Acceptable Means of Compliance and Guidance Material to Annex V (Part-SPA) to Regulation (EU) No 965/2012 — Issue 1, Amendment 16'

Annex V to ED Decision 2025/010/R

'AMC & GM to Part-SPA — Issue 1, Amendment 16'

This document shows deleted, new or amended text as follows:

— deleted text is ~~struck through~~;

— new or amended text is highlighted in blue;

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

Note to the reader

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

GM1 SPA.GEN.100(a) Competent authority

DETERMINING THE PLACE WHERE AN OPERATOR ~~IS RESIDING~~ RESIDES

For the purpose of Regulation (EU) No 965/2012, the concept of 'place where the operator resides'~~is residing' is~~ mainly concerns ~~addressed to~~ a natural person.

[…]

AMC1 SPA.EFB.100(b) Use of electronic flight bags (EFBs) – operational approval

SUITABILITY OF THE HARDWARE

[…]

(c) Power source

[…]

For EFBs that have an internal battery power source, and that are used as an alternative for paper documentation that is required by point CAT.GEN.MPA.180 or point IAM.GEN.MVCA.180, the operator should either have at least one EFB connected to an aircraft power bus, or have established and documented mitigation means and procedures to ensure that sufficient power with acceptable margins will be available during the whole flight.

[…]

AMC3 SPA.EFB.100(b)(3) Use of electronic flight bags (EFBs) – operational approval

PROCEDURES

[…]

(c) Procedures to mitigate and/or control workload

Procedures should be designed to mitigate and/or control additional workload created by using an EFB system. The operator should implement procedures to ensure that, while the aircraft is in flight or moving on the ground, flight crew members do not become preoccupied with the EFB system at the same time. Workload should be shared between flight crew members or between the PIC and the technical crew member to ensure ease of use and continued monitoring of other flight crew functions and aircraft equipment. These procedures should be strictly applied in flight and the operator should specify any times when the flight crew may not use a specific EFB application.

[…]

(g) Electronic signatures

Part-CAT, Part-IAM and Part-M may require a signature when issuing or accepting a document (e.g. load sheet, technical logbook, notification to captain (NOTOC)). In order to be accepted as being equivalent to a handwritten signature, electronic signatures used in EFB applications need, as a minimum, to fulfil the same objectives and to assure the same degree of security as the handwritten or any other form of signature that they are intended to replace. AMC1 CAT.POL.MAB.105(c) and AMC1 UAM.POL.VCA.145(c) provide~~s~~ the means to comply with the required handwritten signature or its equivalent for mass and balance documentation.

[…]

AMC5 SPA.EFB.100(b)(3) Use of electronic flight bags (EFBs) – operational approval

PERFORMANCE AND MASS AND BALANCE APPLICATIONS

(a) General

Performance and mass and balance applications should be based on existing published data found in the AFM or the performance manual, and should account for the applicable ~~CAT.POL~~ performance requirements of this Regulation. The applications may use algorithms or data spreadsheets to determine results. They may have the capability to interpolate within the information contained in the published data for the particular aircraft but they should not extrapolate beyond it.

[…]

AMC6 SPA.EFB.100(b)(3) Use of electronic flight bags (EFBs) – operational approval

~~AIRPORT~~AERODROME MOVING MAP DISPLAY (AMMD) APPLICATION WITH OWN-SHIP POSITION

[…]

(e) Operational procedures

Changes to operational procedures of the aircraft (e.g. flight crew procedures) should be documented in the operations manual or user's guide as appropriate. In particular, the documentation should highlight that the AMMD is only designed to assist flight crew members in orienting themselves on the ~~airport~~ aerodrome surface so as to improve the flight crew members' positional awareness during taxiing, and that it is not to be used as the basis for ground manoeuvring.

[…]

AMC7 SPA.EFB.100(b)(3) Use of electronic flight bags (EFBs) – — operational approval

USE OF COMMERCIAL OFF-THE-SHELF (COTS) POSITION SOURCES

[…]

(b) Installation aspects:

If the COTS position sources are stand-alone PEDs, they should be treated as C-PEDs and their installation and use should follow the requirements of point CAT.GEN.MPA.140 or point IAM.GEN.VCA.140 and associated AMC and GM.

If an external COTS position source transmits wirelessly, ~~cyber-~~ cybersecurity aspects have to be considered.

Non-certified securing systems should be assessed according to ~~paragraph~~ point (h) of AMC1 CAT.GEN.MPA.141(a) as applicable to operations with aeroplanes, helicopters and VCA.

[…]

GM5 SPA.EFB.100(b)(3) Use of electronic flight bags (EFBs) – — operational approval

USE OF COMMERCIAL OFF-THE-SHELF (COTS) POSITION SOURCES – — PRACTICAL EVALUATION

The tests should consist of a statistically relevant sample of taxiing. It is recommended to include taxiing at ~~airports~~ aerodromes that are representative of the more complex ~~airports~~ aerodromes typically accessed by the operator. Taxiing segment samples should include data that is derived from runways/FATO and taxiways, and should include numerous turns, in particular of 90 degrees or more, and segments in straight lines at the maximum speed at which the own-ship symbol is displayed. Taxiing segment samples should include parts in areas of high buildings such as terminals.

The analysis should include at least 25 inbound and/or outbound taxiing segments between the parking location and the runway/FATO.

During the tests, any unusual events (such as observing the own-ship symbol in a location on the map that is notably offset compared to the actual position, the own-ship symbol changing to non-directional when the aircraft is moving, and times when the own-ship symbol disappears from the map display) should be noted. For the test, the pilot should be instructed to diligently taxi on the centre line.

[…]

AMC1 SPA.VEMS.100 Emergency medical service operations with manned VTOL-capable aircraft (VEMS)

PUBLIC INTEREST SITE (PIS)

The VEMS operator should include in its operations manual a diagram or annotated photograph of each PIS used that shows its main aspects, dimensions, main hazards and the contingency plan in case of an incident. The VEMS operator should keep this information up to date.

AMC2 SPA.VEMS.100 Emergency medical service operations with manned VTOL-capable aircraft (VEMS)

PRE-SURVEYED VEMS OPERATING SITES

(a) The operator should have in place a procedure for the survey of VEMS operating sites by a competent person. Alternatively, the operator may use reliable survey information provided by site owners.

(b) The operator should address the following when using adequate pre-surveyed VEMS operating sites for VEMS missions or VEMS training, in a particular region of operation:

(1) at strategic planning level:

(i) the location of adequate pre-surveyed operating sites taking into account the CMP following a CFP;

(ii) the adequacy of pre-surveyed VEMS operating sites which should be regularly assessed, at least on an annual basis, using publicly available information or by conducting on-site surveys;

(iii) possible changes to the site characteristics which may have taken place since last surveyed;

(iv) information on the operating region's prevailing weather conditions, available from local or other sources; this includes:

(A) local observations;

(B) regional weather information (e.g. significant weather charts); and

(C) METAR/TAF of the nearest aerodromes (vertiports);

(2) in the pre-flight planning phase:

(i) the expected weather conditions along the route and at the VEMS operating site should not affect the capability of the VCA to reach a VEMS operating site under CMP following a CFP;

(ii) aerodromes (vertiports) or locations suitable for diversion should be programmed into the navigation system, if such system is available on board, so that track and distance to such aerodromes (vertiports) or diversion locations are continuously available and immediately displayed when required.

(c) The operator should specify in the operations manual the VEMS operating sites that are pre-surveyed. The operations manual should contain diagrams and/or ground and aerial photographs, and depiction (pictorial) and description of:

(1) the overall dimensions of the operating site;

(2) the location and height of relevant obstacles in the approach and take-off flight paths and in the manoeuvring area;

(3) the approach and take-off flight paths;

(4) the surface condition (blowing dust/snow/sand);

(5) how third parties ensure control at the site, if applicable;

(6) lighting, if applicable;

(7) site adequacy with reference to aircraft performance;

(8) procedure for activating the operating site in accordance with national regulations, if applicable; and

(9) other useful information; for example, details of the appropriate ATS agency and frequency.

AMC3 SPA.VEMS.100 Emergency medical service operations with manned VTOL-capable aircraft (VEMS)

NON-PRE-SURVEYED VEMS OPERATING SITES

(a) For the use of non-pre-surveyed VEMS operating sites, the operator should have in place a procedure that enables the PIC to make a judgement on the suitability of a site for a safe landing and take-off with a reasonable expectation of no injuries to persons in the VCA and to persons on the ground.

(b) All information that is reasonably practicable to acquire should be used by the operator to allow the PIC to establish the suitability of a non-pre-surveyed VEMS operating site considering the items of point AMC2 SPA.VEMS.100(c) as applicable.

(c) When intending to use a non-pre-surveyed and unfamiliar site, the PIC should gather as much information as possible about the area allowing the best estimate of obstacles, area slope and terrain to reduce the risk to a level as low as reasonably practicable.

GM1 SPA.VEMS.100 Emergency medical service operations with manned VTOL-capable aircraft (VEMS)

NON-PRE-SURVEYED VEMS OPERATING SITES — PROCEDURE

(a) Even after all reasonably practicable precautions have been taken, a residual risk remains at VEMS operating sites, which is acceptable.

(b) A reconnaissance turn may be flown prior to landing at a non-pre-surveyed and unfamiliar site, at a sufficient altitude from the air, to enable the PIC to determine:

(1) the direction and speed of the wind;

(2) the touchdown point;

(3) suitable approach and departure paths; and

(4) the obstacles in the approach and departure paths.

(c) Whenever necessary, additional reconnaissance turns may be flown until the PIC is satisfied that a safe landing can be conducted. Decision to land or go around should be made before or at the LDP.

(d) A ground reconnaissance prior to take-off may be performed to determine the best take-off path, considering the load, height of obstacles, shape of the area, direction of the wind and surface conditions (dust, sand, snow, mud, rocks). The PIC should consider positioning the VCA at the most downwind position of the site to be able to take off into the wind.

GM1 SPA.VEMS.110 Equipment requirements for VEMS operations

GENERAL

Approval requirements in accordance with Regulation (EU) No 748/2012 apply to permanently installed equipment.

Non-permanently installed equipment is not subject to the airworthiness approval requirements of Regulation (EU) No 748/2012. In addition, no licensed personnel are required to install or remove non-permanently installed equipment.

In any case, no equipment (medical or not, installed or not) can affect the airworthiness or the safe operation of the aircraft even in the case of failure or malfunction.

GM2 SPA.VEMS.110 Equipment requirements for VEMS operations

AUTOPILOT

If the VEMS operator chooses to install an autopilot on the VCA, the autopilot should have at least the following functions:

(a) attitude hold,

(b) altitude hold mode, and

(c) heading hold mode.

AMC1 SPA.VEMS.110 Equipment requirements for VEMS operations

MOVING MAP DISPLAYS

The moving map display should show the relative altitude of the surrounding terrain and obstacles to that of the VCA, and should be one of the following:

(a) a TAWS that is airworthiness approved;

(b) a display that is integrated in the cockpit environment and is airworthiness approved;

(c) a type B EFB software application.

The database should cover the area where the VCA usually performs VEMS operations.

GM3 SPA.VEMS.110 Equipment requirements for VEMS operations

MOVING MAPS — TRAINING

Point ORO.FC.125 requires differences training or familiarisation when introducing new equipment and procedures. For EFB applications, AMC4 SPA.EFB.100(b)(3) defines the related training.

In either case, the training focuses not only on the usage of the equipment or the EFB application, but also on its limitations, including the following limitations of moving maps:

(a) Not all terrain and obstacles will be included in the database.

(b) In VFR, the proper selection of altitude and efficient visual scanning of the environment remain the primary means of obstacle and terrain avoidance.

(c) A type B EFB software application can only be used for increased situational awareness.

GM1 SPA.VEMS.120 Visibility and distance from cloud minima

REDUCED VISIBILITY MINIMA

(a) It is possible, in accordance with point SERA.5001, that the competent authority permit VEMS flights (missions) with reduced flight visibility in Class F and Class G airspace. This means that the VEMS flight is conducted:

— during day with the surface in sight; and

— in-flight visibility of not less than 1 500 m, and at a speed of 140 kt IAS or less to have a reasonable opportunity to observe other traffic and any obstacles in time to avoid a collision.

(b) Reduced visibility minima also apply to VEMS training flights.

AMC1 SPA.VEMS.125 Performance requirements for VEMS operations

VEMS OPERATING SITE DIMENSIONS AND FEATURES

(a) A non-pre-surveyed VEMS operating site, when selected from the air, should have a minimum dimension of at least 2 × D.

The operator may establish alternative criteria for non-pre-surveyed VEMS operating sites, when selected from the air, together with operating procedures and training, which mitigate the risks identified in the operator's risk assessment to a level as low as reasonably practicable. In this case, the operator may choose not to define minimum site dimensions.

(b) A pre-surveyed VEMS operating site should have a minimum dimension of at least 2 × D.

(c) The VEMS operating site features should enable the VCA to adequately clear all obstructions.

GM1 SPA.VEMS.125 Performance requirements for VEMS operations

LEVEL OF RISK AS LOW AS REASONABLY PRACTICABLE

When landing at a VEMS operating site where additional controls and mitigation measures are not economically or reasonably practicable, in particular after LDP, the associated risk is considered as low as reasonably practicable.

AMC1 SPA.VEMS.130 Crew requirements

VEMS PILOT-IN-COMMAND (PIC) MINIMUM EXPERIENCE

(a) The experience requirements for the PIC that conducts VEMS flights should be as follows:

(1) either:

(i) a minimum of 1 000 hours as PIC/commander of any aircraft, of which 500 hours are as PIC/commander on helicopters and/or VCA; or

(ii) a minimum of 1 000 hours as co-pilot in VEMS or HEMS operations, of which at least 500 hours are as PIC under supervision, and 100 hours as PIC/commander on helicopters and/or VCA; and

(2) a minimum of 500 hours of operating experience in helicopters and/or VCA, gained in an operational environment similar to that of the intended operation; and

(3) RESERVED

(4) RESERVED

(b) As regards the minimum experience requirements for a commander that conducts VEMS flights, the geographical characteristics of the operation (sea, mountain, big cities with heavy traffic, etc.) should be taken into account.

AMC2 SPA.VEMS.130 Crew requirements

VEMS TECHNICAL CREW MEMBER

(a) When the crew is composed of a PIC and a VEMS technical crew member, the latter should be seated in a forward-facing front seat during the flight, so as to be able to carry out his or her primary tasks of assisting the PIC in:

(1) collision avoidance;

(2) the selection of the VEMS operating site;

(3) the detection of obstacles during the approach and take-off phases; and

(4) the reading of checklists.

(b) By day, the VEMS technical crew member may be seated in the cabin, at the discretion of the PIC, provided all the following conditions are met:

(1) the VEMS technical crew member provides medical assistance to the medical patient in flight; and

(2) the flight is conducted to or from a VEMS operating site.

(c) The PIC may delegate other aviation tasks to the VEMS technical crew member, as necessary:

(1) assistance in navigation;

(2) assistance in the selection of radio-communication/radio-navigation means;

(3) if properly qualified and licensed, assistance in radio communications; and

(4) monitoring of parameters.

(d) The PIC may also delegate to the VEMS technical crew member tasks on the ground, such as:

(1) assistance in preparing the VCA and the dedicated medical specialist equipment for a subsequent VEMS departure; or

(2) assistance in the application of safety measures during ground operations with lift and thrust units powered on (including, as applicable, crowd control, embarking and disembarking of passengers, refuelling, battery recharging or swapping, etc.).

(e) There may be exceptional circumstances when it is not possible for the VEMS technical crew member to carry out his or her primary tasks as defined under point (a). This is to be regarded as exceptional and the tasks are only to be undertaken at the discretion of the PIC, taking into account the dimensions and environment of the VEMS operating site.

(f) RESERVED

(g) When selecting flight crews for single-pilot operations in accordance with point SPA.VEMS.130(a), the operator should consider the experience of both the PIC and the VEMS technical crew member.

The operator should consider a VEMS technical crew member as inexperienced until the VEMS technical crew member has completed 25 VEMS missions. The operator may include VEMS missions flown during line flying under supervision and simulated VEMS missions.

When an inexperienced VEMS technical crew member is part of the crew, the following should apply:

(1) the PIC has completed 10 flight hours on the VCA type within a period of 60 days since the completion of the operator's conversion course on the VCA type; or

(2) the PIC has completed 20 flight hours on the VCA type after the completion of the operator's conversion course on the VCA type.

(h) A smaller number of VEMS missions or flight hours than those defined in point (g) may be acceptable to the competent authority and subject to any conditions which the competent authority may impose, when either of the following applies:

(1) a new operator commences operations;

(2) an operator introduces a new VCA type;

(3) the PIC has previously completed a type conversion course with the same operator (reconversion);

(4) credits are defined in the operational suitability data established in accordance with Commission Regulation (EU) No 748/2012.

AMC3 SPA.VEMS.130 Crew requirements

OPERATIONS WITH NO TECHNICAL CREW MEMBER ABOARD

(a) The PIC should decide whether the VEMS technical crew member can be relieved from aviation tasks to provide medical assistance to the medical patient on the ground or in flight, or during the transport of the medical patient in another vehicle.

(b) When relieved from aviation tasks, the VEMS technical crew member should take part in the departure briefing that summarises the relevant obstacles and threats.

GM1 SPA.VEMS.130 Crew requirements

CONTINUITY OF THE CREW CONCEPT

The crew concept includes the operator's normal crew composition and variations to it that the operator accepts that will occur during the VEMS mission. The operator ensures the continuity of the crew concept by managing the variations.

AMC4 SPA.VEMS.130 Crew requirements

FLIGHT CREW TRAINING AND CHECKING SYLLABUS

(a) The flight crew initial and recurrent training syllabus should include the following items:

(1) meteorological training focusing on the understanding and interpretation of available weather information;

(2) preparing the VCA and the specialist medical equipment for subsequent VEMS departure;

(3) practice of VEMS departures;

(4) assessment from the air of the suitability of VEMS operating sites;

(5) medical effects that air transport may have on the patient;

(6) in-flight replanning, including fuel/energy replanning and CMP constraints.

(b) Single-pilot operations

(1) The flight crew training syllabus should include initial and annual recurrent VCA/FSTD training focusing on crew cooperation with the technical crew member.

(2) The initial training should include at least 4 hours of flight instruction dedicated to crew cooperation, unless the PIC:

(i) holds a certificate of satisfactory completion of a multi-crew cooperation course in accordance with Commission Regulation (EU) No 1178/2011; or

(ii) has at least 500 hours in either multi-pilot operations or single-pilot operations with a VEMS or HEMS technical crew member, or a combination of these.

(3) The training described in points (1) and (2) should be organised with a crew composition of a PIC and a technical crew member.

(4) The training described in points (1) and (2) should be provided by a suitably qualified PIC/commander with a minimum experience of 350 hours total flight time in either multi-pilot operations or single-pilot operations with a VEMS or HEMS technical crew member, or a combination of these.

(c) The flight crew checking syllabus should include:

(1) proficiency checks, which should include landing and take-off profiles likely to be used at VEMS operating sites; and

(2) line checks, with special emphasis on all the following:

(i) local area meteorology;

(ii) VEMS flight planning and in-flight replanning;

(iii) VEMS departures;

(iv) the selection from the air of VEMS operating sites;

(v) familiarity with established VEMS operating sites and diversion locations in the operator's local area register;

(vi) crew cooperation.

AMC5 SPA.VEMS.130 Crew requirements

VEMS TECHNICAL CREW MEMBER TRAINING AND CHECKING SYLLABUS

INITIAL AND RECURRENT TRAINING COVERING PRIMARY TASKS

(a) The VEMS technical crew member's initial and recurrent training and checking syllabus covering primary tasks should include the following items:

(1) applicable laws and regulations;

(2) VCA general knowledge:

(i) stowage, cabin safety and use of on-board medical equipment;

(ii) general knowledge of VCA operations;

(3) meteorology;

(4) operational procedures:

(i) operator's procedures;

(ii) duties in the VEMS role;

(iii) response to VEMS dispatch;

(iv) VEMS operating site selection and use;

(v) patients;

(v) portable electronic devices (PEDs) and electronic flight bags (EFBs), as applicable;

(5) crew coordination, including checklists;

(6) human performance and limitations, and CRM in accordance with AMC1 ORO.FC.115;

(7) flight safety:

(i) general flight safety in VCA operations;

(ii) obstacle and traffic clearance;

(iii) handling of abnormal and emergency situations, including checklists;

(iv) dangerous goods (DG), as relevant for VEMS operation;

(8) security.

NAVIGATION TRAINING

(b) If the VEMS technical crew member is tasked to provide assistance in navigation, the initial and recurrent training and checking syllabus should also include the following items:

(1) applicable parts of SERA, as relevant to the navigation tasks of the VEMS crew member;

(2) basic navigation training;

(3) principles and use of navigation aids;

(4) airspace, restricted areas, and noise-abatement procedures;

(5) crew coordination.

COMMUNICATION TRAINING

(c) If the VEMS technical crew member is tasked to provide assistance in radio communications, the initial and recurrent training and checking syllabus should also include the following items:

(1) operation of relevant radio equipment;

(2) crew coordination.

MONITORING TRAINING

(d) If the VEMS technical crew member is tasked to provide assistance in the monitoring of the flight path and instruments, the initial and recurrent training and checking syllabus should also include the following items:

(1) general knowledge of VCA operations;

(2) monitoring function;

(3) crew coordination;

(4) handling of abnormal and emergency situations, as applicable.

GROUND CREW TRAINING

(e) If the VEMS technical crew member is tasked to provide assistance to the VCA on the ground, the initial and recurrent training and checking syllabus should also include the following items as applicable to their tasks:

(1) safety and security at the VEMS operating site;

(2) the dangers to self and others posed by rotors or propellers or other rotating parts;

(3) preparing the VCA and the specialist medical equipment for subsequent departure;

(4) conducting refuelling, and conducting refuelling with lift and thrust units powered on;

(5) marshalling signals;

(6) safety at the aerodrome (vertiport) and the operating site, including fire prevention and ramp safety areas;

(7) towing of VCA/trolley; and

(8) risks arising from damaged VCA batteries.

ADDITIONAL TRAINING, AS APPROPRIATE

(f) RESERVED

CONVERSION COURSE GROUND TRAINING AND CHECKING

(g) The conversion course ground training and checking, when changing VCA types, should include the elements of points (a) to (f) that are relevant for the new VCA type.

(h) When changing operators, the conversion course ground training and checking should include the elements of points (a) to (f) that are relevant in the context of changing operators.

INITIAL VCA/FSTD TRAINING

(i) The VEMS technical crew member training syllabus should include VCA/FSTD training focusing on crew cooperation with the PIC.

(1) The initial VCA/FSTD training should include at least 4 hours of instruction dedicated to crew cooperation unless:

(i) the VEMS technical crew member has received such training at another operator; or

(ii) the VEMS technical crew member has performed at least 50 missions in VEMS or in an equivalent role as a technical crew member.

(2) The initial VCA/FSTD training should be organised with a crew composition of a PIC and a VEMS technical crew member.

(3) The initial VCA/FSTD training may be combined with line flying under supervision.

LINE FLYING UNDER SUPERVISION

(j) Line flying under supervision

(1) Line flying under supervision should take place during the operator's conversion course.

(2) Line flying under supervision provides the opportunity for a VEMS technical crew member to practise the procedures and techniques the VEMS technical crew member should be familiar with regarding ground and flight operations, including any elements that are specific to a particular VCA type. Upon completion of the line flying under supervision, the VEMS technical crew member should be able to safely perform the flight operational duties assigned to him or her according to the procedures of the operator's operations manual.

(3) Line flying under supervision should include a minimum of 5 VEMS missions involving a minimum of 3 VEMS operating sites the VEMS technical crew member is not familiar with.

RECURRENT VCA/FSTD TRAINING

(k) Recurrent VCA/FSTD training

(1) The recurrent VCA/FSTD training should focus on crew cooperation and should contain a minimum of 2 hours of flight.

(2) The recurrent VCA/FSTD training should take place in the same conditions as the initial training in point (i).

(3) The validity period of the recurrent VCA/FSTD training should be 12 calendar months.

LINE CHECKS

(l) Line checks

(1) The line check should be performed during a VEMS mission or, alternatively, during a flight that is representative of a VEMS mission.

(2) The operator's conversion course should include a line check. The line check should take place after the completion of the line flying under supervision.

(3) Any task-specific items may be checked by a suitably qualified VEMS technical crew member nominated by the operator and trained in CRM concepts and in the assessment of non-technical skills.

OPERATOR PROFICIENCY CHECKS

(m) Operator proficiency checks

(1) The VEMS technical crew member should complete an operator proficiency check to demonstrate his or her competence in carrying out normal, abnormal and emergency procedures, covering the relevant aspects associated with the flight operational tasks described in the operations manual and not already covered in the line check.

(2) The conversion course should include an operator proficiency check.

(3) The operator proficiency check should be valid for a given VCA type. In order to consider that an operator proficiency check is valid for several VCA types, the operator should demonstrate that the types concerned are sufficiently similar from the technical crew member's perspective.

PROVISION OF TRAINING AND CHECKING

(n) Use of FSTDs

(1) The line check and line flying under supervision should be performed in the VCA used for the training of the VEMS technical crew member or in another VCA of the same type or variant.

(2) Notwithstanding point (1), the operator may perform the line check in two parts, in a suitable FSTD and on the ground, if all the following conditions are met:

(i) the FSTD part of the line check takes place in a line-oriented evaluation;

(ii) the ground part of the line check takes place at the VEMS operating base and includes all normal operating procedures not checked in the FSTD;

(iii) both parts of the line check are conducted within 3 months;

(iv) for the purpose of AMC1 SPA.VEMS.130, the line check is considered to be performed on the day on which the last part of the line check is completed;

(v) for the purpose of point (ii), the operator should arrange to replicate realistic conditions as much as practicable, so that normal operating procedures that are carried out on the ground at the VEMS operating site are also checked.

(3) Operator proficiency checks and FSTD training should be performed in a suitable FSTD or, if it is not reasonably practicable to gain access to such devices, in the VCA used for the training of the VEMS technical crew member or in another VCA of the same type or variant.

(o) Emergency and safety equipment training should be performed in the VCA involved in VEMS operations or in a representative training device or in a VCA of the same type or variant.

(p) The type of equipment used for the training and checking should be representative of the instrumentation, equipment and layout of the VCA type to be operated by the VEMS technical crew member.

(q) Training and checking in the VCA/FSTD should take place as part of the normal crew complement.

(r) The person conducting the training and checking should be a suitably qualified PIC nominated by the operator. In the case of the training described in points (i) and (k), the person conducting the training should have a minimum of 350 hours of experience in either multi-pilot operations or single-pilot operations with a VEMS/HEMS technical crew member or a combination of these two types of operations. The person conducting a CRM assessment should be trained in CRM concepts and in the assessment of CRM skills.

(s) Notwithstanding point (r), the person conducting the training and checking of tasks conducted in the cabin where crew cooperation is not essential may be a suitably qualified technical crew member nominated by the operator.

CRM ASSESSMENT OF THE VEMS TECHNICAL CREW MEMBER

(t) The CRM assessment should take place during the line check or should take place annually in a line-oriented flight scenario (LOFT or line-oriented section of the operator proficiency check) of an FSTD session in a suitable FSTD. The CRM assessment in the VCA type to be operated by the

VEMS technical crew member should take place as described for the pilots in AMC1 ORO.FC.430 point (b)(3)(vi) or (b)(3)(vii).

AMC6 SPA.VEMS.130 Crew requirements

LINE CHECKS

If the line check cannot be conducted on an operational flight due to the size, the configuration or the performance of the VCA, it may be conducted on a specially arranged representative flight. This flight may be immediately adjacent to, but not simultaneous with, one of the biannual proficiency checks.

GM2 SPA.VEMS.130 Crew requirements

VEMS TECHNICAL CREW MEMBER THEORETICAL TRAINING

(a) The VEMS technical crew member training and checking may be adapted to the knowledge of the VEMS technical crew member and structured as shown in Table 1. The operator should decide to what extent a qualified HEMS technical crew member needs to receive the theoretical training as shown in Table 1.

Table 1: VEMS technical crew member training

VEMS TECHNICAL CREW MEMBER TRAINING TRAINING TOPIC	Trainee with PPL(H)*	Trainee with PPL(A)**	Other trainee
(1) Applicable laws and regulations			
(i) Introduction to the regulatory framework applicable to VEMS operations, including SERA			X
(ii) VEMS requirements	X	X	X
(iii) Public interest sites (PISs), if applicable	X	X	X
(2) VCA general knowledge			
(i) Stowage, cabin safety and use of on-board medical equipment			
(A) safe storage of loose personal objects and medical equipment			X
(B) securing patients on the EMS stretcher (if applicable)	X	X	X
(C) influence of medical equipment usage (e.g. defibrillator) on VCA systems	X	X	X
(ii) General knowledge of VCA operations			
(A) general principles of flight		X	X
(B) VCA mass and balance			X
(C) VCA performance (including CSFL capability and operations)	X	X	X
(D) location and design of normal and emergency systems and			X

equipment, including all VCA lights and operation of doors			
(E) intercommunication system			X
(3) Meteorology			
(i) meteorology as relevant to the operating area			X
(ii) meteorology as a limiting factor for mission planning/execution			X
(4) Operational procedures			
(i) operator's procedures			
(A) the relevant extracts of the organisation's management manual and operations manual	X	X	X
(B) operational control and supervision	X	X	X
(ii) duties in the VEMS role			
(A) duties of the technical crew member before flight, during all flight phases, and post-flight duties	X	X	X
(B) legal aspects of tasks delegated by the PIC	X	X	X
(iii) response to VEMS dispatch			
(A) flight planning, preparation, and in-flight operations	X	X	X
(iv) VEMS operating site selection and use			
(A) minimum dimensions or equivalent criteria	X	X	X
(B) effects of downwash (outwash)	X	X	X
(C) accessibility	X	X	X
(v) patients (if applicable)			
(A) aspects of VEMS operating site selection for patient transport	X	X	X
(B) patient onloading/offloading	X	X	X
(C) medical consequences of air transport on patients, including influence of noise, vibration, air pressure and temperature	X	X	X
(D) consequences of hospital selection on flight (endurance, weather)	X	X	X
(E) knowledge of hospital casualty reception	X	X	X
(vi) portable electronic devices (PEDs) and electronic flight bags (EFBs), as applicable	X	X	X

(5) Crew coordination, including checklists			
(i) crew concept	X	X	X
(ii) checklist reading philosophy, initiation, interruptions, and termination	X	X	X
(iii) communication and call-outs	X	X	X
(iv) effective use of intercommunications system	X	X	X
(v) early identification of pilot incapacitation	X	X	X
(vi) debriefing	X	X	X
(6) Human performance and limitations, CRM: as per AMC1 ORO.FC.115	X	X	X
(7) Flight safety			
(i) general flight safety in VCA operations			
(A) if necessary, noise protection for crew members embarking/disembarking with lift and thrust units powered on		X	X
(B) the dangers to self and others posed by turning rotors or turning propellers or other rotating parts; familiarisation with hazard areas of the VCA		X	X
(C) effects of downwash (outwash) on persons and objects		X	X
(D) dangers of turning rotors or turning propellers or other rotating parts hitting objects on ground and in flight		X	X
(E) safety at the VEMS operating site		X	X
(F) safety at other landing sites, including the VEMS operating base and diversion locations		X	X
(ii) obstacle and traffic clearance			
(A) importance of lookout for collision avoidance and associated call-outs			X
(B) application of sterile flight crew compartment procedures during critical phases of flight			X
(C) identification of obstacles and conflicting terrain			X
(iii) handling of abnormal and emergency situations, including checklists			

(A) necessary coordination procedures between flight and technical/other crew members, including checklists, as applicable	X	X	X
(B) early identification of pilot incapacitation	X	X	X
(C) emergency evacuation	X	X	X
(iv) dangerous goods (DG), as relevant for VEMS operations			
(A) DG that might be in medical passengers' luggage, including oxygen, if not part of the cabin design			X
(B) awareness of DG that might be in patients' or other passengers' luggage, backpacks or clothes			X
(8) Security			
(i) Operator's security programme	X	X	X
(ii) VEMS operating sites and operating bases	X	X	X

* *Applicable to trainees that have passed the theoretical knowledge examination for at least the PPL(H) or that hold at least a PPL(H).*

** *Applicable to trainees that have passed the theoretical knowledge examination for at least the PPL(A) or that hold at least a PPL(A).*

(b) The operator may consider that trainees that have passed the theoretical knowledge examination for at least the PPL(A) or the PPL(H), or that hold at least a PPL(A) or a PPL(H), or that are qualified HEMS technical crew members, do not need to receive additional navigation training.

In all other cases, if the VEMS technical crew member is tasked to provide assistance in navigation, the navigation training may be structured as follows:

(1) Applicable parts of SERA, as relevant to the navigation tasks of the VEMS technical crew member.

(2) Basic navigation training:

(i) charts (convergence, scale, projections, symbology, plotting);

(ii) measuring distances and courses;

(iii) ability to keep track with helicopter position on map;

(iv) moving map, if applicable;

(v) identification of obstacles and conflicting terrain;

(vi) time (local/UTC, sunrise/sunset) and speed;

(vii) units and unit conversion.

(3) Principles and use of navigation aids:

(i) navigation equipment and AFCS operations, as applicable;

(ii) transponder;

(iii) ACAS, HTAWS, weather radar, moving map, as applicable;

(iv) inadvertent IMC.

(4) Airspace, restricted areas, and noise-abatement procedures:

(i) air traffic services;

(ii) aerodrome procedures;

(iii) AIP;

(iv) NOTAMs.

(5) Crew coordination: assignment of navigation tasks.

(c) The operator may consider that trainees that have passed the theoretical knowledge examination for at least the PPL(A) or the PPL(H) or that hold at least a PPL(A) or a PPL(H), or are qualified HEMS technical crew members, do not require communication training. In all other cases, if the VEMS technical crew member is tasked to provide assistance in radio communications, the radio communications training may be structured as follows:

(1) operation of relevant radio equipment: radio licence as applicable to the frequencies used by the technical crew member;

(2) crew coordination: effective use of the radio communication system.

(d) If the VEMS technical crew member is tasked to provide assistance in monitoring, the training in monitoring may be adapted to the knowledge of the VEMS technical crew member and structured as shown in Table 2.

Table 2: VEMS technical crew member monitoring training

VEMS TECHNICAL CREW MEMBER MONITORING TRAINING TRAINING TOPIC	Trainee with PPL(H)*	Trainee with PPL(A)**	Other trainee
(1) General knowledge of VCA operations			
(i) general knowledge of VCA structure, power plant, systems, instruments, and airworthiness		X	X
(ii) limitations, normal and abnormal procedures, including CSFL capability	X	X	X
(2) Monitoring function			
(i) assignment of flight crew compartment tasks	X	X	X
(ii) parameters the VEMS technical crew member is tasked to monitor	X	X	X
(iii) flight path monitoring in the context of collision avoidance and, if applicable, navigation	X	X	X
(3) Crew coordination			
(i) assignment of monitoring tasks	X	X	X

(ii) emphasis on call-outs and actions resulting from the monitoring process	X	X	X
(4) Handling of abnormal and emergency situations, as applicable			
(i) definition of warnings, cautions and advisories			X
(ii) identification of malfunctions (visual and aural)			X
(iii) selection of appropriate abnormal or emergency procedure in the checklist			X
(iv) abnormal or emergency procedures checklist reading			X
(v) monitoring of critical actions			X
(vi) distress call and other means of emergency signalling			X

** Applicable to trainees that have passed the theoretical knowledge examination for at least the PPL(H) or that hold at least a PPL(H).*

*** Applicable to trainees that have passed the theoretical knowledge examination for at least the PPL(A) or that hold at least a PPL(A).*

(e) RESERVED

(f) If the VEMS technical crew member is tasked to provide assistance on the ground, the training in these tasks may be structured as per AMC5 SPA.VEMS.130.

GM3 SPA.VEMS.130 Crew requirements

VEMS TECHNICAL CREW MEMBER OBSERVATION FLIGHTS

If the candidate VEMS technical crew member has no prior flight experience as technical crew member, flight crew member or student pilot, the operator may provide observation flights on VEMS missions, prior to the VCA/FSTD training, once the ground training and checking of the conversion course has been completed.

GM4 SPA.VEMS.130 Crew requirements

USE OF VEMS OPERATING SITES FOR TRAINING AND CHECKING

In order to ensure that the training and checking is relevant to the duties of the crew members and ground personnel, as required by point ORO.GEN.110(e), the operator may define VEMS operating sites for the purpose of the VEMS training and checking required by point SPA.VEMS.130, except for the initial part of the training.

The training and checking may involve all personnel necessary to carry out the VEMS mission.

AMC1 SPA.VEMS.135 Briefing of VEMS medical passengers and of other personnel

BRIEFING OF VEMS MEDICAL PASSENGER

The briefing should ensure that the medical passenger understands their role in the operation, which includes:

(a) familiarisation with the VCA type(s) operated;

(b) VCA entry and exit under normal and emergency conditions both for self and patients;

(c) the use of relevant on-board specialist medical equipment;

(d) the need for the PIC's approval prior to the use of specialised equipment;

(e) the method of supervision of other medical staff;

(f) the use of VCA intercommunication systems;

(g) the location and use of on-board fire extinguishers; and

(h) the operator's crew coordination concept, including relevant elements of crew resource management (CRM).

AMC2 SPA.VEMS.135 Briefing of VEMS medical passengers and of other personnel

GROUND EMERGENCY SERVICE PERSONNEL

(a) The VCA operator should provide assistance as regards training of ground emergency service personnel who are tasked with VEMS support. This can be achieved by various means, such as but not limited to the production of flyers, the publication of relevant information on the operator's website, the development of applications, and the provision of extracts from the operator's operations manual.

(b) The elements that should be covered include:

(1) two-way radio communication procedures with VCA;

(2) the selection of suitable VEMS operating sites for VEMS flights;

(3) the physical danger areas of VCA;

(4) crowd control in respect of VCA operations; and

(5) the evacuation of VCA occupants following an on-site VCA accident.

GM1 SPA.VEMS.135 Briefing of VEMS medical passengers and of other personnel

GROUND EMERGENCY SERVICE PERSONNEL

(a) When applying AMC2 SPA.VEMS.135, the VEMS operator may describe the following items:

(1) Definitions: List of applicable definitions and abbreviations

(2) VCA

(i) Type(s) of VCA in use and layout(s), such as doors for onloading and offloading with text(s), figure(s) or photo(s); and

(ii) Hazardous areas with figure(s) or photo(s), with emphasis on the risk posed by turning rotors or turning propellers or other rotating parts, as well as from sloping terrain.

(3) Types, and selection, of VEMS operating sites as applicable to the operation

(i) Various types of VEMS operating sites; for example, roads, mountains, gardens, fields, mountain ledges, steep terrain, football fields, school yards, pre-surveyed sites.

(ii) Advantages and disadvantages, hazards (for example, weather and light conditions, the use of flashlights/searchlights, surface, dust, snow, fixed and loose obstacles, wires, downwash (outwash), open fires/fireplaces, traffic and bystanders), limitations and procedures associated with the various types of VEMS operating sites.

(iii) Challenges related to weather (temperature, wind, fog, low clouds, rain, snow) and light conditions.

(iv) VEMS operating site dimension(s) for the different type(s) of VCA with text(s), figure(s) or photo(s).

(v) How to illuminate the VEMS operating site from the ground.

(vi) Light on skid/wheel.

(vii) Signals from the ground to the VCA.

(viii) Special hazards related to fire or chemical, biological, or radiological accidents and the importance of selecting a safe VEMS operating site(s) for the protection of both ground emergency services personnel and crew.

(ix) Communication between the ground emergency services personnel and VCA during landing (radio communication or hand signals).

(b) The operator may make available a short checklist, covering, for example, the following actions:

(1) establish communication;

(2) select operating site;

(3) secure the operating site (public / bystanders / crowd control / obstacles / loose objects); and

(4) communicate with the VCA the position of/how to identify the operating site, weather, and hazards.

(c) Operators in the same operating area should collaborate when developing checklists and when describing the items covered in AMC2 SPA.VEMS.135.

AMC1 SPA.VEMS.140 Information, procedures and documentation

OPERATIONS MANUAL

The operations manual should include all the following:

(a) the on-board use of portable equipment;

(b) guidance on take-off and landing procedures at non-pre-surveyed VEMS operating sites;

(c) the final reserve fuel/energy, in accordance with point UAM.OP.VCA.191;

(d) operating minima;

(e) recommended routes for regular flights to pre-surveyed VEMS operating sites, including the minimum flight altitude;

(f) guidance on the selection of a VEMS operating site in the case of a VEMS flight to a non-pre-surveyed VEMS operating site;

(g) the safety altitude for the area overflown;

(h) abnormal procedures, including procedures to be followed in case of inadvertent entry into cloud;

(i) operational dispatch criteria;

(j) a description of the crew composition for all phases of flight and conditions, standard operating procedures for the described crew composition, including any procedures to ensure the continuity of the crew concept;

(k) flight crew and technical crew training and checking syllabi, as required by point SPA.VEMS.130.

AMC2 SPA.VEMS.140 Information, procedures and documentation

VEMS RISK ASSESSMENT

The operator's VEMS risk assessment should take into account, but should not be limited to, all the following:

(a) adequate ground reference;

(b) reliability of weather reporting facilities;

(c) crew composition, minimum crew qualification, initial and recurrent training;

(d) flight time limitations and crew fatigue;

(e) operating procedures, including crew coordination;

(f) weather minima;

(g) VCA equipment;

(h) additional considerations due to specific local conditions;

(i) location and availability of diversion locations;

(j) CSFL compliance, both for pre-flight planning and in-flight replanning.

GM1 SPA.VEMS.140(b) Information, procedures and documentation

VEMS TACTICAL RISK ASSESSMENT

The tactical risk assessment of a VEMS flight by the PIC may be included in the daily briefing and amended as necessary.

The following may be considered:

(a) operating environment, including airspace, local geography and availability of diversion locations;

(b) weather;

(c) NOTAMs;

(d) VCA performance;

(e) VCA equipment and defects, MEL, and medical equipment;

(f) fuel/energy planning;

(g) crew fatigue, recency and qualifications;

(h) dispatch criteria;

(i) tasking, roles and responsibilities;

(j) in-flight replanning;

(k) relevant threats.

AMC1 SPA.VEMS.150 Fuelling / defuelling / battery charging / battery swapping while passengers are embarking, on board, or disembarking

The VEMS operator should comply with point UAM.OP.MVCA.200 or point UAM.OP.MVCA.205, as applicable, considering that medical personnel, ill or injured persons and other persons directly involved and technical crew may be embarking, on board, or disembarking during fuelling, defuelling, battery charging, and/or battery swapping.

AMC1 SPA.VEMS.155 Aircraft tracking system

GENERAL

(a) The operator should track and monitor VEMS flights from take-off to landing.

(b) The operator should establish a detailed procedure describing how the aircraft tracking system is to be monitored, what actions are to be taken if a deviation or anomaly has been detected, and when those actions are to be taken.

OPERATIONAL PROCEDURE

(c) The operational procedure should take into account the following aspects:

(1) the outcome of the risk assessment conducted when the frequency of position reports was defined;

(2) the local environment of the intended operations; and

(3) the interface with the operator's emergency response plan.

(d) Aircraft tracking data should be recorded on the ground and retained for at least 48 hours. Following an accident or a serious incident subject to investigation, the data should be retained for at least 30 days, and the operator should provide a copy of this data without delay.