



Innovative Air Mobility Operations

RECORD OF REVISIONS

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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:

- (a) commercial air transport operations with manned VCA;
- (b) non-commercial operations with manned VCA, including training flights, maintenance check flights, demonstration flights and ferry flights;
- (c) emergency medical services (EMS) with manned VCA (VEMS).

IAM.GEN.VCA.100 Crew responsibilities

- (a) Pilots and other crew members shall be responsible for the proper execution of their duties that are:
 - (1) related to the safety of the VCA and its occupants; and
 - (2) specified in the operations manual (OM) of the VCA operator.
- (b) Pilots and other crew members shall comply with all of the following:
 - (1) 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;
 - (2) 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;
 - (3) comply with the relevant requirements of the operator's occurrence-reporting scheme;
 - (4) comply with the flight time, duty time and rest requirements applicable to their activities;
 - (5) not disable or switch off the recorders during flight, or intentionally erase their recordings.
- (c) Pilots and other crew members shall not perform duties related to the operation of VCA if they are in any of the following situations:
 - (1) when they are under the influence of psychoactive substances or when they are unfit due to injury, fatigue, medication, sickness or other similar causes;
 - (2) when they do not fulfil applicable medical requirements;
 - (3) when they are in any doubt as to being able to accomplish their assigned duties;
 - (4) 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 CAR-OCR 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:

- (a) 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;
- (b) 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;
- (c) 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)

- (a) 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:
 - (1) be responsible for the safety of all crew members, passengers and cargo on board the VCA;
 - (2) be responsible for the operation and safety of the VCA when the lift and thrust units are powered on;
 - (3) be responsible for the initiation, continuation, termination or diversion of a flight in the interest of safety;



- (4) 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;
 - (5) 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;
 - (6) ensure that all passengers are briefed on when and how to communicate with the flight crew member(s) during the flight;
 - (7) ensure that all operational procedures and checklists are complied with in accordance with the operations manual (OM) of the VCA operator;
 - (8) 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;
 - (9) ensure that the recorders are not disabled or switched off during the flight, and that their recordings are not intentionally erased;
 - (10) 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;
 - (11) ensure that the pre-flight inspection has been carried out in accordance with the applicable continuing airworthiness requirements;
 - (12) be satisfied that the relevant emergency equipment remains easily accessible for immediate use;
 - (13) 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.
- (b) 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.
- (c) 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:

- (a) 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;
- (b) 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;
- (c) all baggage and cargo are properly loaded and secured;
- (d) the VCA operating limitations as specified in the VCA flight manual (AFM) will not be exceeded at any time during the flight;
- (e) the pilot and other crew members under his or her authority are properly rated and meet competency and recency requirements;
- (f) 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;

(g) 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:

- (a) disembark any person, or any part of the cargo, that may represent a potential hazard to the safety of the VCA or its occupants;
- (b) 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;
- (c) 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:

- (a) the recordings of the flight recorder are not intentionally erased; and
- (b) 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

- (a) Whenever a potential bird hazard is observed, the PIC should inform the appropriate ATS unit as soon as his or her workload allows.
- (b) 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

- (a) The following two situations where the lift and thrust units are powered on should be distinguished:
 - (1) for the purpose of flight; this is the intent of IAM.GEN.VCA.130;
 - (2) for maintenance purposes or for parking.
- (b) Lift and thrust unit engagement for the purpose of flight: the pilot should not leave the controls when the lift and thrust units are powered on.
- (c) Engagement of lift and thrust 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

- (a) The IAM operator should comply with AMC1 CAT.GEN.MPA.140 as regards the technical prerequisites for the use of PEDs.
- (b) 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

- (a) 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.
- (b) 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.
- (c) 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

- (a) The IAM operator shall not accept sporting weapons for carriage by air in the VCA unless:
 - (1) they can be stowed in the VCA in a place that is inaccessible to passengers during the flight; and
 - (2) 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

- (a) 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.
- (b) 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.
- (c) 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

- (a) 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.
- (b) 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.
- (c) A firearm is any gun, rifle or pistol that fires a projectile.

The following firearms are generally regarded as being sporting weapons:

- (1) those designed for shooting game, birds and other animals;
- (2) 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
- (3) 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

- (a) 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.
- (b) 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.
- (c) 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

- (a) 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.
- (b) 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

- (a) 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:
 - (1) endanger the safety of the VCA or the safety of the persons in it; or
 - (2) cause or permit the VCA to endanger any person or property.
- (b) The IAM operator shall ensure that pilots undergo a psychological assessment before commencing flight operations in order to:
 - (1) identify the pilots' psychological attributes and suitability in respect of their work environment; and
 - (2) 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) 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.
- (b) 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

- (a) 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.
- (b) 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:

- (a) AMC1 CAT.GEN.MPA.215 as regards the principles governing a support programme;
- (b) AMC2 CAT.GEN.MPA.215 as regards the confidentiality and protection of data;
- (c) AMC3 CAT.GEN.MPA.215 as regards the elements of a support programme; and
- (d) 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

- (a) 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:
 - (1) is preserved on the ground; and
 - (2) is retained until it has been duplicated at the place at which it will be stored; or, if this is

impracticable

(3) is carried in a fireproof container in the VCA.

(b) The information referred to in point (a) shall include all the following:

- (1) a copy of the operational flight plan;
- (2) copies of the relevant part(s) of the aircraft continuing airworthiness records;
- (3) route-specific NOTAM documentation, if specifically edited by the IAM operator;
- (4) mass and balance documentation;
- (5) 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

- (a) 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.
- (b) The IAM operator shall conduct operational checks and evaluations of the recordings to ensure the continued serviceability of the recorder.
- (c) 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.
- (d) 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.
- (e) The IAM operator shall make available any recording of the recorder that has been preserved, if so determined by the competent authority.
- (f) Without prejudice to Accident Investigation Regulations and CAR-OCR:
 - (1) except for ensuring the serviceability of a recorder, audio recordings shall not be disclosed or used unless all the following conditions are fulfilled:
 - (i) a procedure related to the handling of such audio recordings and of their transcript is in place;
 - (ii) all pilots and maintenance personnel concerned have given their prior consent;
 - (iii) such audio recordings are used only for maintaining or improving safety;
 - (2) 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;
 - (3) 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:



- (i) are used by the IAM operator for airworthiness or maintenance purposes only;
- (ii) are de-identified;
- (iii) are disclosed under secure procedures;
- (4) 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:
 - (i) a procedure related to the handling of such image recordings is in place;
 - (ii) all pilots and maintenance personnel concerned have given their prior consent;
 - (iii) such image recordings are used only for maintaining or improving safety;
- (5) when images of the flight crew compartment, recorded by a recorder, are inspected for ensuring the serviceability of that recorder, then:
 - (i) those images shall not be disclosed or used for purposes other than for ensuring the serviceability of the recorder;
 - (ii) 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

- (a) 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.
- (b) 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

- (a) 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).
- (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).
- (c) 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

- (a) 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.
- (b) 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:

- (a) the flight crew seats;
- (b) VCA and engine controls;
- (c) VCA instruments;
- (d) windshield and windows used by the flight crew to get an external view while seated at their duty station; and
- (e) 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

- (a) 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).
- (b) The IAM operator shall be approved for the carriage of dangerous goods by air as cargo in accordance with Subpart G of Part-SPA.
- (c) 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.
- (d) 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.
- (e) The IAM operator shall, in accordance with TI, ensure that passengers are provided with information about the carriage of dangerous goods on board.
- (f) 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:
 - (1) any accidents or incidents involving dangerous goods;
 - (2) the discovery of undeclared or misdeclared dangerous goods in cargo or mail; or
 - (3) the finding of dangerous goods carried by passengers or crew members, or in their baggage, when not in accordance with Part 8 of TI.
- (g) 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

- (a) 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.
- (b) 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.
- (c) The first and any subsequent report should be as precise as possible and should contain the following data, where relevant:
 - (1) date of the incident or accident or the finding of undeclared or misdeclared dangerous goods;
 - (2) location and flight date;
 - (3) description of the goods and the reference number of the air waybill, pouch, baggage tag, ticket, etc.;
 - (4) proper shipping name (including the technical name, if appropriate) and UN/ID number, when known;
 - (5) class or division and any subsidiary risk;
 - (6) type of packaging, and the packaging specification marking on it;
 - (7) quantity;
 - (8) name and address of the shipper, passenger, etc.;
 - (9) any other relevant details;
 - (10) suspected cause of the incident or accident;
 - (11) action taken;
 - (12) any other reporting action taken; and
 - (13) name, title, address and telephone number of the person making the report.
- (d) Copies of relevant documents and any photographs taken should be attached to the report.
- (e) 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.
- (f) 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:

1. A dangerous goods accident is as defined in Part-DEF. For this purpose, serious injury is as defined in Accident Investigation regulations.
2. 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.
3. 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.
4. Copies of all relevant documents and any photographs taken should be attached to this report.
5. 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).
6. 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

- (a) 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.

- (b) 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.



- (c) 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.
- (d) 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

- (a) The transport of dangerous goods by air shall be conducted at least in accordance with Annex 18 to the Chicago Convention and applicable TI.
- (b) Dangerous goods shall be carried by operators on board VCA without the specific approval required under Subpart G of Part-SPA if:
 - (1) they are not subject to the TI in accordance with Part 1 thereof; or
 - (2) they are carried by passengers or crew, or are in baggage, in accordance with Part 8 of TI.
- (c) 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.
- (d) The IAM operator shall ensure that passengers are provided with information about the carriage of dangerous goods in accordance with the Technical Instructions.
- (e) 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.
- (f) 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:
 - (1) any accidents or incidents involving dangerous goods;
 - (2) the discovery of undeclared dangerous goods in cargo or mail; or
 - (3) 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:

- (a) they are not subject to the Technical Instructions in accordance with Part 1 thereof; or



- (b) 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

- (a) 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:
 - (1) an operating crew member;
 - (2) a representative of the competent authority or inspecting authority, if this is required for the performance of their official duties; or
 - (3) permitted by and carried in accordance with the operator's OM.
- (b) The pilot-in-command shall ensure that:
 - (4) admission to the flight crew compartment does not cause distraction or interference with the conduct of the flight; and
 - (5) all persons carried in the flight crew compartment are made familiar with the relevant safety procedures.
- (c) 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:

- (a) this will not cause distraction or interference with the operation of the flight; and
- (b) 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

- (a) 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:
 - (1) the aircraft flight manual (AFM), or equivalent document(s);
 - (2) the original certificate of registration of the aircraft;
 - (3) the original certificate of airworthiness (CofA);
 - (4) the noise certificate, including an English translation where one has been provided by the authority that is responsible for issuing the noise certificate;
 - (5) a certified true copy of the air operator certificate (AOC), including an English translation when

- the AOC has been issued in another language;
- (6) 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;
 - (7) the original aircraft radio licence, if applicable;
 - (8) the third-party liability insurance certificate(s);
 - (9) the journey log, or equivalent, for the aircraft;
 - (10) the continuing airworthiness records, as applicable;
 - (11) details of the filed ATS flight plan, if applicable;
 - (12) 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;
 - (13) procedures and information on visual signals for use by intercepting and intercepted aircraft;
 - (14) information concerning search and rescue services for the area of the intended flight, which shall be easily accessible in the aircraft;
 - (15) the current parts of the OM that are relevant to the duties of the pilots, which shall be easily accessible to those pilots;
 - (16) the MEL;
 - (17) appropriate notices to airmen (NOTAMs) and aeronautical information service (AIS) briefing documentation;
 - (18) appropriate meteorological information;
 - (19) cargo and/or passenger manifests;
 - (20) mass and balance documentation;
 - (21) the operational flight plan, where required;
 - (22) notification about special categories of passenger (SCPs), if applicable; and
 - (23) any other documentation that may be pertinent to the flight or is required by the States concerned with the flight.
- (b) The documents, manuals, and information carried on each flight shall be accessible to authorised persons, usable, and reliable.
- (c) 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

- (a) Reserved
- (b) 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

- (a) 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:
 - (1) the meteorological information that is specified in point (e) of point MET.TR.215 of Part-MET; and/or
 - (2) supplemental meteorological information:
 - (i) information other than that specified in point (a) above, which should be based on data from certified meteorological service providers; or
 - (ii) information from other reliable sources of meteorological information that should be evaluated by the operator.
- (b) 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.
- (c) All of the following should qualify as supplemental meteorological information:
 - (1) 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;
 - (2) a meteorological observation from a properly trained observer; and
 - (3) 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

- (a) 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:
- (1) noise certificate;
 - (2) aircraft radio licence;
 - (3) journey log, or equivalent;
 - (4) continuing airworthiness records;
 - (5) notices to airmen (NOTAMs) and aeronautical information service (AIS) briefing documentation;
 - (6) meteorological information;
 - (7) notification about special categories of passengers (SCPs), if applicable; and
 - (8) 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

- (a) The IAM operator shall establish procedures for altimeter checking before each departure.
- (b) 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

- (a) 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.
- (b) The VCA shall be taxied on the movement area of a vertiport, diversion location or VEMS operating site:
 - (1) by an appropriately qualified pilot at the controls of the VCA; or
 - (2) 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.
- (c) 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

- (a) 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.
- (b) 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.
- (c) 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.

- (d) 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

- (a) 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.
- (b) These procedures should include at least the following:
- (1) instructions on the use of standard radio-telephony (RTF) phraseology;
 - (2) instructions on the use of lights, if applicable;
 - (3) 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;
 - (4) instructions on the avoidance of actions which may create distraction from the taxiing activity.
- (c) 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

- (a) Operator's procedures for ground movement of VCA should take into consideration at least the following:
- (1) VCA dimensions, proper movement speed and VCA turning arcs;
 - (2) 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;
 - (3) measures to keep the VCA being moved within the appropriate designated areas.
- (b) 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:

- (a) is trained in ground taxiing of the VCA;
- (b) is trained to use the radio telephone;

- (c) 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;
- (d) has received instruction in respect of air traffic control (ATC) signals and instructions, phraseology and procedures, if applicable;
- (e) 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

- (a) 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.
- (b) The IAM operator's procedures shall:
 - (1) ensure that safety has priority over noise abatement; and
 - (2) 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

- (a) The IAM operator shall ensure that operations are only conducted along routes or within areas for which:
 - (1) space-based facilities, ground facilities and services, and meteorological services, adequate for the planned operation, are provided;
 - (2) 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;
 - (3) the performance of the VCA is adequate to comply with minimum flight altitude requirements;
 - (4) the equipment of the VCA meets the minimum requirements for the planned operation; and
 - (5) appropriate maps and charts are available.
- (b) 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

- (a) 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).
- (b) The method for establishing minimum flight altitudes shall be approved by the competent authority.
- (c) 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

- (a) 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:
 - (1) 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;
 - (2) the accuracy with which the position of the VCA can be determined;
 - (3) the probable inaccuracies in the indications of the altimeters used;
 - (4) 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;
 - (5) the probability of encountering unfavourable meteorological conditions, such as severe turbulence and descending air currents;
 - (6) the possible inaccuracies in aeronautical charts.
- (b) The operator should also consider:
 - (1) corrections for temperature and pressure variations from standard values;
 - (2) ATC requirements, if applicable; and
 - (3) any foreseeable contingencies along the planned route.

UAM.OP.VCA.190 Fuel/energy scheme – general

- (a) The IAM operator shall establish, implement and maintain a fuel/energy scheme that comprises policies and procedures for:
 - (1) fuel/energy planning and fuel/energy in-flight replanning;
 - (2) selection of vertiports, diversion locations or VEMS operating sites; and
 - (3) in-flight fuel/energy management.

- (b) The fuel/energy scheme shall:
 - (1) be appropriate for the intended operation; and
 - (2) correspond to the capacity of the IAM operator to support its implementation.
- (c) The fuel/energy scheme shall be included in the operations manual.
- (d) 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:

- (a) 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;
- (b) the planned amount of usable fuel/energy for the intended flight is based on all the following:
 - (1) fuel/energy consumption data provided in the AFM or current aircraft-specific data derived from a fuel/energy consumption monitoring system;
 - (2) the conditions under which the flight is to be operated, including but not limited to:
 - (i) performance required for the intended flight to the destination, including vertiports, diversion

- locations or operating sites, selected along the route;
- (ii) anticipated masses;
- (iii) NOTAMs;
- (iv) anticipated meteorological conditions;
- (v) 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;
- (vi) the expected departure and arrival routing, and anticipated delays;
- (3) the efficiency and capacity of energy storage devices for the planned operating conditions, considering degradation of those energy storage devices as appropriate;
- (c) the pre-flight calculation of the usable fuel/energy and reserves for a flight includes:
 - (1) taxi fuel/energy that shall not be less than the amount expected to be used prior to take-off;
 - (2) 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);
 - (3) 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;
 - (4) final reserve fuel/energy that shall be determined based on all the following:
 - (i) 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;
 - (ii) conservative ambient conditions from the point of view of fuel/energy consumption;
 - (iii) an appropriate configuration/speed to perform the go-around and approach procedures;
 - (iv) a conservative fuel/energy consumption;
 - (5) 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;
 - (6) extra fuel/energy to take into account anticipated delays or specific operational constraints; and
 - (7) discretionary fuel/energy, if required by the PIC;
- (d) 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:

- (a) for take-off and climb from the departure vertiport elevation to initial cruising level/altitude, taking into account the expected departure routing;
- (b) from the top of climb to the top of descent;
- (c) from the top of descent to the point where the approach procedure is initiated;
- (d) for the approach and landing at the destination vertiport.

GM 2 UAM.OP.VCA.191 Fuel/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.191 Fuel/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.191 Fuel/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”.

- (d) 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

- (a) 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.
- (b) 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:
- (1) the amount of fuel/energy necessary to complete the remaining portion of the flight to the destination; and
 - (2) 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.

- (c) 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:

- (a) divert to a selected vertiport/diversion location along the route in accordance with the individual fuel/energy scheme; or
- (b) 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

- (a) 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.



- (b) 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

- (a) During take-off and landing, the pilot required to be on duty shall be at their assigned station.
- (b) 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.
- (c) 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

- (a) 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.
- (b) 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

- (a) 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.
- (b) In addition, a description of the fluid types used should be given, including the following:
 - (1) proprietary or commercial names;
 - (2) characteristics;
 - (3) effects on aircraft performance;



- (4) hold-over times;
- (5) 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

- (a) The IAM operator shall establish procedures for flights in expected or actual icing conditions.
- (b) 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.
- (c) 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:

- (a) 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
- (b) 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:

- (a) when it is necessary for taking off or landing; or
- (b) 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:

- (a) 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
- (b) 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

- (a) 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.
- (b) 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.
- (c) 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.
- (d) 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

- (a) 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.

- (b) 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:

- (a) as flight hours flown by each VCA — identified by its serial number and registration mark — during the previous calendar year; or
- (b) 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:

- (a) ATS appropriate to the airspace in which the operation is conducted and to the applicable rules of the air are used, whenever available;
- (b) in-flight operational instructions involving a change to the ATS flight plan are coordinated with the appropriate ATS unit before transmission to the VCA;
- (c) 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;
- (d) 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) 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.
- (b) 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.
- (c) 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

- (a) The IAM operator shall use adequate vertiports for its normal operations and for diversion from the planned route as necessary.
- (b) 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.
- (c) A vertiport is considered adequate if at the expected time of use it is:
 - (1) compatible with the dimensions and weight of the VCA;
 - (2) compatible with the VCA approach and departure paths;
 - (3) provided with rescue and firefighting services (RFFS) and other services and facilities necessary for the intended operation; and
 - (4) available.
- (d) A diversion location is considered adequate if at the expected time of use:
 - (1) its characteristics, including dimensions, obstacles, and surface condition, are compatible with the VCA and allow for landing in accordance with an approved landing profile;
 - (2) it can be reached within the CMP of the VCA taking wind limitations into account;
 - (3) it has an acceptable level of RFFS protection;
 - (4) it is pre-surveyed; and
 - (5) it is available.

AMC1 UAM.OP.MVCA.107 Adequate vertiport and adequate diversion location

SELECTION OF ADEQUATE VERTIPORTS AND DIVERSION LOCATIONS

- (a) 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.
- (b) 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

- (a) 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.
- (b) An aerodrome or heliport meeting UAM.OP.MVCA.107(c) is considered to be an adequate vertiport for the operations of VCA.
- (c) 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:

- (a) Data provided by the VCA manufacturer including:
 - (1) certified minimum performance (CMP) including wind limitations;
 - (2) the radial component of the downwash (outwash) around the VCA;
 - (3) diversion location required characteristics:
 - (i) size of the landing area;
 - (ii) surface characteristics;
 - (iii) slope;
 - (iv) obstacles clearance areas;
 - (4) firefighting information, if any.
- (b) The operating conditions under which the flight is to be conducted including:
 - (1) anticipated masses;
 - (2) anticipated VCA fuel/energy consumption;
 - (3) anticipated meteorological conditions.
- (c) 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.
- (d) The means to have an indication on wind speed and direction.
- (e) Ground markings, if available.
- (f) The means to achieve an acceptable level of RFFS protection, including equipment, or agreement with the local firefighting brigade or any other adequate arrangement.
- (g) 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

- (a) 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.
- (b) 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:
 - (1) its overall dimensions;
 - (2) its suitability with reference to VCA performance as well as the radial component of the downwash (outwash) around the VCA;



- (3) the location and height of relevant obstacles in the approach and take-off flight paths and in the manoeuvring area, of any diversion location ;
- (4) the approach and take-off flight paths;
- (5) its surface condition (blowing dust/snow/sand);
- (6) the provision of control of third parties on the ground, if applicable;
- (7) current firefighting arrangements (equipment or agreement with the local firefighting brigade or any other adequate arrangement);
- (8) existing means indicating wind speed and direction;
- (9) the procedure for its activation in accordance with relevant regulations, if applicable;
- (10) other useful information; for example, details of the appropriate ATS agency and frequency;
- (11) the evacuation paths for the passengers taking into account the VCA hazard areas; and
- (12) 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

- (a) Adequate diversion locations while en-route should be used to ensure:
 - (1) a CSFL of the VCA following a CFP or another abnormal condition or situation; and/or
 - (2) compliance with the final fuel/energy reserve requirements.
- (b) Diversion locations should not be used for planned embarking and disembarking of passengers or for loading and unloading cargo.
- (c) 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.
- (d) 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

- (a) 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).

- (b) 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).
- (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:

- (a) 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
- (b) 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

- (a) 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.
- (b) 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

- (a) 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.
- (b) 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.
- (c) The flights shall be conducted with the surface in sight.



AMC1 UAM.OP.MVCA.111 Visibility and distance from cloud minima — VFR flights

GENERAL

- (a) When establishing visibility and distance from cloud minima, the operator shall take the following into account:
- (1) meteorological conditions appropriate to the intended flight;
 - (2) take-off and landing area condition;
 - (3) location and height of all obstacles that could hinder take-off or landing;
 - (4) VCA performance and capability related to obstacle clearance, take-off and landing and any flight restrictions;
 - (5) ATC communications, if required;
 - (6) ATC instructions and clearances in controlled airspace, if applicable; and
 - (7) availability of ground infrastructure and equipment required for take-off, landing and taxiing or ground movement.
- (b) 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

- (a) 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.
- (b) 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.
- (c) 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)

- (a) 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.
- (b) SCPs shall not be allocated to, nor occupy, seats that permit direct access to emergency exits or where their presence could:
- (1) impede crew members' duties;
 - (2) obstruct access to emergency equipment; or

(3) impede the emergency evacuation of passengers.

(c) 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:

- (a) 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;
- (b) infants and unaccompanied children; and
- (c) 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:

- (a) only baggage that can be appropriately and securely stowed is taken into the passenger compartment; and
- (b) 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:

- (a) each item should be stowed only in a location that is capable of restraining it;
- (b) weight limitations placarded on or adjacent to stowages should not be exceeded;
- (c) 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;
- (d) 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:

- (a) dangerous goods should not be allowed;
- (b) the mass of cargo should not exceed the structural loading limits of the floor or seats;
- (c) the number/type of restraint devices and their attachment points should be capable of restraining the cargo; and

- (d) 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:

- (a) given safety briefings and safety demonstrations in a manner that facilitates the execution of the applicable procedures in the event of an emergency; and
- (b) 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

- (a) Passenger briefings and demonstrations should contain instructions on the following items, as applicable for the intended operation:
 - (1) the use of safety belts or restraint systems, including how to fasten and unfasten the safety belts or restraint systems;
 - (2) the location of emergency exits;
 - (3) 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;
 - (4) the location and use of life jackets, if carried on board;
 - (5) the location and use of the hand fire extinguisher, if carried in the passenger compartment;
 - (6) emergency lighting and marking;
 - (7) any cabin secured aspects, e.g. required position of seatbacks, tray tables, footrests, window

- blinds, etc. as applicable;
 - (8) correct stowage of baggage and the importance of leaving baggage behind in case of evacuation;
 - (9) the use and stowage of portable electronic devices (PEDs), including in-flight entertainment (IFE) systems;
 - (10) non-smoking instructions;
 - (11) the radial component of the downwash around the VCA;
 - (12) the use of life rafts and survival equipment, if carried on board.
- (b) Passengers occupying seats with direct access to emergency exits should receive an additional briefing on the operation and use of the exit.
- (c) 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

- (a) 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.
- (b) 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

- (a) In single-pilot operations, passenger briefing should be provided:
- (1) by ground personnel designated by the operator; or
 - (2) by the pilot except during the critical phases of flight.
- (b) 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:

- (a) instructions on how to safely operate the IFE system for personal use in normal conditions;
- (b) 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

- (a) 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.
- (b) 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.
- (c) 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.
- (d) 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.
- (e) The operator should consider including the following information in its safety briefing material, as applicable for the intended operations:
 - (1) baggage — correct versus forbidden stowage locations (e.g. exits, aisles, etc.);
 - (2) 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;
 - (3) 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;
 - (4) 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;
- (5) 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;
- (6) escape routes: depiction of routes:
 - (i) to the exits (inside the aircraft);
 - (ii) on the ground away from the aircraft;
- (7) 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;
- (8) 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.;
- (9) 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;



- (10) 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;
- (11) non-smoking instructions (e.g. phase of flight, electronic smoking devices, pipes, etc.)
- (12) 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;
- (13) hand fire extinguisher(s):
 - (i) location;
 - (ii) use;
- (14) actions in case of an emergency (e.g. remove sharp objects, fasten seat belt, open window blind, etc.);
- (15) any other safety aspects.

UAM.OP.MVCA.175 Flight preparation

- (a) 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.
- (b) The flight shall not be commenced unless the PIC is satisfied that:
 - (1) 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;
 - (2) the aircraft is not operated against the requirements of the configuration deviation list (CDL);
 - (3) the parts of the operations manual (OM) that are required for the conduct of the planned flight are available;
 - (4) 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;
 - (5) 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;
 - (6) space-based facilities, ground facilities and services that are required for the planned flight are available and adequate;
 - (7) 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;
 - (8) Reserved;
 - (9) any additional operational limitations can be complied with;

- (10) any load carried is properly distributed and safely secured;
- (11) 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

(a) The operational flight plan used and the entries made during flight should contain the following items:

- (1) VCA registration;
- (2) VCA type and variant;
- (3) date of flight;
- (4) flight identification;
- (5) name(s) of the flight crew member(s);
- (6) duty assignment of the flight crew member(s);
- (7) place (vertiport) of departure;
- (8) time of departure (actual off-block time, take-off time);
- (9) place (vertiport) of arrival (planned and actual);
- (10) time of arrival (actual landing and on-block time);
- (11) type of operation (VFR day; commercial air transport operation, VEMS, non-commercial operations, training flights, etc.);
- (12) route and route segments with checkpoints/waypoints, distances, time and tracks;
- (13) planned cruising speed and flying times between checkpoints/waypoints (estimated, revised, and actual times overhead);
- (14) minimum flight altitudes and minimum levels;
- (15) planned altitudes and flight levels;
- (16) fuel/energy calculations (records of in-flight fuel/energy checks);
- (17) fuel/energy on board when powering on lift and thrust units;
- (18) safe landing options at the point of commitment;
- (19) vertiports or diversion locations along the route for the purpose of diversion;
- (20) initial ATS flight plan clearance and subsequent reclearance, if applicable;
- (21) in-flight replanning calculations; and
- (22) meteorological information, as specified in point (a) of point MET.TR.215 of Part-MET.

(b) 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.

(c) The operational flight plan and its use should be described in the operations manual.

(d) All entries on the operational flight plan should be made concurrently and be permanent in nature.

OPERATIONAL FLIGHT PLAN —VEMS AND LOCAL OPERATIONS



- (e) 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.
- (f) No entries should be made in the operational flight plan during the flight.

OPERATIONAL FLIGHT PLAN PRODUCED BY A COMPUTERISED FLIGHT-PLANNING SYSTEM

- (g) 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.
- (h) 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

- (a) 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.
- (b) 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.
- (c) 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

- (a) 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.
- (b) To ensure that each flight is located at all times, these instructions should:
 - (1) 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;
 - (2) if an VCA is overdue or missing, ensure that the appropriate ATS or SAR service is notified; and
 - (3) 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

- (a) 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:

- (1) at least two safe landing options at the destination, which may be reached from the point of commitment for landing; and
 - (2) 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.
- (b) For the purpose of selecting vertiports and diversion locations in accordance with point (a), the PIC shall consider whether:
- (1) 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;
 - (2) the CMP of the VCA allows for safe landing at the selected vertiports or diversion locations;
 - (3) any required additional operational approvals are held.
- (c) 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:

- (a) the planned safe landing options can be reached from that point taking into account the CMP following a CFP;
- (b) after that point, landing at the committed landing site should be guaranteed;
- (c) 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:

- (a) the destination vertiport and another vertiport; or



- (b) the destination vertiport and a diversion location; or
- (c) 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

- (a) 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

- (b) 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.
- (c) 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

- (d) 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

- (a) The PIC should commit to land at one of the safe landing options:
 - (1) 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
 - (2) after checking that the landing option is available.
- (b) 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

- (a) Special refuelling or defuelling shall be performed only if the IAM operator has:
 - (1) developed standard operating procedures on the basis of a risk assessment; and
 - (2) established a training programme for its personnel involved in such operations.
- (b) Special refuelling or defuelling applies to:
 - (1) refuelling with lift and thrust units powered on;
 - (2) refuelling/defuelling with passengers embarking, on board, or disembarking; and
 - (3) refuelling/defuelling with wide-cut fuel.
- (c) 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

- (a) 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.
- (b) The operators' risk assessment may include, but not be limited to, the following risks, hazards and mitigation measures:
 - (1) risk related to refuelling with lift and thrust units powered on;
 - (2) risk related to the shutting down of the lift and thrust units, including the risk of failures during start-up;
 - (3) environmental conditions, such as wind limitations, displacement of exhaust gases, and blade sailing;



- (4) risk related to human factors and fatigue management, especially for single-pilot operations for long periods of time;
- (5) 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.;
- (6) assessment of the use of radio transmitting equipment;
- (7) determination of the use of passenger seat belts;
- (8) assessment of the use of the PED(s);
- (9) if passengers are to disembark, consideration of their disembarking before rather than after the refuelling; and
- (10) 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

- (a) Refuelling when lift and thrust units are powered on should only be conducted:
 - (1) with no passengers embarking or disembarking; however, passengers may be on board;
 - (2) if allowed by the operator of vertiport or diversion location, as applicable;
 - (3) in accordance with any specific procedures and limitations in the AFM;
 - (4) using JET A or JET A-1 fuel types; and
 - (5) with the appropriate RFF facilities or equipment available.
- (b) In addition, operational procedures in the operations manual should specify that at least the following precautions are taken:
 - (1) all necessary information should be exchanged in advance with the vertiport or diversion location operator, and with the refuelling operator;
 - (2) the procedures to be used by crew members should be defined;
 - (3) 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;
 - (4) the operator's training programmes for crew members and for the operator's ground operations personnel should be described;
 - (5) 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;
 - (6) a handheld fire extinguisher with the equivalent of 5 kg of dry powder should be immediately available and ready for use;
 - (7) a means for a two-way communication between the crew and the person in charge of refuelling should be defined and established;
 - (8) if fuel vapour is detected inside the VCA, or any other hazard arises, refuelling/defuelling should be stopped immediately;
 - (9) 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

(10) 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:

- (a) 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;
- (b) on a vertiport or diversion location, the ground area beneath the exits that are intended for emergency evacuation should be kept clear;
- (c) 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;
- (d) interior lighting should be set to enable identification of emergency exits;
- (e) 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;
- (f) 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
- (g) 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

- (a) 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.
- (b) 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

- (a) The charging or swapping of VCA batteries while passengers embark, are on board, or disembark shall be performed only if the IAM operator has:
- (1) developed standard operating procedures on the basis of a risk assessment; and
 - (2) 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

- (a) 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:
- (1) fires;
 - (2) overcharging of batteries;
 - (3) battery short circuit;
 - (4) stability of electrical currents when charging batteries;
 - (5) ambient conditions in which battery charging will take place;
 - (6) 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.
- (b) 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.
- (c) 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

- (a) 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.
- (b) 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

- (a) 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.
- (b) Passengers
 - (1) 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.
 - (2) 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

- (a) 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.
- (b) 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

(a) The PIC shall:

- (1) commence the flight; or
- (2) if applicable, continue beyond the point from which a revised ATS flight plan applies in the event of in-flight replanning;
- (3) 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

(a) The mass of the VCA:

(1) at the start of the take-off; or



- (2) 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.
- (b) 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.
- (c) When showing compliance with the requirements of this Subpart, the following parameters shall be taken into account:
 - (1) the mass of the VCA;
 - (2) the configuration of the VCA;
 - (3) the environmental conditions, in particular:
 - (i) density altitude;
 - (ii) wind:
 - (A) 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;
 - (B) 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;
 - (C) 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;
 - (4) the operating techniques; and
 - (5) 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-flight planning and for the purpose of obstacle-clearance calculations:

- (a) 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:
 - (1) for flights to be conducted in accordance with VFR:
 - (iii) $0.75 \times D$;
 - (iv) plus the greater of $0.25 \times D$ or 3 m ;
 - (v) plus:
 - (A) $0.10 \times \text{distance DR}$ for operations under VFR by day; or
 - (B) Reserved;
- (b) 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:
 - (1) $0.75 \times D$;
 - (2) plus the greater of $0.25 \times D$ or 3 m ;
 - (3) plus:
 - (i) $0.10 \times \text{distance DR}$ for operations under VFR by day; or
 - (ii) reserved;
- (c) 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:
 - (1) $3 \times D$ for VFR day operations if it is assured that navigational accuracy can be achieved by reference to suitable visual cues during the climb;
 - (2) 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 D_{taxi} and D_{parking} 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

- (a) 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.
- (b) The IAM operator shall take into account:
 - (1) the appropriate parameters of point UAM.POL.VCA.110(c); and
 - (2) the obstacles identified in accordance with point UAM.POL.VCA.115.
- (c) In addition, for VCA operations from a FATO:
 - (1) the take-off mass shall be such that:
 - (i) 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);
 - (ii) the rejected take-off distance required (RTODRV) does not exceed the rejected take-off distance available (RTODAV); and
 - (iii) 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).
 - (2) 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.
- (d) 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

- (a) The procedure used for take-off should be compatible with the certified performance for take-off obtained during the type certification of the VCA.
- (b) 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).

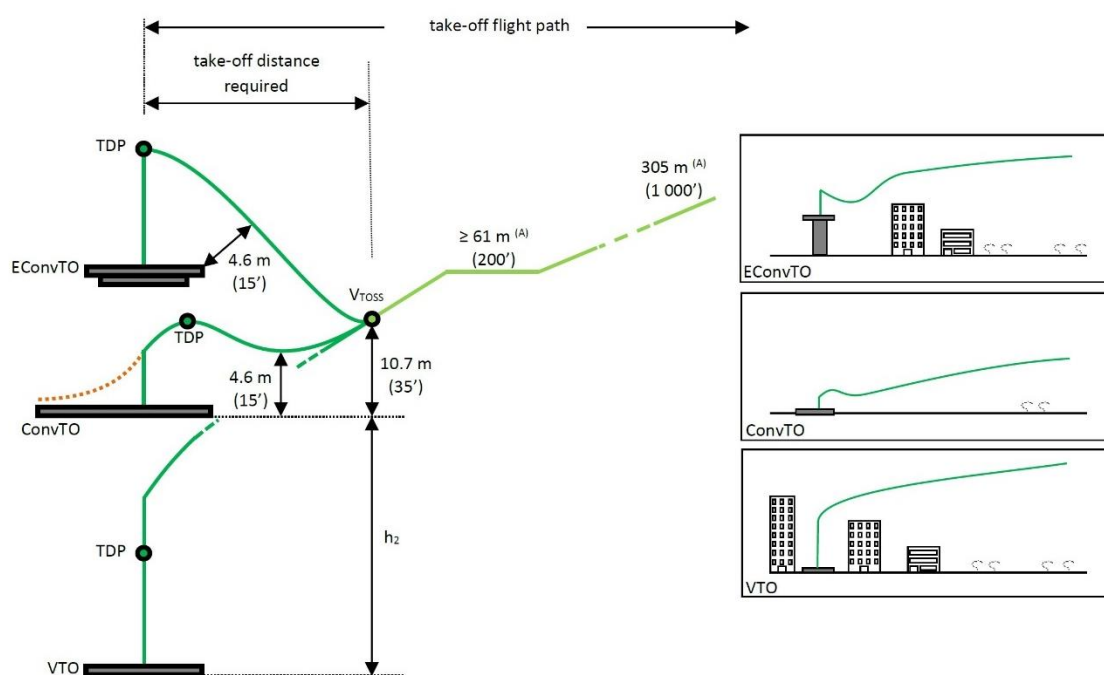


Figure 1: Possible take-off paths

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:

- (a) the take-off surface; or
- (b) 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:

- (a) 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 %;
- (b) 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 %;
- (c) 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

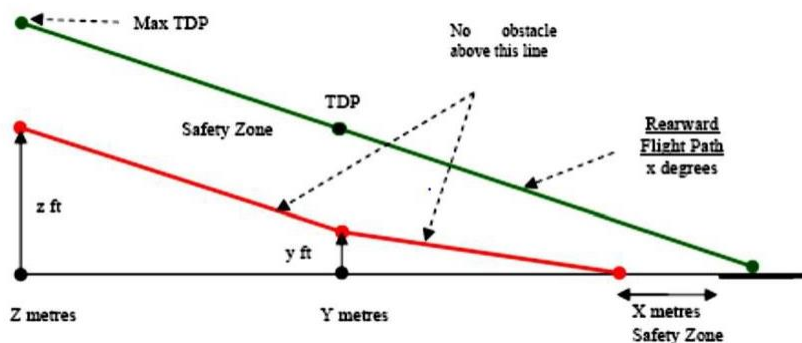
OBSTACLE CLEARANCE IN THE BACKUP AREA

- (a) 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:
 - (1) 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;
 - (2) 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;
 - (3) in the continued take-off (CTO): the PIC should be able to accelerate to VTOSS whilst ensuring an adequate clearance from obstacles.
- (b) UAM.POL.VCA.120(d) may be achieved by establishing that:
 - (1) 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

- (2) during the backup, the RTO and the CTO manoeuvres, obstacle clearance is demonstrated to the competent authority.

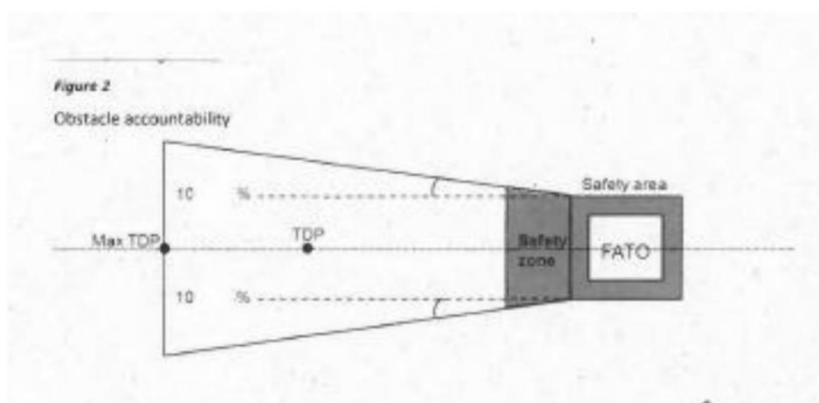
Figure 1 – Rearward flight path



- (c) 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:

- (1) $0.75 \times D$; plus
- (2) $0.25 \times D$ or 3 m, whichever is greater; plus
- (3) $0.10 \times DR$ 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

- (a) 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):
 - (1) 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;
 - (2) 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.
- (b) 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

- (a) 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:
 - (1) Reserved.
 - (2) Reserved.
 - (3) 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.
- (b) When showing compliance with point (a), all the following shall apply:
 - (1) the CFP is assumed to occur at the most critical point along the route;
 - (2) the effects of winds on the flight path are considered;
 - (3) 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
 - (4) fuel jettisoning, if applicable, is not planned below 300 m (1 000 ft) above terrain.

UAM.POL.VCA.135 Landing

- (a) 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.
- (b) The IAM operator shall take into account:
 - (1) the relevant parameters of point UAM.POL.VCA.110(c); and

- (2) the obstacles identified in accordance with point UAM.POL.VCA.115.
- (c) 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).
- (d) 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) 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).
- (b) 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.
- (c) 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.

- (a) 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.
- (b) Following a CFP before or after the LDP, the VCA should be capable of a CFSL.

LANDING DISTANCE REQUIRED (LDRV)

- (c) 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).

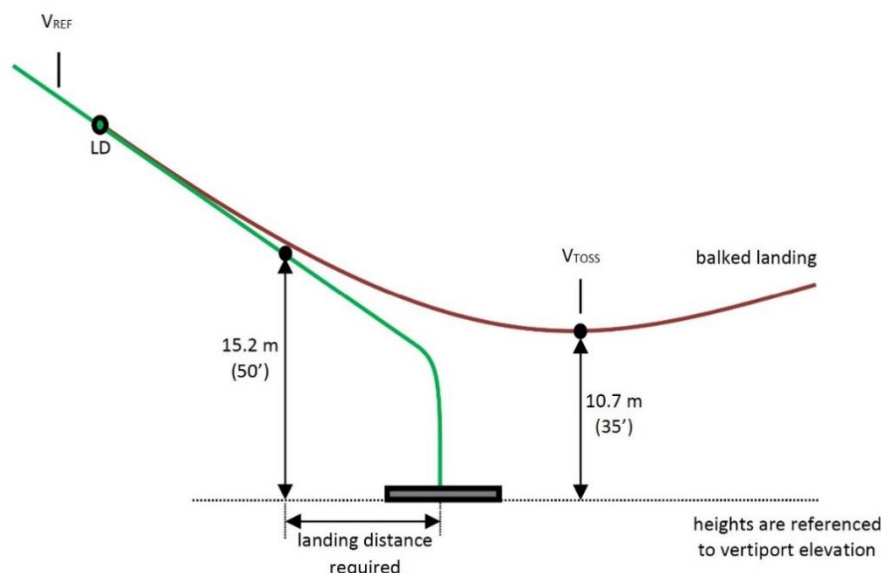


Figure 1: Landing path

UAM.POL.VCA.140 Mass and balance, and loading

- (a) 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.
- (b) 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.
- (c) The weighing shall be accomplished by the manufacturer of the aircraft or by an approved maintenance organisation.
- (d) 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.
- (e) 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.
- (f) 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.
- (g) The IAM operator shall determine the mass of the fuel load and/or of the energy storage unit as follows:
 - (1) 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);
 - (2) for the energy storage unit, by weighing or by using standard masses specified in the OM.
- (h) The IAM operator shall ensure that the loading of:
 - (1) the VCA is performed under the supervision of qualified personnel; and

- (2) the traffic load is consistent with the data used for the calculation of the aircraft mass and balance.
- (i) 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.
- (j) 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:

- (a) defining and applying operational margins to the certified CG envelope in order to compensate for the following deviations and errors:
 - (1) 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;
 - (2) 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;
 - (3) 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;
 - (4) deviations of the actual CG of cargo and passenger load within individual cargo compartments or cabin sections from the normally assumed mid position;
 - (5) deviations of the CG caused by any configuration change, unless already covered by the certified limits;
 - (6) deviations caused by in-flight change of loading;
 - (7) deviations caused by the difference between the actual passenger masses and standard passenger masses when such masses are used; and
- (b) defining and applying operational procedures in order to:
 - (1) ensure an even distribution of passengers in the cabin;
 - (2) take into account any significant CG travel during flight caused by passenger/crew movement; and
 - (3) 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

- (a) 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.
- (b) 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.

- (c) When weighing a VCA, normal precautions should be taken consistent with good practices such as:
- (1) checking for completeness of the VCA and equipment;
 - (2) determining that fluids are properly accounted for;
 - (3) ensuring that the VCA is clean; and
 - (4) ensuring that weighing is accomplished in an enclosed building.
- (d) 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 Table 1 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:

- (a) the pilot(s), technical crew member(s) and their baggage as applicable;
- (b) 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

- (a) 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:
 - (1) actual weighted masses including baggage; or
 - (2) standard masses, including baggage, of 85 kg.
- (b) 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

- (a) 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.

- (b) 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.
- (c) 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

- (1) As the baggage is weighed separately, 6 kg may be deducted from male and female masses in Table 1.
- (2) For operations in which a survival suit is provided to passengers, 3 kg should be added to the passenger mass value.
- (d) 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.
- (e) 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.
- (f) 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:

- (a) 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
- (b) 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

- (a) 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:
 - (1) VCA registration and type;
 - (2) flight identification, number and date;
 - (3) full name of the PIC;
 - (4) full name of the person that has prepared the documentation;
 - (5) dry operating mass and the corresponding CG of the aircraft;
 - (6) mass of the fuel or energy storage unit at take-off, and the mass of trip fuel;
 - (7) mass of consumables other than fuel, if applicable;
 - (8) traffic load components, including passengers, baggage, freight and ballast;

- (9) take-off mass, landing mass, and zero fuel mass;
- (10) applicable aircraft CG positions; and
- (11) the limiting mass and CG values.

The information above shall be available in flight-planning documents or in mass and balance systems.

- (b) When mass and balance data and mass and balance documentation are generated by a computerised mass and balance system, the operator shall:
 - (1) verify the integrity of the output data to ensure that the data is within the AFM limitations; and
 - (2) specify the instructions and procedures for its use in its operations manual (OM).
- (c) 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.
- (d) The IAM operator shall specify procedures for last-minute changes to the load to ensure that:
 - (1) 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;
 - (2) the maximum last-minute change allowed in passenger numbers or hold load is specified; and
 - (3) 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:

- (a) the load distribution is in accordance with a pre-calculated balance table; or
- (b) 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:

- (a) electronic 'signing' by entering a personal identification number (PIN) code with appropriate security, etc.;
- (b) 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;
- (c) the computer system logs information to indicate when and where each PIN code has been entered;
- (d) the use of the PIN code is, from a legal and responsibility point of view, considered to be fully equivalent to a handwritten signature;
- (e) the requirements for record-keeping remain unchanged; and
- (f) 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

- (a) 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:

- (1) first-aid kits;
 - (2) survival and signalling equipment;
 - (3) sea anchors and equipment for mooring; and
 - (4) child restraint devices.
- (b) 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:
- (1) 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
 - (2) the instruments and equipment shall not affect the airworthiness of the aircraft, even in the case of failure or malfunction.
- (c) 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.
- (d) 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.
- (e) 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

- (a) 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.
- (b) 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:
 - (1) portable EFB;
 - (2) PEDs carried by flight crew or cabin crew; and
 - (3) 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:

- (a) the aircraft is operated in accordance with the operator's minimum equipment list (MEL); or
- (b) 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

- (a) 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.
- (b) 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

- (a) 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.
- (b) 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.
- (c) 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

- (a) 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.
- (b) 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

- (a) The VCA shall be equipped with means of measuring and displaying to the pilot in flight the remaining usable amount of fuel/energy.
- (b) 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

- (a) The VCA should be equipped with means of:
- (1) measuring the remaining usable amount of fuel/energy;
 - (2) 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;
 - (3) displaying to the pilot the comparison between (1) and (2) updated at regular intervals, as well as upon request; and
 - (4) 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).
- (b) The calculation in (a)(2) should:
- (1) 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);
 - (2) take into account the actual wind conditions, and updated weather information through dedicated service providers; and
 - (3) take into account any existing or possible failure or malfunction of the VCA system or any existing or possible abnormal flight condition.
- (c) 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.
- (d) 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

- (a) 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:
- (1) at a distance from land corresponding to more than 3 minutes flying time at normal cruising speed;
 - (2) reserved;
 - (3) reserved;
 - (4) 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

- (a) 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.
- (b) 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:

- (a) operate independently of the crew interphone systems except for handsets, headsets, microphones, selector switches and signalling devices;
- (b) 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) A VCA with an MCTOM of more than 5 700 kg shall be equipped with a CVR.
- (b) The CVR shall be capable of retaining the data recorded during at least the preceding 2 hours.



- (c) The CVR shall record with reference to a timescale on means other than magnetic tape or magnetic wire:
 - (1) voice communications transmitted from or received in the flight crew compartment by radio;
 - (2) crew members' voice communications using the interphone system and the public address system (PAS), if installed;
 - (3) the aural environment of the flight crew compartment, including the audio signals received from the flight crew microphone;
 - (4) voice or audio signals identifying navigation or approach aids introduced into a headset or a speaker.
- (d) 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.
- (e) 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.
- (f) 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) 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.
- (b) 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.
- (c) Data shall be obtained from the VCA sources that enable accurate correlation with information displayed to the pilot(s).
- (d) 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.
- (e) 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 of 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) A VCA with an MCTOM of 5 700 kg or less shall be equipped with a flight recorder.
- (b) 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:
 - (1) audio from the flight crew compartment in multi-crew and VEMS operations; or
 - (2) radio communications with air traffic service (ATS) units, where applicable.
- (c) 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.
- (d) 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.

- (e) 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.
- (f) 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

- (a) 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.
- (b) If the flight recorder records flight data, it should record at least the following parameters:
 - (1) relative time count;
 - (2) pitch attitude or pitch rate;
 - (3) roll attitude or roll rate;
 - (4) heading (magnetic or true) or yaw rate;
 - (5) latitude;
 - (6) longitude;
 - (7) positioning system: estimated error (if available);
 - (8) pressure altitude or altitude from a positioning system;
 - (9) time;
 - (10) ground speed;
 - (11) positioning system: track (if available);
 - (12) normal acceleration;
 - (13) longitudinal acceleration; and
 - (14) lateral acceleration.
- (c) 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:
 - (1) magnetic or true heading;
 - (2) time (if presented on the front instrument panel);
 - (3) pressure altitude;
 - (4) indicated airspeed;
 - (5) vertical speed;
 - (6) slip;
 - (7) OAT;
 - (8) attitude (if displayed);



- (9) stabilised heading (if displayed);
- (10) lift and thrust unit status; and
- (11) fuel/energy status.
- (d) 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.
- (e) 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.
- (f) The operational performance requirements for flight recorders should be those laid down in:
 - (1) EUROCAE Document ED-155 or any equivalent standard accepted by the competent authority for lightweight flight recorders; or
 - (2) 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:

- (a) all voice communications and the aural environment required by UAM.IDE.MVCA.185 regarding CVRs; and
- (b) 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)

- (a) The VCA shall be equipped with:

- (1) a seat or berth for each person on board that is aged 24 months or older;
 - (2) a seat belt with an upper-torso restraint system for use on each passenger seat and restraining belts on each berth;
 - (3) a child restraint device (CRD) for each person on board that is younger than 24 months; and
 - (4) a four-point upper-torso restraint system that includes a seat belt with two shoulder straps, on each pilot seat.
- (b) A seat belt with upper-torso restraint system shall:
- (1) have a single-point release; and
 - (2) 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

- (a) The VCA shall be equipped with at least one first-aid kit.

- (b) First-aid kits shall be:
- (1) readily accessible for use;
 - (2) 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

- (a) The VCA shall be equipped with at least one handheld fire extinguisher in the flight crew compartment, which shall be readily accessible for use.
- (b) 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.
- (c) 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.

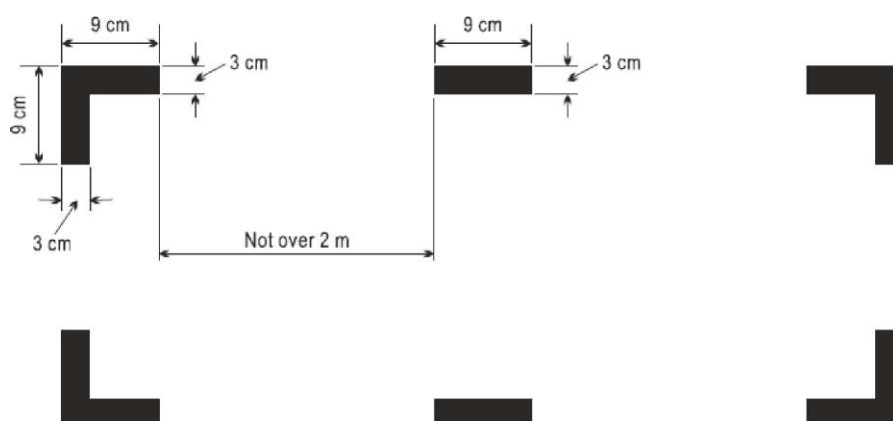
AMC1 UAM.IDE.MVCA.250 Handheld fire extinguishers

NUMBER, LOCATION, AVAILABILITY AND TYPE

- (a) 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.
- (b) The handheld fire extinguisher should be checked for being:
 - (1) in place and secured;
 - (2) charged and pressurised; and
 - (3) kept up to date.
- (c) 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.
- (d) 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.
- (e) 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.
- (f) 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

- (a) The colour of the markings should be red or yellow and, if necessary, should be outlined in white to contrast with the background.
- (b) 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:

- (a) an emergency lighting system independent of the VCA normal electric power supply to facilitate the evacuation of passengers from the aircraft; and
- (b) 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) 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
- (b) 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

- (a) 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.
- (b) The airborne system used to comply with UAM.IDE.MVCA.280 when not based on an automatic ELT should:
 - (1) be combined with an ELT(S) or a PLB;
 - (2) comply with the applicable ETSO;
 - (3) comply with the Certification Specifications for Airborne Communications, Navigation and Surveillance (CS-ACNS) issued by EASA, or equivalent; and
 - (4) the transmission service provider should be certified in accordance with CAR-ANS.
- (c) 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

- (a) 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).
- (b) 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.
- (c) 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) 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.
- (b) 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

- (a) 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:
 - (1) 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.
 - (2) 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.

- (3) All batteries used in PLBs should be replaced or recharged when 50 % of their useful life, as established by the battery manufacturer, has expired.
 - (4) 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.
- (b) 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) A VCA that carries passengers shall be certified:
- (1) 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;
 - (2) 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;
 - (3) 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:
 - (i) the total flying time over water is longer than 3 minutes;
 - (ii) the landing or take-off is performed over water.
- (b) A VCA that does not carry passengers shall be certified:
- (1) 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;
 - (2) 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:
 - (i) the total flying time over water is longer than 3 minutes;
 - (ii) the landing or take-off is performed over water.
- (c) 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).
- (d) 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).
- (e) 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))

- (a) 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.
- (b) The ELT(S) should be carried in one of the following locations on the VCA:



- (1) on the person of a crew member; or
 - (2) on the person of a passenger or in a life raft; or
 - (3) adjacent to an emergency exit used for evacuation of the VCA in an emergency.
- (c) 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

- (a) 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:

- (a) taking off from or landing at a vertiport, diversion location or VEMS operating site where the take-off or approach path is over water;
- (b) 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

- (a) 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.
- (b) 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.
- (c) 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:
 - (1) 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;

- (2) 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;
- (3) 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

- (a) The VCA shall be 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.
- (b) All required life rafts shall allow for their ready use in an emergency.
- (c) Each required life raft shall contain at least one ELT(S).
- (d) 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.
- (e) 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

- (a) Each required life raft should conform to the following specifications:

- (1) be of an approved design and stowed so as to facilitate its readily use in an emergency;
- (2) be radar conspicuous to standard airborne radar equipment;
- (b) In addition to the specifications under point (a):
 - (1) 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
 - (2) 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.
- (c) Each required life raft should contain at least the following:
 - (1) one approved survivor locator light;
 - (2) one approved visual signalling device;
 - (3) one canopy (for use as a sail, sunshade or rain catcher) or other means to protect occupants from the elements;
 - (4) one radar reflector;
 - (5) one 20-m retaining line designed to hold the life raft near the VCA but to release it if the VCA becomes totally submerged;
 - (6) one sea anchor;
 - (7) one survival kit, appropriately equipped for the route to be flown, which should contain at least the following:
 - (i) one life raft repair kit;
 - (ii) one bailing bucket;
 - (iii) one signalling mirror;
 - (iv) one police whistle;
 - (v) one buoyant raft knife;
 - (vi) one supplementary means of inflation;
 - (vii) sea sickness tablets;
 - (viii) one first-aid kit;
 - (ix) one portable means of illumination;
 - (x) 500 ml of pure water and one sea water desalting kit; and
 - (xi) 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) A VCA operated over areas where search and rescue would be particularly difficult shall be equipped with:
 - (1) signalling equipment to make distress signals;
 - (2) at least one ELT(S); and
 - (3) 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

- (a) The following additional survival equipment should be carried when required:
- (1) 500 ml of water for each 4, or fraction of 4, persons on board;
 - (2) one knife;
 - (3) first-aid equipment; and
 - (4) one set of air/ground codes.
- (b) 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:

- (a) areas so designated by the authority responsible for managing search and rescue; or
- (b) areas that are largely uninhabited and where:
- (1) 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
 - (2) 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) A VCA certified for operating on water shall be equipped with:
- (1) 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
 - (2) 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) 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.
- (b) 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

- (a) 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.
- (b) The radio communication equipment shall allow flight crews under normal operating conditions to:
 - (1) communicate with appropriate ground stations from any point on the route, including diversions;
 - (2) communicate with appropriate ATC stations from any point in controlled airspace within which flights are intended to be operated; and
 - (3) receive meteorological information.
- (c) The radio communication equipment shall allow for communication on the 121,5 MHz aeronautical emergency frequency.

UAM.IDE.MVCA.345 Navigation equipment

- (a) The VCA shall be equipped with navigation equipment for flights in accordance with VFR by day and in accordance with the applicable airspace requirements.
- (b) 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

(a) The IAM operator shall:

- (1) 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;
- (2) ensure the timely distribution and update of current and unaltered aeronautical databases to all aircraft that require them;
- (3) 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 CAR-OCR. 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

- (a) 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.
- (b) 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.



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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.