent training and checking relevant to the VCA type or variant on which they operate, and to associated equipment.

(b) IAM operator proficiency check

(1) Each flight crew member shall complete the IAM operator proficiency checks as part of the normal crew complement to demonstrate their competence in applying normal, abnormal and emergency procedures, covering the relevant aspects associated with the tasks described in the operations manual.

(2) Reserved.

(3) The validity period of the IAM operator proficiency check shall be 6 calendar months.

(c) Line check

Each flight crew member shall complete a line check on the VCA. The validity period of the line check shall be 12 calendar months.

(d) Emergency and safety equipment training and checking

Each flight crew member shall complete recurrent training and checking with regard to the location and use of all emergency and safety equipment carried on board the aircraft. The validity period of an emergency and safety equipment check shall be 12 calendar months.

(e) CRM training

(1) CRM training elements shall be integrated into all appropriate phases of the recurrent training.

(2) Each flight crew member shall receive specific modular CRM training. All major topics of the CRM training shall be covered by distributing modular training sessions as evenly as possible over each 3-year period.

(f) Each flight crew member shall receive ground training and flight training in an FSTD or a VCA, or a combination of FSTD and VCA training, at least every 12 calendar months.

AMC1 ORO.FC.430 Recurrent training and checking

RECURRENT TRAINING AND CHECKING SYLLABUS

(a) Recurrent training

Recurrent training should comprise the following:

(1) Ground training

(i) The ground training programme should include:

(A) aircraft systems;

(B) normal procedures, including but not limited to flight planning, ground handling, flight operations, including VCA performance, mass and balance, fuel/energy schemes, selection of vertiports and diversion locations;

(C) abnormal and emergency procedures, which include pilot incapacitation;

(D) a review of relevant occurrences to increase awareness regarding the occurrences that may be relevant for the intended operation.

(ii) Knowledge of the ground training should be verified by a questionnaire or other suitable methods.

(2) Emergency and safety equipment training

(i) Emergency and safety equipment training may be combined with emergency and safety equipment checking and should be conducted in an aircraft or a suitable alternative training device.

(ii) Every year the emergency and safety equipment training programme should include the following:

(A) actual donning of a life jacket if the VCA is operated over water;

(B) actual handling of fire extinguishers of the type used;

(C) instruction on the location and use of all emergency and safety equipment carried on the aircraft;

(D) instruction on the location and use of all types of exits;

(E) security procedures.

(iii) Every 3 years the training programme should include the following:

(A) actual operation of all exits;

(B) demonstration of the method used to operate a slide where fitted;

(C) actual firefighting using equipment representative of that carried in the aircraft on an actual or simulated fire except that, with Halon extinguishers, an alternative extinguisher may be used;

(D) the effects of smoke in an enclosed area and actual use of all relevant equipment in a simulated smoke-filled environment;

(E) actual handling of pyrotechnics, real or simulated, where applicable;

(F) demonstration and use of the life rafts if the VCA is involved in over-water operations in a hostile or non-hostile sea at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed.

VCA water survival training

Where the VCA is equipped with life rafts in accordance with UAM.IDE.MVCA.310, a comprehensive wet drill to cover all ditching procedures should be practised by crew members. This wet drill should include, as appropriate, practice of the actual donning and inflation of a life jacket, together with a demonstration or audiovisual presentation of the inflation of life rafts. The crew member should board the same (or similar) life rafts from the water whilst wearing a life jacket. Training should include the use of all survival equipment carried on board life rafts and any additional survival equipment carried separately on board the VCA.

Consideration should be given to the provision of further specialist training such as underwater escape training. Where operations are predominately conducted over water in a hostile or non-hostile sea at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed, operators should conduct 3-yearly VCA underwater escape training at an appropriate facility.

Wet practice drill should always be given in initial training unless the crew member concerned has received similar training provided by another operator;

(G) first aid, appropriate to the kind of operation and crew complement.

(iv) The successful resolution of VCA emergencies requires interaction between flight crew and technical crew, if applicable, and emphasis should be placed on the importance of effective coordination and two-way communication between all crew members in various emergency situations.

(v) Emergency and safety equipment training should include joint practice in evacuations from a VCA so that all who are involved are aware of the duties other crew members should perform. When such practice is not possible, combined flight crew and technical crew training should include joint discussion of emergency scenarios.

(vi) Emergency and safety equipment training should, as far as practicable, take place in conjunction with technical crew undergoing similar training with emphasis on coordinated procedures and two-way communication between the flight crew compartment and the cabin.

(3) CRM

Elements of CRM training, as specified in Table 1 of AMC1 ORO.FC.115, should be integrated into all appropriate phases of recurrent training.

(4) VCA/FSTD training

(i) General

(A) The VCA/FSTD training programme should be established in a way that all major failures, including CFP, of VCA systems and associated procedures will have been trained in the preceding 3-year period.

(B) The CFP should preferably be simulated and trained in a FSTD and not trained in a VCA.

(C) The recurrent VCA/FSTD training of a single task or manoeuvre should be separate from, and should not take place at the same time as, an operator proficiency check of the item.

(ii) VCA/FSTD

(A) If the operator is able to demonstrate, on the basis of a compliance and risk assessment, that alternating the use of an FSTD with the use of a VCA for this training provides equivalent standards of training with safety levels similar to those achieved using an FSTD, the VCA may be used (alternating with the use of an FSTD) for this training to the extent necessary.

(b) Recurrent checking

Recurrent checking should comprise the following:

(1) Operator proficiency checks

(i) VCA/FSTD

(A) The VCA/FSTD checking programme should be established in a way that all major failures of VCA systems, including CFP, and associated procedures will have been checked in the preceding 3-year period.

The operator should define which failures are major for the purpose of the operator proficiency check based on a risk assessment, taking the following into account:

(a) cautions or warnings associated with the failure;

(b) the criticality of the situation or failure;

(c) the outcome of the procedure (land immediately or as soon as possible as opposed to land as soon as practical);

(d) when available, manufacturer documentation including relevant information in OSD; and

(e) the list of abnormal/emergency procedures described in point (e) of AMC1 ORO.FC.420.

(B) Operator proficiency checks should be conducted with one qualified pilot in

single-pilot operations.

(C) The flight crew should be assessed on their CRM skills in accordance with the methodology described in AMC1 and AMC2 ORO.FC.115 and as specified in the operations manual.

(D) If the operator is able to demonstrate, on the basis of a compliance and risk similar to those achieved using an FSTD, the aircraft may be used (alternating with the use of an FSTD) for this checking to the extent necessary.

(ii) The checks prescribed in (b)(1)(i) may be combined with the skill test or proficiency check required for the issue, the revalidation or renewal of the aircraft type rating.

(2) Emergency and safety equipment checks

The items to be checked should be those for which training has been carried out in accordance with (a)(2).

(3) Line checks

(i) A line check should establish the ability to perform satisfactorily a complete line operation, including pre-flight and post-flight procedures and use of the equipment provided, as specified in the operations manual. The route chosen operation and take appropriate command decisions.

(ii) The flight crew should be assessed on their CRM skills in accordance with the methodology described in AMC1 ORO.FC.115 and as specified in the operations manual.

(iii) CRM assessment should not be used as a reason for the failure of the line check unless the observed behaviour could lead to an unacceptable reduction in the safety margin.

(iv) When pilots are assigned duties as pilot flying and pilot monitoring, they should be checked in both functions.

(v) A line check should be conducted by a PIC nominated by the operator. The operator should maintain a list of nominated PICs and inform the competent authority about the persons nominated.

(vi) CRM assessment during the line check

The CRM assessment taking place during the line check should be solely based on observations made during the initial briefing, flight crew compartment briefing and those phases where the line checker occupies the observer's seat.

(vii) Complementary CRM assessment

If a suitable FSTD is available and accessible for operator proficiency checks or FSTD training, then a CRM assessment should take place in a line-oriented flight scenario (LOFT or line-oriented section of the OPC) of an FSTD session. This assessment complements the CRM assessment taking place during the line check, but is not part of the line check.

(4) The recurrent checks referred to in (b)(1) and (3) should be performed in the single-pilot role in an environment representative of the operation.

(c) Flight crew incapacitation training

(1) Procedures should be established to train flight crew to recognise and handle flight crew incapacitation. This training should be conducted every year and can form part of other recurrent training. It should take the form of classroom instruction, discussion, audiovisual presentation or other similar means.

(2) If an FSTD is available for the type of aircraft operated, practical training on flight crew incapacitation should be carried out at intervals not exceeding 3 years.

(d) Use of FSTD

(1) Training and checking provide an opportunity to practise abnormal/emergency procedures that rarely arise in normal operations and should be part of a structured programme of recurrent training. This should be carried out in an FSTD when available and accessible.

(2) The line check should be performed in the aircraft. All other training and checking should be performed in an FSTD, or, if it is not reasonably practicable to gain access to such devices, in an aircraft of the same type or in the case of emergency and safety equipment training, in a representative training device. The type of equipment used for training and checking should be representative of the instrumentation, equipment and layout of the aircraft type operated by the flight crew member.

(3) Because of the unacceptable risk when simulating CFP, the CFP should preferably be covered in an FSTD. If no FSTD is available, CFP may be covered in the aircraft using a safe airborne simulation, bearing in mind the effect of any subsequent failure, and the exercise should be preceded by a comprehensive briefing.

AMC2 ORO.FC.430 Recurrent training and checking

TRAINING PROGRAMMES

The operator should ensure that training programmes include the relevant de-identified feedback from the management system, including occurrence reporting.

GM1 ORO.FC.430 Recurrent training and checking

LINE CHECK AND PROFICIENCY TRAINING AND CHECKING

(a) Line checks, route and vertiport knowledge and recent experience requirements are intended to ensure the crew member's ability to operate efficiently under normal conditions, whereas other checks and emergency and safety equipment training are primarily intended to prepare the crew member for abnormal/emergency procedures.

(b) The line check is considered a particularly important factor in the development, maintenance and refinement of high operating standards, and can provide the operator with a valuable indication of the usefulness of its training policy and methods. Line checks are a test of a flight crew member's ability to perform a complete line operation, including pre-flight and post-flight procedures and use of the equipment provided, and an opportunity for an overall assessment of their ability to perform the duties required as specified in the operations manual. The line check is not intended to determine knowledge on any particular route.

(c) Proficiency training and checking
When an FSTD is used, the opportunity should be taken, where possible, to use LOFT.

MAJOR FAILURES — VCA

(d) The list of major failures as defined by the operator under AMC1 ORO.FC.430 for the purpose of training may be more extensive than the list covered in the 3-yearly operator proficiency checking programme for the following reasons:

(1) may happen that several training elements are covered by a single check; and

(2) Certain complex system malfunctions are best explored under recurrent training, where the trainee will derive more benefit and training to proficiency is also employed.

ORO.FC.440 Conducting operations on more than one type or variant

(a) The procedures or operational restrictions for conducting operations on more than one type or variant established in the operations manual and approved by the competent authority shall cover:

(1) the flight crew members' minimum experience required;

(2) the minimum experience required for a given type or variant before commencing training in and operation on another type or variant;

(3) the process whereby flight crew members qualified on one type or variant will be trained in and qualify for another type or variant; and

(4) all applicable recent experience requirements for each type or variant.

(b) Flight crew members should not operate more than three aircraft types or groups of types, including at least one VCA.

AMC1 ORO.FC.440 Operations on more than one type or variant

MORE THAN ONE TYPE OR VARIANT OF VCA

(a) For operations on more than one type or variant of VCA, the following should be met:

(1) the recency requirements and the requirements for recurrent training and checking should

be met and confirmed prior to IAM operations on any of the types/variants, and the minimum number of flights on each type/variant should be specified in the operations manual;

(2) the ORO.FC.430 requirements with regard to recurrent training; and

(3) the ORO.FC.430 requirements with regard to proficiency checks. When credits related to the training, checking and recent experience requirements are defined in the operational suitability data established in accordance with CAR-21 or equivalent, for the relevant types or variants, the requirements of ORO.FC.430 with regard to proficiency checks may be met by a 6-monthly check on any one type or variant operated. However, a proficiency check on each type or variant operated should be completed every 12 months.

(b) For any combination of aircraft types or groups of types, including at least one VCA, the following should be met:

(1) when more than one type or variant of VCA is operated in IAM operations as part of the combination, the applicable requirements are those specified in point (a) above with respect to the VCA types/variants;

(2) when the combination consists of aeroplanes and/or helicopters, operated in CAT, NCC and/or SPO, and at least one VCA operated in IAM, the applicable requirements with regard to those aeroplanes and/or helicopters are contained in ORO.FC.240.

GM1 ORO.FC.440 Operations on more than one type or variant

GROUP OF TYPES OF HELICOPTERS

Information about the ‘group of types of helicopters’ is provided in AMC1 ORO.FC.240.

SUBPART CC — CABIN CREW

[…]

SECTION 1 — COMMON REQUIREMENTS

[…]

SECTION 2 — ADDITIONAL REQUIREMENTS FOR COMMERCIAL AIR TRANSPORT OPERATIONS

[…]

SUBPART TC — TECHNICAL CREW IN HEMS, HHO OR NVIS OPERATIONS

ORO.TC.100 Scope

This Subpart establishes the requirements to be met by ~~the~~an air operator when operating an aircraft with technical crew members in commercial air transport helicopter emergency medical service (HEMS) operations, emergency medical service operations with VCA (VEMS), night-~~-~~vision imaging system (NVIS) operations, or helicopter hoist operations (HHO).

ORO.TC.105 Conditions for assignment to duties

(a) Technical crew members involved in commercial air transport HEMS, VEMS, HHO or NVIS operations shall only be assigned duties ~~if~~provided they:

(1) are at least 18 years of age;

(2) are physically and mentally fit to safely discharge their assigned duties and responsibilities;

(3) have completed all applicable training required by this Subpart to perform ~~the~~their assigned duties;

(4) have been checked ~~as~~and found to be proficient to perform all their assigned duties in accordance with the procedures specified in the operations manual.

(b) Before assigning to duties technical crew members who are self-employed and/or working on a freelance or part-time basis, the operator shall verify that all applicable requirements of this Subpart are complied with, taking into account all services rendered by the technical crew member to other operator(s) to determine in particular:

(1) the total number of aircraft types and variants operated;

(2) the applicable flight and duty time limitations and rest requirements.

AMC1 ORO.TC.105 Conditions for assignment to duties

GENERAL

(a) The technical crew member in HEMS, VEMS, HHO or NVIS operations should undergo an initial medical examination or assessment and, if applicable, a re-assessment before undertaking duties.

[…]

ORO.TC.110 Training and checking

(a) The operator shall establish a training programme in accordance with the applicable

requirements of this Subpart to cover the duties and responsibilities to be performed by technical crew members.

(b) Following the completion of initial, operator conversion, and differences training, and following any required familiarisation flights, each technical crew member shall undergo a check to demonstrate their proficiency in carrying out normal and emergency procedures.

(c) Training and checking shall be conducted for each training course by personnel suitably qualified and experienced in the subject to be covered. The operator shall inform the competent authority about the personnel conducting the checks.

(d) The checks that follow the operator conversion training and any required familiarisation flights shall take place prior to operating as a required technical crew member in HEMS, VEMS, HHO or NVIS operations.

(e) The validity of the technical crew member's check to demonstrate their proficiency in carrying out normal and emergency procedures shall be 12 calendar months.

[…]

AMC1 ORO.TC.115 Initial training

ELEMENTS

(a) The elements of initial training mentioned in ORO.TC.115 should include in particular:

(1) General theoretical knowledge on aviation and aviation regulations relevant to duties and responsibilities:

(i) the importance of crew members performing their duties in accordance with the operations manual;

(ii) continuing competence and fitness to operate as a crew member with special regard to flight and duty time limitations and rest requirements;

(iii) an awareness of the aviation regulations relating to crew members and the role of the competent and inspecting authority;

(iv) general knowledge of relevant aviation terminology, theory of flight, passenger distribution, meteorology and areas of operation;

(v) pre-flight briefing of the crew members and the provision of necessary safety information with regard to their specific duties;

(vi) the importance of ensuring that relevant documents and manuals are kept up-to-date with amendments provided by the operator;

(vii) the importance of identifying when crew members have the authority and responsibility to initiate an evacuation and other emergency procedures; and

(viii) the importance of safety duties and responsibilities and the need to respond promptly and effectively to emergency situations.

(2) Fire and smoke training:

(i) reactions to emergencies involving fire and smoke and identification of the fire sources, including battery fires;

(ii) the classification of fires and the appropriate type and techniques of application of extinguishing agents, the consequences of misapplication, and of use in a confined space; ~~and~~

(iii) the general procedures of ground-based emergency services at aerodromes~~.~~/vertiports;

(iv) the risks of overcharging, overheating, short circuit and fire when charging or swapping VCA batteries; heat generation and 'thermal runaway', if applicable.

(3) When conducting extended overwater operations with helicopters, including operations with VCA over water in a hostile or non-hostile sea at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed, water survival training, including the use of personal flotation equipment.

[…]

ORO.TC.120 Operator conversion training

Each technical crew member shall complete:

(a) operator conversion training, including relevant CRM elements,

(1) before being first assigned by the operator as a technical crew member; or

(2) when changing to a different aircraft type or class, if any of the equipment or procedures mentioned in (b) are different.

(b) ~~Operator~~The operator conversion training shall include:

(1) the location and use of all safety and survival equipment carried on board the aircraft;

(2) all normal and emergency procedures;

(3) on-board equipment used to ~~carry-out~~perform duties in the aircraft or on the ground for the purpose of assisting the pilot during HEMS, VEMS, HHO or NVIS operations.

AMC1 ORO.TC.120&.125 Operator conversion training and differences training

ELEMENTS

(a) Operator conversion training mentioned in ORO.TC.120 (b) and differences training mentioned in ORO.TC.125 (a) should include the following:

(1) Fire and smoke training, including practical training in the use of all ~~fire-fighting~~ firefighting equipment as well as protective clothing representative of that carried in the

aircraft. Each technical crew member should:

(i) extinguish a fire characteristic of an aircraft interior fire except that, in the case of Halon extinguishers, an alternative extinguishing agent may be used; ~~and~~

(ii) practise the donning and use of protective breathing equipment (when fitted) in an enclosed, simulated smoke-filled environment~~.~~; and

(iii) manage a fire of a battery mounted on a VCA, where applicable.

(2) Practical training on operating and opening all normal and emergency exits for passenger evacuation in an aircraft or representative training device and demonstration of the operation of all other exits.

(3) Evacuation procedures and other emergency situations, including:

(i) recognition of planned or unplanned evacuations on land or water — this training should include recognition of unusable exits or unserviceable evacuation equipment;

(ii) in-flight fire and identification of fire source; and

(iii) other in-flight emergencies.

(4) ~~When the flight crew is more than one, training~~Training on assisting if a pilot becomes incapacitated, including a demonstration of:

[…]

AMC1 ORO.TC.135 Recurrent training

ELEMENTS

(a) The 12-month period mentioned in ORO.TC.135 (a) should be counted from the last day of the month when the first checking was made. Further training should be undertaken within the last 3 calendar months of that period. The new 12-month period should be counted from the original expiry date.

(b) The recurrent practical training should include every year:

(1) emergency procedures, including early identification of pilot incapacitation;

(2) evacuation procedures;

(3) touch-drills by each technical crew member for opening normal and emergency exits for (passenger) evacuation;

(4) the location and handling of emergency equipment and the donning by each technical crew member of life jackets and protective breathing equipment (PBE), when applicable;

(5) first aid and the contents of the first-aid kit(s);

(6) stowage of articles in the cabin;

(7) use of dangerous goods, if applicable;

(8) incident and accident review; and

(9) crew resource management: all topics of the initial CRM training should be covered over a period not exceeding 3 years.

(c) Recurrent training should include every 3 years:

(1) practical training on operating and opening all normal and emergency exits for passenger evacuation in an aircraft or representative training device and demonstration of the operation of all other exits;

(2) practical training in the use of all firefighting equipment as well as protective clothing representative of that carried in the aircraft. Each technical crew member should:

(i) extinguish a fire characteristic of an aircraft interior fire except that, in the case of Halon extinguishers, an alternative extinguishing agent may be used; and

(ii) practise the donning and use of protective breathing equipment (when fitted) in an enclosed, simulated smoke-filled environment; and

(iii) manage a fire of a battery mounted on a VCA, where applicable;

(3) use of pyrotechnics (actual or representative devices); and

(4) demonstration of the use of the life raft, where fitted.

[…]

SUBPART FTL — FLIGHT AND DUTY TIME LIMITATIONS AND REST REQUIREMENTS

Section 1 — General

ORO.FTL.100.G Scope

~~The competent authority has established the following regulations specifying the limitations applicable to the flight time and flight duty periods for crew members. These regulations also make provision for adequate rest periods to ensure that fatigue occurring either in a flight or successive flights, or accumulated over a period of time due to these and other tasks, does not endanger the safety of a flight.~~

This Subpart establishes the requirements to be met by an operator and its crew members with regard to flight and duty time limitations and rest requirements for crew members.

[…]

Section 2 – Aeroplanes

[…]

Section 3 – Helicopters

[…]

Specific approvals

[...]

PART-SPA

SUBPART A — GENERAL REQUIREMENTS

[...]

SUBPART C – OPERATIONS WITH SPECIFIED MINIMUM NAVIGATION PERFORMANCE (MNPS)

SPA.MNPS.100 MNPS operations

~~Aircraft~~Aeroplanes and helicopters shall only be operated in designated minimum navigation performance specifications (MNPS) airspace in accordance with regional supplementary procedures, where ~~minimum navigation performance specifications~~MNPS are established, if the operator has been granted an approval by the competent authority to conduct such operations.

GM1 SPA.MNPS.100 MNPS operations

DOCUMENTATION

MNPS and the procedures governing their application are published in the Regional Supplementary Procedures, ICAO Doc 7030, as well as in ~~national~~relevant aeronautical information publications (AIP).

[...]

SUBPART D – OPERATIONS IN AIRSPACE WITH REDUCED VERTICAL SEPARATION MINIMA (RVSM)

SPA.RVSM.100 RVSM operations

~~Aircraft~~Aeroplanes and helicopters shall only be operated in designated airspace where a reduced vertical separation minimum of 300 m (1 000 ft) applies between flight level (FL) 290 and FL 410, inclusive, if the operator has been granted an approval by the competent authority to conduct such operations.

[...]

SUBPART E — LOW-VISIBILITY OPERATIONS (LVOs) AND OPERATIONS WITH OPERATIONAL CREDITS

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

~~The~~An operator of aeroplanes or helicopters shall conduct the following operations only if they are approved by the competent authority:

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

instrument approach operations in low-visibility conditions; and

operations with operational credits, except for EFVS 200 operations, which shall not be subject to a specific approval.

[...]

SUBPART G — TRANSPORT OF DANGEROUS GOODS

SPA.DG.100 Transport of dangerous goods

Except as provided for in Part-CAT, Part-NCC, Part-NCO, Part-SPO and Part-~~SPO~~IAM, the operator shall only transport dangerous goods by air if ~~the operator~~it has been approved by the competent authority.

[…]

SUBPART H — HELICOPTER OPERATIONS WITH NIGHT VISION IMAGING SYSTEMS (NVIS)

[…]

SUBPART I — HELICOPTER HOIST OPERATIONS (HHO)

[…]

SUBPART J — HELICOPTER EMERGENCY MEDICAL SERVICE (HEMS) OPERATIONS

[…]

SUBPART K — HELICOPTER OFFSHORE OPERATIONS (HOFO)

[…]

SUBPART L — SINGLE-ENGINED TURBINE AEROPLANE OPERATIONS AT NIGHT OR IN INSTRUMENT METEOROLOGICAL CONDITIONS (SET-IMC)

[…]

SUBPART M — ELECTRONIC FLIGHT BAGS (EFBs)

SPA.EFB.100 Use of electronic flight bags (EFBs) — Operational approval

A commercial air transport operator of aeroplanes or helicopters or an IAM operator shall only use a type B EFB application if the operator has been granted an approval by the competent authority for such use.

[…]

AMC1 SPA.EFB.100(b) Use of electronic flight bags (EFBs) — Operational approval

SUITABILITY OF THE HARDWARE

[…]

Power source

The design of a portable EFB system should consider the source of electrical power, the independence of the power sources for multiple EFBs, and the potential need for an independent battery source. A non-exhaustive list of factors to be considered includes:

the possibility to adopt operational procedures to ensure an adequate level of safety (for example, a minimum preflight level of charge);

the possible redundancy of portable EFBs to reduce the risk of exhausted batteries;

the availability of backup battery packs to ensure that there is an alternative source of power.

Battery-powered EFBs that have aircraft power available for recharging the internal EFB batteries are considered to have a suitable backup power source.

For EFBs that have an internal battery power source, and that are used as an alternative for paper documentation that is required by CAT.GEN.MPA.180 or IAM.GEN.MVCA.180, the operator should either have at least one EFB connected to an aircraft power bus, or have established and documented mitigation means and procedures to ensure that sufficient power with acceptable margins will be available during the whole flight.

[…]AMC3 SPA.EFB.100(b)(3) Use of electronic flight bags (EFBs) — Operational approval

PROCEDURES

General

If an EFB system generates information similar to that generated by existing certified systems, procedures should clearly identify which information source will be the primary, which source will be used for backup information, and under which conditions the backup source should be used. Procedures should define the actions to be taken by the flight crew when information provided by an EFB system is not consistent with that from other flight crew compartment sources, or when one EFB system shows different information than the other.

In the case of EFB applications providing information which might be affected by Notice(s) to Airmen NOTAMS (e.g. Airport moving map display (AMMD), performance calculation, etc.), the

procedure for the use of these applications should include the handling of the relevant NOTAMS before their use.

Flight crew awareness of EFB software/database revisions

The operator should have a procedure in place to verify that the configuration of the EFB, including software application versions and, where applicable, database versions, are up to date. Flight crew members should have the ability to easily verify the validity of database versions used on the EFB. Nevertheless, flight crew members should not be required to confirm the revision dates for other databases that do not adversely affect flight operations, such as maintenance log forms or a list of airport codes. An example of a date-sensitive revision is that applied to an aeronautical chart database. Procedures should specify what actions should be taken if the software applications or databases loaded on the EFB system are outdated.

Procedures to mitigate and/or control workload

Procedures should be designed to mitigate and/or control additional workload created by using an EFB system. The operator should implement procedures to ensure that, while the aircraft is in flight or moving on the ground, flight crew members do not become preoccupied with the EFB system at the same time. Workload should be shared between flight crew members or between the pilot and the technical crew member, to ensure ease of use and continued monitoring of other flight crew functions and aircraft equipment. These procedures should be strictly applied in flight and the operator should specify any times when the flight crew may not use a specific EFB application.

[…]

Electronic signatures

Part-CAT, PART-IAM and CAR-M may require a signature when issuing or accepting a document (e.g. load sheet, technical logbook, notification to captain (NOTOC)). In order to be accepted as being equivalent to a handwritten signature, electronic signatures used in EFB applications need, as a minimum, to fulfil the same objectives and to assure the same degree of security as the handwritten or any other form of signature that they are intended to replace. AMC1 CAT.POL.MAB.105(c) and AMC1 UAM.POL.VCA.145(c) provides the means to comply with the required handwritten signature or its equivalent for mass and balance documentation.

[…]

AMC7 SPA.EFB.100(b)(3) Use of electronic flight bags (EFBs) — Operational approval

USE OF COMMERCIAL OFF-THE-SHELF (COTS) POSITION SOURCE

COTS positions sources may be used for AMMD EFB applications and for EFB applications displaying the ownship position in-flight when the following considerations are complied with:

Characterisation of the receiver:

The position should originate from an airworthiness approved GNSS receiver, or from a COTS GNSS receiver fully characterised in terms of technical specifications and featuring an adequate number of channels (12 or more).

The EFB application should, in addition to position and velocity data, receive a sufficient number of parameters related to the fix quality and integrity to allow compliance with the accuracy

requirements (e.g. the number of satellites and constellation geometry parameters such as dilution of position (DOP), 2D/3D fix).

Installation aspects:

If the COTS position sources are stand-alone PEDs, they should be treated as C-PEDs and their installation and use should follow the requirements of CAT.GEN.MPA.140~~.~~ or IAM.GEN.VCA.140 and associated AMC & GM.

If an external COTS position source transmits wirelessly, cyber security aspects have to be considered.

Non-certified securing systems should be assessed according to ~~paragraph~~ point (h) of AMC1 CAT.GEN.MPA.141(a~~).~~) as applicable to operations with aeroplanes, helicopters and VCA.

[…]

AMC10 SPA.EFB.100(b)(3) Use of electronic flight bags (EFBs) — Operational approval

APPLICATIONS DISPLAYING OWN-SHIP POSITION IN FLIGHT

Limitations

The display of own-ship position in flight as an overlay to other EFB applications should not be used as a primary source of information to fly or navigate the aircraft.

Except on VFR flights over routes navigated by reference to visual landmark, the display of the own-ship symbol is allowed only in aircraft having a certified navigation display (moving map).

In the specific case of IFW applications, the display of own-ship on such applications is restricted to ~~aircraft~~ aeroplanes and helicopters equipped with a weather radar.

[…]

GM5 SPA.EFB.100(b)(3) Use of electronic flight bags (EFBs) — Operational approval

USE OF COMMERCIAL OFF-THE-SHELF (COTS) POSITION SOURCE – PRACTICAL EVALUATION

The tests should consist of a statistically relevant sample of taxiing. It is recommended to include taxiing at ~~airports~~aerodromes that are representative of the more complex ~~airports~~aerodromes typically accessed by the operator. Taxiing segment samples should include data that is derived from runways/FATO and taxiways, and should include numerous turns, in particular of 90 degrees or more, and segments in straight lines at the maximum speed at which the own-ship symbol is displayed. Taxiing segment samples should include parts in areas of high buildings such as terminals.

The analysis should include at least 25 inbound and/or outbound taxiing segments between the parking location and the runway~~.~~/FATO.

During the tests, any unusual events (such as observing the own-ship symbol in a location on the map that is notably offset compared to the actual position, the own-ship symbol changing to non-directional when the aircraft is moving, and times when the own-ship symbol disappears from the map display) should be noted. For the test, the pilot should be instructed to diligently taxi on the centre line.[…]

SUBPART N: HELICOPTER POINT-IN-SPACE APPROACHES AND DEPARTURES WITH REDUCED VFR MINIMA (PINS-VFR)

[…]

SUBPART O: EMERGENCY MEDICAL SERVICE OPERATIONS WITH MANNED VTOL-CAPABLE AIRCRAFT (VEMS)

SPA.VEMS.100 Emergency medical service operations with manned VTOL-capable aircraft (VEMS)

An IAM operator shall only conduct emergency medical service operations with manned VTOL-capable aircraft (VEMS) if the operator has been granted an approval by the competent authority for such operations.

To obtain such approval by the competent authority, the IAM operator shall:

hold an AOC in accordance with Part-ORO;

conduct operations in accordance with the relevant requirements of Part-IAM; and

demonstrate to the competent authority compliance with the requirements contained in this Subpart.

The IAM operator shall use adequate vertiports for its VEMS operating base and hospital sites unless approved by the competent authority to use a public interest site (PIS) at a hospital site.

The IAM operator may use adequate operating sites for the purpose of VEMS missions or VEMS training flights taking into account:

the aircraft performance requirements applicable for take-off and landing;

operating site characteristics, including dimensions, obstacles, and surface condition;

the safe separation of VTOL-capable aircraft (VCA) from people on the ground; and

privacy, data protection, liability, insurance, security, and environmental protection requirements.

AMC1 SPA.VEMS.100 Emergency medical service operations with manned VTOL-capable aircraft (VEMS)

PUBLIC INTEREST SITE (PIS)

The VEMS operator should include in their operations manual a diagram or annotated photograph of each PIS used that shows its main aspects, dimensions, main hazards and the contingency plan in case of an incident. The VEMS operator should keep the information up to date.

AMC2 SPA.VEMS.100 Emergency medical service operations with manned VTOL-capable aircraft (VEMS)

PRE-SURVEYED VEMS OPERATING SITES

the operator should have in place a procedure for the survey of VEMS operating sites by a competent

person. Alternatively, the operator may use reliable survey information provided by site owners.

The operator should address the following when using adequate pre-surveyed VEMS operating sites for VEMS missions or VEMS training, in a particular region of operation:

at the strategic planning level:

the location of adequate pre-surveyed operating sites taking into account the CMP following a CFP;

the adequacy of pre-surveyed VEMS operating sites which should be regularly assessed, at least on an annual basis, using publicly available information or by conducting on-site surveys;

possible changes to the site characteristics which may have taken place since last surveyed;

the operating region's prevailing weather conditions information, available from local or other sources; this includes:

local observations;

regional weather information (e.g. significant weather charts); and

METAR/TAF of the nearest aerodromes/vertiports;

at the pre-flight planning phase:

the expected weather conditions along the route and at the VEMS operating site should not affect the capability of the VCA to reach a VEMS operating site under CMP following a CFP;

vertiports or locations suitable for diversion should be programmed into the navigation system, if such system is available on board, so that track and distance to those sites/vertiports are continuously available and immediately displayed when required.

The operator should specify in the operations manual the VEMS sites that are pre-surveyed. The operations manual should contain diagrams and/or ground and aerial photographs, and depiction (pictorial) and description of:

the overall dimensions of the operating site;

the location and height of relevant obstacles in the approach and take-off flight paths and in the manoeuvring area;

the approach and take-off flight paths;

the surface condition (blowing dust/snow/sand);

how third parties ensure control at the site, if applicable;

lighting, if applicable;

site adequacy with reference to aircraft performance;

procedure for activating the operating site in accordance with applicable regulations, if applicable; and

other useful information; for example, details of the appropriate ATS agency and frequency.

AMC3 SPA.VEMS.100 Emergency medical service operations with manned VTOL-capable aircraft (VEMS)

NON-PRE-SURVEYED VEMS OPERATING SITES

For the use of non-pre-surveyed VEMS operating sites the operator should have in place a procedure that enables the pilot to make a judgement on the suitability of a site for a safe landing and take-off with a reasonable expectation of no injuries to persons in the VCA.

All information reasonably practical to acquire should be used by the operator to establish the characteristics of non-pre-surveyed VEMS operating sites.

GM1 SPA.VEMS.100 Emergency medical service operations with manned VTOL-capable aircraft (VEMS)

NON-PRE-SURVEYED VEMS OPERATING SITES — PROCEDURE

When planning to land at a non-pre-surveyed and unfamiliar site, the PIC should gather as much information as possible about the area allowing the best estimate of obstacles, area slope and terrain.

A reconnaissance turn should be flown prior to landing at a sufficient altitude to determine:

the direction and speed of the wind;

the touchdown point;

suitable approach and departure paths; and

the obstacles in the approach and departure paths.

Whenever necessary, additional reconnaissance turns should be flown until the PIC is satisfied that a safe landing can be conducted. Decision to land or go around should be made before or at the LDP.

The PIC should perform a ground reconnaissance prior to take-off to determine the best take- off path, considering the load, height of obstacles, shape of the area, direction of the wind and surface conditions (dust, sand, snow, mud, rocks). The PIC should consider positioning the VCA at the most downwind position of the site to be able to take off into the wind.

SPA.VEMS.110 Equipment requirements for VEMS operations

The installation on a VTOL-capable aircraft (VCA) of all dedicated medical equipment and any subsequent modifications to that installation and, where appropriate, its operation, shall be approved in accordance with CAR 21 or equivalent.

For VFR flights by day over routes or areas navigated by reference to visual landmarks, the VCA shall be equipped with tools providing own-ship position and obstacles on a moving map display. The map and obstacle database(s) shall be kept up to date.

For VFR flights by day, the VCA shall be equipped with a means of measuring and displaying to the pilot the attitude and the stabilised heading or with other equivalent tools to mitigate pilot disorientation in case of reduced visual cues.

Any VCA used in VEMS missions shall be equipped with tools having an ADS-B Out capability.

Instruments and equipment required under point (f) shall be certified in accordance with the applicable airworthiness requirements.

The IAM operator shall ensure that all relevant information is documented in the minimum equipment list (MEL).

AMC1 SPA.VEMS.110 Equipment requirements for VEMS operations

MOVING MAP DISPLAYS

The moving map display should show the relative altitude of the surrounding terrain and obstacles to that of the VCA, and may be any of the following:

a TAWS that is airworthiness approved;

a display that is integrated in the cockpit environment and is airworthiness approved;

a type B EFB software application.

The database should cover the area where the VCA usually performs VEMS operations.

GM1 SPA.VEMS.110 Equipment requirements for VEMS operations

GENERAL

Approval requirements in accordance with CAR 21 or equivalent, apply to permanently installed equipment.

Non-permanently installed equipment is not subject to the airworthiness approval requirements of CAR 21. In addition, no licensed personnel are required to install or remove non-permanently installed equipment. However, the operator should ensure that no equipment (medical or not, installed or not) affects the airworthiness or the safe operation of the aircraft even in the case of failures or malfunctions.

GM2 SPA.VEMS.110 Equipment requirements for VEMS operations

AUTOPILOT

If the VEMS operator chooses to install an autopilot on the VCA, the autopilot should have at least the following functions:

attitude hold;

altitude hold mode; and

heading hold mode.

GM3 SPA.VEMS.110 Equipment requirements for VEMS operations

MOVING MAPS — TRAINING

ORO.FC.125 requires differences training or familiarisation when introducing new equipment and procedures. For EFB applications, AMC4 SPA.EFB.100(b)(3) defines the related training.

In either case, the training focuses not only on the usage of the equipment or EFB application, but also on its limitations, including the following limitations of moving maps:

Not all terrain and obstacles will be included in the database.

In VFR, the proper selection of altitude and efficient visual scanning of the environment remain the primary means of obstacle and terrain avoidance.

A type B EFB software application can only be used for increased situational awareness.

SPA.VEMS.115 Communication

In addition to the requirements for instruments and equipment applicable to VCA in manned configuration, VCA used for VEMS flights shall have communication equipment capable of conducting two-way communication with the organisation for which the VEMS flight is conducted and, where possible, to communicate with ground emergency service personnel at the scene of the operation.

SPA.VEMS.120 Visibility and distance from cloud minima

The minima for the dispatch and en-route phase of the VEMS flight shall be those established in accordance with point ROA.FLR.5001. If during the en-route phase the weather conditions fall below the applicable minima:

VCA certified for flights only under VFR by day shall land as soon as practicable or return to the VEMS base.

Reserved.

GM1 SPA.VEMS.120 Visibility and distance from cloud minima

REDUCED VISIBILITY MINIMA

When permitted by the competent authority, in accordance with ROA.FLR.5001, to operate VEMS flights with reduced flight visibilities in Class F and Class G airspace, the pilot should only conduct the VEMS flight:

during day with the surface in sight;

in flight visibility of not less than 1 500 m, and at a speed of 140 kt IAS or less to have adequate opportunity to observe other traffic and any obstacles in time to avoid a collision.

The reduced visibility minima should also cover VEMS training flights.

SPA.VEMS.125 Performance requirements for VEMS operations

VCA used for VEMS operations shall be operated in accordance with the applicable performance requirements established in point UAM.POL.VCA.100.

AMC1 SPA.VEMS.125 Performance requirements for VEMS operations

VEMS OPERATING SITE DIMENSIONS AND FEATURES

A VEMS operating site in a congested area, when selected from the air, should have a minimum dimension of at least 2 × D.

The operator should establish alternative criteria for VEMS operating sites in non-congested areas, when selected from the air, together with operating procedures and training, which mitigate the risks identified in the operator's risk assessment. In this case the operator may choose not to define minimum site dimensions.

A pre-surveyed VEMS operating site should have a minimum dimension of at least 2 × D.

The VEMS operating site features should enable the VCA to adequately clear all obstructions.

Before operating at a VEMS operating site, the PIC should estimate whether it is suitable for safe operations based on the above and on the environmental conditions.

SPA.VEMS.130 Crew requirements

Selection.

The IAM operator shall establish criteria for the selection of flight crew members for VEMS operations, taking their prior experience into account.

Operational training.

Crew members shall successfully complete operational training in accordance with the VEMS procedures contained in the operations manual.

Reserved.

Crew composition

Day flight.

The minimum crew composition at dispatch for a VEMS flight under VFR day shall be two pilots or one pilot and one VEMS technical crew member.

After landing at the VEMS operating site, subsequent flights may be conducted by one pilot:

if there is a need for additional medical supplies, refuel/battery recharge or reposition while the VEMS technical crew member provides medical assistance on the ground; or

if the VEMS technical crew member provides medical assistance to the medical patient in flight or during transport in another vehicle.

Reserved.

The IAM operator shall ensure that the continuity of the crew concept is maintained throughout the VEMS mission.

Flight and technical crew training and checking

Training and checking shall be conducted by suitably qualified personnel in accordance with a syllabus included in the operations manual and approved by the competent authority.

Crew members

All relevant elements of the crew training programme shall improve crew knowledge of the VEMS working environment and equipment, improve crew coordination, and include measures to minimise the risks associated with an en-route transit to low-visibility conditions, the selection of VEMS operating sites, and approach and departure profiles.

The measures referred to in point (i) shall be assessed during both of the following:

VMC day proficiency checks;

line checks.

The VEMS components of the proficiency checks and line checks referred to in point (ii) shall have a validity period of 6 and 12 calendar months respectively.

AMC1 SPA.VEMS.130 Crew requirements

VEMS PILOT-IN-COMMAND MINIMUM EXPERIENCE

The minimum experience level for the PIC who conducts VEMS flights should not be less than:

either:

1 000 hours as pilot-in-command/commander of any aircraft, of which 500 hours are as pilot-in-command/commander on helicopters and/or VCA; or

1 000 hours as co-pilot in VEMS or HEMS operations, of which at least 500 hours are as pilot-in-command under supervision, and 100 hours as pilot-in-command/commander on helicopters and/or VCA; and

500 hours of operating experience in helicopters and/or VCA, gained in an operational environment similar to that of the intended operation; and

Reserved

Reserved

The minimum experience level for a commander conducting VEMS flights should take into account the geographical characteristics of the operation (sea, mountain, big cities with heavy traffic, etc.).

AMC2 SPA.VEMS.130 Crew requirements

VEMS TECHNICAL CREW MEMBER

When the crew is composed of one pilot and one VEMS technical crew member, the latter should be seated in a forward-facing front seat during the flight, so as to be able to carry out his or her primary tasks of assisting the commander in:

collision avoidance;

selection of the VEMS operating site;

detection of obstacles during the approach and take-off phases; and

reading of checklists.

By day, the VEMS technical crew member may be seated in the cabin at the discretion of the PIC if all of the following conditions are met:

the VEMS technical crew member provides medical assistance to the medical patient in flight; or

the flight is conducted to or from a VEMS operating site.

The PIC may delegate other aviation tasks to the VEMS technical crew member, as necessary:

assistance in navigation;

assistance in the selection of radio communication/radio navigation means;

if properly qualified and licensed, radio communication; and

monitoring of parameters.

The PIC may also delegate to the VEMS technical crew member tasks on the ground such as:

assistance in preparing the VCA and dedicated medical specialist equipment for a subsequent VEMS departure; or

assistance in the application of safety measures during ground operations with lift and thrust units powered on (including, as applicable, crowd control, embarking and disembarking of passengers, refuelling, battery recharging or swapping, etc.).

There may be exceptional circumstances when it is not possible for the VEMS technical crew member to carry out his or her primary tasks as defined under (a). This is to be regarded as exceptional and the tasks are only to be undertaken at the discretion of the PIC, taking into account the dimensions and environment of the VEMS operating site.

Reserved

When selecting flight crew for single-pilot operations in accordance with SPA.VEMS.130(a), the operator should consider the experience of both the PIC and the technical crew member.

The operator should consider a VEMS technical crew member as inexperienced until he or she has completed 50 route sectors. The operator may include VEMS missions flown during line flying under supervision.

When an inexperienced VEMS technical crew member is part of the crew, the following should apply:

the pilot has achieved 30 route sectors on the type within a period of 60 days since the completion of the operator's conversion course on the type; or

the pilot has achieved 50 route sectors on the type after the completion of the operator's conversion course on the type.

A smaller number of sectors than those defined in (g) may be acceptable to the competent authority and subject to any conditions which the competent authority may impose, when one of the following applies:

a new operator commences operations;

an operator introduces a new VCA type;

the pilot has previously completed a type conversion course with the same operator(reconversion);

credits are defined in the operational suitability data established or equivalent.

AMC3 SPA.VEMS.130 Crew requirements

SINGLE-PILOT OPERATIONS WITH NO TECHNICAL CREW MEMBER

The PIC should decide whether the technical crew member can be relieved from aviation tasks to provide medical assistance to the medical patient on the ground or in flight or during the transport of the medical patient in another vehicle.

When relieved from aviation tasks, the technical crew member should take part in the departure briefing that summarises the relevant obstacles and threats.

AMC4 SPA.VEMS.130 Crew requirements

FLIGHT CREW TRAINING AND CHECKING SYLLABUS

The flight crew initial and recurrent training syllabus should include the following items:

meteorological training focusing on the understanding and interpretation of available weather information;

preparing the VCA and specialist medical equipment for subsequent VEMS departure;

practice of VEMS departures;

assessment from the air of the suitability of VEMS operating sites;

medical effects that air transport may have on the patient;

in-flight replanning, including fuel/energy replanning and CMP constraints.

Single-pilot operations

The flight crew training syllabus should include initial and annual recurrent VCA/FSTD training focusing on crew cooperation with the technical crew member.

The initial training should include at least 4 hours flight instruction dedicated to crew cooperation unless the pilot:

holds a certificate of satisfactory completion of a multi-crew cooperation course in accordance with CAR-FCL; or

has at least 500 hours in either multi-pilot operations or single-pilot operations with a VEMS or HEMS technical crew member, or a combination of these.

The training described in (1) and (2) above should be organised with a crew composition of one pilot and one technical crew member.

The training described in (1) and (2) should be conducted by a suitably qualified commander/PIC with a minimum experience of 350 route sectors in either multi-pilot operations or single-pilot operations with a VEMS or HEMS technical crew member, or a combination of these.

The flight crew checking syllabus should include:

proficiency checks, which should include landing and take-off profiles likely to be used at VEMS operating sites; and

line checks, with special emphasis on all of the following:

local area meteorology;

VEMS flight planning and in-flight replanning;

VEMS departures;

the selection from the air of VEMS operating sites;

familiarity with established VEMS operating sites and diversion locations in the operator's local area register;

crew cooperation.

AMC5 SPA.VEMS.130 Crew requirements

VEMS TECHNICAL CREW MEMBER TRAINING AND CHECKING SYLLABUS

INITIAL AND RECURRENT TRAINING COVERING PRIMARY TASKS

The VEMS technical crew member initial and recurrent training and checking syllabus covering primary tasks should include the following items:

Applicable laws and regulations;

VCA general knowledge:

stowage, cabin safety and use of on-board medical equipment;

general knowledge of VCA operations;

Meteorology;

Operational procedures:

company procedures;

duties in the VEMS role;

response to VEMS dispatch;

VEMS operating site selection and use;

patients;

portable electronic devices and electronic flight bags, as applicable.

Crew coordination, including checklists;

Human performance and limitations, CRM in accordance with AMC1 ORO.FC.115;

Flight safety:

general flight safety in VCA operations;

obstacle and traffic clearance;

handling of abnormal and emergency situations, including checklists;

dangerous goods (DG), as relevant for VEMS operation;

Security.

NAVIGATION TRAINING

If the VEMS technical crew member is tasked to provide assistance in navigation, the initial and recurrent training and checking syllabus should also include the following items:

applicable parts of Part-ROA, as relevant to the navigation tasks of the VEMS crew member;

basic navigation training;

navigation aid principles and use;

airspace, restricted areas, and noise-abatement procedures.

crew coordination.

COMMUNICATION TRAINING

If the VEMS technical crew member is tasked to provide assistance in radio communications, the initial and recurrent training and checking syllabus should also include the following items:

operation of relevant radio equipment;

crew coordination.

MONITORING TRAINING

If the VEMS technical crew member is tasked to provide assistance in monitoring the flight path and instruments, the initial and recurrent training and checking syllabus should also include the following items:

general knowledge of VCA operations;

monitoring function;

crew coordination;

handling of abnormal and emergency situations, as applicable.

GROUND CREW TRAINING

If the VEMS technical crew member is tasked to provide assistance to the VCA on the ground, the initial and recurrent training and checking syllabus should also include the following items as applicable to their tasks:

safety and security at the VEMS operating site;

the dangers to self and others by rotors or propellers or other rotating parts;

preparing the VCA and specialist medical equipment for subsequent departure;

conducting refuelling, and conducting refuelling with lift and thrust units powered on;

marshalling signals;

safety on the vertiport/operating site, including fire prevention and ramp safety areas;

towing of VCA/trolley; and

risks arising from damaged VCA batteries.

ADDITIONAL TRAINING, AS APPROPRIATE

Reserved

CONVERSION COURSE GROUND TRAINING AND CHECKING

The conversion course ground training and checking when changing VCA types should include the elements of (a) to (f) above that are relevant to the new VCA type.

The conversion course ground training and checking when changing operators should include the elements of (a) to (f) above that are relevant in the context of changing operators.

INITIAL VCA/FSTD TRAINING

The technical crew member training syllabus should include VCA/FSTD training focusing on crew cooperation with the pilot.

The initial VCA/FSTD training should include at least 4 hours of instruction dedicated to crew cooperation unless:

the VEMS crew member has undergone this training under another operator; or

the VEMS crew member has performed at least 50 missions in VEMS or equivalent role as a technical crew member.

The initial VCA/FSTD training should be organised with a crew composition of one pilot and one technical crew member.

The initial VCA/FSTD training may be combined with the line flying under supervision.

LINE FLYING UNDER SUPERVISION

Line flying under supervision

Line flying under supervision should take place during the operator's conversion course.

Line flying under supervision provides the opportunity for a VEMS technical crew member to practise the procedures and techniques he or she should be familiar with, regarding member should be able to safely conduct the flight operational duties assigned to him or her according to the procedures laid down in the operator's operations manual.

Line flying under supervision should include a minimum of five sectors. These sectors should include a minimum of three VEMS operating sites that the technical crew member is not familiar with.

RECURRENT VCA/FSTD TRAINING

Recurrent VCA/FSTD training

The recurrent VCA/FSTD training should focus on crew cooperation and contain a minimum of 2 hours of flight.

The recurrent VCA/FSTD training should take place in the same conditions as the initial training in (i) above.

The validity period of the recurrent VCA/FSTD training should be 12 calendar months.

LINE CHECKS

Line checks

The line check should be performed during a VEMS mission or alternatively, during a flight that is representative of a VEMS mission.

The operator's conversion course should include a line check. The line check should take place after the completion of the line flying under supervision.

Any task-specific items may be checked by a suitably qualified VEMS technical crew member nominated by the operator and trained in CRM concepts and the assessment of non-technical skills.

OPERATOR PROFICIENCY CHECKS

Operator proficiency checks

The VEMS technical crew member should complete an operator proficiency check to demonstrate his or her competence in carrying out normal, abnormal and emergency procedures, covering the relevant aspects associated with the flight operational tasks described in the operations manual and not already covered in the line check.

The conversion course should include an operator proficiency check.

The operator proficiency check should be valid for a given VCA type. In order to consider an operator proficiency check to be valid for several VCA types, the operator should demonstrate that the types are sufficiently similar from the technical crew member's perspective.

PROVISION OF TRAINING AND CHECKING

Use of FSTDs

The line check and line flying under supervision should be performed in the VCA used for the training of the VEMS technical crew member or in another VCA of the same type or variant.

Notwithstanding (1), the operator may perform the line check in two parts, in a suitable FSTD and on ground, if all of the following conditions are met:

the FSTD part of the line check takes place in a line-oriented evaluation;

the ground part of the line check takes place at the VEMS operating base and includes all normal operating procedures not checked in the FSTD;

both parts of the line check are conducted within 3 months of each other;

for the purpose of AMC1 SPA.VEMS.130, the line check is considered to be performed on the day when the last part of the line check is completed;

for the purpose of (ii), the operator should arrange to replicate realistic conditions as much as practicable, so that normal operating procedures that take place on ground at the VEMS operating site are also checked.

Operator proficiency checks and FSTD training should be performed in a suitable FSTD or, if it is not reasonably practicable to gain access to such devices, in the VCA used for the training of the VEMS technical crew member or in another VCA of the same type or variant.

Emergency and safety equipment training should be performed in the VCA involved in VEMS operations or in a representative training device or in a VCA of the same type or variant.

The type of equipment used for training and checking should be representative of the instrumentation, equipment and layout of the VCA type to be operated by the crew member.

Training and checking in the VCA/FSTD should take place as part of the normal crew complement.

The person conducting the training and checking should be a suitably qualified PIC nominated by the operator. In the case of the training described in (i) and (k) above, the person conducting two types of operations. The person conducting a CRM assessment should be trained in CRM concepts and the assessment of CRM skills.

Notwithstanding (r), the person conducting the training and checking of tasks conducted in the cabin where crew cooperation is not essential may be a suitably qualified technical crew member nominated by the operator.

CRM ASSESSMENT OF THE VEMS TECHNICAL CREW MEMBER

A CRM assessment should take place during the line check or should take place annually in a line-oriented flight scenario (LOFT or line-oriented section of the operator proficiency check) of an FSTD session in a suitable FSTD. The CRM assessment in the VCA type to be operated by the crew member should take place as described for the pilots in AMC1 ORO.FC.430 point (b)(3)(vi) or (b)(3)(vii).

AMC6 SPA.VEMS.130 Crew requirements

LINE CHECKS

Where due to the size, the configuration or the performance of the VCA, the line check cannot be conducted on an operational flight, it may be conducted on a specially arranged representative flight. This flight may be immediately adjacent to, but not simultaneous with, one of the biannual proficiency checks.

GM1 SPA.VEMS.130 Crew requirements

CONTINUITY OF THE CREW CONCEPT

The crew concept includes the operator's normal crew composition and variations to it that the operator accepts that will occur during the VEMS mission. The operator ensures the continuity of the crew concept by managing these variations.

GM2 SPA.VEMS.130 Crew requirements

VEMS TECHNICAL CREW MEMBER THEORETICAL TRAINING

The VEMS technical crew member training and checking may be adapted to the knowledge of the technical crew member and structured as shown in Table 1. The operator should decide to what extent a qualified HEMS technical crew member needs the theoretical training as shown in Table 1.

Table 1: VEMS technical crew member training

VEMS TECHNICAL CREW MEMBER TRAINING TRAINING TOPIC	Trainee with PPL(H)*	Trainee with PPL(A)**	Other Trainee
(1) Applicable laws and regulations			
(i) Introduction to the regulatory environment applicable to VEMS operations, including Part-ROA			X
(ii) VEMS requirements	X	X	X
(iii) Public interest sites (PISs) if applicable	X	X	X
(2) VCA general knowledge			
(i) Stowage, cabin safety and use of on-board medical equipment			
(A) safe storage of loose personal objects and medical equipment			X
(B) securing patients on the EMS stretcher (if applicable)	X	X	X
(C) influence of medical equipment usage on VCA systems (e.g. defibrillator)	X	X	X
(ii) General knowledge of VCA operations			
(A) general principles of flight		X	X
(B) VCA mass and balance			X
(C) VCA performance (including CSFL capability and operations)	X	X	X
(D) location and design of normal and emergency systems and equipment including all VCA lights and operation of doors			X
(E) intercommunication system			X
(3) Meteorology			
(i) meteorology as relevant to the operating area			X
(ii) meteorology as a limiting factor for mission planning/execution			X
(4) Operational procedures			
(i) operator's procedures			
(A) the relevant extracts of the organisation's management manual and operations manual	X	X	X
(B) operational control and supervision	X	X	X
(ii) duties in the VEMS role			
(A) duties of the technical crew member before flight, during all flight phases and post- flight duties	X	X	X
(B) legal aspects of delegated tasks by the commander	X	X	X
(iii) response to VEMS dispatch			

VEMS TECHNICAL CREW MEMBER TRAINING TRAINING TOPIC	Trainee with PPL(H)*	Trainee with PPL(A)**	Other Trainee
(A) flight planning, preparation, and in-flight operations	X	X	X
(iv) VEMS operating site selection and use			
(A) minimum dimensions or equivalent criteria	X	X	X
(B) effects of downwash (outwash)	X	X	X
(C) accessibility	X	X	X
(v) patients (if applicable)			
(A) aspects of VEMS operating site selection for patient transport	X	X	X
(B) patient on-/off-loading	X	X	X
(C) medical consequences of air transport on patients including influence of noise, vibration, air pressure and temperature	X	X	X
(D) consequences of hospital selection on flight (endurance, weather)	X	X	X
(E) knowledge of hospital casualty reception	X	X	X
(vi) Portable electronic devices and electronic flight bags, as applicable	X	X	X
(5) Crew coordination including checklists			
(i) crew concept	X	X	X
(ii) checklist reading philosophy, initiation, interruptions, and termination	X	X	X
(iii) communication and call-outs	X	X	X
(iv) effective use of intercommunication system	X	X	X
(v) early identification of pilot incapacitation	X	X	X
(vi) debriefing	X	X	X
(6) Human performance and limitations, CRM: as per AMC1 ORO.FC.115	X	X	X
(7) Flight safety			
(i) general flight safety in VCA operations			
(A) if necessary, noise protection for crew members embarking/disembarking with lift and thrust units powered on		X	X
(B) the dangers to self and others of turning rotors or turning propellers or other rotating parts; familiarisation with hazard areas of the VCA		X	X
(C) effects of downwash (outwash) on persons and objects		X	X
(D) dangers of turning rotors or tuning propellers or other rotating parts hitting objects on ground and in flight		X	X
(E) safety at the VEMS operating site		X	X
(f) safety at other landing sites, including the VEMS operating base and diversion locations		X	X
(ii) obstacle and traffic clearance			
(A) importance of lookout for collision			X

VEMS TECHNICAL CREW MEMBER TRAINING TRAINING TOPIC	Trainee with PPL(H)*	Trainee with PPL(A)**	Other Trainee
avoidance and associated call-outs			
(B) application of the sterile flight crew compartment procedures during critical phases of flight			X
(C) identification of obstacles and conflicting terrain			X
(iii) handling of abnormal and emergency situations including checklists			
(A) necessary coordination procedures between flight and technical/other crew members including checklists as applicable	X	X	X
(B) early identification of pilot incapacitation	X	X	X
(C) emergency evacuation	X	X	X
(iv) dangerous goods (DG), as relevant for VEMS operation			
(A) DG that might be in medical passengers' luggage including oxygen, if not part of the cabin design			X
(B) awareness of DG that might be in patients' or other passengers' luggage, backpacks or clothes			X
(8) security			
(i) The operator's security programme	X	X	X
(ii) VEMS operating sites and operating base	X	X	X

** Applicable to trainees that have passed the theoretical knowledge examination for at least PPL(H) or that hold at least a PPL(H).*

*** Applicable to trainees that have passed the theoretical knowledge examination for at least PPL(A) or that hold at least a PPL(A).*

The operator may consider that trainees that have passed the theoretical knowledge examination for at least PPL(A) or PPL(H), or that hold at least a PPL(A) or PPL(H), or that are qualified HEMS technical crew members do not need additional navigation training. In all other cases, if the VEMS technical crew member is tasked to provide assistance in navigation, the navigation training may be structured as follows:

Applicable requirements of Part-ROA, as relevant to the navigation tasks of the VEMS crew member

Basic navigation training

charts (convergence, scale, projections, symbology, plotting)

measuring distances and courses

ability to keep track with helicopter position on map

moving map if applicable

identification of obstacles and conflicting terrain

time (local/UTC, sunrise/sunset) and speed

units and unit conversion

Principles and use of navigation aids

navigation equipment and AFCS operations as applicable

transponder

ACAS, HTAWS, weather radar, moving map, as applicable

inadvertent IMC

Airspace, restricted areas, and noise-abatement procedures

air traffic services

aerodrome procedures

AIP

NOTAMs

Crew coordination: assignment of navigation tasks

The operator may consider that trainees that have passed the theoretical knowledge examination for at least PPL(A) or PPL(H) or that hold at least a PPL(A) or PPL(H), or are qualified HEMS technical crew member, do not require communication training. In all other cases, if the VEMS technical crew member is tasked to provide assistance in radio communications, the radio communications training may be structured as follows:

Operation of relevant radio equipment: radio licence as applicable to the frequencies used by the technical crew member;

crew coordination: effective use of radio communication system.

If the VEMS technical crew member is tasked to provide assistance in monitoring, the training towards monitoring may be adapted to the knowledge of the technical crew member and structured as shown in Table 2.

Table 2: VEMS technical crew member monitoring training

VEMS TECHNICAL CREW MEMBER MONITORING TRAINING TRAINING TOPIC	Trainee with PPL(H)*	Trainee with PPL(A)**	Other trainee
(1) General knowledge of VCA operations			
(i) general knowledge of VCA structure, power plant, systems, instruments, and airworthiness		X	X
(ii) limitations, normal, and abnormal procedures including CSFL-capability	X	X	X
(2) Monitoring function			
(i) assignment of flight crew compartment tasks	X	X	X
(ii) parameters the VEMS crew member is tasked to monitor	X	X	X
(iii) flight path monitoring in the context of collision avoidance and, if applicable, navigation	X	X	X
(3) Crew coordination			
(i) assignment of monitoring tasks	X	X	X

(ii) emphasis on call-outs and actions resulting from the monitoring process	X	X	X
(4) Handling of abnormal and emergency situations, as applicable			
(i) definition of warnings, cautions and advisories			X
(ii) identification of malfunctions (visual and aural)			X
(iii) selection of appropriate abnormal or emergency procedure in checklist			X
(iv) abnormal or emergency procedures checklist reading			X
(v) monitoring of critical actions			X
(vi) distress call and other means of emergency signalling			X

** Applicable to trainees that have passed the theoretical knowledge examination for at least PPL(H) or that hold at least a PPL(H).*

*** Applicable to trainees that have passed the theoretical knowledge examination for at least PPL(A) or that hold at least a PPL(A).*

Reserved

If the VEMS technical crew member is tasked to provide assistance on the ground, the training towards these tasks may be structured as in AMC5 SPA.VEMS.130.

GM3 SPA.VEMS.130 Crew requirements

VEMS TECHNICAL CREW MEMBER OBSERVATION FLIGHTS

If the candidate VEMS technical crew member has no prior flight experience as technical crew member, flight crew member or student pilot, the operator may provide observation flights on VEMS missions, prior to the VCA/FSTD training, once the ground training and checking of the conversion course has been completed.

GM4 SPA.VEMS.130 Crew requirements

USE OF VEMS OPERATING SITES FOR TRAINING AND CHECKING

In order to ensure that the training and checking is relevant to the duties of the crew members and ground personnel as required by ORO.GEN.110(e), the operator may define VEMS operating sites for the purpose of the VEMS training and checking required in SPA.VEMS.130, except for the initial part of the training.

The training and checking may involve all personnel necessary to the VEMS mission.

GM4 SPA.VEMS.130 Crew requirements

GROUND EMERGENCY SERVICE PERSONNEL

When applying AMC2 SPA.VEMS.135, the VEMS operator may describe the following items:

Definitions: List applicable definitions and abbreviations

VCA(s)

Type(s) of VCA(s) in use and layout(s) such as doors for loading and offloading with text(s), figure(s) or photo(s); and

Hazardous areas with figure(s) or photo(s), with emphasis on dangers from turning rotors or turning propellers or other rotating parts, as well as from sloping terrain.

Types, and selection, of VEMS operating sites as applicable to the operation

Various types of VEMS operating sites; for example, roads, mountains, gardens, fields, mountain ledges, steep terrain, football fields, school yards, pre-surveyed sites, aerodromes;

Advantages and disadvantages, hazards (for example, weather and light conditions, the use of flashlights/searchlights, surface, dust, snow, fixed and loose obstacles, wires, downwash (outwash), open fires/fireplaces, traffic and bystanders), limitations and procedures associated with the various types of VEMS operating sites;

Challenges related to weather (temperature, wind, fog, low clouds, rain, snow) and light conditions;

VEMS operating site dimension(s) for the different type(s) of VCA(s) with text(s), figure(s) or photo(s);

How to illuminate the VEMS operating site from the ground;

Light on skid/wheel;

Ground to VCA signals;

Special hazards related to fire or chemical, biological, or radiological accidents and the importance of selecting a safe VEMS operating site(s) for the protection of both ground emergency services personnel and crew; and

Communication between the ground emergency services personnel and VCA during landing (radio communication or hand signals).

The operator could make available a short checklist, covering, for example, the following actions:

establish communication;

select operating site;

secure the operating site (public/bystanders/crowd control/obstacles/loose objects); and

communicate with the VCA the position of/how to identify the operating site, weather, and hazards.

Operators in the same operating area should collaborate when developing checklists and when describing items covered in AMC2 SPA.VEMS.135.

SPA.VEMS.135 Briefing of medical passengers and of other personnel

Medical passengers.

Prior to any VEMS flight, or series of VEMS flights, medical passengers shall be briefed to ensure they are familiar with the VEMS working environment and equipment, can operate on-board emergency equipment, and can take part in normal and emergency entry and exit procedures.

Ground emergency service personnel.

Where ground emergency service personnel are employed, the IAM operator shall take all necessary measures to ensure that such personnel are familiar with the VEMS working environment and equipment, and the risks associated with ground operations at a VEMS operating site.

Medical patients.

Notwithstanding point UAM.OP.MVCA.170 of Part-IAM, a briefing shall be held only if the medical condition of the medical patient renders it practicable.

AMC1 SPA.VEMS.135 Briefing of VEMS medical passengers and of other personnel

VEMS MEDICAL PASSENGER BRIEFING

The briefing should ensure that the medical passenger understands his or her role in the operation, which includes:

the familiarisation with the VCA type(s) operated;

the entry and exit under normal and emergency conditions both for self and patients;

the use of the relevant on-board specialist medical equipment;

the need for the PIC's approval prior to the use of specialised equipment;

the method of supervision of other medical staff;

the use of VCA inter-communication systems;

the location and use of on-board fire extinguishers; and

the operator's crew coordination concept including relevant elements of crew resource management.

AMC2 SPA.VEMS.135 Briefing of VEMS medical passengers and of other personnel

GROUND EMERGENCY SERVICE PERSONNEL

The VCA operator should provide assistance for the training of emergency service personnel in VEMS support. This can be achieved by various means, such as, but not limited to, the production of flyers, publication of relevant information on the operator's website, development of applications and provision of extracts from the operations manual.

The elements that should be covered include:

two-way radio communication procedures with VCA;

the selection of suitable VEMS operating sites for VEMS flights;

the physical danger areas of VCA;

crowd control in respect of VCA operations; and

the evacuation of VCA occupants following an on-site VCA accident.

GM1 SPA.VEMS.135 Briefing of VEMS medical passengers and of other personnel

GROUND EMERGENCY SERVICE PERSONNEL

When applying AMC2 SPA.VEMS.135, the VEMS operator may describe the following items:

Definitions: List applicable definitions and abbreviations

VCA(s)

Type(s) of VCA(s) in use and layout(s) such as doors for loading and offloading with text(s), figure(s) or photo(s); and

Hazardous areas with figure(s) or photo(s), with emphasis on dangers from turning rotors or turning propellers or other rotating parts, as well as from sloping terrain.

Types, and selection, of VEMS operating sites as applicable to the operation

Various types of VEMS operating sites; for example, roads, mountains, gardens, fields, mountain ledges, steep terrain, football fields, school yards, pre-surveyed sites, aerodromes;

Advantages and disadvantages, hazards (for example, weather and light conditions, the use of flashlights/searchlights, surface, dust, snow, fixed and loose obstacles, wires, downwash (outwash), open fires/fireplaces, traffic and bystanders), limitations and procedures associated with the various types of VEMS operating sites;

Challenges related to weather (temperature, wind, fog, low clouds, rain, snow) and light conditions;

VEMS operating site dimension(s) for the different type(s) of VCA(s) with text(s), figure(s) or photo(s);

How to illuminate the VEMS operating site from the ground;

Light on skid/wheel;

Ground to VCA signals;

Special hazards related to fire or chemical, biological, or radiological accidents and the importance of selecting a safe VEMS operating site(s) for the protection of both ground emergency services personnel and crew; and

Communication between the ground emergency services personnel and VCA during landing (radio communication or hand signals).

The operator could make available a short checklist, covering, for example, the following actions:

establish communication;

select operating site;

secure the operating site (public/bystanders/crowd control/obstacles/loose objects); and

communicate with the VCA the position of/how to identify the operating site, weather, and hazards.

Operators in the same operating area should collaborate when developing checklists and when describing items covered in AMC2 SPA.VEMS.135.

SPA.VEMS.140 Information, procedures and documentation

The IAM operator shall assess, mitigate and minimise the risks associated with the VEMS environment as part of its risk analysis and management process. The IAM operator shall describe its mitigating measures, including operating procedures, in the operations manual.

The IAM operator shall ensure that the pilot-in-command (PIC) assesses specific risks associated with a particular VEMS flight.

Relevant extracts from the operations manual shall be made available to the organisation for which the VEMS operation is being provided.

AMC1 SPA.VEMS.140 Information, procedures and documentation

OPERATIONS MANUAL

The operations manual should include all of the following:

the use of portable equipment on board;

guidance on take-off and landing procedures at non-pre-surveyed VEMS operating sites;

the final reserve fuel/energy, in accordance with UAM.OP.VCA.191;

operating minima;

recommended routes for regular flights to pre-surveyed VEMS operating sites, including the minimum flight altitude;

guidance for the selection of the VEMS operating site in the case of a flight to a non-pre-surveyed VEMS operating site;

the safety altitude for the area overflown;

abnormal procedures including procedures to be followed in case of inadvertent entry into cloud;

operational dispatch criteria;

a description of the crew composition for all phases of flight and conditions, standard operating procedures for the described crew composition including any procedures to ensure the continuity of the crew concept;

flight crew and technical crew training and checking syllabi, as required by SPA.VEMS.130.

AMC2 SPA.VEMS.140 Information, procedures and documentation

VEMS OPERATOR'S RISK ASSESSMENT

The operator's VEMS risk assessment should take into account, but not be limited to, all of the following:

adequate ground reference;

reliability of weather reporting facilities;

crew composition, minimum crew qualification, initial and recurrent training;

flight time limitations and crew fatigue;

operating procedures, including crew coordination;

weather minima;

equipment of the VCA;

additional considerations due to specific local conditions;

location and availability of diversion locations;

CSFL-compliance, both for pre-flight planning and in-flight replanning.

GM1 SPA.VEMS.140(b) Information, procedures and documentation

VEMS TACTICAL RISK ASSESSMENT

The tactical risk assessment of the PIC of a VEMS flight may be included in the daily briefing and amended as necessary. The following may be considered:

operating environment, including airspace, local geography and availability of diversion locations;

weather;

NOTAMs;

performance;

VCA, equipment and defects, MEL, and medical equipment;

fuel/energy planning;

crew fatigue, recency and qualifications;

dispatch criteria;

tasking, roles and responsibilities;

in-flight replanning;

relevant threats.

SPA.VEMS.145 Facilities at the VEMS operating base

If crew members are required to be on standby with a reaction time of less than 45 minutes, dedicated

suitable accommodation shall be provided close to each VEMS operating base.

At each VEMS operating base, the flight crew shall be granted access to facilities for obtaining current and forecast weather information and shall be provided with adequate communications with the appropriate air traffic service (ATS) units. Adequate facilities shall be available for the planning of all related tasks.

SPA.VEMS.150 Fuelling/ defuelling / battery charging / battery swapping while passengers are embarking, on board, or disembarking

Refuelling, defueling, battery charging or battery swapping procedures with either lift and thrust units powered on or off shall only be performed in accordance with point UAM.OP.MVCA.200 or point UAM.OP.MVCA.205, as applicable.

AMC1 SPA.VEMS.150 Fuelling/defuelling/battery charging/battery swapping while passengers are embarking, on board, or disembarking

GENERAL

The VEMS operator should comply with UAM.OP.MVCA.200 or UAM.OP.MVCA.205 as applicable, considering that medical personnel, ill or injured persons and other persons directly involved and technical crew may be embarking, on board, or disembarking.

SPA.VEMS.155 Aircraft tracking system

The IAM operator shall establish and maintain a monitored aircraft tracking system for VEMS operations for the entire duration of the VEMS flight.

AMC1 SPA.VEMS.155 Aircraft tracking system

GENERAL

The operator should track and monitor VEMS flights from take-off to landing.

The operator should establish a detailed procedure describing how the aircraft tracking system is to be monitored, what actions are to be taken if a deviation or anomaly has been detected, and when those actions are to be taken.

OPERATIONAL PROCEDURE

The procedure should take into account the following aspects:

the outcome of the risk assessment made when the frequency of position reports was defined;

the local environment of the intended operations; and

the interface with the operator's emergency response plan.

Aircraft tracking data should be recorded on the ground and retained for at least 48 hours. Following an accident or a serious incident subject to investigation, the data should be retained for at least

30 days, and the operator should be capable of providing a copy of this data without delay.

Innovative Air Mobility Operations

RECORD OF REVISIONS

Issue no.	Date of issue Date of applicability	Change
01	XX XXX 202X Refer to Cover Regulation, Article 11.G for the date of applicability and Article 7 for the transitional period.	Initial issue based on NPA 2024-XX and associated CRD

TABLE OF CONTENTS

PART-IAM

SUBPART A – GENERAL REQUIREMENTS

IAM.GEN.050 Scope

This Part shall apply to IAM operations with manned VTOL-capable aircraft (VCA) in accordance with VFR by day.

IAM.GEN.055 Competent authority

The competent authority of the IAM operator shall be the GCAA.

SECTION 1 - VTOL-CAPABLE AIRCRAFT (VCA)

IAM.GEN.VCA.050 Scope

This Section contains general requirements for the operation of VTOL-capable aircraft (VCA).

GM1 IAM.GEN.050 Scope

IAM OPERATIONS WITH VCA INCLUDED IN THE SCOPE

The scope of applicability of IAM operations includes:

commercial air transport operations with manned VCA;

non-commercial operations with manned VCA, including training flights, maintenance check flights, demonstration flights and ferry flights;

emergency medical services (EMS) with manned VCA (VEMS).

IAM.GEN.VCA.100 Crew responsibilities

Pilots and other crew members shall be responsible for the proper execution of their duties that are:

related to the safety of the VCA and its occupants; and

specified in the operations manual (OM) of the VCA operator.

Pilots and other crew members shall comply with all of the following:

report, if not already reported, to the pilot-in-command (PIC) any fault, failure, malfunction or defect which they believe may affect the airworthiness or safe operation of the VCA, including emergency systems;

report, if not already reported, to the PIC any incident that has endangered, or could have endangered, the safety of the operation of the VCA;

comply with the relevant requirements of the operator's occurrence-reporting scheme;

comply with the flight time, duty time and rest requirements applicable to their activities;

not disable or switch off the recorders during flight, or intentionally erase their recordings.

Pilots and other crew members shall not perform duties related to the operation of VCA if they are in any of the following situations:

when they are under the influence of psychoactive substances or when they are unfit due to injury, fatigue, medication, sickness or other similar causes;

when they do not fulfil applicable medical requirements;

when they are in any doubt as to being able to accomplish their assigned duties;

when they know or suspect they suffer from fatigue as referred to in point 7.5 of Annex II to CAR-

BR or otherwise feel unfit to the extent that the safety of the flight may be endangered.

AMC1 IAM.GEN.VCA.100 Pilot responsibilities

COPIES OF REPORTS

Where a written report is required, a copy of the report should be communicated to the PIC concerned

unless the terms of the operator's reporting scheme dictate otherwise.

GM1 IAM.GEN.VCA.100 Pilot responsibilities

OCCURRENCE REPORTING SCHEME

CAR-SMS and AMC-22 contain the relevant requirements of the operator's occurrence reporting scheme.

GM2 IAM.GEN.VCA.100 Pilot responsibilities

FLIGHT TIME, DUTY TIME AND REST REQUIREMENTS

IAM.GEN.VCA.100(b)(4) does not require that the pilots of VCA and other crew members of VCA comply with the flight time, duty time and rest requirements (FTL) contained in Subpart FTL. With regard to VCA operations, flight time, duty time and rest requirements may be established at the operator level.

AMC2 IAM.GEN.VCA.100 Pilot responsibilities

ALCOHOL CONSUMPTION

The operator should issue instructions concerning the consumption of alcohol by crew members. The instructions should be not less restrictive than the following:

no alcohol should be consumed less than 8 hours prior to the specified reporting time for a flight duty period or the commencement of standby;

the blood alcohol level should not exceed the lower of the national requirements or 0.2 per thousand at the start of a flight duty period;

no alcohol should be consumed during the flight duty period or whilst on standby.

GM3 IAM.GEN.VCA.100 Pilot responsibilities

ELAPSED TIME BEFORE RETURNING TO FLYING DUTY

24 hours is a suitable minimum length of time to allow after normal blood donation or normal recreational (sport) diving with compressed air before returning to flying duties. This should

be considered by operators when determining a reasonable time period for the guidance of crew members.

Information on the effects of medication, drugs, other treatments and alcohol can be found in CAR-MED.

IAM.GEN.VCA.105 Responsibilities of the pilot-in-command (PIC)

In addition to complying with point IAM.GEN.VCA.100, the PIC shall, as soon as they assume the command functions at the assigned station and until they hand over the command functions or leave the assigned station at the end of the flight, comply with all of the following:

be responsible for the safety of all crew members, passengers and cargo on board the VCA;

be responsible for the operation and safety of the VCA when the lift and thrust units are powered on;

be responsible for the initiation, continuation, termination or diversion of a flight in the interest of safety;

have the authority to give all commands and take any appropriate actions for the purpose of ensuring the safety of the VCA and of the persons and/or property carried in it;

ensure that all passengers are briefed on the location of emergency exits, and on the location and use of relevant safety and emergency equipment, as applicable;

ensure that all passengers are briefed on when and how to communicate with the flight crew member(s) during the flight;

ensure that all operational procedures and checklists are complied with in accordance with the operations manual (OM) of the VCA operator;

not permit any crew member to perform any activity during critical phases of flight, except for duties required for the safe operation of the VCA;

ensure that the recorders are not disabled or switched off during the flight, and that their recordings are not intentionally erased;

decide on the acceptance of a VCA with unserviceability in accordance with the VCA configuration deviation list (CDL) or the minimum equipment list (MEL), and the VCA technical logbook;

ensure that the pre-flight inspection has been carried out in accordance with the applicable continuing airworthiness requirements;

be satisfied that the relevant emergency equipment remains easily accessible for immediate use;

record, at the termination of the flight, in accordance with the continuing airworthiness record system requirements, utilisation data and all known or suspected defects of the VCA to ensure continued flight safety.

The PIC shall, in an emergency situation that requires immediate decision and action, take any action they consider necessary under the circumstances. In such cases, the PIC may deviate from rules, operational procedures and methods in the interest of safety.

The PIC shall, as soon as practicable, report to the appropriate air traffic services (ATS) unit any hazardous weather or flight conditions encountered during the flight that are likely to affect the safety of other VCA operations.

AMC1 IAM.GEN.VCA.105 Responsibilities of the pilot-in-command (PIC)

INITIATION (COMMENCEMENT) OF FLIGHT

The PIC should only commence a flight if he or she is satisfied that:

instruments and equipment required for the execution of that flight are installed in the VCA and are operative, unless operation with inoperative equipment is permitted by the minimum equipment list (MEL) or equivalent document;

the mass of the VCA and centre of gravity (CG) location are such that the flight can be conducted within the limits prescribed in the airworthiness documentation;

all baggage and cargo are properly loaded and secured;

the VCA operating limitations as specified in the VCA flight manual (AFM) will not be exceeded at any time during the flight;

the pilot and other crew members under his or her authority are properly rated and meet competency and recency requirements;

the other crew members under his or her authority are not incapacitated from performing duties by any cause such as injury, sickness, fatigue or the effects of any psychoactive substance;

any navigational database required for the flight is suitable and current.

GM1 IAM.GEN.VCA.105 Responsibilities of the pilot-in-command (PIC)

MEANING OF THE TERM 'ENSURE'

The term 'ensure' in the context of PIC responsibilities means that the PIC should make all reasonable endeavours to obtain the required result, either directly or through another person, placed under their authority.

AMC2 IAM.GEN.VCA.105 Responsibilities of the pilot-in-command (PIC)

AUTHORITY OF THE PIC

The operator should ensure that the PIC has the authority to:

disembark any person, or any part of the cargo, that may represent a potential hazard to the safety of the VCA or its occupants;

not allow a person to be carried in the VCA who appears to be under the influence of alcohol or drugs to the extent that the safety of the VCA or its occupants is likely to be endangered;

refuse transportation of inadmissible passengers, deportees or persons in custody if their carriage increases the risk to the safety of the VCA or its occupants.

AMC3 IAM.GEN.VCA.105 Responsibilities of the pilot-in-command (PIC)

PRESERVATION OF FLIGHT RECORDER RECORDINGS

The PIC should ensure that in the event of an occurrence that is subject to reporting in accordance with ORO.GEN.160(a) or if preservation of recordings of the flight recorder is directed by the investigating authority:

the recordings of the flight recorder are not intentionally erased; and

precautionary measures to preserve the recordings of the flight recorder are taken before leaving the VCA.

GM2 IAM.GEN.VCA.105 Responsibilities of the pilot-in-command (PIC)

ACCEPTANCE OF THE VCA WITH UNSERVICEABILITY

The acceptance of the VCA with unserviceability in accordance with the configuration deviation list (CDL) or the minimum equipment list (MEL) and VCA technical log book may be supported by maintenance or other personnel, if properly licensed.

AMC4 IAM.GEN.VCA.105 Responsibilities of the pilot-in-command (PIC)

BIRD HAZARDS AND STRIKES

Whenever a potential bird hazard is observed, the PIC should inform the appropriate ATS unit as soon as his or her workload allows.

In case of a bird strike that results in significant damage to the VCA or the loss or malfunction of any essential service, the PIC should submit a written bird strike report to the competent authority after landing in accordance with ORO.GEN.160.

IAM.GEN.VCA.110 Authority of the pilot-in-command

The IAM operator shall take all reasonable measures to ensure that all persons carried on board VCA obey all lawful commands given by the PIC for the purpose of ensuring the safety of the VCA and of the persons or property carried in it.

IAM.GEN.VCA.120 Common language

The IAM operator shall ensure that all crew members can communicate with each other in a common language.

IAM.GEN.VCA.130 Powering-on of lift and thrust units

The VCA's lift and thrust units shall only be powered on for the purpose of flight by a qualified

pilot at the VCA controls.

GM1 IAM.GEN.VCA.130 Powering-on of lift and thrust units

INTENT OF THE RULE

The following two situations where the lift and trust units are powered on should be distinguished:

for the purpose of flight; this is the intent of IAM.GEN.VCA.130;

for maintenance purposes or for parking.

Lift and trust unit engagement for the purpose of flight: the pilot should not leave the controls when the lift and trust units are powered on.

Engagement of lift and trust units for the purpose of maintenance or parking: IAM.GEN.VCA.130 does not prevent ground runs or ground taxi from being conducted by qualified and authorised personnel other than pilots.

IAM.GEN.VCA.140 Portable electronic devices (PEDs)

The IAM operator shall not permit any person to use a PED on board an aircraft that could adversely affect the performance of the VCA's systems and equipment, and shall take all reasonable measures to prevent such use.

AMC1 IAM.GEN.VCA.140 Portable electronic devices (PEDs)

USE OF PEDs

The IAM operator should comply with AMC1 CAT.GEN.MPA.140 as regards the technical prerequisites for the use of PEDs.

The IAM operator should comply with AMC2 CAT.GEN.MPA.140 as regards the procedures for the use of PEDs.

GM1 IAM.GEN.VCA.140 Portable electronic devices (PEDs)

USE OF PEDs

Useful guidance material about the use of PEDs can be found in:

GM1 CAT.GEN.MPA.140;

GM2 CAT.GEN.MPA.140; and

GM3 CAT.GEN.MPA.140.

IAM.GEN.VCA.141 Use of electronic flight bags (EFBs)

When an EFB is used on board an aircraft, the IAM operator shall ensure that it does not adversely

affect the performance of the VCA's systems or equipment, or the ability of the flight crew member to operate the VCA.

The IAM operator shall not use a type B EFB application unless it is approved in accordance with Subpart M of Part-SPA.

AMC1 IAM.GEN.VCA.141 Use of electronic flight bags (EFBs)

EFB HARDWARE AND SOFTWARE APPLICATIONS

The IAM operator should comply with AMC1 CAT.GEN.MPA.141(a) as regards the hardware of EFBs.

The IAM operator should comply with AMC1 CAT.GEN.MPA.141(b) as regards the application classification of EFBs.

The IAM operator should comply with AMC2 CAT.GEN.MPA.141(b) as regards type A EFB applications. The term 'airport' should be understood to also mean 'vertiport' in the case of IAM operations.

The IAM operator should comply with AMC3 CAT.GEN.MPA.141(b) for type B EFB applications. The term 'airport' should be understood to also mean 'vertiport' in the case of IAM operations.

GM1 IAM.GEN.VCA.141 Use of electronic flight bags (EFBs)

USE OF EFBs

Useful guidance material about the use of EFBs can be found in:

GM1 CAT.GEN.MPA.141;

GM2 CAT.GEN.MPA.141;

GM1 CAT.GEN.MPA.141(a);

GM1 CAT.GEN.MPA.141(b); and

GM2 CAT.GEN.MPA.141(b).

IAM.GEN.VCA.145 Information on emergency and survival equipment carried on board VCA

The IAM operator shall at all times have available for immediate communication to rescue coordination centres (RCCs) lists containing information on the emergency and survival equipment carried on board any of its VCA.

AMC1 IAM.GEN.VCA.145 Information on emergency and survival equipment carried on board VCA

ITEMS FOR COMMUNICATION TO THE RCC

The IAM operator should include, as applicable, the number, colour and type of life rafts and

pyrotechnics, details of emergency medical supplies, e.g. first-aid kits, emergency medical kits, water supplies and the type and frequencies of the emergency portable radio equipment.

IAM.GEN.VCA.155 Carriage of weapons of war and munitions of war

The IAM operator shall not accept weapons of war or munitions of war for carriage by air in the VCA.

GM1 IAM.GEN.VCA.155 Carriage of weapons of war and munitions of war

WEAPONS OF WAR AND MUNITIONS OF WAR

Considering the increased security risks during VCA operations in congested areas or in other sensitive areas, carriage of weapons of war on board should not be permitted. Weapons of war carried by sky marshals or bodyguards may be allowed under strict conditions, but this is rather an exception and not a regular operation.

There is no internationally agreed definition of weapons of war and munitions of war. Some States may have defined them for their particular purposes or for national need.

It is the responsibility of the operator to check, with the State(s) concerned, whether or not a particular weapon or munition is regarded as a weapon of war or munitions of war. For the purpose of granting approvals for the carriage of weapons of war or munitions of war, the States concerned are those of origin, transit, overflight and destination of the consignment and the State of the operator.

IAM.GEN.VCA.160 Carriage of sporting weapons and ammunition

The IAM operator shall not accept sporting weapons for carriage by air in the VCA unless:

they can be stowed in the VCA in a place that is inaccessible to passengers during the flight; and

all ammunition is unloaded and carried separately from the sporting weapons.

AMC1 IAM.GEN.VCA 160 Carriage of sporting weapons and ammunition

STOWAGE IN THE VCA

If sporting weapons cannot be stowed in a place that is inaccessible with all ammunition unloaded, they should not be accepted for carriage. Exemptions may be provided by the competent authority on a case-by-case basis.

Where the VCA does not have a separate compartment in which the sporting weapons can be stowed, they should be stowed so they are not immediately accessible to the passengers, e.g. in locked boxes, in checked baggage that is stowed under other baggage or under fixed netting.

Unloaded ammunition for sporting weapons may be carried separately in passengers' checked baggage, in accordance with the technical instructions.

GM1 IAM.GEN.VCA.160 Carriage of sporting weapons and ammunition

SPORTING WEAPONS

In accordance with CAR PART VII - Aviation Security, sporting weapons may be carried on board an aircraft, in a place that is not inaccessible, if the required security conditions in accordance with national laws have been fulfilled and an authorisation has been given by the State(s) involved.

There is no internationally agreed definition of sporting weapons. In general, it may be any weapon that is not a weapon of war or munitions of war. Sporting weapons include hunting knives, bows and other similar articles. An antique weapon, which at one time may have been a weapon of war or munitions of war, such as a musket, may now be regarded as a sporting weapon.

A firearm is any gun, rifle or pistol that fires a projectile.

The following firearms are generally regarded as being sporting weapons:

those designed for shooting game, birds and other animals;

those used for target shooting, clay-pigeon shooting and competition shooting, providing that the weapons are not those on standard issue to military forces; and

airguns, dart guns, starting pistols, etc.

A firearm, which is not a weapon of war or munitions of war, should be treated as a sporting weapon for the purposes of its carriage on a VCA.

IAM.GEN.VCA.165 Method of carriage of persons

The IAM operator shall take all reasonable measures to ensure that no person is located in any part of the VCA in flight which is not designed or designated for the accommodation of persons, except when a person takes an action that is necessary for the safety of the VCA or of any person, animal or goods carried in the VCA.

IAM.GEN.VCA.170 Psychoactive substances

The IAM operator shall take all reasonable measures to ensure that no person enters or is aboard the VCA when under the influence of psychoactive substances to the extent that the safety of the VCA or its occupants is likely to be endangered.

The IAM operator shall develop and implement an objective, transparent and non-discriminatory policy and procedure on the prevention and detection of misuse of psychoactive substances by the pilots and other safety-sensitive personnel under the IAM operator's direct control, in order to ensure that the safety of the VCA and its occupants is not endangered.

If pilots or other safety-sensitive personnel are tested positive to psychoactive substances, the IAM operator shall inform its competent authority and the authority that is responsible for the pilots and the personnel concerned.

AMC1 IAM.GEN.VCA.170 Psychoactive substances

POLICY ON PREVENTION OF MISUSE OF PSYCHOACTIVE SUBSTANCES

The IAM operator should comply with AMC1 CAT.GEN.MPA.170(b) and AMC2 CAT.GEN.MPA.170(b) as regards the policy on prevention of misuse of psychoactive substances.

The reference to CAT.GEN.MPA.215 in AMC1 CAT.GEN.MPA.170(b) should be considered as a reference to IAM.GEN.VCA.176.

GM1 IAM.GEN.VCA.170 Psychoactive substances

POLICY ON THE PREVENTION AND DETECTION OF MISUSE OF PSYCHOACTIVE SUBSTANCES

Other useful guidance material with regard to the policy on the prevention and detection of misuse of psychoactive substances by crew members can be found in:

GM1 CAT.GEN.MPA.170(b);

GM2 CAT.GEN.MPA.170(b);

GM3 CAT.GEN.MPA.170(b); and

GM4 CAT.GEN.MPA.170(b).

AMC2 IAM.GEN.VCA.170 Psychoactive substances

OBJECTIVE, TRANSPARENT AND NON-DISCRIMINATORY TESTING PROCEDURE

The IAM operator should refer to AMC1 CAT.GEN.MPA.170(c) when developing and implementing an objective, transparent and non-discriminatory testing procedure.

IAM.GEN.VCA.175 Endangering safety

The IAM operator shall take all reasonable measures to ensure that no person recklessly, intentionally or negligently acts, or omits to act, so as to:

endanger the safety of the VCA or the safety of the persons in it; or

cause or permit the VCA to endanger any person or property.

The IAM operator shall ensure that pilots undergo a psychological assessment before commencing flight operations in order to:

identify the pilots' psychological attributes and suitability in respect of their work environment; and

reduce the likelihood of pilots negatively interfering with the safe operation of the VCA.

AMC1 IAM.GEN.VCA.175 Endangering safety

PSYCHOLOGICAL ASSESSMENT

The IAM operator should refer to AMC1 CAT.GEN.MPA.175(b) for the psychological assessment of their flight crew.

GM1 IAM.GEN.VCA.175 Endangering safety

PSYCHOLOGICAL ASSESSMENT

Useful guidance on conducting a psychological assessment can be found in GM1 CAT.GEN.MPA.175(b).

AMC2 IAM.GEN.VCA.175 Endangering safety

INTERNAL ASSESSMENT FOR NON-COMPLEX OPERATORS

A non-complex IAM operator in accordance with AMC1 ORO.GEN.200(b) may replace the psychological assessment with an internal assessment of the psychological attributes and suitability of the flight crew.

The internal assessment for non-complex operators of VCA should as far as possible apply the same principles as the psychological assessment before commencing line flying for complex operators.

IAM.GEN.VCA.176 Pilot support programme

The IAM operator shall enable, facilitate and ensure access to a proactive and non-punitive support programme that will assist and support pilots in recognising, coping with, and overcoming any problem which might negatively affect their ability to safely exercise the privileges of their licence.

Without prejudice to the applicable laws on the protection of individuals with regard to the processing of personal data and on the free movement of such data, the protection of the confidentiality of personal data shall be a precondition for an effective pilot support programme.

AMC1 IAM.GEN.VCA.176 Pilot support programme

SUPPORT PROGRAMME

The IAM operator should comply with:

AMC1 CAT.GEN.MPA.215 as regards the principles governing a support programme;

AMC2 CAT.GEN.MPA.215 as regards the confidentiality and protection of data;

AMC3 CAT.GEN.MPA.215 as regards the elements of a support programme; and

AMC4 CAT.GEN.MPA.215 as regards the training and awareness.

GM1 IAM.GEN.VCA.176 Pilot support programme

SUPPORT PROGRAMME

Useful guidance material about the support programme can be found in:

GM1 CAT.GEN.MPA.215;

GM2 CAT.GEN.MPA.215;

GM3 CAT.GEN.MPA.215;

GM4 CAT.GEN.MPA.215;

GM5 CAT.GEN.MPA.215;

GM6 CAT.GEN.MPA.215;

GM7 CAT.GEN.MPA.215; and

GM8 CAT.GEN.MPA.215.

IAM.GEN.VCA.185 Information to be preserved on the ground

The IAM operator shall ensure that for the duration of each flight, or series of flights, information that is relevant to the flight, or series of flights, and appropriate for the type of operation:

is preserved on the ground; and

is retained until it has been duplicated at the place at which it will be stored; or, if this is impracticable

is carried in a fireproof container in the VCA.

The information referred to in point (a) shall include all the following:

a copy of the operational flight plan;

copies of the relevant part(s) of the aircraft continuing airworthiness records;

route-specific NOTAM documentation, if specifically edited by the IAM operator;

mass and balance documentation;

special loads notification.

IAM.GEN.VCA.190 Provision of documentation and records

The PIC shall, within a reasonable time of being requested to do so by a person authorised by an authority, provide that person with the documentation required to be carried on board, in paper or digital media.

IAM.GEN.VCA.195 Preservation, production, protection and use of recorder recordings

Following an accident, a serious incident or an occurrence identified by the investigating authority, the IAM operator shall preserve the original recorded data of the recorder, carried in the VCA in accordance with Subpart D of this Part, for a period of 60 days or until otherwise directed by the investigating authority.

The IAM operator shall conduct operational checks and evaluations of the recordings to ensure the continued serviceability of the recorder.

The IAM operator shall ensure that the recordings of flight parameters required to be recorded on a recorder are preserved. For the purpose of testing and maintaining the recorder, up to 1 hour of the oldest recorded material at the time of testing may be erased.

The IAM operator shall keep and maintain up to date the documentation that contains the necessary information to convert raw flight data into flight parameters expressed in engineering units.

The IAM operator shall make available any recording of the recorder that has been preserved, if so determined by the competent authority.

Without prejudice to Accident Investigation Regulations and AMC-22:

except for ensuring the serviceability of a recorder, audio recordings shall not be disclosed or used unless all the following conditions are fulfilled:

a procedure related to the handling of such audio recordings and of their transcript is in place;

all pilots and maintenance personnel concerned have given their prior consent;

such audio recordings are used only for maintaining or improving safety;

when inspecting the audio recordings of a recorder to ensure the serviceability of that recorder, the IAM operator shall protect the privacy of those audio recordings and make sure that they are not disclosed or used for purposes other than for ensuring the serviceability of the recorder;

flight parameters recorded by a recorder shall not be used for purposes other than for the investigation of an accident or an incident which is subject to mandatory reporting, unless such recordings meet any of the following conditions:

are used by the IAM operator for airworthiness or maintenance purposes only;

are de-identified;

are disclosed under secure procedures;

except for ensuring the serviceability of a recorder, recorded images of the flight crew compartment shall not be disclosed or used unless all the following conditions are fulfilled:

a procedure related to the handling of such image recordings is in place;

all pilots and maintenance personnel concerned have given their prior consent;

such image recordings are used only for maintaining or improving safety;

when images of the flight crew compartment, recorded by a recorder, are inspected for ensuring the serviceability of that recorder, then:

those images shall not be disclosed or used for purposes other than for ensuring the serviceability of the recorder;

if body parts of pilots or passengers are likely to be visible on the images, the operator shall ensure the privacy of those images.

AMC1 IAM.GEN.VCA.195 Preservation, production, protection and use of recorder recordings

PRESERVATION OF RECORDED DATA FOR INVESTIGATION

The IAM operator should comply with AMC1 CAT.GEN.MPA.195(a) as regards the preservation of recorded data for investigation.

GM1 IAM.GEN.VCA.195 Preservation, production, protection and use of recorder recordings

REMOVAL OF RECORDERS IN CASE OF AN INVESTIGATION

Useful guidance material as regards the need for removal of the recorders from the VCA can be found in GM1 CAT.GEN.MPA.195(a).

AMC2 IAM.GEN.VCA.195 Preservation, production, protection and use of recorder recordings

INSPECTIONS AND CHECKS OF RECORDINGS

The IAM operator should comply with AMC1 CAT.GEN.MPA.195(b) as regards the inspections and check of recordings, to the extent applicable to IAM operations and the VCA.

In point (c) of AMC1 CAT.GEN.MPA.195(b), the references to CAT.IDE.A.191 and CAT.IDE.H.191 should be considered as a reference to UAM.IDE.MVCA.191.

GM2 IAM.GEN.VCA.195 Preservation, production, protection and use of recorder recordings

INSPECTION OF THE FLIGHT RECORDERS' RECORDINGS FOR ENSURING SERVICEABILITY

Useful guidance material as regards the inspection of the flight recorders' recordings for ensuring serviceability, to the extent applicable to IAM operations and the VCA, can be found in GM1 CAT.GEN.MPA.195(b).

In point (b) of GM1 CAT.GEN.MPA.195(b), the references to CAT.GEN.MPA.195(f)(1a) should be

considered as a reference to IAM.GEN.VCA.195(f)(2).

In point (d) of GM1 CAT.GEN.MPA.195(b), the references to CAT.GEN.MPA.195(f)(3a) should be considered as a reference to IAM.GEN.VCA.195(f)(5).

GM3 IAM.GEN.VCA.195 Preservation, production, protection and use of recorder recordings

MONITORING AND CHECKING THE PROPER OPERATION OF FLIGHT RECORDERS — EXPLANATION OF TERMS

For the understanding of the terms used in IAM.GEN.VCA.195(b) and AMC1 IAM.GEN.VCA.195(b), the IAM operator should refer to GM2 CAT.GEN.MPA.195(b).

AMC3 IAM.GEN.VCA.195 Preservation, production, protection and use of recorder recordings

USE OF AUDIO RECORDINGS FOR MAINTAINING OR IMPROVING SAFETY

The IAM operator should comply with AMC1 CAT.GEN.MPA.195(f)(1) as regards the use of audio recordings for maintaining or improving safety.

The reference in point (b) of AMC1 CAT.GEN.MPA.195(f)(1) to CAT.GEN.MPA.195(f)(1) should be considered as a reference to IAM.GEN.VCA.195(f)(1).

AMC4 IAM.GEN.VCA.195 Preservation, production, protection and use of recorder recordings

INSPECTION OF AUDIO RECORDINGS FOR ENSURING SERVICEABILITY

The IAM operator should comply with AMC1 CAT.GEN.MPA.195(f)(1a) as regards the inspection of audio recordings for ensuring serviceability.

AMC5 IAM.GEN.VCA.195 Preservation, production, protection and use of recorder recordings

USE OF IMAGES FROM THE FLIGHT CREW COMPARTMENT FOR MAINTAINING OR IMPROVING SAFETY

The IAM operator should comply with AMC1 CAT.GEN.MPA.195(f)(3) as regards the use of images from the flight crew compartment for maintaining or improving safety.

AMC6 IAM.GEN.VCA.195 Preservation, production, protection and use of recorder recordings

INSPECTION OF IMAGES OF THE FLIGHT CREW COMPARTMENT FOR ENSURING SERVICEABILITY

The IAM operator should comply with AMC1 CAT.GEN.MPA.195(f)(3a) as regards the inspection of images of the flight crew compartment for ensuring serviceability.

GM4 IAM.GEN.VCA.195 Preservation, production, protection and use of recorder recordings

FLIGHT CREW COMPARTMENT

If there are no compartments to physically segregate the flight crew from the passengers during the flight, the 'flight crew compartment' in point (f)(5) of IAM.GEN.VCA.195 is understood to refer to the area comprising:

the flight crew seats;

VCA and engine controls;

VCA instruments;

windshield and windows used by the flight crew to get an external view while seated at their duty station; and

circuit breakers accessible by the flight crew while seated at their duty station.

IAM.GEN.VCA.200 Transport of dangerous goods under a specific approval

The transport of dangerous goods by air shall be conducted at least in accordance with Annex 18 to the Chicago Convention and applicable technical instructions (TI).

The IAM operator shall be approved for the carriage of dangerous goods by air as cargo in accordance with Subpart G of Part-SPA.

The IAM operator shall establish procedures to ensure that all reasonable measures are taken to prevent undeclared or misdeclared dangerous goods from being carried on board inadvertently.

The IAM operator shall ensure that all personnel, including third-party personnel, involved in the acceptance, handling, loading and unloading of cargo are informed of the operator's operational approval and limitations with regard to the transport of dangerous goods by air, and are provided with the necessary information enabling them to carry out their responsibilities, as required by the TI.

The IAM operator shall, in accordance with TI, ensure that passengers are provided with information about the carriage of dangerous goods on board.

The IAM operator shall, in accordance with TI, report without delay to the competent authority and the appropriate authority of the State of occurrence in the event of:

any accidents or incidents involving dangerous goods;

the discovery of undeclared or misdeclared dangerous goods in cargo or mail; or

the finding of dangerous goods carried by passengers or crew members, or in their baggage, when not in accordance with Part 8 of TI.

The IAM operator shall ensure that notices giving information about the transport of dangerous goods are provided at acceptance points for cargo as required by the TI.

GM1 IAM.GEN.VCA.200 Transport of dangerous goods under a specific approval

APPLICABLE TECHNICAL INSTRUCTIONS

The applicable technical instructions are the Technical instructions for the Safe Transport of Dangerous Goods by Air (ICAO Doc 9284-AN/905).

AMC1 IAM.GEN.VCA.200 Transport of dangerous goods under a specific approval

DANGEROUS GOODS ACCIDENT AND INCIDENT REPORTING

Dangerous goods accidents or incidents, the discovery of undeclared or misdeclared dangerous goods, as well as the finding of dangerous goods carried by passengers or crew members, or in their baggage, when not in accordance with Part 8 of the Technical Instructions, should be reported. The reporting of undeclared and misdeclared dangerous goods found in cargo also applies to items of operators' stores that are classified as dangerous goods.

The first report should be dispatched within 72 hours of the event. It may be sent by any means, including email, telephone or fax. This report should include the details that are known at that time. If necessary, a subsequent report should be sent as soon as possible giving all the details that were not known at the time the first report was sent. If a report has been made verbally, written confirmation should be sent as soon as possible.

The first and any subsequent report should be as precise as possible and should contain the following data, where relevant:

date of the incident or accident or the finding of undeclared or misdeclared dangerous goods;

location and flight date;

description of the goods and the reference number of the air waybill, pouch, baggage tag, ticket, etc.;

proper shipping name (including the technical name, if appropriate) and UN/ID number, when known;

class or division and any subsidiary risk;

type of packaging, and the packaging specification marking on it;

quantity;

name and address of the shipper, passenger, etc.;

any other relevant details;

suspected cause of the incident or accident;

action taken;

any other reporting action taken; and

name, title, address and telephone number of the person making the report.

Copies of relevant documents and any photographs taken should be attached to the report.

A dangerous goods accident or incident may also constitute an VCA accident, serious incident or incident. The criteria for reporting both types of occurrences should be met.

The following dangerous goods reporting form should be used, but other forms, including electronic transfer of data, may be used provided that at least the minimum information of this AMC is supplied:

DANGEROUS GOODS OCCURRENCE REPORT			DGOR No:
1. Operator:	2. Date of occurrence:		3. Local time of occurrence:
4. Flight date:		5. Flight ID:	
6. Departure vertiport:		7. Destination vertiport:	
8. VCA type:		9. VCA registration:	
10. Location of occurrence:		11. Origin of the goods:	
12. Description of the occurrence, including details of injury, damage, etc. (if necessary, continue on the reverse of this form):			
13. Proper shipping name (including the technical name):			14. UN/ID No (when known):
15.Class/division (when known):	16. Subsidiary risk(s):	17. Packing group:	18 Category (Class 7 only):
19. Type of packaging:	20.Packaging specification marking:	21. No of packages:	22. Quantity (or transport index, if applicable):
23. Reference No of airway bill:			
24. Reference No of courier pouch, baggage tag, or transport document:			
25. Name and address of shipper, agent, passenger, etc.:			
26. Other relevant information (including suspected cause, any action taken):			
27. Name and title of person making the report:		28. Telephone No:	
29. Company:		30. Reporter(s) ref.:	
31. Address:		32. Signature:	
		33. Date:	
Description of the occurrence (continuation)			

Notes for the completion of the form:

A dangerous goods accident is as defined in Part-DEF. For this purpose, serious injury is as defined in Accident Investigation regulations.

This form should also be used to report any occasion when undeclared or misdeclared dangerous

goods are discovered in cargo, mail or unaccompanied baggage or when accompanied baggage contains dangerous goods which passengers or crew are not permitted to take on the VCA.

The initial report should be dispatched unless exceptional circumstances prevent this. This occurrence report form, duly completed, should be sent as soon as possible, even if all the information is not available.

Copies of all relevant documents and any photographs taken should be attached to this report.

Any further information, or any information not included in the initial report, should be sent as soon as possible to the authorities identified in IAM.GEN.VCA.200(f).

Providing it is safe to do so, all dangerous goods, packaging, documents, etc., relating to the occurrence should be retained until after the initial report has been sent to the authorities identified in IAM.GEN.VCA.200(f), and they have indicated whether or not these should continue to be retained.

GM2 IAM.GEN.VCA.200 Transport of dangerous goods under a specific approval

GENERAL

The Technical Instructions provide that in certain circumstances dangerous goods, which are normally forbidden on a VCA, may be carried. In these circumstances, all the States concerned may grant exemptions from the provisions of the Technical Instructions provided that an overall level of safety which is at least equivalent to that provided by the Technical Instructions is achieved.

The Technical Instructions also make provision for some dangerous goods to be carried only when an approval has been granted by the State of origin and the State of the operator.

When an exemption is required, the States concerned are those of origin, transit, overflight and destination of the consignment and that of the operator. For the State of overflight, if none of the criteria for granting an exemption are relevant, an exemption may be granted based solely on whether it is believed that an equivalent level of safety in air transport has been achieved.

The Technical Instructions provide that exemptions and approvals are granted by the 'appropriate national authority', which is intended to be the authority responsible for the particular aspect against which the exemption or approval is being sought. The Instructions do not specify who should seek exemptions and, depending on the legislation of the particular State, this may mean the operator, the shipper or an agent. If an exemption or approval has been granted to other than the operator, the operator should ensure that a copy has been obtained before the relevant flight. The operator should ensure that all relevant conditions on an exemption or approval are met.

The exemption or approval referred to in points (a) to (c) is in addition to the approval required by Part SPA, Subpart G.

IAM.GEN.VCA.205 Transport of dangerous goods without a specific approval

The transport of dangerous goods by air shall be conducted at least in accordance with Annex 18 to

the Chicago Convention and applicable TI.

Dangerous goods shall be carried by operators on board VCA without the specific approval required under Subpart G of Part-SPA if:

they are not subject to the TI in accordance with Part 1 thereof; or

they are carried by passengers or crew, or are in baggage, in accordance with Part 8 of TI.

IAM operators not approved in accordance with Subpart G of Part-SPA, shall establish a dangerous goods training programme that meets the requirements of Annex 18 of Chicago Convention and the applicable TI.

The IAM operator shall ensure that passengers are provided with information about the carriage of dangerous goods in accordance with the Technical Instructions.

The IAM operator shall establish procedures to ensure that all reasonable measures are taken to prevent undeclared dangerous goods from being carried on board inadvertently.

The IAM operator shall, in accordance with the TI, report without delay to the competent authority and the appropriate authority of the State of occurrence in the event of:

any accidents or incidents involving dangerous goods;

the discovery of undeclared dangerous goods in cargo or mail; or

the finding of dangerous goods carried by passengers or crew members, or in their baggage, when not in accordance with Part 8 of the TI.

GM1 IAM.GEN.VCA.205 Transport of dangerous goods without a specific approval

APPLICABLE TECHNICAL INSTRUCTIONS

The applicable technical instructions are the Technical instructions for the Safe Transport of Dangerous Goods by Air (ICAO Doc 9284-AN/905).

GM2 IAM.GEN.VCA.205 Transport of dangerous goods without a specific approval

GENERAL

No specific approval for the transport of dangerous goods by air is required when:

they are not subject to the Technical Instructions in accordance with Part 1 thereof; or

they are carried by passengers or crew, or are in baggage, in accordance with Part 8 of the Technical Instructions.

AMC1 IAM.GEN.VCA.205 Transport of dangerous goods without a specific approval

DANGEROUS GOODS TRAINING PROGRAMME

The training programme should meet the requirements of ICAO Annex 18 and the applicable requirements of the Technical instructions, Part 1, Chapter 4.

AMC2 IAM.GEN.VCA.205 Transport of dangerous goods without a specific approval

DANGEROUS GOODS ACCIDENT AND INCIDENT REPORTING

Dangerous goods accidents or incidents, the discovery of undeclared dangerous goods, as well as the finding of dangerous goods carried by passengers or crew members, or in their baggage, when not in accordance with Part 8 of the Technical Instructions, should be reported in accordance with AMC1 IAM.GEN.VCA.200 as applicable.

SECTION 2 - MANNED VTOL-CAPABLE AIRCRAFT (MVCA)

IAM.GEN.MVCA.050 Scope

This Section establishes additional requirements for IAM operations with manned VTOL-capable aircraft (MVCA).

IAM.GEN.MVCA.135 Admission to the flight crew compartment

The IAM operator shall ensure that no person, other than the pilot assigned to a flight, is admitted to, or carried in, the flight crew compartment unless that person is:

an operating crew member;

a representative of the competent authority or inspecting authority, if this is required for the performance of their official duties; or

permitted by and carried in accordance with the operator's OM.

The pilot-in-command shall ensure that:

admission to the flight crew compartment does not cause distraction or interference with the conduct of the flight; and

all persons carried in the flight crew compartment are made familiar with the relevant safety procedures.

The pilot-in-command shall make the final decision regarding admission to the flight crew compartment in the VCA.

AMC1 IAM.GEN.MVCA.135 Admission to the flight crew compartment

ADMISSION OF PASSENGERS TO / CARRIAGE OF PASSENGERS IN THE FLIGHT CREW COMPARTMENT

Where a VCA is used in a single-pilot operation and has more than one pilot station, passengers may be carried in the unoccupied pilot seat(s), provided that the commander is satisfied that:

this will not cause distraction or interference with the operation of the flight; and

the passenger occupying a pilot seat is familiar with the relevant restrictions and safety procedures.

IAM.GEN.MVCA.180 Documents, manuals and information to be carried on board each flight

The following documents, manuals and information, in paper or digital media, shall be carried on each flight with a VCA and shall be easily accessible for inspection purposes:

the aircraft flight manual (AFM), or equivalent document(s);

the original certificate of registration of the aircraft;

the original certificate of airworthiness (CofA);

the noise certificate, including an English translation where one has been provided by the authority that is responsible for issuing the noise certificate;

a certified true copy of the air operator certificate (AOC), including an English translation when the AOC has been issued in another language;

the operations specifications relevant to the aircraft type, issued with the AOC, including an English translation when the operations specifications have been issued in another language;

the original aircraft radio licence, if applicable;

the third-party liability insurance certificate(s);

the journey log, or equivalent, for the aircraft;

the continuing airworthiness records, as applicable;

details of the filed ATS flight plan, if applicable;

current and suitable aeronautical charts for the route of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted;

procedures and information on visual signals for use by intercepting and intercepted aircraft;

information concerning search and rescue services for the area of the intended flight, which shall be easily accessible in the aircraft;

the current parts of the OM that are relevant to the duties of the pilots, which shall be easily accessible to those pilots;

the MEL;

appropriate notices to airmen (NOTAMs) and aeronautical information service (AIS) briefing documentation;

appropriate meteorological information;

cargo and/or passenger manifests;

mass and balance documentation;

the operational flight plan, where required;

notification about special categories of passenger (SCPs), if applicable; and

any other documentation that may be pertinent to the flight or is required by the States concerned with the flight.

The documents, manuals, and information carried on each flight shall be accessible to authorised persons, usable, and reliable.

Notwithstanding point (a), in case of loss or theft of the documents specified in points (a)(2) to (8), the operation may continue until the flight reaches its destination or a place where replacement

documents can be provided.

AMC1 IAM.GEN.MVCA.180 Documents, manuals and information to be carried on board each flight

DIGITAL MEDIA

The IAM operator should use digital media such as EFBs that host type A and/or type B EFB applications as an alternative to the carriage of documents, manuals and information in paper on each flight, in accordance with point IAM.GEN.VCA.141.

GM1 IAM.GEN.MVCA.180 Documents, manuals and information to be carried on board each flight

CERTIFIED TRUE COPIES

Reserved

Translations of the air operator certificate (AOC) including operations specifications do not need to be certified.

GM2 IAM.GEN.MVCA.180 Documents, manuals and information to be carried on board each flight

JOURNEY LOG OR EQUIVALENT

Journey log, or equivalent' means that the required information may be recorded in documentation

other than a log book, such as the operational flight plan or the VCA technical log.

AMC2 IAM.GEN.MVCA.180 Documents, manuals and information to be carried on board each flight

PROCEDURES AND VISUAL SIGNALS FOR USE BY INTERCEPTING AND INTERCEPTED AIRCRAFT

The procedures and the visual signals information for use by intercepting and intercepted aircraft should reflect those contained in Part-ROA. They may be part of the operations manual.

AMC3 IAM.GEN.MVCA.180 Documents, manuals and information to be carried on board each flight

APPROPRIATE METEOROLOGICAL INFORMATION

The appropriate meteorological information should be relevant to the planned operation, as specified in point (a) of point MET.TR.215 of Part-MET, and comprise the following:

the meteorological information that is specified in point (e) of point MET.TR.215 of Part-MET; and/or

supplemental meteorological information:

information other than that specified in point (a) above, which should be based on data from certified meteorological service providers; or

information from other reliable sources of meteorological information that should be evaluated by the operator.

The providers of meteorological information specified in point (e) of point MET.TR.215 should be certified meteorological services providers that meet the necessary oversight and certification requirements as specified in Part-MET.

All of the following should qualify as supplemental meteorological information:

a reliable, timestamped image from a serviceable digital camera of known location, bearing, and altitude, which shows the weather conditions in the approach path at destination;

a meteorological observation from a properly trained observer; and

a report from non-certified automatic weather observation systems to which the operator should apply relevant margins based on the reliability and precision of the system.

GM3 IAM.GEN.MVCA.180 Documents, manuals and information to be carried on board each flight

DATA FROM CERTIFIED METEOROLOGICAL SERVICE PROVIDERS

The supplemental meteorological information, in the context of point (a)(2)(i) of AMC3 IAM.GEN.MVCA.180, should originate only from authoritative sources or certified providers and should not be transformed or tampered, except for the purpose of presenting the data in the correct format.

GM4 IAM.GEN.MVCA.180 Documents, manuals and information to be carried on board each flight

INFORMATION FROM OTHER RELIABLE SOURCES OF METEOROLOGICAL INFORMATION

Other reliable sources of meteorological information, in the context of point (a)(2)(ii) of AMC3 IAM.GEN.MVCA.180, are organisations that are able to provide an appropriate level of data assurance in terms of accuracy and integrity.

For the purpose of evaluating such organisations, the operator should consider whether the organisation has established a quality assurance system to cover source selection, acquisition/import, processing, validity period check, and distribution phase of data.

GM5 IAM.GEN.MVCA.180 Documents, manuals and information to be carried on board each flight

SUPPLEMENTAL INFORMATION

Supplemental information is information included in point (e) of MET.TR.215 Part-MET and refers to meteorological information to be reported in specific cases such as freezing precipitation, blowing snow, thunderstorm, etc.

IAM.GEN.MVCA.181 Documents and information that may not be carried on board

Notwithstanding point IAM.GEN.MVCA.180, for IAM operations in accordance with VFR by day, taking off and landing at the same vertiport within 24 hours, or remaining within a local area specified in the OM, the following documents and information may be retained at the vertiport instead of being carried on board each flight:

noise certificate;

aircraft radio licence;

journey log, or equivalent;

continuing airworthiness records;

notices to airmen (NOTAMs) and aeronautical information service (AIS) briefing documentation;

meteorological information;

notification about special categories of passengers (SCPs), if applicable; and

mass and balance documentation.

GM1 IAM.GEN.MVCA.181 Documents and information that may not be carried on board

MEANING OF 'LOCAL AREA'

The 'local area' is defined by the competent authority of the operator, in a radius of nautical miles or otherwise.

SUBPART B – OPERATING PROCEDURES

SECTION 1 - VTOL-CAPABLE AIRCRAFT (VCA)

UAM.OP.VCA.050 Scope

This Section establishes the requirements for IAM operations with VTOL-capable aircraft (VCA).

UAM.OP.VCA.101 Altimeter check and altimeter settings

The IAM operator shall establish procedures for altimeter checking before each departure.

The IAM operator shall establish procedures for altimeter settings for all phases of flight, which shall take into account the procedures established by the State of the vertiport or, if applicable, by the State of the airspace flown.

UAM.OP.VCA.125 Taxiing and ground movement

The IAM operator shall establish standard and contingency procedures for the taxiing of VCA (in the air and on the ground) and for the movement of VCA on the ground in order to ensure the safe operation of the VCA at the vertiport, diversion location or VEMS operating site. In particular, the IAM operator shall consider the risk of collision between a taxiing VCA or a VCA being moved and another aircraft or other objects, as well as the risk of injuries to ground personnel. The IAM operator's procedures shall be coordinated with the operator of the vertiport, the diversion location or the operating site, as applicable.

The VCA shall be taxied on the movement area of a vertiport, diversion location or VEMS operating site:

by an appropriately qualified pilot at the controls of the VCA; or

in the case of ground taxiing without passengers for a purpose other than taking off, by a person at the controls of the VCA, designated by the IAM operator, after having received appropriate training and instructions.

The IAM operator shall ensure that the ground movement of a VCA on the movement area of a vertiport, diversion location or VEMS operating site is carried out or supervised by personnel that have received appropriate training and instructions.

GM1 UAM. OP.VCA.125 Taxiing and ground movement

GENERAL

Taxiing is the movement of a VCA on the movement area of a vertiport, diversion location or VEMS

operating site , under its own power, either on the ground or in the air.

Ground taxiing with passengers for the purpose of flight or after landing is a critical phase of the flight (Definition (31)) as is air taxiing and hover taxiing. Due to the safety-critical nature of these types of taxiing, they are performed by an appropriately qualified pilot at the controls of the VCA.

Ground taxiing without passengers for a purpose other than taking off e.g. for repositioning or maintenance, should not be considered a critical phase of flight. This type of taxiing may be performed by appropriately qualified pilots or by trained personnel other than pilots, designated by the IAM operator.

Ground movement is the movement of a VCA on the movement area of a vertiport, diversion location or VEMS operating site with the support of external equipment or accessory that is not powered by the VCA. When the ground movement is carried out with the help of automated or autonomous equipment, the operation of such equipment should be carried out by suitably trained personnel for the task, even if that personnel only monitors the functioning of the systems.

AMC1 UAM.OP.VCA.125 Taxiing and ground movement

PROCEDURES FOR GROUND TAXIING OF VCA

The IAM operator should take into account the particular operational environment at the vertiport, diversion location or VEMS operating site being used for the operation(s) when establishing procedures for ground taxiing.

These procedures should include at least the following:

instructions on the use of standard radio-telephony (RTF) phraseology;

instructions on the use of lights, if applicable;

measures to enhance the situational awareness, such as the use of the layout charts of a particular vertiport, diversion location or VEMS operating site as applicable;

instructions on the avoidance of actions which may create distraction from the taxiing activity.

Operator's procedures for ground taxiing without passengers for a purpose other than taking off should in particular ensure that the lift and thrust units of the VCA are not powered on inadvertently by the person designated in accordance with UAM.OP.VCA.125(b)(2).

AMC2 UAM.OP.VCA.125 Taxiing and ground movement

PROCEDURES FOR GROUND MOVEMENT OF VCA

Operator's procedures for ground movement of VCA should take into consideration at least the following:

VCA dimensions, proper movement speed and VCA turning arcs;

measures to maintain overall situational awareness of the location and movement of the VCA and of other traffic at the vertiport, diversion location or VEMS operating site;

measures to keep the VCA being moved within the appropriate designated areas.

Operator's procedures for ground movement of VCA should include instructions for team members involved in ground movement of VCA to follow and adhere to all operational and safety procedures during the VCA movement and to communicate among them to prevent accidents.

AMC3 UAM.OP.VCA.125 Taxiing and ground movement

DESIGNATED PERSONS

The operator should only designate a person other than a pilot for the ground taxiing of the VCA on the movement area of a vertiport, diversion location or VEMS operating site, if that person:

is trained in ground taxiing of the VCA;

is trained to use the radio telephone;

has received instruction in respect of the layout of the vertiport, diversion location or VEMS operating site, as applicable, and the routes, signs, marking and lights thereon;

has received instruction in respect of air traffic control (ATC) signals and instructions, phraseology and procedures, if applicable;

is able to conform to the operational standards required for a safe ground taxiing at the vertiport, diversion location or VEMS operating site.

UAM.OP.VCA.130 Noise-abatement procedures

When developing operating procedures, the IAM operator shall take into account the need to minimise the effect of noise and any published noise-abatement procedures.

The IAM operator's procedures shall:

ensure that safety has priority over noise abatement; and

be simple and safe to implement by not significantly increasing flight crew workload during critical phases of flight.

UAM.OP.VCA.135 Routes and areas of operation

The IAM operator shall ensure that operations are only conducted along routes or within areas for which:

space-based facilities, ground facilities and services, and meteorological services, adequate for the planned operation, are provided;

adequate vertiports, diversion locations or VEMS operating sites are available that permit a landing to be executed in the case of critical failure for performance (CFP) of the VCA;

the performance of the VCA is adequate to comply with minimum flight altitude requirements;

the equipment of the VCA meets the minimum requirements for the planned operation; and

appropriate maps and charts are available.

The IAM operator shall ensure that operations are conducted in accordance with any restriction on the routes or the areas of operation specified by the competent authority.

AMC1 UAM.OP.VCA.135 Routes and areas of operation

USE OF DESIGNATED ROUTES

If the competent authority of the place of operation has designated routes for VFR day operations with VCA to account for potential ground risks and potential risks of collision with other aircraft or for airspace management purposes, the operator should ensure that operations are only conducted along those routes.

GM1 UAM.OP.VCA.135 Routes and areas of operation

USE OF ADEQUATE VERTIPORTS, DIVERSION LOCATIONS OR VEMS OPERATING SITES

The actions needed to make a diversion location comply with the requirements, such as those related to availability and adequacy, may be subcontracted (for example, to the owner of the land or any third party) in accordance with ORO.GEN.205. The IAM operator should ensure, in particular, that the services provided by the subcontractor are appropriately integrated to its flight preparation and operations management processes.

UAM.OP.VCA.145 Establishment of minimum flight altitudes

For all route segments to be flown, the IAM operator shall establish:

(1) minimum flight altitudes that provide the required vertical clearance from terrain and obstacles, taking into account the relevant requirements of Subpart C of this Part and the minima established by the State where the operation takes place; and

(2) a method for the pilot to determine the altitudes referred to in point (1).

The method for establishing minimum flight altitudes shall be approved by the competent authority.

Where the minimum flight altitudes established by the IAM operator and the State where the operation takes place differ, the higher values shall apply.

AMC1 UAM.OP.VCA.145 Establishment of minimum flight altitudes

CONSIDERATIONS WHEN ESTABLISHING MINIMUM FLIGHT ALTITUDES

When establishing minimum flight altitudes for flights to be conducted in accordance with VFR day, the operator should take into consideration all of the following:

(a) the minimum flight altitudes specified in point ROA.FLR.5005(f) or the exemptions granted by the competent authorities of the place of operation or the minima established by the State

where the operation takes place;

the accuracy with which the position of the VCA can be determined;

the probable inaccuracies in the indications of the altimeters used;

the characteristics of the terrain, such as sudden changes in the elevation, along the routes or in the areas where operations are to be conducted;

the probability of encountering unfavourable meteorological conditions, such as severe turbulence and descending air currents;

the possible inaccuracies in aeronautical charts.

The operator should also consider:

corrections for temperature and pressure variations from standard values;

ATC requirements, if applicable; and

any foreseeable contingencies along the planned route.

UAM.OP.VCA.190 Fuel/energy scheme – general

The IAM operator shall establish, implement and maintain a fuel/energy scheme that comprises policies and procedures for:

fuel/energy planning and fuel/energy in-flight replanning;

selection of vertiports, diversion locations or VEMS operating sites; and

in-flight fuel/energy management.

The fuel/energy scheme shall:

be appropriate for the intended operation; and

correspond to the capacity of the IAM operator to support its implementation.

The fuel/energy scheme shall be included in the operations manual.

The fuel/energy scheme and any changes to it shall require the prior approval of the competent authority.

GM1 UAM.OP.VCA.190 Fuel/energy scheme — general

GENERAL

For the purpose of establishing the fuel/energy scheme for safe operations with VCA, the IAM operator should consider the certified minimum performance (CMP) data set of the VCA obtained by considering the effect of single failures and combinations of failures that are not extremely improbable on the nominal performance parameters.

For some VCA designs, a failure or a combination of failures in the fuel/energy system may lead to the most detrimental effect on the aircraft range during cruise phase. Such failure(s) would then become, for the respective flight phase and performance parameter, the critical

failure for performance (CFP).

The CFP affects the aircraft systems and CSFL ability. The CFP considers all types of failures that are not extremely improbable. The critical failures may be different per flight phase and performance parameter.

The CMP and CFP are defined in Part-DEF — definitions (133) and (135) respectively. Definitions of the CMP and CFP are also included in MOC VTOL.2000. For reference, the CMP corresponds to a critical engine failure (OEI) scenario of a Category A helicopter.

The goal of the fuel/energy scheme is to ensure that a flight can be conducted safely; in particular, that the VCA can reach the selected vertiports, diversion locations or VEMS operating sites. In VCA using conventional fuels for propulsion this depends primarily on the quantity of fuel on board, while for VCA with electric propulsion it may be other factors that are critical, e.g. component temperature limitations following a CFP. For some configurations it is likely that the VCA has plenty of remaining energy after a CFP but cannot reach a vertiport or a diversion location on a particular day because the energy is not accessible, e.g. in the case of a component overheat.

The CMP data allows the operator to plan the range of VCA if affected by the CFP, as well as other flight parameters such as rate of climb, thus assessing the suitability of the vertiports, diversion locations or VEMS operating sites along the route before each flight.

UAM.OP.VCA.191 Fuel/energy scheme – fuel/energy planning and fuel/energy in-flight replanning

The IAM operator shall ensure that:

the VCA carries a sufficient amount of usable fuel/energy and reserves to safely complete the planned flight and to allow for deviations from the planned operation;

the planned amount of usable fuel/energy for the intended flight is based on all the following:

fuel/energy consumption data provided in the AFM or current aircraft-specific data derived from a fuel/energy consumption monitoring system;

the conditions under which the flight is to be operated, including but not limited to:

performance required for the intended flight to the destination, including vertiports, diversion locations or operating sites, selected along the route;

anticipated masses;

NOTAMs;

anticipated meteorological conditions;

the effects of deferred maintenance items in accordance with the IAM operator's MEL and/or of configuration deviations in accordance with the IAM operator's CDL;

the expected departure and arrival routing, and anticipated delays;

the efficiency and capacity of energy storage devices for the planned operating conditions, considering degradation of those energy storage devices as appropriate;

the pre-flight calculation of the usable fuel/energy and reserves for a flight includes:

taxi fuel/energy that shall not be less than the amount expected to be used prior to take-off;

trip fuel/energy that shall be the amount of fuel/energy that is needed to enable the aircraft to fly from take-off, or from the point of in-flight replanning, to landing at the destination vertiport, diversion location or operating site, taking into account the operating conditions of point (b)(2);

contingency fuel/energy that shall be the amount of fuel/energy needed to compensate for unforeseen factors that could have an influence on the fuel/energy consumption to the destination vertiport, diversion location or operating site;

final reserve fuel/energy that shall be determined based on all the following:

a representative time provided in the AFM to perform a go-around from a landing decision point (LDP) and back to that LDP taking into account the certified minimum performance (CMP) of the VCA;

conservative ambient conditions from the point of view of fuel/energy consumption;

an appropriate configuration/speed to perform the go-around and approach procedures;

a conservative fuel/energy consumption;

additional fuel/energy that shall be the amount of fuel/energy to enable the VCA to perform a safe landing at a vertiport, diversion location or operating site, selected along the route, taking into account the CMP of the VCA at any point of the route; this additional fuel/energy is required only if the amount of fuel/energy that is calculated according to points (c)(2) and (c)(3) is not sufficient for such event;

extra fuel/energy to take into account anticipated delays or specific operational constraints; and

discretionary fuel/energy, if required by the PIC;

if a flight must proceed along a route or to a destination vertiport, diversion location or operating site other than that originally planned, in-flight replanning procedures for calculating the required usable fuel/energy include those referred to in point (b)(2) and in points (c)(2) to (6).

AMC1 UAM.OP.VCA.191 Fuel/energy scheme — fuel/energy planning and in-flight replanning

VCA SPECIFIC DATA

When no VCA-specific data (derived from a fuel/energy consumption monitoring system) exists for the precise conditions of the flight, the planned amount of usable fuel/energy for the flight may be based on estimated fuel/energy consumption data.

GM 1 UAM.OP.VCA.191 Fuel/energy scheme — fuel/energy planning and in-flight re-planning

NOTAMs

Pilots should review all available NOTAMs affecting their flight route before take-off. Best practice is to check NOTAMs early and often, both when planning the flight and on the day of operations.

NOTAMs can be accessed online and are also available at most airport weather stations.

AMC2 UAM.OP.VCA.191 Fuel/energy scheme — fuel/energy planning and in-flight replanning

TRIP FUEL/ENERGY

The trip fuel/energy should include fuel/energy:

for take-off and climb from the departure vertiport elevation to initial cruising level/altitude, taking into account the expected departure routing;

from the top of climb to the top of descent;

from the top of descent to the point where the approach procedure is initiated;

for the approach and landing at the destination vertiport.

GM 2 UAM.OP.VCA.191Fuel/energy scheme — fuel/energy planning and in-flight re-planning

FUEL/ENERGY FOR LANDING

The amount of fuel/energy necessary for landing at the destination vertiport, from the LDP, should only be calculated once for the planned route.

AMC3 UAM.OP.VCA.191 Fuel/energy scheme — fuel/energy planning and in-flight replanning

CONTINGENCY FUEL/ENERGY

The contingency fuel/energy should be equivalent to 10 % of the planned trip fuel/energy or, in the event of in-flight replanning, 10 % of the trip fuel/energy for the remainder of the flight.

GM3 UAM.OP.VCA.191 Fuel/energy scheme — fuel/energy planning and in-flight re-planning

CONTINGENCY FUEL/ENERGY — UNFORESEEN FACTORS

Unforeseen factors are those which could have an influence on the fuel consumption from take-off vertiport to the destination vertiport such as deviations of an individual VCA from the expected fuel consumption data, deviations from forecast meteorological conditions, extended delays and deviations from planned routings and/or cruising levels.

AMC4 UAM.OP.VCA.191 Fuel/energy scheme—fuel/energy planning and in-flight replanning

FINAL RESERVE FUEL/ENERGY

The representative time in accordance with UAM.OP.VCA.191(c)(4)(ii) should be provided by the VCA manufacturer in accordance with MOC VTOL.2130.

GM4 UAM.OP.VCA.191Fuel/energy scheme — fuel/energy planning and in-flight re-planning

FINAL RESERVE FUEL/ENERGY

The objective of the final reserve fuel/energy protection is to ensure that a safe landing is made when unforeseen circumstances may not allow to complete the flight, as originally planned.

The PIC should plan the flight so in way that allows from any point along the route a safe-landing to be performed with more than the final reserve fuel/energy. If in-flight the final reserve fuel/energy can no longer be protected, then a fuel emergency should be declared.

GM5 UAM.OP.VCA.191Fuel/energy scheme — fuel/energy planning and in-flight re-planning

FINAL RESERVE/FUEL ENERGY

Operators may determine one final reserve fuel/energy value for each VCA type in their fleet rounded up to an easily recalled figure.

There may be also different calculations of the final fuel/energy reserves for each VCA type , for example, a final fuel/energy reserve for vertical landing and a final reserve for a conventional landing.

ICAO Doc 9976 and the EASA Fuel Manual provide further detailed guidance on the development of a comprehensive in-flight fuel management policy and related procedures.

AMC5 UAM.OP.VCA.191 Fuel/energy scheme — fuel/energy planning and in-flight replanning

ADDITIONAL ENERGY

The pre-flight planning should take into account the CMP data and, in particular, a potentially lower total fuel/energy remaining after an assumed CFP and a potentially higher consumption after an assumed CFP.

UAM.OP.VCA.195 Fuel/energy scheme – in-flight fuel/energy management

The IAM operator shall establish policies and procedures ensuring that in-flight fuel/energy checks and fuel/energy management are performed.

The PIC shall monitor the amount of usable fuel/energy remaining in the VCA to ensure that it is protected and not less than the fuel/energy required to proceed to the selected destination vertiport, diversion location or VEMS operating site where a safe landing can be performed.

When a change to the clearance to proceed to a specific vertiport, diversion location or VEMS operating site at which the PIC has committed to land may result in landing with less than the planned final reserve fuel/energy, they shall advise air traffic control (ATC) of a "minimum fuel/energy" state by declaring "MINIMUM FUEL".

The PIC shall declare a situation of "fuel/energy emergency" by broadcasting "MAYDAY MAYDAY MAYDAY FUEL" when the usable fuel/energy that is calculated to be available upon landing at the nearest vertiport, diversion location or VEMS operating site where a safe landing can be performed is less than the planned final reserve fuel/energy.

AMC1 UAM.OP.VCA.195 Fuel/energy scheme — in-flight fuel/energy management

IN-FLIGHT FUEL/ENERGY CHECKS

The operator's policy and procedures should ensure that the PIC monitors and compares the remaining usable amount of fuel/energy and the fuel/energy necessary to proceed to a vertiport, diversion location or VEMS operating site where a safe landing can be performed, either through dynamic in-flight fuel/energy checks or checks at regular intervals.

When routes have been established in the operations manual by the operator with specific check points according to the operator's policy and procedures, the following may be calculated during the fuel/energy planning for those check points and monitored and compared by the PIC:

the amount of fuel/energy necessary to complete the remaining portion of the flight to the destination; and

the amount of fuel/energy necessary to reach a vertiport or diversion location along the route.

The specific check points should be regularly distributed along the route to allow for a safe management of the fuel/energy in flight.

The PIC should monitor the fuel/energy on board as the VCA proceeds towards its destination and confirm that sufficient fuel/energy remains to complete the flight safely by comparing the calculated amounts at check points with the indications of the energy measuring equipment that is required by UAM.IDE.MVCA.140.

The relevant fuel/energy data and estimations should be recorded.

AMC2 UAM.OP.VCA.195 Fuel/energy scheme — in-flight fuel/energy management

ENSURING A SAFE LANDING

If an in-flight fuel/energy check in accordance with point (a) of AMC1 UAM.OP.VCA.195 shows that the usable fuel/energy that is expected to remain upon landing at the destination is less than the fuel/energy necessary to complete the remaining portion of the flight to the destination plus the final fuel/energy reserve, the PIC should:

divert to a selected vertiport/diversion location along the route in accordance with the individual fuel/energy scheme; or

replan the flight in accordance with point (d) of UAM.OP.VCA.191.

GM1 UAM.OP.VCA.195 Fuel/energy scheme — in-flight fuel/energy management

MINIMUM FUEL' DECLARATION

The 'MINIMUM FUEL' declaration informs the appropriate ATC unit that any change to the existing clearance, or air traffic delays, may result in landing with less than the planned final reserve fuel/energy. This is not an emergency situation but an indication that an emergency situation is possible, should any additional delay occur.

Guidance on declaring MINIMUM FUEL is contained in the ICAO Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).

GM2 UAM.OP.VCA.195 Fuel/energy scheme — in-flight fuel/energy management

BROADCASTING 'MAYDAY MAYDAY MAYDAY FUEL'

The 'MAYDAY MAYDAY MAYDAY FUEL' declaration informs the ATC that a final fuel/energy reserve

portion may be consumed prior to landing.

The standard phraseology 'MAYDAY FUEL' describes the nature of the distress conditions as required in ICAO Annex 10, Volume II.

UAM.OP.VCA.210 Pilots at their assigned stations

During take-off and landing, the pilot required to be on duty shall be at their assigned station.

During all other phases of flight, the pilot required to be on duty shall remain at their assigned station, unless absence is necessary for the performance of duties in connection with the operation or for physiological needs. Where absence is necessary for the above-mentioned reasons, the control of the VCA shall be handed over to another suitably qualified pilot.

During all phases of flight, the pilot required to be on duty shall remain alert. If the pilot realises a lack of alertness, appropriate countermeasures shall be taken.

UAM.OP.VCA.245 Meteorological conditions

The IAM operator shall ensure that the aircraft is operated within the weather operating limitations it is certified for, and considering current and forecast weather conditions for the entire duration of the flight.

UAM.OP.VCA.250 Ice and other contaminants – ground procedures

The IAM operator shall establish procedures to be followed when ground de-icing and anti-icing treatment and related inspections of the VCA are necessary for its safe operation.

The PIC shall commence take-off only if the VCA is clear of any deposit that might adversely affect its performance or controllability in accordance with its AFM.

AMC1 UAM.OP.VCA.250 Ice and other contaminants — ground procedures

DE-ICING AND ANTI-ICING ON THE GROUND

The IAM operator should include in its OM a description of the de-icing and anti-icing policy and procedures for aircraft on the ground. These should include descriptions of the types and effects of icing and other contaminants on aircraft whilst stationary, during ground movements and during take-off.

In addition, a description of the fluid types used should be given, including the following:

proprietary or commercial names;

characteristics;

effects on aircraft performance;

hold-over times;

precautions during usage.

GM1 UAM.OP.VCA.250 Ice and other contaminants — ground procedures

DE-ICING/ANTI-ICING

Useful guidance material as regards de-icing and anti-icing can be found in:

GM1 CAT.OP.MPA.250, with guidance on terms used in the context of de-icing/anti-icing;

GM2 CAT.OP.MPA.250, with guidance on de-icing and/or anti-icing procedures; and

GM3 CAT.OP.MPA.250, with further guidance on de-icing and/or anti-icing.

UAM.OP.VCA.255 Ice and other contaminants – flight procedures

The IAM operator shall establish procedures for flights in expected or actual icing conditions.

The PIC shall commence the flight or intentionally fly into expected or actual icing conditions only if the VCA is certified and equipped to operate in such conditions.

If actual icing exceeds the intensity of icing for which the aircraft is certified, or if an aircraft not certified for flight in known icing conditions encounters icing, the PIC shall exit the icing conditions without delay and, if necessary, declare an emergency to ATS.

UAM.OP.VCA.260 Oil supply

Where applicable, the PIC shall commence a flight, or continue in the event of in-flight replanning, only when satisfied that the VCA carries at least the planned amount of oil to complete the flight safely, taking into account expected operating conditions.

UAM.OP.VCA.265 Take-off conditions

Before commencing take-off, the PIC shall be satisfied that:

the meteorological conditions at the vertiport, diversion location or VEMS operating site and the condition of the surface for take-off intended to be used will not prevent the PIC from conducting a safe take-off and departure; and

the established operating minima for the vertiport, diversion location or VEMS operating site, as applicable, will be complied with.

UAM.OP.VCA.270 Minimum flight altitudes

The PIC shall not fly below specified minimum flight altitudes except:

when it is necessary for taking off or landing; or

when descending in accordance with procedures approved by the competent authority.

UAM.OP.VCA.275 Simulated abnormal or emergency situations in flight

When carrying passengers or cargo, the PIC shall not simulate abnormal or emergency situations that require the application of abnormal or emergency procedures.

UAM.OP.VCA.290 Proximity detection

When undue proximity to the ground and/or obstacles located horizontally in relation to the VCA is detected by the PIC or by a proximity warning system, the PIC shall immediately take corrective action to establish safe flight conditions.

GM1 UAM.OP.VCA.290 Proximity detection

TRAINING OBJECTIVES FOR THE USE OF THE PROXIMITY WARNING SYSTEM

When a VCA operator has a proximity warning system installed, the performance-based training objectives of GM1 CAT.OP.MPA.290 may be used for the pilot training programmes.

UAM.OP.VCA.300 Approach and landing conditions

Before commencing an approach operation, the PIC shall be satisfied that:

the meteorological conditions at the vertiport, diversion location or VEMS operating site will not prevent the PIC from conducting a safe approach, landing or go-around, considering the performance information contained in the operations manual (OM); and

the established vertiport operating minima, or visibility and distance from cloud minima for flights conducted in accordance with VFR by day, shall be complied with.

AMC1 UAM.OP.VCA.300 Approach and landing conditions

LANDING DISTANCE ASSESSMENT — VCA INTENDING A CONVENTIONAL LANDING WITH ROLL-ON

The in-flight landing distance assessment should be based on the latest available weather report and runway condition report (RCR) or equivalent information based on the RCR.

The assessment should be initially carried out when the weather report and the RCR are obtained, usually around top of descent. If the planned duration of the flight does not allow the flight crew to carry out the assessment in non-critical phases of flight, the assessment should be carried out before departure.

When meteorological conditions may lead to a degradation of the runway surface condition, the assessment should include consideration of how much deterioration in runway surface friction characteristics may be tolerated, so that a quick decision can be made prior to landing.

The flight crew should monitor the evolution of the actual conditions during the approach, to ensure that they do not degrade below the condition that was previously determined to be the minimum acceptable.

AMC2 UAM.OP.VCA.300 Approach and landing conditions

WIND DATA

The information on average wind contained in METAR/SPECI/ATIS reports should be the basis for the landing performance calculations, while instant wind information, if reported, should be monitored during the approach to ensure that the wind speed does not exceed the assumptions made for landing performance calculations.

Where the AFM so requires, the operator should use instant wind information for landing performance calculations.

AMC3 UAM.OP.VCA.300 Approach and landing conditions

IN-FLIGHT DETERMINATION OF THE FATO CONDITION — VCA INTENDING A VERTICAL LANDING

The in-flight determination of the final approach and take-off area (FATO) suitability for a safe approach, landing or missed approach should be based on the latest available meteorological or runway condition report, preferably no more than 30 minutes before the expected landing time.

UAM.OP.VCA.315 Flight hours – reporting

The IAM operator shall make available to the competent authority the amount of hours flown for each VCA operated during the previous calendar year.

GM1 UAM.OP.VCA.315 Flight hours — reporting

FLIGHT HOURS — REPORTING

Flight hours may be reported either:

as flight hours flown by each VCA — identified by its serial number and registration mark — during the previous calendar year; or

as total flight hours of each VCA — identified by its serial number and registration mark — on the 31st of December of the previous calendar year.

SECTION 2 - MANNED VTOL-CAPABLE AIRCRAFT (MVCA)

UAM.OP.MVCA.050 Scope

This Section establishes additional requirements for IAM operations with manned VTOL-capable aircraft (MVCA).

UAM.OP.MVCA.100 Use of air traffic services (ATS)

The IAM operator shall ensure that:

ATS appropriate to the airspace in which the operation is conducted and to the applicable rules of the air are used, whenever available;

in-flight operational instructions involving a change to the ATS flight plan are coordinated with the appropriate ATS unit before transmission to the VCA;

search and rescue service arrangements can be maintained whenever the use of ATS in the airspace in which the operation is conducted is not mandated for VFR flights by day;

for operations in airspace designated by the competent authority as U-space airspace and not provided with air traffic control (ATC) services by an air navigation service provider (ANSP), the VCA continuously makes itself electronically conspicuous to U-space service providers.

GM1 UAM.OP.MVCA.100 Use of air traffic services

IN-FLIGHT OPERATIONAL INSTRUCTIONS

When coordination with an appropriate air traffic service (ATS) unit has not been possible, in-flight operational instructions do not relieve the PIC of the responsibility for obtaining an appropriate clearance from an ATS unit, if applicable, before making a change in flight plan.

AMC1 UAM.OP.MVCA.100 Use of air traffic services

ELECTRONIC CONSPICUITY DEVICE

A manned VCA entering an airspace designated as U-space but not provided with an air traffic control service by the ANSP should comply with point (c) of ROA.FLR.6005.

The PIC should ensure that the electronic conspicuity device of the VCA is correctly operating before entering the U-space airspace until the VCA is leaving the U-space airspace.

An e-Conspicuity device/system compliant with the European ADS-L 4 SRD-860 technical specification, or an equivalent specification as determined by the competent authority meets UAM.OP.MVCA.100(d).

GM1 UAM.OP.MVCA.100 Use of air traffic services (ATS)

IN-FLIGHT OPERATIONAL INSTRUCTIONS

When coordination with an appropriate air traffic service (ATS) unit has not been possible, in-flight operational instructions do not relieve the PIC of the responsibility to obtain an appropriate clearance from an ATS unit, if applicable, before making a change in the flight plan.

UAM.OP. MVCA.107 Adequate vertiport and adequate diversion location

The IAM operator shall use adequate vertiports for its normal operations and for diversion from the planned route as necessary.

Notwithstanding point (a), the IAM operator may use one or more adequate diversion locations while en-route to divert from the planned route as necessary.

A vertiport is considered adequate if at the expected time of use it is:

compatible with the dimensions and weight of the VCA;

compatible with the VCA approach and departure paths;

provided with rescue and firefighting services (RFFS) and other services and facilities necessary for the intended operation; and

available.

A diversion location is considered adequate if at the expected time of use:

its characteristics, including dimensions, obstacles, and surface condition, are compatible with the VCA and allow for landing in accordance with an approved landing profile;

it can be reached within the CMP of the VCA taking wind limitations into account;

it has an acceptable level of RFFS protection;

it is pre-surveyed; and

it is available.

AMC1 UAM.OP.MVCA.107 Adequate vertiport and adequate diversion location

SELECTION OF ADEQUATE VERTIPORTS AND DIVERSION LOCATIONS

The policy and procedures for selection of adequate vertiports, diversion locations and VEMS operating sites should be part of the approved operator's fuel/energy scheme in accordance with UAM.OP.VCA.190 and selected vertiports, diversion locations or VEMS operating sites should comply with UAM.OP.MVCA.192.

When the VCA is certified for operations on floating surfaces in accordance with UAM.IDE.MVCA.300(d), the operator may include floating surfaces in the fuel/energy scheme.

GM1 UAM.OP.MVCA.107 Adequate vertiport and adequate diversion location

ADEQUATE VERTIPORTS

In addition to CAR-HVD, the operator may use PTS-VPT-DSN (EASA 'Prototype technical specifications for the design of VFR vertiports for operation with manned VCA certified in the Enhanced category), or equivalent for the purpose of assessing the adequacy of vertiports for normal operations and for diversion from the planned route.

An aerodrome or heliport meeting UAM.OP.MVCA.107(c) is considered to be an adequate vertiport for the operations of VCA.

For practical reasons, requirements for adequacy of a site used for emergency landing cannot be specified.

AMC2 UAM.OP.MVCA.107 Adequate vertiport and adequate diversion location

ADEQUATE DIVERSION LOCATIONS

The operator's policy and procedure for selection of diversion locations should contain the criteria for adequacy of UAM.OP.MVCA.107(d) and at least the following elements:

Data provided by the VCA manufacturer including:

- certified minimum performance (CMP) including wind limitations;
- the radial component of the downwash (outwash) around the VCA;
- diversion location required characteristics:
  - size of the landing area;
  - surface characteristics;
  - slope;
  - obstacles clearance areas;
- firefighting information, if any.

The operating conditions under which the flight is to be conducted including:

- anticipated masses;
- anticipated VCA fuel/energy consumption;
- anticipated meteorological conditions.

Observations during the process of pre-surveillance of diversion locations by a competent person; the operator should also take into account possible changes to the characteristics of diversion locations that may have taken place since last surveyed.

The means to have an indication on wind speed and direction.

Ground markings, if available.

The means to achieve an acceptable level of RFFS protection, including equipment, or agreement with the local firefighting brigade or any other adequate arrangement.

In the case of cross-border operations, the relevant requirements published by the competent authority of the place of operation stemming from air space management, air traffic management, national security, environmental regulations and administrative regulations.

AMC3 UAM.OP.MVCA.107 Adequate vertiport or adequate diversion location

DOCUMENTATION OF DIVERSION LOCATIONS

Any diversion location selected by the IAM operator and planned to be used, as well as any subsequent change to selected diversion locations, should be notified to the competent authority in accordance with the procedure referred to in ORO.GEN.115(b) and ORO.GEN.130(c) along with the criteria for the selection.

The operations manual or another manual of the IAM operator should contain diagrams or ground and aerial photographs, depiction (pictorial) and description of the selected diversion location including:

its overall dimensions;

its suitability with reference to VCA performance as well as the radial component of the downwash (outwash) around the VCA;

the location and height of relevant obstacles in the approach and take-off flight paths and in the manoeuvring area, of any diversion location ;

the approach and take-off flight paths;

its surface condition (blowing dust/snow/sand);

the provision of control of third parties on the ground, if applicable;

current firefighting arrangements (equipment or agreement with the local firefighting brigade or any other adequate arrangement);

existing means indicating wind speed and direction;

the procedure for its activation in accordance with relevant regulations, if applicable;

other useful information; for example, details of the appropriate ATS agency and frequency;

the evacuation paths for the passengers taking into account the VCA hazard areas; and

the means to remove a VCA from a diversion location.

GM2 UAM.OP.MVCA.107 Adequate vertiport and adequate diversion location

USE OF EN-ROUTE DIVERSION LOCATIONS

Adequate diversion locations while en-route should be used to ensure:

a CSFL of the VCA following a CFP or another abnormal condition or situation; and/or

compliance with the final fuel/energy reserve requirements.

Diversion locations should not be used for planned embarking and disembarking of passengers or for loading and unloading cargo.

After having landed at a diversion location, the operator may resume the flight that has already started at a vertiport, perform a ferry flight or remove the VCA from the diversion location by other means, as the case may be.

A diversion location should not be understood as a diversion vertiport.

GM3 UAM.OP.MVCA.107 Adequate vertiport and adequate diversion location

ABNORMAL CONDITION OR SITUATION

AMC 25.1581 contains the following definition for abnormal procedure in the context of AFM:

'A procedure requiring flight crew action, due to failure of a system or component, to maintain an acceptable level of airworthiness for continued safe flight and landing.'

This definition is fully applicable to a CFP in the context of a VCA. In addition, in flight operations other abnormal situations may arise, such as pilot incapacitation, ground proximity warning, windshear, etc., in which flight crew should be using abnormal (i.e. non-normal) procedures to ensure that the safety of the aircraft or persons on board or on the ground is not in danger.

AMC5 UAM.OP.MVCA.107 Adequate vertiport and adequate diversion location

DIVERSION LOCATIONS IN CROSS-BORDER OPERATIONS

Cross-border operation means an operation in a State other than the State where the operator has its principal place of business (the State of the operator).

For the purpose of using one or more adequate diversion locations in another State operator should ensure that the relevant local requirements and information for the planned locations have been considered. When satisfied that the planned diversion location(s) meet(s) the applicable requirements the operator should notify the competent authority accordance with ORO.GEN.130 (c).

When notified by the operator in accordance with ORO.GEN.130(c) of the selection of one or more diversion locations in a State other than the State where the operator has its principal place of business for the purpose of cross-border operations, the competent authority of the State of the operator should review the operator's policy and procedures for selection of adequate diversion locations and associated documentation in coordination with the competent authority of the place where the operation is planned to be conducted. Both authorities should be satisfied that applicable requirements UAM.OP.MVCA. 107 of have been met before the operator start the planned cross-border operation.

AMC6 UAM.OP.MVCA.107 Adequate vertiport or adequate diversion location

RESCUE AND FIREFIGHTING SERVICES (RFFS)

The VCA operator should:

as part of its safety management system, assess the level of RFFS protection available at the vertiport or diversion location intended to be used, to ensure that an acceptable level of protection is available for the intended operation; and

include relevant information related to the RFFS protection that is deemed acceptable by the operator in the operations manual.

GM4 UAM.OP.MVCA.107 Adequate vertiport or adequate diversion location

RESCUE AND FIREFIGHTING SERVICES (RFFS) AND OTHER SERVICES AND FACILITIES

An adequate vertiport or diversion location should be provided with rescue and firefighting services (RFFS). This means that the vertiport or diversion location are equipped for firefighting (e.g. fire extinguishers, fire hoses, fire and welding blankets) or an agreement is established with a local firefighting unit or there is another adequate arrangement.

The operator should assess which other services and facilities are necessary for the intended operation, such as air traffic services, lighting, communications, weather reporting, navigation aids, charging equipment, sound protection, etc.

UAM.OP.MVCA.111 Visibility and distance from cloud minima – VFR flights

The IAM operator shall establish visibility minima and distance from cloud minima for flights to be conducted in accordance with VFR by day. These minima shall not be lower than those specified in point ROA.FLR.5001 for the airspace class being flown, except when permitted to operate as a special VFR flight.

Where necessary, the IAM operator may specify in the OM additional conditions for the applicability of such minima taking into account factors such as radio coverage, terrain, nature of sites, flight conditions and ATS capacity.

The flights shall be conducted with the surface in sight.

AMC1 UAM.OP.MVCA.111 Visibility and distance from cloud minima — VFR flights

GENERAL

When establishing visibility and distance from cloud minima, the operator shall take the following into account:

meteorological conditions appropriate to the intended flight;

take-off and landing area condition;

location and height of all obstacles that could hinder take-off or landing;

VCA performance and capability related to obstacle clearance, take-off and landing and any flight restrictions;

ATC communications, if required;

ATC instructions and clearances in controlled airspace, if applicable; and

availability of ground infrastructure and equipment required for take-off, landing and taxiing or ground movement.

Where there is a specific need to see and avoid obstacles and/or other VCA on take-off, additional conditions, e.g. ceiling, should be specified.

GM1 UAM.OP.MVCA.111.G Visibility and distance from cloud minima – VFR flights

APPLICATION OF THE PROVISIONS

The intention is to apply all the provisions in ROA.FLR.5001 collectively, provided the operational characteristics demonstrate similarities with the aircraft reflected in the same rule.

UAM.OP.MVCA.127 Take-off and landing – VFR flights by day

When conducting a flight in accordance with VFR by day, the PIC should not take off or land at a vertiport or diversion location unless the reported weather conditions at that vertiport or diversion location are equal to or better than those specified in point ROA.FLR.5001 or point ROA.FLR.5005 for the airspace class being flown.

When the reported weather conditions are below those required for take-off, a take-off shall be commenced only if the PIC can determine that the visibility and distance from cloud minima along the take-off area are equal to or better than the required minimum.

When no reported weather conditions are available, a take-off shall be commenced only if the PIC can determine that the visibility and distance from cloud minima along the take-off area are equal to or better than the required minimum.

UAM.OP.MVCA.155 Carriage of special categories of passengers (SCPs)

SCPs shall be carried on board under such conditions that ensure the safety of the VCA and its occupants according to procedures established by the VCA operator.

SCPs shall not be allocated to, nor occupy, seats that permit direct access to emergency exits or where their presence could:

impede crew members' duties;

obstruct access to emergency equipment; or

impede the emergency evacuation of passengers.

The PIC shall be notified in advance when SCPs are to be carried on board.

AMC1 UAM.OP.MVCA.155 Carriage of special categories of passengers (SCPs)

GENERAL

Persons requiring special conditions, assistance and/or devices when carried on a flight should be considered as SCPs including at least:

persons with reduced mobility (PRMs) who, without prejudice to any other applicable UAE rules on assistance to passengers with reduced mobility, are understood to be any person whose mobility is reduced due to any physical disability, sensory or locomotory, permanent or temporary, intellectual disability or impairment, any other cause of disability, or age;

infants and unaccompanied children; and

deportees, inadmissible passengers or prisoners in custody.

UAM.OP.MVCA.160 Stowage of baggage and cargo

The IAM operator shall establish procedures to ensure that:

only baggage that can be appropriately and securely stowed is taken into the passenger compartment; and

all baggage and cargo on board the aircraft which might cause injury or damage, or obstruct aisles and exits if displaced, is stowed to prevent them from moving.

AMC1 UAM.OP.MVCA.160 Stowage of baggage and cargo

STOWAGE PROCEDURES

Procedures established by the operator to ensure that baggage and cargo are adequately and securely stowed should take account of the following:

each item should be stowed only in a location that is capable of restraining it;

weight limitations placarded on or adjacent to stowages should not be exceeded;

under seat stowages should not be used unless the seat is equipped with a restraint bar and the baggage is of such size that it may adequately be restrained by this equipment;

baggage and cargo should not be placed where they can impede access to emergency equipment.

AMC2 UAM.OP.MVCA.160 Stowage of baggage and cargo

CARRIAGE OF CARGO IN THE PASSENGER COMPARTMENT

The following should be observed when carrying cargo in the passenger compartment of VCA:

dangerous goods should not be allowed;

the mass of cargo should not exceed the structural loading limits of the floor or seats;

the number/type of restraint devices and their attachment points should be capable of restraining the cargo; and

the location of the cargo should be such that, in the event of an emergency evacuation, it will neither hinder egress nor impair the crew's view.

GM1 UAM.OP.MVCA.160 Stowage of baggage and cargo

THE TERM 'CARGO'

The term 'cargo' in UAM.OP.MVCA.160(b) refers to anything that belongs to a passenger travelling but is not a piece of luggage (e.g. a musical instrument that may have to be restrained to the seat). Thus, UAM.OP.MVCA.160(b) is not intended to facilitate the use of the cabin as a cargo compartment.

UAM.OP.MVCA.165 Passenger seating

With regard to potential emergency evacuation, the IAM operator shall establish procedures for passenger seating to ensure that passengers are seated where they will be able to assist the evacuation, and not impede it.

AMC1 UAM.OP.MVCA.165 Passenger seating

Passengers who, because of their condition, might hinder other passengers during an evacuation or who might impede the crew in carrying out their duties, should not be allocated seats that permit direct access to emergency exits.

UAM.OP.MVCA.170 Passenger briefing

The IAM operator shall ensure that passengers are:

given safety briefings and safety demonstrations in a manner that facilitates the execution of the applicable procedures in the event of an emergency; and

provided with safety briefing material on which picture-type instructions indicate the operation of emergency equipment and emergency exits likely to be used by passengers.

AMC1 UAM.OP.MVCA.170 Passenger briefing

PASSENGER BRIEFING AND DEMONSTRATIONS

Passenger briefings and demonstrations should contain instructions on the following items, as applicable for the intended operation:

the use of safety belts or restraint systems, including how to fasten and unfasten the safety belts or restraint systems;

the location of emergency exits;

the location and use of oxygen equipment, if carried on board. Passengers should also be briefed on how to extinguish all smoking materials when oxygen is being used;

the location and use of life jackets, if carried on board;

the location and use of the hand fire extinguisher, if carried in the passenger compartment;

emergency lighting and marking;

any cabin secured aspects, e.g. required position of seatbacks, tray tables, footrests, window blinds, etc. as applicable;

correct stowage of baggage and the importance of leaving baggage behind in case of evacuation;

the use and stowage of portable electronic devices (PEDs), including in-flight entertainment (IFE) systems;

non-smoking instructions;

the radial component of the downwash around the VCA;

the use of life rafts and survival equipment, if carried on board.

Passengers occupying seats with direct access to emergency exits should receive an additional briefing on the operation and use of the exit.

In addition to (a) and (b), passengers should be instructed during flight in case of emergency, as appropriate to the circumstances.

AMC2 UAM.OP.MVCA.170 Passenger briefing

PASSENGER BRIEFING AND DEMONSTRATIONS

The operator may replace the briefing/demonstrations specified in point (a) of AMC1 CAT.OP.MPA.170 with a passenger training programme covering all safety and emergency procedures for a given type of aircraft.

Only passengers who have been trained according to this programme and have flown on the aircraft type within the last 90 days may be carried on board without receiving a briefing/demonstrations.

AMC3 UAM.OP.MVCA.170 Passenger briefing

PASSENGER BRIEFING IN SINGLE-PILOT OPERATIONS

In single-pilot operations, passenger briefing should be provided:

by ground personnel designated by the operator; or

by the pilot except during the critical phases of flight.

In single-pilot operations, passenger briefing may be delivered as audio instruction and/or safety video provided on ground or in the aircraft.

AMC4 UAM.OP.MVCA.170 Passenger briefing

IN-FLIGHT ENTERTAINMENT (IFE) SYSTEMS

When IFE systems are available by means of equipment that can be handled by passengers, including PEDs, provided by the operator for the purpose of IFE, appropriate information containing at least the following should be made available to passengers:

instructions on how to safely operate the IFE system for personal use in normal conditions;

restrictions, including stowage of retractable or loose items of equipment (e.g. screens or remote controls) during taxiing, take-off and landing, and in abnormal or emergency conditions.

GM1 UAM.OP.MVCA.170 Passenger briefing

BRIEFING OF PASSENGERS OCCUPYING SEATS WITH DIRECT ACCESS TO EMERGENCY EXITS

The emergency exit briefing should contain instructions on the operation of the exit, assessment of surrounding conditions for the safe use of the exit, and recognition of emergency commands given by the crew.

GM2 UAM.OP.MVCA.170 Passenger briefing

SAFETY BRIEFING MATERIAL

Safety briefing material may be provided by means of a safety video or a safety briefing card. The information in the safety briefing material should be relevant to the aircraft type and the installed equipment and should be consistent with the operator's procedures. The information in the safety briefing material should be presented in a clear and unambiguous manner and in a form easily understandable to passengers.

The safety briefing card should be designed, and the information should be provided, in a size easily visible to the passenger. The safety briefing card should be stowed in a location from where it is easily visible and reachable to the seated passenger and from where it cannot easily fall out. The passenger should be briefed about the location of the safety briefing card. The safety briefing card should be presented in a pictographic form and should be consistent with the placards used in the aircraft. Written information should be kept to the necessary minimum. The safety briefing card should only contain information relevant to safety. Where practicable, safety briefing card can be provided in the form of a sticker.

The safety video should be structured at a pace that allows a continuous ability to follow the information presented. The operator may consider including sign language or subtitles to simultaneously complement the soundtrack.

For passengers occupying seats with direct access to emergency exits, the operator should consider providing a separate briefing card or a sticker which contains exit instructions. If so, the passenger should be informed about the location of the separate briefing card or the sticker.

The operator should consider including the following information in its safety briefing material, as applicable for the intended operations:

baggage — correct versus forbidden stowage locations (e.g. exits, aisles, etc.);

safety belts and other restraint systems:

(i) when and how to use safety belts and other restraint systems;

(ii) restraint of infants and children;

(iii) additional installed systems, e.g. airbag;

drop-down oxygen system:

(i) location;

(ii) activation;

(iii) indication of active oxygen supply;

(iv) correct and timely donning of oxygen mask;

(v) assisting others;

flotation devices:

(i) stowage locations (including if different in various cabin sections);

(ii) use for adult, child and infant;

(iii) features, e.g. straps, toggles, tubes, signalling light, whistle;

(iv) when and where to inflate a life jacket;

(v) flotation devices for infants;

emergency exits:

(i) number and location;

(ii) method of operation, including alternative operation in case of ditching;

(iii) surrounding conditions prior to opening (e.g. fire, smoke, water level, etc.);

(iv) unusable exit;

(v) alternative egress routes in case of unusable exit(s);

(vi) leaving baggage behind;

(vii) method of egress through exit including with infants and children;

(viii) awareness of exit height;

(ix) awareness of lift/thrust units;

escape routes: depiction of routes:

(i) to the exits (inside the aircraft);

(ii) on the ground away from the aircraft;

assisting evacuation means:

(i) location of available equipment (e.g. life raft, installed slide/raft, etc.);

(ii) awareness of the evacuation equipment's features;

(iii) operation of the available equipment (activation, detachment, etc.);

(iv) method of boarding the device including with infants and children;

(v) use of shoes;

(vi) method of evacuation through exits with no assisting evacuation means;

brace position:

(i) appropriate method to the applicable facing direction;

(ii) alternative brace positions for e.g. expectant mothers, passengers with lap-held infants, tall or large individuals, children, etc.;

PEDs, including spare batteries:

(i) allowed versus forbidden devices;

(ii) use in various flight phases including during safety briefing;

(iii) stowage;

(iv) danger of fire in case the device is damaged;

(v) the need to call for immediate assistance in case a device is damaged, hot, produces smoke, is lost, or falls into the seat structure (including advice to refrain from manipulating the seat);

(vi) the need to monitor devices during charging;

cabin secured aspects:

(i) required position of seatbacks, headrests, tray tables, footrests, window blinds, in-seat video screens and their control gadgets, etc.;

(ii) caution when opening baggage compartments;

non-smoking instructions (e.g. phase of flight, electronic smoking devices, pipes, etc.)

emergency lighting and marking (as installed in accordance with UAM.IDE.MVCA.275 and AMC1 UAM.IDE.MVCA.275)

(i) location;

(ii) purpose in case of darkness or smoke;

hand fire extinguisher(s):

(i) location;

(ii) use;

actions in case of an emergency (e.g. remove sharp objects, fasten seat belt, open window blind, etc.);

any other safety aspects.

UAM.OP.MVCA.175 Flight preparation

An operational flight plan (OFP) shall be completed for each intended flight, taking into account the airspace in which the flight is to be conducted and the applicable rules of the air, aircraft performance, operating limitations, and relevant expected conditions along the route to be flown and at the vertiport or diversion location to be used.

The flight shall not be commenced unless the PIC is satisfied that:

all items stipulated in point 2(c) of Annex II to CAR-BR concerning the airworthiness and registration of the aircraft, instrument and equipment, mass and centre of gravity (CG) location, baggage and cargo, and aircraft operating limitations can be complied with;

the aircraft is not operated against the requirements of the configuration deviation list (CDL);

the parts of the operations manual (OM) that are required for the conduct of the planned flight are available;

the documents, additional information and forms required to be available by point IAM.GEN.MVCA.110 are on board, unless permitted to be kept on the ground in accordance with point IAM.GEN.MVCA.115;

current maps, charts and associated documentation or equivalent data are available for the intended operation of the aircraft, including any diversion that may reasonably be expected;

space-based facilities, ground facilities and services that are required for the planned flight are available and adequate;

the applicable requirements specified in the OM in respect of fuel/energy, oil, oxygen, minimum flight altitudes, vertiport operating minima, visibility and distance from cloud minima for VFR flights by day and the selection of adequate vertiports and diversion locations can be complied with for the planned flight;

Reserved;

any additional operational limitations can be complied with;

any load carried is properly distributed and safely secured;

an air traffic service (ATS) flight plan has been approved and flight clearance has been granted in accordance with the applicable rules of the air and the class(es) of airspace in which the operation will be conducted.

AMC1 UAM.OP.MVCA.175 Flight preparation

OPERATIONAL FLIGHT PLAN

The operational flight plan used and the entries made during flight should contain the following items:

VCA registration;

VCA type and variant;

date of flight;

flight identification;

name(s) of the flight crew member(s);

duty assignment of the flight crew member(s);

place (vertiport) of departure;

time of departure (actual off-block time, take-off time);

place (vertiport) of arrival (planned and actual);

time of arrival (actual landing and on-block time);

type of operation (VFR day; commercial air transport operation, VEMS, non-commercial operations, training flights, etc.);

route and route segments with checkpoints/waypoints, distances, time and tracks;

planned cruising speed and flying times between checkpoints/waypoints (estimated, revised, and actual times overhead);

minimum flight altitudes and minimum levels;

planned altitudes and flight levels;

fuel/energy calculations (records of in-flight fuel/energy checks);

fuel/energy on board when powering on lift and thrust units;

safe landing options at the point of commitment;

vertiports or diversion locations along the route for the purpose of diversion;

initial ATS flight plan clearance and subsequent reclearance, if applicable;

in-flight replanning calculations; and

meteorological information, as specified in point (a) of point MET.TR.215 of Part-MET.

Items that are readily available in other documentation or from another acceptable source or are irrelevant to the type of operation may be omitted from the operational flight plan.

The operational flight plan and its use should be described in the operations manual.

All entries on the operational flight plan should be made concurrently and be permanent in nature.

OPERATIONAL FLIGHT PLAN —VEMS AND LOCAL OPERATIONS

For VEMS and local operations with VCA, the operational flight plan may be established in a simplified form. Local operations should be defined in the operations manual.

No entries should be made in the operational flight plan during the flight.

OPERATIONAL FLIGHT PLAN PRODUCED BY A COMPUTERISED FLIGHT-PLANNING SYSTEM

When the IAM operator uses a computerised flight-planning system to produce an operational flight plan, the functionality of this system should be described in the operations manual.

If the computerised flight-planning system is used in conjunction with energy level calculations and

checks, the proper functionality of the software should be tested after each upgrade. The test should verify that the changes to the software do not affect the final output.

GM1 UAM.OP.MVCA.175 Flight preparation

CONVERSION TABLES

The documentation should include any conversion tables necessary to support operations where metric heights, altitudes and flight levels are used.

UAM.OP.MVCA.177 Submission of an air traffic services (ATS) flight plan

The IAM operator shall submit an ATS flight plan as required by the applicable rules of the air for the class(es) of airspace in which the operation will be conducted.

If the submission of an ATS flight plan is not required by the applicable rules of the air for the class(es) of airspace in which the operation will be conducted, the IAM operator shall ensure that adequate information is deposited with the appropriate ATS unit to permit alerting services to be activated if necessary.

If the submission of an ATS flight plan is required but it is impossible to submit it from the site where the operation starts, the ATS flight plan shall be transmitted as soon as possible after take-off by the PIC or the IAM operator.

AMC1 UAM.OP.VCA.177 Submission of an air traffic services (ATS) flight plan

FLIGHTS WITHOUT ATS FLIGHT PLAN

When unable to submit or close the ATS flight plan, the operator should establish procedures, instructions, and a list of nominated persons to be responsible for alerting search and rescue (SAR) services.

To ensure that each flight is located at all times, these instructions should:

provide the nominated person with at least the information required to be included in a VFR flight plan, and the location, date, and estimated time for re-establishing communications;

if an VCA is overdue or missing, ensure that the appropriate ATS or SAR service is notified; and

ensure that the information will be retained at a designated place until the completion of the flight.

UAM.OP.MVCA.192 Fuel/energy scheme – selection of vertiports and diversion locations

The PIC shall select and specify in the operational flight plan and, if so required, in the ATS flight plan, for normal operations, including training, and for the purpose of diversion:

at least two safe landing options at the destination, which may be reached from the point of

commitment for landing; and

one or more vertiports or diversion locations to ensure safe landing in case a diversion is necessary following a CFP at any moment during the flight.

For the purpose of selecting vertiports and diversion locations in accordance with point (a), the PIC shall consider whether:

the actual and forecast weather conditions indicate that at the estimated time of use the conditions at the selected vertiports and diversion locations will be at or above the applicable minima established in accordance with point UAM.OP.MVCA.111;

the CMP of the VCA allows for safe landing at the selected vertiports or diversion locations;

any required additional operational approvals are held.

The PIC shall apply appropriate safety margins to flight planning to take possible deterioration of the meteorological conditions into account at the estimated time of landing compared to the available forecast.

AMC1 UAM.OP.MVCA.192 Fuel/energy scheme — selection of vertiports and diversion locations

ACCESS TO INFORMATION

The IAM operator should ensure that the PIC has access to up-to-date information regarding vertiports and diversion locations, including their operational status and meteorological conditions.

AMC2 UAM.OP.MVCA.192 Fuel/energy scheme — selection of vertiports and diversion locations

POINT OF COMMITMENT

The point of commitment at the destination is a reference point that should be defined based on all the following:

the planned safe landing options can be reached from that point taking into account the CMP following a CFP;

after that point, landing at the committed landing site should be guaranteed;

the safe landing options should be weather-permissible i.e. for the anticipated time of use, meteorological reports, or forecasts, or any combination thereof, should indicate that the meteorological conditions will be at or above the VMC visibility and distance from cloud as specified in ROA.FLR.5001 for the airspace class being flown, unless operating as a special VFR flight.

GM1 UAM.OP.MVCA.192 Fuel/energy scheme — selection of vertiports and diversion locations

POINT OF COMMITMENT

When the planned safe landing options at the destination are minimum two, they may include:

the destination vertiport and another vertiport; or

the destination vertiport and a diversion location; or

two separate runways/FATO/TLOF at the destination vertiport.

AMC3 UAM.OP.MVCA.192 Fuel/energy scheme — selection of vertiports and diversion locations

PLANNING MINIMA AND SAFETY MARGINS FOR THE DEPARTURE VERTIPORT

To allow for a safe landing in case of an abnormal or emergency situation after take-off, the appropriate meteorological information to the PIC should indicate that the actual and forecast meteorological conditions at the vertiport of departure are expected to remain at or above the visibility and distance from cloud minima as specified in ROA.FLR.5001 for the airspace class being flown, unless operating as a special VFR flight.

PLANNING MINIMA AND SAFETY MARGINS FOR THE DESTINATION VERTIPORT OR ANOTHER SAFE LANDING OPTION AT DESTINATION

The PIC should ensure that the duration of the flight and the actual and forecast meteorological conditions, based on appropriate meteorological information, are such that during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the destination vertiport or at another planned safe landing option, an approach and landing are possible at or above visibility and distance from cloud minima as specified in ROA.FLR.5001 for the airspace class being flown, unless operating as a special VFR flight.

As some of the meteorological information specified in point (e) of point MET.TR.215 of Part-MET is airfield-specific, the PIC should exercise caution when associating it with nearby vertiports or diversion locations.

PLANNING MINIMA FOR VERTIPORTS AND DIVERSION LOCATIONS ALONG THE ROUTE

The planning minima, in terms of visibility and distance from cloud, for an approach and landing at vertiports or diversion locations along the route may be below those specified in ROA.FLR.5001 for the airspace class being flown. In any case, the PIC should ensure that the VFR flight is conducted in conditions of visibility and distance from clouds equal to or greater than those specified in ROA.FLR.5001 or ROA.FLR.5005, unless operating as a special VFR flight.

GM2 UAM.OP.MVCA.192 Fuel/energy scheme — selection of vertiports and diversion locations

APPROPRIATE METEOROLOGICAL INFORMATION

Useful guidance material as regards the appropriate meteorological information can be found in:

GM1 CAT.OP.MPA.192(c)&(d), on the use of aerodrome reports and forecasts;

GM2 CAT.OP.MPA.192(c)&(d), on supplemental meteorological information using digital imagery.

UAM.OP.MVCA.193 Safe landing options at the destination

The PIC shall commit to land at one of the safe landing options in accordance with point UAM.OP.MVCA.192, when the current assessment of the meteorological conditions, traffic, and other operational conditions indicate that a safe landing can be performed at the committed landing site at the estimated time of use.

AMC1 UAM.OP.MVCA.193 Safe landing options at the destination

TRAFFIC AND OTHER OPERATIONAL CONDITIONS

The PIC should commit to land at one of the safe landing options:

following an energy system check and prediction indicating that the remaining energy is sufficient to perform a safe landing at the committed landing option; and

after checking that the landing option is available.

If the landing options are collocated at the destination vertiport, the PIC should ensure that no other aircraft is taking off or landing at any of them at the same time when the landing of the VCA is expected, unless the landing options are independent and operation on one of them does not affect safe landing at the other one.

UAM.OP.MVCA.200 Special refuelling or defuelling of VCA

Special refuelling or defuelling shall be performed only if the IAM operator has:

developed standard operating procedures on the basis of a risk assessment; and

established a training programme for its personnel involved in such operations.

Special refuelling or defuelling applies to:

refuelling with lift and thrust units powered on;

refuelling/defuelling with passengers embarking, on board, or disembarking; and

refuelling/defuelling with wide-cut fuel.

Refuelling procedures with lift and thrust units powered on, and any change to those procedures, shall require the prior approval of the competent authority.

GM1 UAM.OP.MVCA.200 Special refuelling or defuelling of VCA

SCOPE

The requirements on special refuelling or defuelling of VCA apply to VCA using conventional fuels.

GM2 UAM.OP.MVCA.200 Special refuelling or defuelling of VCA

RISK ASSESSMENT

The risk assessment required by UAM.OP.MVCA.200(a)(1) should explain why special refuelling/defuelling is needed, identify any additional hazards, and describe how the additional risks are controlled.

The operators' risk assessment may include, but not be limited to, the following risks, hazards and mitigation measures:

- risk related to refuelling with lift and thrust units powered on;
- risk related to the shutting down of the lift and thrust units, including the risk of failures during start-up;
- environmental conditions, such as wind limitations, displacement of exhaust gases, and blade sailing;
- risk related to human factors and fatigue management, especially for single-pilot operations for long periods of time;
- risk mitigation, such as the safety features of the fuel installation, rescue and firefighting (RFF) capability, number of personnel members available, ease of emergency evacuation of the VCA, etc.;
- assessment of the use of radio transmitting equipment;
- determination of the use of passenger seat belts;
- assessment of the use of the PED(s);
- if passengers are to disembark, consideration of their disembarking before rather than after the refuelling; and
- if passengers are to embark, consideration of their embarking after rather than before the refuelling.

AMC1 UAM.OP.MVCA.200 Special refuelling or defuelling of VCA

REFUELLING WHEN LIFT AND THRUST UNITS ARE POWERED ON

Refuelling when lift and thrust units are powered on should only be conducted:

- with no passengers embarking or disembarking; however, passengers may be on board;
- if allowed by the operator of vertiport or diversion location, as applicable;

in accordance with any specific procedures and limitations in the AFM;

using JET A or JET A-1 fuel types; and

with the appropriate RFF facilities or equipment available.

In addition, operational procedures in the operations manual should specify that at least the following precautions are taken:

all necessary information should be exchanged in advance with the vertiport or diversion location operator, and with the refuelling operator;

the procedures to be used by crew members should be defined;

the procedures to be used by the operator's ground operations personnel that are in charge of refuelling or assisting in emergency evacuations should be described;

the operator's training programmes for crew members and for the operator's ground operations personnel should be described;

the minimum distance between the VCA turning parts and the refuelling vehicle or installations should be defined when the refuelling takes place outside a vertiport;

a handheld fire extinguisher with the equivalent of 5 kg of dry powder should be immediately available and ready for use;

a means for a two-way communication between the crew and the person in charge of refuelling should be defined and established;

if fuel vapour is detected inside the VCA, or any other hazard arises, refuelling/defuelling should be stopped immediately;

one pilot should stay at the controls, constantly monitor the refuelling, and be ready to shut off the lift and thrust units and evacuate at all times; and

any additional precautions should be taken, as determined by the operator's risk assessment.

AMC2 UAM.OP.MVCA.200 Special refuelling or defuelling of VCA

REFUELLING WHEN LIFT AND THRUST UNITS ARE POWERED ON WITH PASSENGERS ON BOARD

In addition to AMC1 UAM.OP.MVCA.200, for refuelling with passengers on board, the operational procedures in the operations manual should specify that at least the following precautions are taken:

the positioning of the VCA and the corresponding evacuation strategy should be defined taking into account the wind as well as the refuelling facilities or vehicles;

on a vertiport or diversion location, the ground area beneath the exits that are intended for emergency evacuation should be kept clear;

an additional passenger briefing as well as instructions should be defined, and the 'No smoking' signs should be on unless 'No smoking' placards are installed;

interior lighting should be set to enable identification of emergency exits;

the use of doors during refuelling should be defined: doors on the refuelling side should remain

closed, while doors on the opposite side should remain unlocked or, weather permitting, open, unless otherwise specified in the AFM;

at least one suitable person capable of implementing emergency procedures for firefighting, communications, as well as for initiating and directing an evacuation, should remain at a specified location; this person should not be the qualified pilot at the controls or the person performing the refuelling; and

unless passengers are regularly trained in emergency evacuation procedures, an additional crew member or ground crew member should be assigned to assist in the rapid evacuation of the passengers.

AMC3 UAM.OP.MVCA.200 Special refuelling or defuelling of VCA

REFUELLING OR DEFUELLING WITH PASSENGERS EMBARKING, ON BOARD OR DISEMBARKING

The VCA should not be refuelled/defuelled with Avgas (aviation gasoline) or wide-cut type fuel or a mixture of these types of fuel when passengers are embarking, on board, or disembarking.

For all other types of fuel, the necessary precautions should be taken and qualified personnel should be ready to initiate and direct passenger evacuation from the VCA using the most practical and expeditious means available.

AMC4 UAM.OP.MVCA.200 Special refuelling or defuelling of VCA

REFUELLING WITH PASSENGERS DISEMBARKING OR EMBARKING WHEN THE LIFT AND THRUST UNITS ARE POWERED OFF

When the lift and thrust units are powered off, the efficiency and speed of passengers disembarking from and re-embarking on board VCA should be such that disembarking before refuelling and re- embarking after refuelling is the general practice, except for VEMS.

A VEMS operator should refer to Subpart O of Part-SPA.

AMC5 UAM.OP.MVCA.200 Special refuelling or defuelling of VCA

REFUELLING OR DEFUELLING WITH WIDE-CUT FUEL

Refuelling/defuelling with wide-cut fuel should be conducted only if the operator has established appropriate procedures, taking into account the high risk of using wide-cut fuel types.

GM3 UAM.OP.MVCA.200 Special refuelling or defuelling of the VCA

PROCEDURES FOR REFUELLING/DEFUELLING WITH WIDE-CUT FUEL

The IAM operator should refer to GM3 CAT.OP.MPA.200, if applicable.

UAM.OP.MVCA.205 Charging or swapping of VCA batteries while passengers embark, are on board, or disembark

The charging or swapping of VCA batteries while passengers embark, are on board, or disembark shall be performed only if the IAM operator has:

developed standard operating procedures on the basis of a risk assessment; and

established a training programme for its personnel involved in such operations.

AMC1 UAM.OP.MVCA.205 Charging or swapping of VCA batteries while passengers embark, are on board, or disembark

RISK ASSESSMENT AND NECESSARY PRECAUTIONS

The operator should assess as a minimum the following risks, hazards and mitigation measures related to charging or swapping of batteries while passengers are embarking, on board or disembarking, as applicable:

fires;

overcharging of batteries;

battery short circuit;

stability of electrical currents when charging batteries;

ambient conditions in which battery charging will take place;

available mitigation, such as the safety features of the charging installation, RFF capability, fire extinguishers that are specifically designed to combat a battery fire, available personnel, ease of emergency evacuation of the VCA, etc.

The operator should take the necessary precautions to avoid or mitigate the risks of overcharging, overheating, short circuit and fire when charging or swapping batteries with passengers embarking, on board, or disembarking.

Qualified personnel should be ready to initiate and direct passenger evacuation from the VCA using the most practical and expeditious means available, where necessary.

GM1 UAM.OP.MVCA.205 Charging or swapping of VCA batteries while passengers embark, are on board, or disembark

POTENTIAL RISKS

Overcharging of batteries may lead to heat generation and in some cases, to a so-called thermal runaway. In the case of batteries based on Lithium-Ion technology, this can lead to the cell opening and possibly fire and explosion.

Battery short circuit is a serious safety hazard that can be prevented with proper precautions. A short circuit may occur when the battery gets in touch with some metallic parts or when it is not properly installed. As a result, a large current flows through the short circuit, creating heat

and possibly causing the battery to leak or explode.

Unstable electrical currents when charging Lithium-ion batteries may lead to their cells becoming unstable and causing a fire.

POSSIBLE PRECAUTIONS

The operator should make sure that any staff member or contractor, who is tasked with charging or swapping batteries, is trained to understand and minimise the associated risks.

The operator should provide its staff member or contractor with information regarding the maximum outside temperatures at which charging may take place and the correct charging voltage in order to avoid overcharging.

To avoid overheating, batteries should not be exposed or charged in direct sunlight or near any type of hot work, heated surface, open flame or ignition source. The environment in which the batteries are being charged should also be free from extreme humidity, as any moisture in the air or environment can also affect the stability of the battery.

Precautions should be taken to avoid high charge and discharge currents when Li-ion batteries are being charged.

As battery fires can burn quickly and fiercely, the operator may consider using fire extinguishers that are specifically designed to contain a battery fire at the place of charging or swapping batteries, to at least extend the time for the passengers to evacuate the VCA.

GM2 UAM.OP.MVCA.205 Charging or swapping of VCA batteries while passengers embark, are on board, or disembark

CHARGING OF BATTERIES

Electromagnetic exposure during charging of the battery packs mounted on VCA may have a negative impact on people wearing pacemakers, implantable defibrillators or other implanted devices.

AMC2 UAM.OP.MVCA.205 Charging or swapping of VCA batteries while passengers embark, are on board, or disembark

SWAPPING OF BATTERIES

The removal/installation of a battery on the VCA (swapping of batteries) with passengers embarking, on board, or disembarking, and in any other case of batteries swapping, should be certified by a person authorised as ‘certifying staff’ in accordance with CAR V.

UAM.OP.MVCA.216 Use of headsets

Each pilot required to be on duty at their assigned station shall wear a headset with boom microphone or equivalent. The headset shall be used as the primary device for voice communications with ATS units.

The position of the boom microphone or equivalent in the cockpit shall allow its use for two-way radio communications when the VCA is taxiing under its own power and whenever deemed necessary by the PIC.

UAM.OP.MVCA.220 Emergency evacuation assisting means

The IAM operator shall establish procedures to ensure that before taxiing or ground movement, take-off and landing, and when safe and practicable to do so, all emergency evacuation assisting means that deploy automatically are armed.

UAM.OP.MVCA.225 Seats, safety belts and restraint systems

Pilots

During take-off and landing, and whenever deemed necessary by the PIC in the interest of safety, each pilot shall be properly secured by all safety belts and restraint systems provided on their seats.

Passengers

Before take-off and landing, and during taxiing or ground movement, and whenever deemed necessary in the interest of safety, the PIC shall be satisfied that each passenger on board occupies a seat with their safety belt or restraint system properly secured.

The IAM operator shall make provisions for multiple occupancy of aircraft seats that is only allowed on specified seats. The PIC shall be satisfied that aircraft seats are not used for multiple occupancy other than by one adult and one infant, with the latter being properly secured by a supplementary loop belt or other restraint device.

UAM.OP.MVCA.230 Securing of passenger compartment

The IAM operator shall establish procedures to ensure that before taxiing or ground movement, take-off and landing, all exits and escape paths are unobstructed.

The PIC shall ensure that before take-off and landing, and whenever deemed necessary in the interest of safety, all equipment and baggage is properly stowed and secured.

UAM.OP.MVCA.235 Life jackets

The IAM operator shall establish procedures to ensure that, when operating a VCA over water, the duration of the flight and the conditions to be encountered during the flight are duly considered when deciding whether life jackets are to be worn by all aircraft occupants.

UAM.OP.MVCA.240 Smoking on board

The PIC shall not allow smoking on board at any time.

UAM.OP.MVCA.245 Meteorological conditions

The PIC shall:

commence the flight; or

if applicable, continue beyond the point from which a revised ATS flight plan applies in the event of in-flight replanning;

continue towards the planned destination vertiport,

only when the current meteorological reports or a combination of current reports and forecasts indicate that the expected meteorological conditions at the departure vertiport, along the route to be flown, and at the destination vertiport, at the time of arrival, are at or above the planning minima established in accordance with point UAM.OP. MVCA.111.

UAM.OP.MVCA.285 Use of supplemental oxygen

The PIC shall ensure that all pilots engaged in the performance of duties essential to the safe operation of the VCA during flight use supplemental oxygen continuously whenever the cabin altitude exceeds 10 000 ft for a period of more than 30 minutes and whenever the cabin altitude exceeds 13 000 ft.

UAM.OP.MVCA.295 Use of airborne collision avoidance system (ACAS)

The IAM operator shall establish operational procedures and training programmes when an ACAS is installed and serviceable so that the flight crew is appropriately trained in the avoidance of collisions and competent in the use of ACAS II equipment.

GM1 UAM.OP.VCA.295 Use of airborne collision avoidance system (ACAS)

OPERATIONAL PROCEDURES AND TRAINING PROGRAMMES

When ACAS is installed and serviceable, useful guidance material as regards the operational procedures and training programmes established by the operator can be found in GM1 CAT.OP.MPA.295.

SUBPART C - VTOL-CAPABLE AIRCRAFT (VCA) PERFORMANCE AND OPERATING LIMITATIONS

UAM.POL.VCA.050 Scope

This Subpart establishes performance requirements and operating limitations for IAM operations with VTOL-capable aircraft (VCA).

UAM.POL.VCA.100 Type of operation

VCA shall be operated in accordance with the applicable performance requirements for the intended type of operation to be conducted.

AMC1 UAM.POL.VCA.100 Type of operation

TYPE CERTIFICATION FOR IAM OPERATIONS

The VCA should have a type certification meeting the requirements of the European SC VTOL Enhanced category or an equivalent certification basis. The equivalency is determined by the competent authority.

GM1 UAM.POL.VCA.100 Type of operation

SC VTOL

VCA type certification in Enhanced category, according to the European SC VTOL, is required for commercial and non-commercial operations over congested areas.

The type certification under the European SC VTOL applies to a small VCA with a maximum operational passenger seating configuration (MOPSC) of 9 or less and a maximum certified take-off mass of 5 700 kg or less.

UAM.POL.VCA.105 VTOL-capable aircraft (VCA) performance data

VCA shall be operated in accordance with the certified performance data and limitations contained in the AFM.

AMC1 UAM.POL.VCA.105 VTOL-capable aircraft (VCA) performance data

PERFORMANCE MATERIAL

Performance material that provides the necessary data for compliance with the performance requirements prescribed in Part-IAM should be included in the AFM. If performance data, as required for the VCA operations, are not available in the AFM, then other data should be

included in the OM-B.

UAM.POL.VCA.110 General performance requirements

The mass of the VCA:

at the start of the take-off; or

in the event of in-flight replanning, at the point from which the revised operational flight plan applies;

shall not be greater than the mass at which the requirements of this Subpart can be complied with for the flight to be conducted, considering expected reductions in mass as the flight proceeds and such fuel jettisoning as applicable.

The approved performance data contained in the AFM shall be used to determine compliance with the requirements of this Subpart, supplemented as necessary with other data as prescribed in the relevant requirement. The IAM operator shall specify such other data in the operations manual (OM). When applying the factors prescribed in this Subpart, any operational factors already incorporated in the performance data contained in the AFM shall be considered to avoid double application of factors.

When showing compliance with the requirements of this Subpart, the following parameters shall be taken into account:

the mass of the VCA;

the configuration of the VCA;

the environmental conditions, in particular:

density altitude;

wind:

except as provided in point (C), for take-off, take-off flight path and landing, the correction for wind shall not be more than 50 % of any reported steady headwind component of 5 kt or greater;

when take-off and landing with a tailwind component is permitted in the AFM, and in all cases for the take-off flight path, the correction for tailwind shall not be less than 150 % of any reported wind component;

when precise wind-measuring equipment enables the accurate measurement of wind velocity over the point of take-off and landing, wind components in excess of 50 % may be taken into account by the IAM operator, provided that the IAM operator demonstrates to the competent authority that the proximity to the FATO and accuracy enhancements of the wind-measuring equipment provide an equivalent level of safety;

the operating techniques; and

the operation of any systems that have an adverse effect on the VCA performance.

AMC1 UAM.POL.VCA.110 General performance requirements

CORRECTION FOR WIND

The PIC should apply the correction required in accordance with UAM.POL.VCA.110(c) on the reported wind component and use the resulting value for correcting other performance parameters (e.g. TODRV, LDRV) as specified in the AFM.

GM1 UAM.POL.VCA.110 General performance requirements

DENSITY ALTITUDE

Point (c)(3)(i) of UAM.POL.VCA.110 refers to the pre-flight performance calculation of density altitude, essentially but not only for take-off and landing, using reported pressure altitude and temperature. For in-flight replanning, if necessary, the pressure altitude and temperature of the destination as reported would be used, not the altitude read by the sensors. Therefore, neither the pressure altitude nor the GNSS altitude available in flight will ever be used for the purpose of UAM.POL.VCA.110 (c)(3)(i).

GM2 UAM.POL.VCA.110 General performance requirements

REPORTED HEADWIND COMPONENT

The reported headwind component should be interpreted as being the one reported at the time of flight planning and may be used, provided that there is no significant change of unfactored wind prior to take-off.

UAM.POL.VCA.115 Obstacle accountability

For operations to/from final approach and take-off areas (FATO), the IAM operator shall, during pre-fight planning and for the purpose of obstacle-clearance calculations:

consider an obstacle located beyond the FATO, in the take-off flight path or the missed approach flight path, if its lateral distance to the nearest point on the surface below the intended flight path is not farther than the following:

for flights to be conducted in accordance with VFR:

"0.75 × D";

plus the greater of "0.25 × D" or "3 m";

plus:

0.10 × distance DR for operations under VFR by day; or

Reserved;

consider an obstacle located in the backup or lateral transition area for take-offs using a backup or a lateral transition procedure, if its lateral distance from the nearest point on the surface below the intended flight path is not farther than:

"0.75 × D";

plus the greater of "0.25 × D" or "3 m";

plus:

0.10 × distance DR for operations under VFR by day; or

reserved;

disregard obstacles situated beyond the FATO in the take-off flight path or the missed approach flight path if their lateral distance to the nearest point on the surface below the intended flight path is farther than the following:

3 × D for VFR day operations if it is assured that navigational accuracy can be achieved by reference to suitable visual cues during the climb;

reserved.

GM1 UAM.POL.VCA.115 Obstacle accountability

DIMENSION 'D'

The diameter 'D' is defined in MOC VTOL.2115, point (6). It should be published in metres and feet, rounded up to the next tenth. If the VCA changes its dimensions during taxi or parking (e.g. folding wings), a corresponding Dtaxi and Dparking should also be provided.

GM2 UAM.POL.VCA.115 Obstacle accountability

DISTANCE DR

For the purpose of obstacle accountability in the take-off flight path or the missed approach flight path, the DR distance is the horizontal distance that the VCA has travelled from the end of the TODA or when a backup take-off procedure is being used, from the back of the FATO.

UAM.POL.VCA.120 Take-off

The take-off mass of the VCA shall not exceed the maximum take-off mass specified in the AFM for the certified take- off procedure or procedures to be used.

The IAM operator shall take into account:

the appropriate parameters of point UAM.POL.VCA.110(c); and

the obstacles identified in accordance with point UAM.POL.VCA.115.

In addition, for VCA operations from a FATO:

the take-off mass shall be such that:

it is possible to reject the take-off and land on the FATO if a CFP has been recognised at or before the take- off decision point (TDP);

the rejected take-off distance required (RTODRV) does not exceed the rejected take-off distance available (RTODAV); and

the TODRV does not exceed the TODAV, unless the VCA with a CFP recognised at or before the TDP can, when continuing the take-off, clear all obstacles to the end of the TODRV by a vertical margin of not less than 10.7 m (35 ft).

That part of the take-off up to and including TDP shall be conducted in sight of the surface such that a rejected take-off can be conducted safely.

For take-offs using a backup or lateral transition procedure, with a CFP recognised at or before the TDP, all obstacles in the backup or lateral transition area shall be cleared by an adequate margin.

AMC1 UAM.POL.VCA.120 Take-off

TAKE-OFF PROCEDURE

The procedure used for take-off should be compatible with the certified performance for take- off obtained during the type certification of the VCA.

The VCA certified take-off performance may allow for conventional take-offs (ConvTO) and/or vertical take-offs (VTO) and/or elevated conventional (eConvTO), as described in MOC VTOL.2115 (see Figure 1).

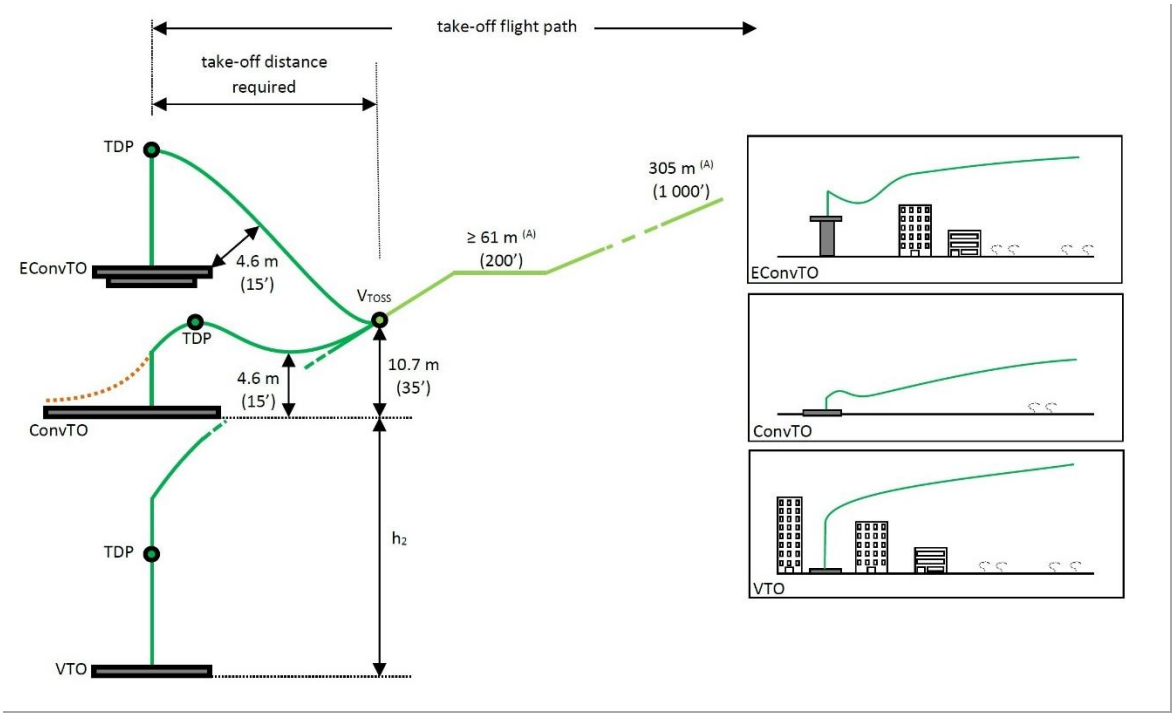


Figure 1: Possible take-off paths

GM1 UAM.POL.VCA.120 Take-off

TAKE-OFF PROCEDURES

The take-off procedures define profiles and scheduled data for various environmental conditions and masses.

Associated with these profiles and conditions are minimum operating surfaces, take-off distances, climb performance distances; these are provided (usually in graphic form) with the take-off mass and the take-off decision point (TDP).

The minimum dimensions of the take-off surface should be compatible with the chosen take-off procedure. For example, for a vertical take-off (VTO) procedure the minimum FATO dimensions should be 1.5 D, while for a forward take-off procedure the minimum FATO dimensions should be the length of the rejected take-off distance required (RTODRV).

The landing surface and the height of the TDP are directly related to the ability of the VCA to reject the take-off and land on the surface, following a CFP event before or at TDP.

Following a CFP event at or after the TDP, a CMP should exist to perform a continued take-off (CTO) which provides obstacle clearance and distance to reach a point from where climb performance in the first and subsequent segments is assured.

The operator should be aware that if the TDP is lower than the top of the vertical segment, it is possible that the rejected take-off (RTO) cannot be performed safely from a given height upwards while meeting the CMP following a CFP. If the RTO is not a foreseen option, then the TDP may be set at the bottom of the vertical segment.

Where the TDP is shifted upwards, it will not affect the shape of the continued take-off profile but should shift the min-dip upwards by the same amount that the revised TDP has been increased — with respect to the basic TDP.

Such assertions are concerned only with the vertical or the backup procedures and can be regarded as achievable under the following circumstances:

when the procedure is flown, it is based upon a profile contained in the AFM — with the exception of the necessity to perform an RTO;

the TDP, if shifted upwards (or upwards and backward in the backup procedure) will be the height at which performance is available to perform CTO following a CFP; and

if obstacles are permitted in the backup area, they should continue to be permitted with a revised TDP.

AMC2 UAM.POL.VCA.120 Take-off

THE APPLICATION OF TODRV

The selected height at which safe obstacle clearance and a positive climb gradient are achieved, following a CFP recognised before or at the TDP should be determined with the use of AFM data, and be at least 10.7 m (35 ft) above:

the take-off surface; or

as an alternative, a level height defined by the highest obstacle in the take-off distance required.

GM2 UAM.POL.VCA.120 Take-off

THE APPLICATION OF TODRV

The TODRV provides safe obstacle clearance following a CFP being recognised at TDP. It is the projected horizontal distance from the start of a take-off procedure to:

for conventional take-off (ConvTO), the point where the VCA reaches 10,7 m (35 ft) above the take-off surface with the minimum climb gradient of 4.5 %;

for elevated conventional take-off (EConvTO): after the dropdown segment, the point where the VCA reaches 10,7 m (35 ft) above the take-off surface with the minimum climb gradient of 4.5 %;

for vertical take-off (VTO), the point where the VCA reaches 10,7 m (35 ft) above the high hover height (h2) established in the AFM with the minimum climb gradient of 4.5 %.

AMC3 UAM.POL.VCA.120 Take-off

OBSTACLE CLEARANCE IN THE BACKUP AREA

For ConvTO and EConvTO using a backup or lateral transition procedure in accordance with UAM.POL.VCA.120(d), the PIC should take into account the following factors:

in the backup: the PIC has few visual cues and should rely upon the altimeter and sight picture through the front or floor window (if flight path guidance is not provided) to achieve an accurate rearward flight path;

in the rejected take-off (RTO): the PIC should be able to manage the descent against a varying forward speed whilst still ensuring an adequate clearance from obstacles until the VCA gets in close proximity for landing on the FATO;

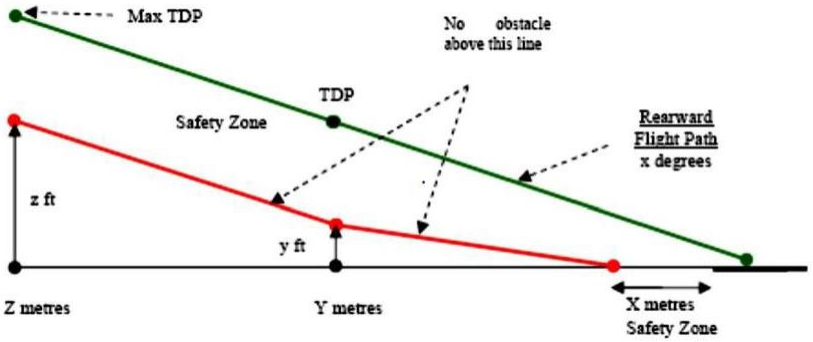
in the continued take-off (CTO): the PIC should be able to accelerate to VTOSS whilst ensuring an adequate clearance from obstacles.

UAM.POL.VCA.120(d) may be achieved by establishing that:

in the backup area no obstacles are located within the safety zone below the rearward flight path when described in the AFM (see Figure 1); in the absence of such data in the AFM, the operator should contact the manufacturer in order to define a safety zone; or

during the backup, the RTO and the CTO manoeuvres, obstacle clearance is demonstrated to the competent authority.

Figure 1 – Rearward flight path



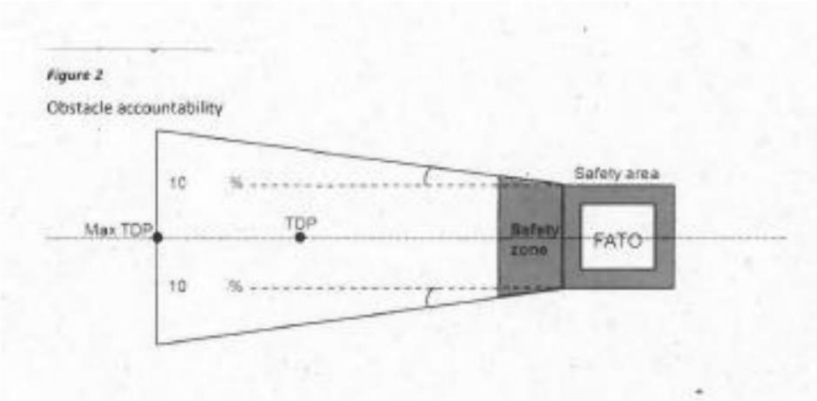
An obstacle in the backup area is considered if its lateral distance from the nearest point on the surface below the intended flight path is not further than:

0.75 × D; plus

0.25 × D or 3 m, whichever is greater; plus

0.10 × DR for VFR day; DR is in this case the distance travelled from the back of the FATO (see Figure 2).

Figure 2 – Obstacle accountability



UAM.POL.VCA.125 Take-off flight path

From the end of the take-off distance required for VCA (TODRV), following a CFP being recognised at or after the take- off decision point (TDP):

the take-off mass shall be such that the take-off flight path provides vertical clearance, above all obstacles located in the climb path, of not less than 10,7 m (35 ft) for operations under VFR by day;

when a change of direction of more than 15° is made, allowance shall be made for the ability to maintain the climb gradient to comply with the obstacle-clearance requirements in accordance with the AFM; this change of direction is not to be initiated before reaching a height of 61 m (200 ft) above the take-off surface unless it is part of an approved take-off procedure in the AFM.

When showing compliance with point (a), the relevant parameters of point UAM.POL.VCA.110(c) shall be considered at the vertiport, diversion location or operating site of departure.

GM1 UAM.POL.VCA.125 Take-off flight path

END OF THE TAKE-OFF FLIGHT PATH

The take-off flight path ends at 1 000 ft above the highest obstacle in congested areas or whenever the VCA reaches the minimum flight altitude/height as established in accordance with Part-ROA.

UAM.POL.VCA.130 En route

The mass of the VCA and the flight path at all points along the route following a critical failure for performance (CFP), and taking into account the meteorological conditions expected for the flight, shall permit compliance with the following:

Reserved.

Reserved.

The mass of the VCA shall permit its operation at or above the minimum level established in accordance with point ROA.FLR.5005(f) and a descent from the cruising altitude to the landing decision point (LDP) above the vertiport, diversion location or operating site where the landing can be conducted in accordance with point UAM.POL.VCA.135.

When showing compliance with point (a), all the following shall apply:

the CFP is assumed to occur at the most critical point along the route;

the effects of winds on the flight path are considered;

fuel jettisoning, if applicable, is planned to be performed only to an extent consistent with reaching the vertiport, diversion location or operating site with the required fuel/energy reserves and using a safe procedure; and

fuel jettisoning, if applicable, is not planned below 300 m (1 000 ft) above terrain.

UAM.POL.VCA.135 Landing

The landing mass of the VCA at the estimated time of landing shall not exceed the maximum mass specified in the AFM for the certified landing procedure to be used.

The IAM operator shall take into account:

the relevant parameters of point UAM.POL.VCA.110(c); and

the obstacles identified in accordance with point UAM.POL.VCA.115.

If a critical failure for performance (CFP) is recognised at any point at or before the landing decision point (LDP), it is possible either to land and stop within the runway or FATO, or perform a balked landing by clearing all obstacles in the flight path by a vertical margin of 10,7 m (35 ft).

If a CFP is recognised at any point at or after the LDP, it is possible to land and stop within the runway or FATO by clearing all obstacles in the approach path.

AMC1 UAM.POL.VCA.135 Landing

LANDING PROCEDURE

The procedure used for landing should be compatible with the certified performance for landing obtained during the type certification of the VCA (ref. MOC VTOL.2130).

GM1 UAM.POL.VCA.135 Landing

LANDING PROCEDURE

The VCA certified landing performance may allow for a conventional landing (ConvL) procedure or a vertical landing (VL) procedure.

A ConvL path starts at a landing decision point (LDP) and ends at the point where the aircraft reaches a stop at the FATO on the ground (after which it may taxi).

A VL might be required when landing on a vertiport in a congested environment. The operator may choose to have, from a point along the approach after the LDP, a pure vertical trajectory.

certified performance additional to (a) or (b), allowing a conventional landing with a roll-on.

GM2 UAM.POL.VCA.135 Landing

START OF THE LANDING FLIGHT PATH

The landing flight path starts at 1 000 ft above the highest obstacle in congested areas or at the minimum flight altitude/height as established in accordance with Part-ROA.

GM3 UAM.POL.VCA.135 Landing

LANDING DECISION POINT (LDP)

The LDP is identified with a combination of height, vertical speed and airspeed and/or ground speed.

The LDP is defined as the last point from which a balked landing can be performed. After the LDP, a balked landing is not assured.

Following a CFP before or after the LDP, the VCA should be capable of a CFSL.

LANDING DISTANCE REQUIRED (LDRV)

The LDRV is the horizontal distance required to land and come to a stop from a point 15 m (50 ft) above the landing surface (Figure 1).

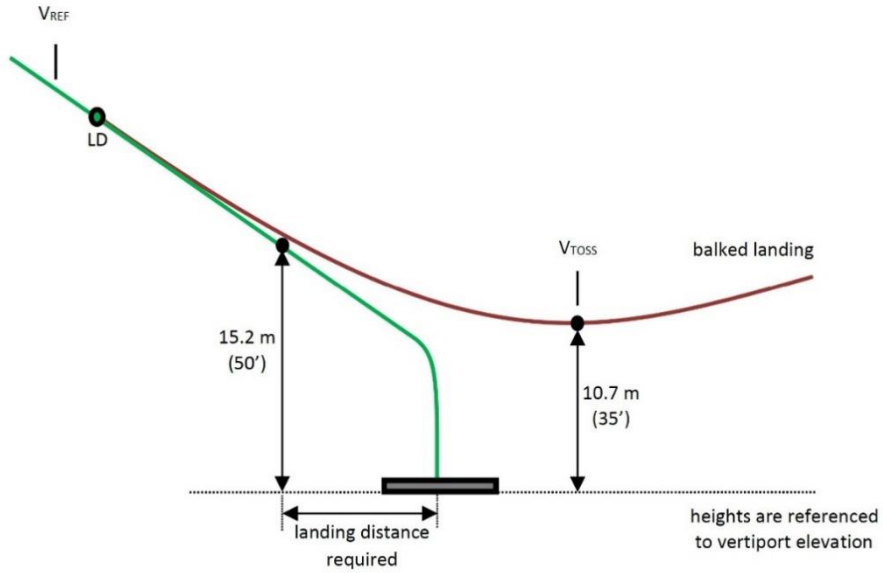


Figure 1: Landing path

UAM.POL.VCA.140 Mass and balance, and loading

During any phase of the operation, the loading, mass, and centre of gravity (CG) of the VCA shall comply with the limitations specified in the AFM, or the operations manual (OM), if more restrictive.

The IAM operator shall establish the mass and the CG of any aircraft it operates by actual weighing prior to initial entry into service and thereafter at intervals of 4 years if individual VCA masses are used, or at intervals of 9 years if fleet masses are used. The accumulated effects of modifications and repairs on the mass and balance of the aircraft shall be considered and properly documented. The VCA shall be reweighed if the effect of modifications on its mass and balance is not accurately known.

The weighing shall be accomplished by the manufacturer of the aircraft or by an approved maintenance organisation.

The IAM operator shall determine the mass of all operating items and crew members (pilots and, if applicable, technical crew), included in the VCA dry operating mass, by actual weighing or by using standard masses. The influence of their position on the aircraft's CG shall be determined.

The IAM operator shall establish the mass of the traffic load, including any ballast, by actual weighing or by determining the mass of the traffic load in accordance with standard passenger and, if applicable, baggage masses.

The IAM operator can use standard masses for other load items if it demonstrates to the competent authority that these items have the same mass or that their masses are within specified tolerances.

The IAM operator shall determine the mass of the fuel load and/or of the energy storage unit as follows:

for the fuel load, by using the actual density or, if not known, the density calculated in accordance with a method specified in the operations manual (OM);

for the energy storage unit, by weighing or by using standard masses specified in the OM.

The IAM operator shall ensure that the loading of:

the VCA is performed under the supervision of qualified personnel; and

the traffic load is consistent with the data used for the calculation of the aircraft mass and balance.

The IAM operator shall comply with additional structural limits such as the floor strength limitations, the maximum load per running metre, the maximum mass per cargo compartment, and the maximum seating limit.

The IAM operator shall specify in the OM the principles and methods applied for the loading and in the mass and balance system that meet the requirements of points (a) to (i). That system shall cover all types of the operator's intended operations.

AMC1 UAM.POL.VCA.140 Mass and balance, loading

CENTRE OF GRAVITY (CG) LIMITS — OPERATIONAL CG ENVELOPE AND IN-FLIGHT CG

In the AFM, forward and aft CG limits are specified. These limits ensure that the certification stability and control criteria are met throughout the whole flight and allow the proper trim setting for take-off. The operator should ensure that these limits are respected by:

defining and applying operational margins to the certified CG envelope in order to compensate for the following deviations and errors:

deviations of the actual CG at empty or operating mass from published values due, for example, to weighing errors, unaccounted modifications and/or equipment variations;

deviations in the distribution of baggage and cargo in the various compartments as compared with the assumed load distribution as well as inaccuracies in the actual mass of baggage and cargo;

deviations in the actual passenger seating from the seating distribution assumed when preparing the mass and balance documentation. Large CG errors may occur when 'free seating', i.e. freedom of passengers to select any seat when entering the VCA, is permitted;

deviations of the actual CG of cargo and passenger load within individual cargo compartments or cabin sections from the normally assumed mid position;

deviations of the CG caused by any configuration change, unless already covered by the certified limits;

deviations caused by in-flight change of loading;

deviations caused by the difference between the actual passenger masses and standard passenger masses when such masses are used; and

defining and applying operational procedures in order to:

ensure an even distribution of passengers in the cabin;

take into account any significant CG travel during flight caused by passenger/crew movement; and

take into account any significant CG travel during flight caused by fuel consumption, if applicable.

AMC2 UAM.POL.VCA.140 Mass and balance, loading

WEIGHING OF A VCA

New VCA that have been weighed at the factory may be placed into operation without reweighing if the mass and balance records have been adjusted for alterations or modifications to the VCA. VCA transferred from one EU operator to another EU operator do not have to be weighed prior to use by the receiving operator unless more than 4 years have elapsed since the last weighing.

The mass and CG position of a VCA should be revised whenever the cumulative changes to the dry operating mass or CG exceed ±0.5 % of the maximum landing mass or CG envelope respectively. This may be done by weighing the VCA or by calculation.

When weighing a VCA, normal precautions should be taken consistent with good practices such as:

checking for completeness of the VCA and equipment;

determining that fluids are properly accounted for;

ensuring that the VCA is clean; and

ensuring that weighing is accomplished in an enclosed building.

Any equipment used for weighing should be properly calibrated, zeroed, and used in accordance with the manufacturer's instructions. Each scale should be calibrated either by the manufacturer, by a civil department of weights and measures or by an appropriately authorised organisation within 2 years or within a time period defined by the manufacturer of the weighing equipment, whichever is less. The equipment should enable the mass of the VCA to be established accurately. One single accuracy criterion for weighing equipment cannot be given. However, the weighing accuracy is considered satisfactory if the accuracy criteria in Table1 are met by the individual scales/cells of the weighing equipment used.

Table 1: Accuracy criteria for weighing equipment

For a scale/cell load	An accuracy of below
2 000 kg	±1 %
from 2 000 kg to 20 000 kg	±20 kg
above 20 000 kg	±0.1 %

AMC3 UAM.POL.VCA.140 Mass and balance, loading

DRY OPERATING MASS OF THE VCA

The dry operating mass includes:

the pilot(s), technical crew member(s) and their baggage as applicable;

catering and removable passenger service equipment, if applicable.

AMC4 UAM.POL.VCA.140 Mass and balance, loading

MASS VALUES FOR THE PILOT(S) AND THE TECHNICAL CREW MEMBER(S), IF APPLICABLE

The operator should use the following mass values for the pilot(s) and the technical crew member(s), as applicable, to determine the dry operating mass:

actual weighted masses including baggage; or

standard masses, including baggage, of 85 kg.

The operator should correct the dry operating mass to account for any additional baggage. The position of this additional baggage should be accounted for when establishing the CG of the VCA.

AMC5 UAM.POL.VCA.140 Mass and balance, loading

MASS VALUES FOR PASSENGERS, THEIR CLOTHING AND PERSONAL BELONGINGS AND FOR BAGGAGE

When the actual number of passenger seats in the VCA is less than six, passenger mass may be calculated on the basis of a statement by, or on behalf of, each passenger plus a predetermined mass to account for clothing and personal belongings.

The predetermined mass for clothing and personal belonging should be established by the operator on the basis of studies relevant to its particular operation. In any case, it should not be less than 4 kg for clothing and personal belongings such as an overcoat, an umbrella, a small handbag or purse, reading material or a small camera or laptop.

The passengers' stated mass and the mass of passengers' clothing and personal belongings should be checked prior to boarding and adjusted, if necessary. The operator should establish a procedure in the operations manual on when to select actual or standard masses and the procedure to be followed when using verbal statements.

When determining the actual mass by weighing, the passengers' mass and the mass of passengers' clothing and personal belongings should be weighted immediately prior to boarding the VCA.

When using standard mass values, the standard mass values in Table 1 below should be used. The standard masses include the mass of any infant carried by an adult on one passenger seat. Infants occupying separate passenger seats should be considered as children for the purpose of this AMC.

Table 1: Standard masses for passengers — VCA with a total number of passenger seats of 19 or less

Passenger seats:	1 - 5	6 - 9	10 - 19
Male	104 kg	96 kg	92 kg
Female	86 kg	78 kg	74 kg
Children	35 kg	35 kg	35 kg

As the baggage is weighed separately, 6 kg may be deducted from male and female masses in Table 1.

For operations in which a survival suit is provided to passengers, 3 kg should be added to the passenger mass value.

Mass values for baggage

For VCA with 19 passenger seats or less, the actual mass of any passenger baggage carried in the VCA should be determined by weighing.

Other standard masses may be used provided that they are calculated on the basis of a detailed weighing survey plan and that a reliable statistical analysis method is applied. The operator should advise the competent authority about the intent of the passenger weighing survey and explain the survey plan in general terms. The revised standard mass values should only be used in circumstances comparable with those under which the survey was conducted. Where the revised standard masses exceed those in Table 1, then such higher values should be used.

On any flight identified as carrying passengers whose masses, including clothing and personal belongings, are expected to significantly deviate from the standard passenger mass, the operator should determine the actual mass of such passengers by weighing or by adding an adequate mass increment.

AMC6 UAM.POL.VCA.140 Mass and balance, loading

PROCEDURE FOR ESTABLISHING REVISED STANDARD MASS VALUES FOR PASSENGERS AND BAGGAGE

To establish revised standard mass values for passengers and baggage, the IAM operator should refer to the procedure described in AMC2 CAT.POL.MAB.100(e).

GM1 UAM.POL.VCA.140 Mass and balance, loading

ADJUSTMENT OF STANDARD MASSES

In accordance with point (f) of AMC5 UAM.POL.VCA.140, when standard mass values are used, the IAM operator should identify and adjust the passenger masses in cases where passengers are suspected of significantly deviating from the standard values. Therefore, the operations manual should contain instructions to ensure that:

relevant personnel report or take appropriate action when a flight is identified as carrying passengers whose masses, including clothing and personal belongings, are expected to significantly deviate from the standard passenger mass; and

VCA pilots pay special attention to the load and its distribution and make proper adjustments.

GM2 UAM.POL.VCA.140 Mass and balance, loading

STATISTICAL EVALUATION OF PASSENGERS AND BAGGAGE DATA

The IAM operator may use the statistical method described in GM2 CAT.POL.MAB.100(e) to establish the mass of the traffic load.

GM3 UAM.POL.VCA.140 Mass and balance, loading

GUIDANCE ON PASSENGER WEIGHING SURVEYS

The IAM operator may use the guidance on passenger weighing surveys as provided in GM3 CAT.POL.MAB.100(e).

UAM.POL.VCA.145 Mass and balance data, and mass and balance documentation

The IAM operator shall establish mass and balance data and shall produce mass and balance documentation prior to each flight, specifying the load and its distribution. The mass and balance documentation shall enable the PIC to determine that the load and its distribution is such that the mass and balance limits of the aircraft are not exceeded. The mass and balance documentation shall contain the following information:

VCA registration and type;

flight identification, number and date;

full name of the PIC;

full name of the person that has prepared the documentation;

dry operating mass and the corresponding CG of the aircraft:

mass of the fuel or energy storage unit at take-off, and the mass of trip fuel;

mass of consumables other than fuel, if applicable;

traffic load components, including passengers, baggage, freight and ballast;

take-off mass, landing mass, and zero fuel mass;

applicable aircraft CG positions; and

the limiting mass and CG values.

The information above shall be available in flight-planning documents or in mass and balance systems.

When mass and balance data and mass and balance documentation are generated by a computerised mass and balance system, the operator shall:

verify the integrity of the output data to ensure that the data is within the AFM limitations; and

specify the instructions and procedures for its use in its operations manual (OM).

The person that supervises the loading of the aircraft shall confirm by handwritten signature or equivalent that the load and its distribution are in accordance with the mass and balance documentation given to the PIC. The PIC shall indicate their acceptance by handwritten signature or equivalent.

The IAM operator shall specify procedures for last-minute changes to the load to ensure that:

any last-minute change following the completion of the mass and balance documentation is brought to the attention of the PIC and entered in the flight-planning documents containing the mass and balance documentation;

the maximum last-minute change allowed in passenger numbers or hold load is specified; and

new mass and balance documentation is prepared if the maximum passenger number is exceeded.

AMC1 UAM.POL.VCA.145 Mass and balance data, documentation

CONTENT OF THE MASS AND BALANCE DOCUMENTATION

The mass and balance documentation should include advice to the PIC whenever a non-standard method has been used for determining the mass of the load.

AMC2 UAM.POL.VCA.145 Mass and balance data, documentation

CG POSITION

The CG position may not need to be in the mass and balance documentation if:

the load distribution is in accordance with a pre-calculated balance table; or

it can be shown that for the planned operations a correct balance can be ensured, whatever the real load is.

AMC3 UAM.POL.VCA.145 Mass and balance data, documentation

INTEGRITY

The operator should verify the integrity of mass and balance data and documentation generated by a computerised mass and balance system at intervals not exceeding 6 months. The operator should establish a system to check that amendments to its input data are incorporated properly in the system and that the system operates correctly on a continuous basis.

AMC4 UAM.POL.VCA.145 Mass and balance data, documentation

SIGNATURE OR EQUIVALENT

Where a signature by hand is impracticable or it is desirable to arrange the equivalent verification by electronic means, the following conditions should be applied in order to render an electronic signature equivalent to a conventional handwritten signature:

electronic ‘signing’ by entering a personal identification number (PIN) code with appropriate security, etc.;

entering the PIN code generates a print-out of the individual's name and professional capacity on the relevant document(s) in such a way that it is evident to anyone having a need for that information, who has signed the document;

the computer system logs information to indicate when and where each PIN code has been entered;

the use of the PIN code is, from a legal and responsibility point of view, considered to be fully equivalent to a handwritten signature;

the requirements for record-keeping remain unchanged; and

all personnel concerned are made aware of the conditions associated with electronic signature and this is documented.

SUBPART D – INSTRUMENTS, DATA AND EQUIPMENT

SECTION 1 - VTOL-CAPABLE AIRCRAFT (VCA)

UAM.IDE.VCA.050 Scope

This Section establishes the requirements for IAM operations with VTOL-capable aircraft (VCA).

UAM.IDE.VCA.100 Instruments and equipment

The instruments, data and equipment required by this Subpart, as well as by the type-certification requirements and airspace requirements, shall be installed on or carried in the VCA according to the conditions under which the operation is to be conducted.

Instruments and equipment required by this Subpart, as well as by the type-certification requirements and airspace requirements, shall be approved in accordance with the applicable airworthiness requirements, except for the following items:

first-aid kits;

survival and signalling equipment;

sea anchors and equipment for mooring; and

child restraint devices.

Instruments and equipment not required by this Part, as well as any other equipment which is not required pursuant to this Regulation, but carried on a flight, shall comply with the following:

the information provided by these instruments, equipment or accessories shall not be used by the pilot to comply with other essential Airworthiness and Unmanned Aircraft related regulations, or with points UAM.IDE.MVCA.330, UAM.IDE.MVCA.335 and UAM.IDE.MVCA.345 of this Part; and

the instruments and equipment shall not affect the airworthiness of the aircraft, even in the case of failure or malfunction.

If equipment is to be used by the pilot at their assigned station during the flight, it shall be installed so as to be easily operable from that station. When a single item of equipment is to be used by more than one person at their assigned stations, it shall be installed so as to be readily operable from any station.

Those instruments that are used by the pilot shall be so arranged as to permit the pilot to see the indications readily from their assigned station with the minimum practicable deviation from the position and line of vision that the pilot normally assumes when looking forward along the flight path.

All required emergency equipment shall be easily accessible for immediate use.

GM1 UAM.IDE.VCA.100 Instruments and equipment

REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH CAR-21

The functionality of non-installed instruments and of the equipment required by this Subpart and that do not need an equipment approval, as listed in UAM.IDE.VCA.100(a), should be checked against recognised industry standards appropriate to the intended purpose. The operator is responsible for ensuring the maintenance of these instruments and equipment.

GM2 UAM.IDE.VCA.100 Instruments and equipment

NOT REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH CAR-21, BUT ARE CARRIED ON A FLIGHT

Point UAM.IDE.VCA.100 does not exempt any installed instrument or item of equipment from complying with CAR-21. In this case, the installation should be approved as required in CAR-21 and should comply with the applicable Certification Specifications as required under the same Regulation.

The failure of additional non-installed instruments or equipment not required by this Part or by CAR-21 or any applicable airspace requirements should not adversely affect the airworthiness and/or the safe operation of the VCA. Examples may be the following:

portable EFB;

PEDs carried by flight crew or cabin crew; and

non-installed passenger entertainment equipment.

UAM.IDE.VCA.105 Minimum equipment required for a flight

A flight shall not commence when any of the aircraft instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless:

the aircraft is operated in accordance with the operator's minimum equipment list (MEL); or

the operator is approved by the competent authority to operate the aircraft within the constraints of the master minimum equipment list (MMEL) in accordance with point ORO.MLR.105(j).

AMC1 UAM.IDE.VCA.105 Minimum equipment for a flight

MANAGEMENT OF THE STATUS OF CERTAIN INSTRUMENTS, EQUIPMENT OR FUNCTIONS

The operator should control and retain the status of the instruments, equipment or functions required for the intended operation, which are not controlled for the purpose of continuing airworthiness management.

GM1 UAM.IDE.VCA.105 Minimum equipment for a flight

MANAGEMENT OF THE STATUS OF CERTAIN INSTRUMENTS, EQUIPMENT OR FUNCTIONS

The operator should define responsibilities and procedures to retain and control the status of instruments, equipment or functions required for the intended operation, which are not controlled for the purpose of continuing airworthiness management.

Examples of such instruments, equipment or functions may be, but are not limited to, equipment related to navigation approvals as FM immunity or certain software versions.

SECTION 2 - MANNED VTOL-CAPABLE AIRCRAFT (MVCA)

UAM.IDE.MVCA.050 Scope

This Section establishes additional requirements for IAM operations with manned VTOL-capable aircraft (MVCA).

UAM.IDE.MVCA.115 Operating lights

A VCA operated under VFR by day shall be equipped with anti-collision lights.

AMC1 UAM.IDE.MVCA.115 Operating lights

ANTI-COLLISION LIGHTS

An anti-collision light system should be installed to attract attention to the VCA and provide sufficient visibility in a timely manner for another aircraft to avoid a collision, especially in congested areas. The system should consist of one or more approved anti-collision lights. Each anti-collision light should be either aviation red or aviation white.

Where installed, red flashing anti-collision lights (rotating beacons) should not affect the vision of the pilot or detract from the visibility of the position lights. The red flashing lights should be turned on when the lift and thrust units are powered on prior to taxiing or movement of the VCA on the ground and should be turned off at the end of the flight.

Where installed, white flashing anti-collision lights (strobes) should be so located that the pilot's vision is not impaired. The white flashing lights should be turned on prior to take-off and turned off immediately after landing.

UAM.IDE.MVCA.125 Flight instruments and associated equipment

The VCA shall be equipped with the flight instruments and equipment specified in its type-certification approval for flights to be conducted in accordance with VFR by day.

Additional flight instruments and equipment shall be installed on or carried in the VCA, as necessary, according to the expected operating conditions and crew workload.

GM1 UAM.IDE.MVCA.125 Flight instruments and associated equipment

TYPE CERTIFICATION APPROVAL

A reference to the type certification approval, including the required flight instruments, should be available in the VCA flight manual and/or TCDS.

UAM.IDE.MVCA.140 Fuel/energy measuring and displaying equipment

The VCA shall be equipped with means of measuring and displaying to the pilot in flight the remaining usable amount of fuel/energy.

A conservative estimate of the amount of fuel/energy necessary to complete the remaining part of the flight shall be displayed to the pilot in flight unless provided by other means as per point

UAM.OP.VCA.195(a).

AMC1 UAM.IDE.MVCA.140 Fuel/energy measuring and displaying equipment

EQUIPMENT REQUIREMENTS

The VCA should be equipped with means of:

measuring the remaining usable amount of fuel/energy;

providing a conservative estimate in flight of the amount of fuel/energy necessary to complete the remaining part of the flight considering the individual fuel/energy scheme;

displaying to the pilot the comparison between (1) and (2) updated at regular intervals, as well as upon request; and

warning the pilot when the amount of fuel/energy necessary to complete the flight estimated in (2) is greater than the remaining usable fuel/energy measured in (1).

The calculation in (a)(2) should:

be updated at intervals allowing the VCA to reach the destination following the actual flight routing with the onset of the warning in (a)(4);

take into account the actual wind conditions, and updated weather information through dedicated service providers; and

take into account any existing or possible failure or malfunction of the VCA system or any existing or possible abnormal flight condition.

The VCA should be equipped with an in-flight replanning function that indicates to the pilot the area where a diversion is possible and indicate vectors to a suitable diversion location.

As an alternative to points (a)(2), (a)(3), (a)(4), (b) and (c), the operator may implement a procedure in accordance with AMC1 UAM.OP.VCA.195.

UAM.IDE.MVCA.145 Height-determination equipment

The VCA shall, for flights over water, be equipped with a means to determine the height of the aircraft in relation to the water surface, capable of emitting an audio warning below a preset value and a visual warning at a height selectable by the pilot, when operating:

at a distance from land corresponding to more than 3 minutes flying time at normal cruising speed;

reserved;

reserved;

out of sight of the land.

AMC1 UAM.IDE.MVCA.145 Height-determination equipment

RADIO ALTIMETER

A radio altimeter capable of emitting an audio warning below a preset height and a visual warning at a height selectable by the pilot may be used to meet the safety objective of UAM.IDE.MVCA.145.

AMC2 UAM.IDE.MVCA.145 Height-determination equipment

AUDIO AND VISUAL WARNING

The audio warning should be a voice warning. The voice warning alert should be distinguishable from other warnings and should contain a clear and concise voice message. The height at which the audio warning is triggered should be such as to provide adequate time for the pilot to take corrective action.

The visual warning should require a minimal interpretation by the pilot for both an instantaneous impression of absolute height and rate of change of height. The voice warning should be triggered only whilst descending through the preset datum height and be inhibited whilst ascending.

GM1 UAM.IDE.MVCA.145 Height-determination equipment

TAWS

A VCA equipped with a TAWS capable of determining the height and capable of emitting an audio warning below a preset value and a visual warning at a height selectable by the pilot does not need to be equipped with a separate radio altimeter.

UAM.IDE.MVCA.170 Crew interphone system

For operations with more than one crew member, the VCA shall be equipped with an interphone system, including headsets and microphones, for use by all the crew members.

AMC1 UAM.IDE.MVCA.170 Crew interphone system

TYPE OF CREW INTERPHONE

The crew interphone system should not be of a handheld type.

UAM.IDE.MVCA.180 Public address system (PAS)

The VCA shall be equipped with a PAS, unless the IAM operator is able to demonstrate that when in flight, the pilot's voice is audible and intelligible at all passengers' seats.

AMC1 UAM.IDE.MVCA.180 Public address system (PAS)

PAS SPECIFICATION

Where required, the PAS should:

operate independently of the crew interphone systems except for handsets, headsets, microphones, selector switches and signalling devices;

following a total failure of its primary electrical system, provide reliable operation for a minimum of 10 minutes.

UAM.IDE.MVCA.185 Cockpit voice recorder (CVR)

A VCA with an MCTOM of more than 5 700 kg shall be equipped with a CVR.

The CVR shall be capable of retaining the data recorded during at least the preceding 2 hours.

The CVR shall record with reference to a timescale on means other than magnetic tape or magnetic wire:

voice communications transmitted from or received in the flight crew compartment by radio;

crew members' voice communications using the interphone system and the public address system (PAS), if installed;

the aural environment of the flight crew compartment, including the audio signals received from the flight crew microphone;

voice or audio signals identifying navigation or approach aids introduced into a headset or a speaker.

The CVR shall, depending on the availability of electrical power, record as early as possible during the cockpit checks at the beginning of the flight prior to the VCA being capable of moving under its own power until the cockpit checks immediately following lift and thrust units powering off at the end of the flight. In any case, the CVR shall automatically start to record prior to the aircraft moving under its own power and shall continue to record until the termination of the flight.

A function to modify CVR recordings shall be at the disposal of the PIC so that recordings made prior to the operation of that function cannot be retrieved using normal replay or copying techniques.

If the CVR is not deployable, it shall have a device to assist in locating it under water with a minimum underwater transmission time of 90 days. If the CVR is deployable, it shall have an automatic emergency locator transmitter (ELT).

AMC1 UAM.IDE.MVCA.185 Cockpit voice recorder (CVR)

OPERATIONAL PERFORMANCE REQUIREMENTS

The operational performance requirements for cockpit voice recorders (CVRs) should be those laid down in EUROCAE Document 112B or any equivalent standard accepted by the competent authority.

UAM.IDE.MVCA.190 Flight data recorder (FDR)

A VCA with an MCTOM of more than 5 700 kg shall be equipped with a FDR that uses a digital method of recording and storing data, and for which a method of readily retrieving that data from the storage medium is available.

The FDR shall record the parameters required to determine accurately the flight path, speed, attitude, engine(s) power, operation, configuration, and any parameter that has been established during the type certification of the VCA and shall be capable of retaining the data recorded during at least the preceding 25 hours.

Data shall be obtained from the VCA sources that enable accurate correlation with information displayed to the pilot(s).

The FDR shall automatically start to record the data not later than the VCA is capable of moving under its own power and shall stop automatically following lift and thrust units powering off at the end of the flight.

If the FDR is not deployable, it shall have a device to assist in locating it under water with a minimum underwater transmission time of 90 days. If the FDR is deployable, it shall have an automatic ELT.

AMC1 UAM.IDE.MVCA.190 Flight data recorder (FDR)

OPERATIONAL PERFORMANCE REQUIREMENTS

The operational performance requirements for FDRs should be those laid down in EUROCAE Document 112B or any equivalent standard accepted by the competent authority.

The FDR should, with reference to a timescale, record the parameters established in Table 1 and Table 2, as applicable, and any parameters that have been established during the type certification of the VCA.

Table 1: FDR — VCA

No	Parameter
1	Time
2	Altitude
3	Latitude
4	Longitude
5	Indicated airspeed or calibrated airspeed
6	Ground speed
7	Outside air temperature (OAT)
8	Heading (magnetic or true)
9	Track
10	Vertical speed
11	Pitch attitude
12	Roll attitude
13	Longitudinal acceleration (body axis)
14	Normal acceleration
15	Lateral acceleration
16	Roll rate or roll acceleration
17	Pitch rate or pitch acceleration
18	Yaw rate or yaw acceleration
19	Electric engines:
19a	Rotation speed of each rotor or propeller (in rpm)
19b	Health status of each electric engine controller
19c	Temperature of each electric engine
19d	Temperature of each electric engine controller
19e	Measured electrical current for each electric engine
19f	For liquid cooled electric engines: pressure and temperature of the cooling liquid
20	Flight controls:
20a	Pilot input positions on all axes and corresponding flight control
20b	Outputs (e.g. target rpm for each electric engine, flight surface positions, etc.)
21	Status or each flight control computer
22	Wings angle (if applicable)
23	Nacelles angle (if applicable)
24	Propeller pits (for every variable pitch propeller)
25	Air-ground status such as weight on wheels or equivalent parameter
26	Alerts (including master warning and master caution status)
27	Manual voice transmission keying (if voice communications are used)
28	Each battery used for propulsion and/or flight controls:
28a	Health status
28b	State of charge (SOC)
28c	Voltage
28d	Temperature
28e	Current flow
28f	State of power (SOP) (if available)

28g	Each battery used for propulsion and/or flight controls: calculated remaining flight time (if available)
29	Each electrical distribution unit (e.g. distribution units, converters) contributing to the propulsion and/or flight controls: health status
30	Status of the battery management system (if any)
31	Combustion engines:
31a	Fuel parameters
31b	Oil pressure and temperature
31c	Parameters required to determine propulsive thrust or power delivered
31d	Turbine rpm (if applicable)
31e	FADEC health status (if applicable)
31f	VCA inputs used by the FADEC (if applicable)
31g	Any electrical current generation
31h	Any other parameter subject to a limitation

Table 2: FDR — VCA for which the data source for the parameter is either used by VCA systems or is available for use by the pilot to operate the VCA

No	Parameter
1	Active AFCS mode
2	Radio altitude or terrain elevation
3	Current navigation source
4	Vertical and lateral deviation with respect to the current active navigation path
5	DME 1 & 2 distances
6	Drift angle
7	Wind speed
8	Wind direction
9	Landing gear position
10	Ice: ice detection
11	Ice: status of de-icing or anti-icing system
12	Electric engine: vibration level
13	Traffic advisory or alerts (if applicable)
14	Obstacle and terrain alerts (if applicable)

UAM.IDE.MVCA.191 Flight recorder

A VCA with an MCTOM of 5 700 kg or less shall be equipped with a flight recorder.

The flight recorder shall record by means of flight data and/or images information that is sufficient to determine the flight path and aircraft speed, as well as:

audio from the flight crew compartment in multi-crew and VEMS operations; or

radio communications with air traffic service (ATS) units, where applicable.

The flight recorder shall be capable of retaining the flight data and/or images, as well as audio, recorded during at least the preceding 5 hours.

The flight recorder shall automatically start to record prior to the VCA being capable of moving under its own power and shall stop automatically following lift and thrust units powering off at the end of the flight.

If the flight recorder records images or audio of the flight crew compartment, a function to modify image

and audio recordings shall be at the disposal of the PIC, so that the recordings made prior to the operation of that function cannot be retrieved using normal replay or copying techniques.

As an alternative to points (b) and (c), some flight data, images or audio may be transmitted and recorded remotely if approved as part of the aircraft type certification.

AMC1 UAM.IDE.MVCA.191 Flight recorder

OPERATIONAL PERFORMANCE REQUIREMENTS

The flight recorder should record the parameters established in point (b) or point (c) below and any parameters that have been established during the type certification of the VCA.

If the flight recorder records flight data, it should record at least the following parameters:

relative time count;

pitch attitude or pitch rate;

roll attitude or roll rate;

heading (magnetic or true) or yaw rate;

latitude;

longitude;

positioning system: estimated error (if available);

pressure altitude or altitude from a positioning system;

time;

ground speed;

positioning system: track (if available);

normal acceleration;

longitudinal acceleration; and

lateral acceleration.

If the flight recorder records images, it should capture views of the main instrument displays at the pilot station(s). The recorded image quality should allow reading the following indications during most of the flight, as applicable:

magnetic or true heading;

time (if presented on the front instrument panel);

pressure altitude;

indicated airspeed;

vertical speed;

slip;

OAT;

attitude (if displayed);

stabilised heading (if displayed);

lift and thrust unit status; and

fuel/energy status.

If the flight recorder records a combination of images and flight data, each flight parameter listed in (b) should be recorded as flight data or by means of images.

The parameters to be recorded as flight data should meet the performance specifications (range, sampling intervals, accuracy limits and resolution in read-out) as defined in the relevant tables of EUROCAE Document 112B or any equivalent standard accepted by the competent authority, or EUROCAE Document ED-155 'Minimum Operational Performance Specification for Lightweight Flight Recording Systems', or any equivalent standard accepted by the competent authority.

The operational performance requirements for flight recorders should be those laid down in:

EUROCAE Document ED-155 or any equivalent standard accepted by the competent authority for lightweight flight recorders; or

in EUROCAE Document 112B or any equivalent standard accepted by the competent authority for crash-protected flight recorders.

GM1 UAM.IDE.MVCA.191 Flight recorder

ADDITIONAL INFORMATION

The operator should refer to the following guidance material:

GM1 CAT.IDE.H.191 as regards additional useful information on lightweight flight recorders;

GM2 CAT.IDE.H.191 as regards the installation of cameras;

GM3 CAT.IDE.A.191 as regards recording accuracy of attitude rate parameters;

GM1 CAT.IDE.A.191(e) as regards the function to modify image and audio recordings.

UAM.IDE.MVCA.200 Flight data and cockpit voice combination recorder

Compliance with the CVR and FDR requirements may be achieved by the carriage of one combination recorder.

AMC1 CAT.IDE.H.200 Flight data and cockpit voice combination recorder

GENERAL

A flight data and cockpit voice combination recorder is a flight recorder that records:

all voice communications and the aural environment required by UAM.IDE.MVCA.185 regarding CVRs; and

all the parameters required by UAM.IDE.MVCA.190 regarding FDRs, with the associated specifications detailed in UAM.IDE.MVCA.190.

UAM.IDE.MVCA.205 Seats, seat safety belts, restraint systems, and child restraint devices (CRDs)

The VCA shall be equipped with:

a seat or berth for each person on board that is aged 24 months or older;

a seat belt with an upper-torso restraint system for use on each passenger seat and restraining belts

on each berth;

a child restraint device (CRD) for each person on board that is younger than 24 months; and

a four-point upper-torso restraint system that includes a seat belt with two shoulder straps, on each pilot seat.

A seat belt with upper-torso restraint system shall:

have a single-point release; and

on the pilot seat, incorporate a device that will automatically restrain the occupant's torso in the event of rapid deceleration.

AMC1 UAM.IDE.MVCA.205 Seats, seat safety belts, restraint systems and child restraint devices (CRDs)

UPPER TORSO RESTRAINT SYSTEM

The upper torso restraint system and the seat belt may be used independently.

AMC2 UAM.IDE.MVCA.205 Seats, seat safety belts, restraint systems and child restraint devices (CRDs)

CHILD RESTRAINT DEVICES (CRDs)

The CRD should comply with AMC1 CAT.IDE.H.205.

AMC3 UAM.IDE.MVCA.205 Seats, seat safety belts, restraint systems and child restraint devices (CRDs)

FOUR-POINT UPPER TORSO RESTRAINT SYSTEM

A four-point upper torso restraint system may also be used on passengers' seats.

UAM.IDE.MVCA.210 "FASTEN SEAT BELT" and "NO SMOKING" signs

The VCA shall be equipped with a means of indicating to all persons on board when seat belts shall be fastened, and that smoking is not allowed at any time.

AMC1 UAM.IDE.MVCA.210 'FASTEN SEAT BELT' and 'NO SMOKING'Signs

PERMANENT SIGNS

If the seat belts are supposed to be fastened throughout the flight, a permanent sign is acceptable. Passengers should be instructed accordingly.

UAM.IDE.MVCA.220 First-aid kits

The VCA shall be equipped with at least one first-aid kit.

First-aid kits shall be:

readily accessible for use;

kept up to date.

AMC1 UAM.IDE.MVCA.220 First-aid kits

CONTENT OF FIRST-AID KITS

First-aid kits should be equipped with appropriate and sufficient medications and tools.

The minimum content of the first-aid kit should comply with points (b)(1), (b)(2) and (b)(3) of AMC1 CAT.IDE.H.220.

UAM.IDE.MVCA.240 Supplemental oxygen – non-pressurised aircraft

Non-pressurised VCA operated at pressure altitudes above 10 000 ft shall be equipped with supplemental oxygen equipment capable of storing and dispensing oxygen in accordance with the following table:

Table: Minimum requirements regarding supplemental oxygen in non-pressurised aircraft

Supply for:	Flight duration and cabin pressure altitude
person(s) piloting the aircraft	For the entire flying time at pressure altitudes above 13 000 ft and for any period that exceeds 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
100 % of passengers (1)	For the entire flying time at pressure altitudes above 13 000 ft.
10 % of passengers (1)	For the entire flying time beyond 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.

(1) Passenger percentages in this table refer to passengers carried on board, including persons younger than 24 months of age.

AMC1 UAM.IDE.MVCA.240 Supplemental oxygen — non- pressurised VCA

DETERMINATION OF OXYGEN

The amount of supplemental oxygen for sustenance for a particular operation should be determined on the basis of flight altitudes and flight duration, consistent with the operating procedures, including emergency procedures, established for each operation and the routes to be flown as specified in the operations manual.

UAM.IDE.MVCA.250 Handheld fire extinguishers

The VCA shall be equipped with at least one handheld fire extinguisher in the flight crew compartment, which shall be readily accessible for use.

At least one handheld fire extinguisher shall be located in the passenger compartment if the handheld fire extinguisher located in the flight crew compartment cannot be easily accessed by the passengers.

The type and quantity of the fire-extinguishing agent of the handheld fire extinguishers shall be suitable for the type of fire likely to occur in the compartment where the handheld fire extinguisher is intended to

be used and to minimise the hazard of toxic gas concentration in compartments occupied by persons.

AMC1 UAM.IDE.MVCA.250 Handheld fire extinguishers

NUMBER, LOCATION, AVAILABILITY AND TYPE

The number and location of handheld fire extinguishers should be such as to provide adequate availability for use in each compartment accessible in flight, account being taken of the need to minimise the hazard of toxic gas concentrations.

The handheld fire extinguisher should be checked for being:

in place and secured;

charged and pressurised; and

kept up to date.

Unless an extinguisher is clearly visible, its location should be indicated by a placard or sign. Appropriate symbols may also be used to supplement such a placard or sign.

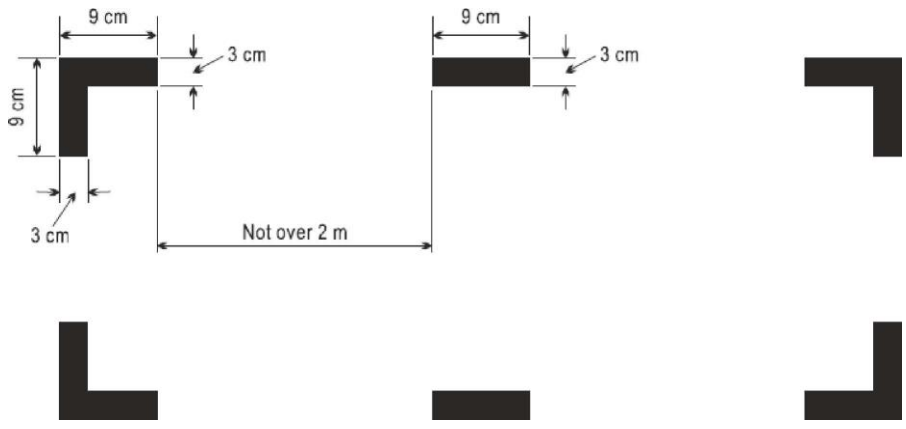
The handheld fire extinguisher should be suitable for the kinds of fire likely to occur in the compartment where the handheld fire extinguisher is intended to be used.

Dry chemical fire extinguishers should not be used in the flight crew compartment or in any passenger cabin not separated by a partition from the flight crew compartment, because of the adverse effect on vision during discharge and, if conductive, interference with electrical contacts by the chemical residues.

The passengers should be instructed on how to use the handheld fire extinguisher when necessary.

UAM.IDE.MVCA.260 Marking of break-in points

If areas on the VCA's fuselage that are suitable for break-in by rescue crews in an emergency are marked, such areas shall be marked as shown in the figure below.



AMC1 UAM.IDE.MVCA.260 Marking of break-in points

MARKINGS — COLOUR AND CORNERS

The colour of the markings should be red or yellow and, if necessary, should be outlined in white to contrast with the background.

If the corner markings are more than 2 m apart, intermediate lines 9 cm × 3 cm should be inserted so that there is no more than 2 m between adjacent markings

UAM.IDE.MVCA.275 Emergency lighting and marking

The VCA shall be equipped with:

an emergency lighting system independent of the VCA normal electric power supply to facilitate the evacuation of passengers from the aircraft; and

emergency-exit marking and locating signs visible in daylight, in the dark and in a smoke filled cabin.

AMC1 UAM.IDE.MVCA.275 Emergency lighting and marking

GENERAL

Compliance with UAM.IDE.MVCA.275(a) of VCA operating in VFR day may be achieved by:

a floor proximity emergency escape path marking system, such as photoluminescent strips on the floor or lights on the seats, providing visual guidance along the cabin floor to the emergency exit(s) in darkness or a smoke-filled cabin; or

for a VCA with a maximum operational passenger seating configuration (MOPSC) of six or less, illumination of the instruments or illumination of the emergency-exit marking and locating signs if such illumination provides visual guidance to the emergency exit(s) in darkness and in a smoke-filled cabin and is independent of the VCA normal electric power supply.

UAM.IDE.MVCA.280 Emergency locator transmitters (ELTs)

The VCA shall be equipped (fitted) with at least one approved automatic ELT or, alternatively, with such other approved automatic aircraft tracking device in combination with a locator beacon that shall enable rescue services to be alerted, to reach the accident site and to accurately locate survivors.

AMC1 UAM.IDE.MVCA.280 Emergency locator transmitters (ELTs)

AUTOMATIC ELT OR AUTOMATIC TRACKING DEVICE

The automatic ELT fitted on the VCA should be compliant with the applicable ETSO and able to transmit an encoded position of the VCA from an internal GNSS receiver.

The airborne system used to comply with UAM.IDE.MVCA.280 when not based on an automatic ELT should:

be combined with an ELT(S) or a PLB;

comply with the applicable ETSO;

comply with the Certification Specifications for Airborne Communications, Navigation and Surveillance (CS-ACNS) issued by EASA, or equivalent; and

the transmission service provider should be certified in accordance with CAR-ANS.

The ground part of the VCA tracking system should automatically identify an abnormal lack of position reporting and provide alert to the operator. It should also be capable of automatically transmitting tracking data and alerting signals to search and rescue services.

GM1 UAM.IDE.MVCA.280 Emergency locator transmitters (ELTs)

AUTOMATIC ELT OR AUTOMATIC TRACKING DEVICE

ELT compliant with the applicable ETSO means either compliant with ETSO-C126c or be part of an overall VCA approval.

Tracking system compliant with the applicable ETSO means either compliant with a particular ETSO or be part of an overall VCA approval.

AMC2 UAM.IDE.MVCA.280 Emergency locator transmitters (ELTs)

TYPES OF ELTs AND GENERAL TECHNICAL SPECIFICATIONS

Point (a) of AMC2 CAT.IDE.H.280 lists the applicable types of ELTs. An 'automatic ELT' means an ELT(AF), ELT(AP) or ELT(AD).

To minimise the possibility of damage in the event of crash impact, the automatic ELT should be rigidly fixed to the VCA structure, as far as is practicable, with its antenna and connections arranged so as to maximise the probability of the signal being transmitted after a crash.

Any ELT carried should operate in accordance with the relevant provisions of ICAO Annex 10, Volume III, and should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

AMC3 UAM.IDE.MVCA.280 Emergency locator transmitters (ELTs)

PLB TECHNICAL SPECIFICATIONS

A personal locator beacon (PLB) should have a built-in GNSS receiver with a search and rescue satellite-aided tracking (COSPAS-SARSAT) type approval number. However, devices with a COSPAS-SARSAT number belonging to series 700 are excluded as this series of numbers identifies the special-use beacons not meeting all the technical requirements and all the tests specified by COSPAS-SARSAT.

Any PLB carried should be registered with the national agency responsible for initiating search and rescue or other nominated agency.

AMC4 UAM.IDE.MVCA.280 Emergency locator transmitters (ELTs)

BRIEFING ON PLB USE

When a PLB is carried by a passenger, the PIC should brief that passenger, prior to the flight, on the PLB characteristics and use.

AMC5 UAM.IDE.MVCA.280 Emergency locator transmitters (ELTs)

BATTERIES

All batteries used in ELTs or PLBs should be replaced (or recharged, if the battery is rechargeable) when the equipment has been in use for more than 1 cumulative hour or in the following cases:

Batteries specifically designed for use in ELTs and having an airworthiness release certificate (EASA Form 1 or equivalent) should be replaced or recharged before the end of their useful life in accordance with the maintenance instructions applicable to the ELT.

Standard batteries manufactured in accordance with an industry standard and not having an

airworthiness release certificate (EASA Form 1 or equivalent), when used in ELTs should be replaced or recharged when 50 % of their useful life, as established by the battery manufacturer, has expired.

All batteries used in PLBs should be replaced or recharged when 50 % of their useful life, as established by the battery manufacturer, has expired.

The battery useful life criteria in (1), (2) and (3) do not apply to batteries (such as water- activated batteries) that are essentially unaffected during probable storage intervals.

The new expiry date for a replaced or recharged battery should be legibly marked on the outside of the equipment.

UAM.IDE.MVCA.300 Flights over water

A VCA that carries passengers shall be certified:

for ditching, when operated over water in a hostile sea at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed;

for ditching or emergency flotation, when operated over water in a non-hostile sea at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed;

for limited overwater operations, if not meeting the criteria referred to in point (a)(1) or (a)(2), and when one or more of the following conditions apply:

the total flying time over water is longer than 3 minutes;

the landing or take-off is performed over water.

A VCA that does not carry passengers shall be certified:

for ditching or emergency flotation, when operated over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed;

for limited overwater operations, if not meeting the criteria referred to in point (b)(1) and when one or more of the following conditions apply:

the total flying time over water is longer than 3 minutes;

the landing or take-off is performed over water.

A VCA that operates on water shall be certified for operations on water in addition to meeting the criteria referred to in point (a) or (b).

A VCA that operates on floating surfaces shall be certified for operations on floating surfaces in addition to meeting the criteria referred to in point (a) or (b).

The VCA shall carry a survival ELT (ELT(S)) that is buoyant and can be automatically activated for flights over water, except for limited overwater operations.

AMC1 UAM.IDE.MVCA.300 & 310 & 311 Flights over water / Life rafts / Survival equipment

SURVIVAL ELT (ELT(S))

The survival ELT (ELT(S)) is an ELT removable from a VCA, stowed so as to facilitate its ready use in an emergency. An ELT(S) may be activated manually by a survivor or automatically. The automatic activation of an ELT(S) should result from water immersion.

The ELT(S) should be carried in one of the following locations on the VCA:

on the person of a crew member; or

on the person of a passenger or in a life raft; or

adjacent to an emergency exit used for evacuation of the VCA in an emergency.

An automatic portable ELT (ELT(AP)) may be used to replace one required ELT(S) provided that it meets the ELT(S) requirements. A water-activated ELT(S) is not an ELT(AP).

GM1 UAM.IDE.MVCA.300 Flights over water

LIMITED OVERWATER OPERATIONS

For limited overwater operations, the term 'water' refers to all types of waterbodies, including hostile seas, non-hostile seas, lakes, rivers, etc.

GM2 UAM.IDE.MVCA.300 Flights over water

TOTAL FLYING TIME

The total flying time is meant to be the cumulative time of all periods during which the VCA is operated over water.

(b).G The total flying time spent over water can be converted into distance for planning purposes under standard conditions in still air.

GM3 UAM.IDE.MVCA.300 Flights over water

LANDING OR TAKE-OFF IS PERFORMED OVER WATER

The condition 'landing or take-off is performed over water' may include one of the following:

taking off from or landing at a vertiport, diversion location or VEMS operating site where the take-off or approach path is over water;

landing on or taking off from a fixed or floating platform in the water or a vessel suitable for that purpose.

UAM.IDE.MVCA.305 Life jackets and other equipment

Except as specified in point (c) for flights over water as defined in point UAM.IDE.MVCA.300, the VCA shall be equipped as a minimum with a life jacket for each person on board, stowed in a position that is readily accessible from the seat or berth of the person for whose use it is provided, with the restrain system fastened. If it is not possible to have the life jackets readily accessible with the restrain system fastened, each person shall wear a life jacket on or, if that person is younger than 24 months, an equivalent flotation device.

Each life jacket or equivalent individual flotation device shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons in the water.

For flights over water in a hostile sea at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed, for the purpose of support to activities related to non-renewable and renewable-energy sources and support to vessels:

each person on board shall wear a life jacket during the entire operation unless integrated survival suits that meet the combined requirement of the survival suit and life jacket are worn;

each person on board shall wear a survival suit as appropriate with regard to the water temperature

and estimated rescue time; the level of insulation provided shall be sufficient for the prevailing conditions and not excessive;

each person on board shall carry an emergency breathing system (EBS) and shall be instructed in its use.

AMC1 UAM.IDE.MVCA.305 Life jackets and other equipment

ELECTRIC ILLUMINATION

The means of electric illumination include a survivor locator light as defined in the applicable ETSO issued by EASA or equivalent.

GM1 UAM.IDE.MVCA.305 Life jackets and other equipment

SEAT CUSHIONS

Seat cushions are not considered flotation devices.

GM2 UAM.IDE.MVCA.305 Life jackets and other equipment

SUPPORT ACTIVITIES

Flights under point UAM.IDE.MVCA.305(c) include operations for the purpose of:

support of offshore oil, gas and mineral exploration, production, storage and transport;

support to offshore wind turbines and other renewable-energy sources; or

support to ships including sea pilot transfer.

UAM.IDE.MVCA.310 Life rafts

The VCA shall equipped with one or more life rafts for flights over water in a hostile sea area at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed or shall carry at least one life raft stowed so as to facilitate its ready use in an emergency for flights over water in a non-hostile sea at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed. The life rafts shall have sufficient capacity, separately or together, to accommodate all persons carried on board the VCA.

All required life rafts shall allow for their ready use in an emergency.

Each required life raft shall contain at least one ELT(S).

Each required life raft shall be usable in the sea conditions in which the VCA's ditching, flotation, and trim characteristics have been evaluated for the purpose of certification.

Each required life raft shall contain life-saving equipment, including means of sustaining life, as appropriate to the flight to be undertaken.

AMC1 UAM.IDE.MVCA.310 Life rafts

LIFE RAFTS AND EQUIPMENT FOR MAKING DISTRESS SIGNALS

Each required life raft should conform to the following specifications:

be of an approved design and stowed so as to facilitate its readily use in an emergency;

be radar conspicuous to standard airborne radar equipment;

In addition to the specifications under point (a):

when carrying more than one life raft on board, at least 50 % should be able to be deployed by the crew while seated at their normal station, where necessary by remote control; and

life rafts that are not deployable by remote control or by the crew should be of such weight as to permit handling by one person. 40 kg should be considered a maximum weight.

Each required life raft should contain at least the following:

one approved survivor locator light;

one approved visual signalling device;

one canopy (for use as a sail, sunshade or rain catcher) or other means to protect occupants from the elements;

one radar reflector;

one 20-m retaining line designed to hold the life raft near the VCA but to release it if the VCA becomes totally submerged;

one sea anchor;

one survival kit, appropriately equipped for the route to be flown, which should contain at least the following:

one life raft repair kit;

one bailing bucket;

one signalling mirror;

one police whistle;

one buoyant raft knife;

one supplementary means of inflation;

sea sickness tablets;

one first-aid kit;

one portable means of illumination;

500 ml of pure water and one sea water desalting kit; and

one comprehensive illustrated survival booklet in an appropriate language.

See also AMC1 UAM.IDE.MVCA.300 & 310 & 311

UAM.IDE.MVCA.311 Survival equipment

A VCA operated over areas where search and rescue would be particularly difficult shall be equipped with:

signalling equipment to make distress signals;

at least one ELT(S); and

additional survival equipment for the route to be flown taking into account the number of persons on board.

AMC1 UAM.IDE.MVCA.311 Survival equipment

ADDITIONAL SURVIVAL EQUIPMENT

The following additional survival equipment should be carried when required:

500 ml of water for each 4, or fraction of 4, persons on board;

one knife;

first-aid equipment; and

one set of air/ground codes.

If any item of equipment contained in the above list is already carried on board the VCA in accordance with another requirement, there is no need for this to be duplicated.

GM1 UAM.IDE.MVCA.311 Survival equipment

SIGNALLING EQUIPMENT

The signalling equipment for making distress signals is described in ICAO Annex 2, Rules of the Air.

GM2 UAM.IDE.MVCA.311 Survival equipment

AREAS WHERE SEARCH AND RESCUE WOULD BE PARTICULARLY DIFFICULT

The expression 'areas in which search and rescue would be particularly difficult' should be interpreted, in this context, as meaning:

areas so designated by the authority responsible for managing search and rescue; or

areas that are largely uninhabited and where:

the authority referred to in (a) has not published any information to confirm whether search and rescue would be or would not be particularly difficult; and

the authority referred to in (a) does not, as a matter of policy, designate areas as being particularly difficult for search and rescue.

See also AMC1 UAM.IDE.MVCA.300 & 310 & 311

UAM.IDE.MVCA.315 Equipment for on-water operations

A VCA certified for operating on water shall be equipped with:

a sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvring the VCA on water, appropriate to its size, weight and handling characteristics; and

equipment for making the sound signals prescribed in the International Regulations for Preventing Collisions at Sea, where applicable.

GM1 UAM.IDE.MVCA.315 Equipment for on-water operations

INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA

International Regulations for Preventing Collisions at Sea are those that were published by the International Maritime Organisation (IMO) in 1972.

UAM.IDE.MVCA.325 Headsets

The VCA shall be equipped with a headset with boom microphone or equivalent and a transmit button on the flight controls for each pilot of the VCA at their assigned station.

AMC1 UAM.IDE.MVCA.325 Headsets

GENERAL

A headset consists of a communication device that includes two earphones to receive and a microphone to transmit audio signals to the VCA communication system. To comply with the minimum performance requirements, the earphones and microphone should match the communication system's characteristics and the cockpit environment. The headset should be adequately adjustable in order to fit the pilot's head. Headset boom microphones should be of the noise cancelling type.

If the intention is to utilise noise cancelling earphones, the operator should ensure that the earphones do not attenuate any aural warnings or sounds necessary for alerting the flight crew on matters related to the safe operation of the VCA.

GM1 UAM.IDE.MVCA.325 Headsets

GENERAL

The term 'headset' includes any aviation helmet incorporating headphones and microphone worn by a flight crew member.

UAM.IDE.MVCA.330 Radio communication equipment

The VCA shall be equipped with at least one radio communication system connected to the aircraft's primary power supply and as many more radio communication systems as necessary for the type of operation to be conducted and the class(es) of airspace in which the operation shall take place.

The radio communication equipment shall allow flight crews under normal operating conditions to:

communicate with appropriate ground stations from any point on the route, including diversions;

communicate with appropriate ATC stations from any point in controlled airspace within which flights are intended to be operated; and

receive meteorological information.

The radio communication equipment shall allow for communication on the 121,5 MHz aeronautical emergency frequency.

UAM.IDE.MVCA.345 Navigation equipment

The VCA shall be equipped with navigation equipment for flights in accordance with VFR by day and in accordance with the applicable airspace requirements.

The VCA shall be equipped with sufficient navigation equipment to ensure that, in the event of failure of one item of equipment at any phase of the flight, the remaining equipment shall allow for safe navigation in accordance with the flight plan.

GM1 UAM.IDE.MVCA.345 Navigation equipment

APPLICABLE AIRSPACE REQUIREMENTS

Reserved.

UAM.IDE.MVCA.350 Transponders

When required by the class of airspace being flown, the VCA operated under VFR by day shall be equipped with a secondary surveillance radar (SSR) transponder with all the required capabilities.

AMC1 UAM.IDE.MVCA.350 Transponders

SSR TRANSPONDER

Airspace requirements for the carriage and operation of SSR transponders in VCA operated in accordance with VFR day are those contained in Part-ROA.

UAM.IDE.MVCA.355 Management of aeronautical databases

The IAM operator shall:

ensure that the aeronautical databases to be used on certified aircraft system applications meet the data quality requirements that are adequate for the intended use of the data;

ensure the timely distribution and update of current and unaltered aeronautical databases to all aircraft that require them;

report to the database provider instances of erroneous, inconsistent or missing data that might be reasonably expected to constitute a hazard to flight, notwithstanding any other occurrence-reporting requirements as defined in CAR-SMS and AMC-22. In such cases, the IAM operator shall inform all personnel concerned, and shall ensure that the affected data is not used.'

AMC1 UAM.IDE.MVCA.355 Management of aeronautical databases

AERONAUTICAL DATABASES

When the operator of an VCA uses an aeronautical database that supports an airborne navigation application as a primary means of navigation used to meet the airspace usage requirements, the database provider should be a Type 2 DAT provider certified in accordance with the European Regulation (EU) 2017/373, or equivalent.

GM1 UAM.IDE.MVCA.355 Management of aeronautical databases

AERONAUTICAL DATABASE APPLICATIONS

Applications using aeronautical databases for which Type 2 DAT providers should be certified in accordance with the European Regulation (EU) 2017/373 may be found in GM1 DAT.OR.100 of the AMC & GM to Part-DAT of that regulation.

The certification of a Type 2 DAT provider in accordance with the European Regulation (EU) 2017/373, or equivalent ensures data integrity and compatibility with the certified VCA application/equipment.

GM2 UAM.IDE.MVCA.355 Management of aeronautical databases

TIMELY DISTRIBUTION

The operator should distribute current and unaltered aeronautical databases to all VCA requiring them in accordance with the validity period of the databases or in accordance with a procedure established in the operations manual if no validity period is defined.