European Union Aviation Safety Agency

Notice of Proposed Amendment 2024-06(D)

in accordance with Article 6 of MB Decision 01-2022

Proposed AMC and GM
to the continuing airworthiness requirements
for organisations

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Proposed amendments

The amendments are arranged as follows to show deleted, new and unchanged text:

— deleted text is ~~struck through~~;

— new text is highlighted in blue;

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

Where necessary, the rationale is provided in *italics.*

GM1 Article 1

APPLICABILITY OF THE CONTINUING AIRWORTHINESS REQUIREMENTS

As established in point (i) of Article 7(2a) of Commission Implementing Regulation (EU) 2019/947, a UA must have an airworthiness certificate issued in accordance with Annex I (Part 21) to Commission Regulation (EU) No 748/2012 when it is intended to be operated in the 'specific' category and the related risk assessment demonstrates that the risk of the operation cannot be adequately mitigated without the certification of the UAS, as defined in point 1(d) of Article 40 of Commission Delegated Regulation (EU) 2019/945. Such operation is commonly referred to as 'high risk' (i.e. SAIL V to VI) operation in the 'specific' category and must be conducted with a certified UAS.

The issuance of such airworthiness certificate in this case creates the need for the UAS to comply with Commission Delegated Regulation (EU) 2024/1107 for its continuing airworthiness to be ensured (i.e. Part-ML.UAS to be complied with, and the Part-CAO.UAS organisation to ensure carrying out the associated tasks). Compliance with that Regulation is required as long as the airworthiness certificate is not surrendered or revoked, regardless of the type of operation effectively conducted.

This means that even though the certified UAS conducts a lower-risk operation in the 'specific' category, if an airworthiness certificate has been obtained from the competent authority of the Member State of registry, compliance with that Regulation is required.

On a voluntary basis, the owner/operator may decide to comply with that Regulation for UAS operated in low-/medium-risk operations (i.e. SAIL I to IV) in the 'specific' category. The reason behind such a decision could be to ensure a smooth transition when the operation shifts to 'high-risk', or simply because the owner/operator wishes to adhere to higher continuing airworthiness standards. This may be achieved by requesting, and obtaining, an airworthiness certificate issued in accordance with Annex I (Part 21) to Commission Regulation (EU) No 748/2012, even though it is not required as per point (i) of Article 7(2a) of Commission Implementing Regulation (EU) 2019/947. By doing so, Commission Delegated Regulation (EU) 2024/1107 applies, and the relevant applicable requirements must be complied with.

If the airworthiness certificate has been issued but the UAS is not (or no longer) used in 'high-risk' operations in the 'specific' category, the owner/operator may decide to surrender the airworthiness certificate to avoid being required to fulfil the applicable requirements established by Commission

Delegated Regulation (EU) 2024/1107. However, it should be noted that if a new airworthiness certificate is requested after the previous one has been surrendered, an airworthiness review in accordance with point ML.UAS.903 must be carried out.

GM1 ML.UAS.201(a) Responsibilities

ACCOUNTABILITY FOR THE CONTINUING AIRWORTHINESS OF THE UAS

To ensure the continuing airworthiness of the UAS, it is fundamental to determine the related accountabilities. Point ML.UAS.201(a) indicates that the owner of the UA is accountable for the continuing airworthiness of both the UA and the CMU(s) that is (are) used to operate that UA.

If a CMU is used to operate different UA of different owners, the UA owners are accountable for the continuing airworthiness of the CMU to the extent the CMU applies to the owned UA.

The main obligation of the owner, as provided for in point ML.UAS.201(e), is to ensure that the tasks related to the continuing airworthiness management of the UA, and of the CMU(s) used to operate that UA, are carried out by an organisation approved in accordance with Annex II (Part-CAO.UAS) to Commission Delegated Regulation (EU) 2024/1107.

AMC1 ML.UAS.201(e)(1) Responsibilities

CONTINUING AIRWORTHINESS OF SHARED CMUs

When a CMU is used to operate different UA of different owners, various Part-CAO.UAS organisations may be involved in the continuing airworthiness of the CMU, and in respect of such CMU, they would be responsible for the continuing airworthiness tasks to the extent that the CMU applies to the managed UA. In this case, it is expected that Part-CAO.UAS organisations will establish an arrangement for the continuing airworthiness of the CMU. When a Part-CAO.UAS organisation is contracted by the owner, such arrangement should be documented in the written contract established in accordance with Appendix 1 'Continuing airworthiness management contract' to Annex I (Part-ML.UAS) to Commission Delegated Regulation (EU) 2024/1107.

The arrangement is intended to ensure that all relevant information and records regarding the CMU are continuously shared between the two organisations concerned for the entire duration of the sharing. Such information and records include but are not limited to:

— all maintenance performed on the CMU during the sharing period, including modifications and repairs;

— CMU's defects not corrected or which have been deferred;

— CMU's recurrent defects;

— records identified in point ML.UAS.305 that apply to the CMU;

— any safety-related event or condition of the CMU that endangers or, if not corrected or addressed, could endanger the UAS or any person involved in its operation;

— any information requested by the organisation that manages the continuing airworthiness of the UAS in order to fulfil its responsibilities.

GM1 ML.UAS.201(e)(1) Responsibilities

ACCOUNTABILITY FOR THE CONTINUING AIRWORTHINESS OF THE UAS

(a) When a contract is concluded in accordance with Appendix 1 'Continuing airworthiness management contract' to Annex I (Part-ML.UAS) to Commission Delegated Regulation (EU) 2024/1107 between an owner/operator and an organisation approved in accordance with Annex II (Part-CAO.UAS) to that Regulation, a set of obligations is established that both parties need to fulfil. Therefore, the Part-CAO.UAS organisation becomes responsible for the proper performance of the continuing airworthiness tasks in relation to the UAS, as referred to in point ML.UAS.301, for which it has been contracted.

If the owner of the UA is also appropriately approved in accordance with Annex II (Part-CAO.UAS), a contract is not needed; however, the same obligations as specified in Appendix 1 'Continuing airworthiness management contract' to Annex I (Part-ML.UAS) are expected to be fulfilled.

(b) As specified in point ML.UAS.201(e)(1), the tasks associated with the continuing airworthiness management of a UAS must be carried out by an organisation approved in accordance with Annex II (Part-CAO.UAS) to Commission Delegated Regulation (EU) 2024/1107. This requires that the UA and all the CMUs used to operate it are within the scope of work of the Part-CAO.UAS organisation and specified in the organisation manual. This is due to the fact that the continuing airworthiness of the UA is connected to, and dependent on, the CMU's configuration and status, and vice versa. This interdependence implies that certain continuing airworthiness tasks encompass both systems, examples of which include the following:

— The aircraft maintenance programme (AMP) is developed including the scheduled maintenance tasks for both the UA and the CMU(s).

— The configuration of both the UA and the CMU(s) is known and controlled.

— Organise that all UAS maintenance be performed by an approved maintenance organisation.

— The defects detected in either the UA or the CMU(s) are rectified by an appropriately approved maintenance organisation or deferred in a controlled manner.

GM1 ML.UAS.502(b) Maintenance of UA components

DECLARATION OF MAINTENANCE ACCOMPLISHED

A 'declaration of maintenance accomplished' is a certificate prepared in any format/form by the person or organisation that has performed any type of maintenance of the component covered by the certificate and subject to the conditions established in point ML.UAS.502(b).

That person or organisation does not need an approval to perform maintenance in accordance with Commission Delegated Regulation (EU) 2024/1107; however, this does not exclude a maintenance organisation approved under Part-CAO.UAS from issuing a 'declaration of maintenance accomplished'. For the component to be eligible for installation with a 'declaration of maintenance accomplished', the declaration, together with other records, should allow determining that the component was first installed as 'new', as a component referred to in point ML.UAS.502(b). Such a component should not be installed in a UA if there is information contained in the certificate that is not readable or not understandable or states that the component is not in a satisfactory condition for operation.

GM1 ML.UAS.520(e) Installation and maintenance of CMU components

DECLARATION OF MAINTENANCE ACCOMPLISHED

A 'declaration of maintenance accomplished' is a certificate prepared in any format/form by the person or organisation that has performed any type of maintenance of the component covered by the certificate and subject to the conditions established in point ML.UAS.520(e).

That person or organisation does not need an approval to perform maintenance in accordance with Commission Delegated Regulation (EU) 2024/1107; however, this does not exclude a maintenance organisation approved under Part-CAO.UAS from issuing such a 'declaration of maintenance accomplished'. For the component to be eligible for installation with a 'declaration of maintenance accomplished', the declaration, together with other records, should allow determining that the component was first installed as 'new', as a component referred to in point ML.UAS.520(e). Such a component should not be installed in a CMU if there is information contained in the certificate that is not readable or not understandable or states that the component is not in a satisfactory condition for operation.

AMC1 ML.UAS.801 Certification of UA maintenance

In addition to the information required by points (b) and (c) of point ML.UAS.801, the certificate of release to service following UA maintenance should contain the following statement:

'Certifies that the work specified, except as otherwise specified, was carried out in accordance with Part-CAO.UAS and in respect to that work, the UA is considered ready for release to service'.

AMC1 ML.UAS.803 Certification of CMU maintenance

The maintenance performed on the CMU should be certified on an EASA Form 1 as set out in Appendix II 'Authorised Release Certificate' to Annex I (Part-M) to Commission Regulation (EU) No 1321/2014, following the instructions provided in Appendix 3 'EASA Form 1 fill-in instructions' to Commission Delegated Regulation (EU) 2024/1107.

Alternatively, the certificate of release to service may be established in a different form than with an EASA Form 1. In this case, in addition to the information required by point ML.UAS.803(b), the certificate of release to service for the CMU maintenance should contain the following statement:

'Certifies that the work specified, except as otherwise specified, was carried out in accordance with Part-CAO.UAS and in respect to that work the CMU is considered ready for release to service.'

GM1 ML.UAS.803(a) Certification of CMU maintenance

Point ML.UAS.803 addresses the certification of CMU maintenance when such maintenance involves any component that is considered critical for the UAS operation, as referred to in point 21.A.308(a) of Annex I (Part 21) to Commission Regulation (EU) No 748/2012.

When CMU maintenance does not involve any component that is considered critical for the UAS operation, such maintenance may be certified in accordance with point ML.UAS.803, but it may also be declared by a person, other than a certifying staff, authorised for such maintenance by the Part-CAO.UAS organisation managing the continuing airworthiness of the CMU. In this case, the declaration should be similar to what is established in GM1 ML.UAS.502(b) and GM1 ML.UAS.520(e). Such maintenance requires adherence to point ML.UAS.401 maintenance data and to the maintenance standards of the Part-CAO.UAS organisation.

It is important to include such declaration in the UAS continuing airworthiness records system, as required by point ML.UAS.305(b)(2).

AMC1 ML.UAS.805 Certification of CMU installation

In addition to the information required by point ML.UAS.805(b), the certificate of release to service for the installation of the CMU should contain the following statement:

'Certifies that the installation of the CMU, except as otherwise specified, was carried out in accordance with Part-CAO.UAS and in respect to that work the CMU is considered ready for release to service.'

GM1 ML.UAS.805 Certification of CMU installation

For the purpose of this Regulation, as regards the installation of the CMU, it is expected that similar standards will be followed as for maintenance, such as incoming inspection, clean work area, and segregation of components.

Depending on the CMU design, and without prejudice to the limitations and instructions provided in the installation instructions, the installer should also consider factors such as CMU size, protection against adverse weather, wildlife, and dust, as well as the availability of secure network and electrical

connections, as applicable, in order to determine whether a given physical environment is appropriate for installing the CMU. A physical environment could be, for example, a room, a van, a tent, or a field.

AMC1 ML.UAS.903 Airworthiness review process

AIRWORTHINESS REVIEW STANDARDS

(a) Airworthiness review staff (ARS) are responsible for the accomplishment of both the documented review and the physical survey of the UA and the respective CMU(s). If more than one CMU is used to operate a specific UA, all CMUs should be part of the airworthiness review, except those CMUs that have been included in the airworthiness review of an UA of the same type in the last 6 months, as specified in point ML.UAS.903(b).

(b) ARS should follow the Part-CAO.UAS procedures that establish the depth of the documented review and the physical survey, but ARS should go beyond such depth if they consider it necessary.

(c) An airworthiness review report should be produced by the ARS, detailing all items checked and the outcome of the review. The airworthiness review report should identify the CMU (or CMUs) that was (were) part of the review, including the CMU(s) with non-compliances not properly addressed as per AMC1 ML.UAS.903(g). In such cases, a statement should be included indicating that the particular CMU(s) should not be used to operate the UA until the non-compliances are corrected, or properly deferred, in accordance with point ML.UAS.403. Additionally, the airworthiness review report should include the justification for any CMU(s) used to operate the UA that was (were) not reviewed, for example, due to the reasons specified in point ML.UAS.903(b). In this case, the justification should include the reference to the airworthiness review report issued upon the completion of the airworthiness review covering the particular CMU(s).

(d) The issuance of the airworthiness review certificate (ARC) by the ARS only certifies that the UAS is considered airworthy in relation to the scope of the airworthiness review performed and the fact that the ARS are not aware of instances of non-compliance which could endanger flight safety. Furthermore, the ARC only certifies that the UAS is considered airworthy at the time of the review.

(e) The airworthiness review report should be sent to the organisation that manages the UAS's continuing airworthiness, if different from the organisation that issues the ARC, as specified in point CAO.UAS.090(a)(4).

GM1 ML.UAS.903(g) Airworthiness review process

NON-COMPLIANCE DETECTED IN THE CMU(s)

Non-compliance detected in the CMU(s) are to be corrected, or properly deferred, in accordance with point ML.UAS.403 before the airworthiness review certificate (ARC) is issued. However, in cases where there are still non-compliances in one or more CMUs for a particular UA, the ARC may be issued provided that at least one CMU does not have non-compliances, or such non-compliances in that CMU have been properly deferred. The remaining CMU(s) with the non-compliances cannot be used to

operate that UA, or any other UA to which the non-compliance relates, until they have been corrected or properly deferred.

AMC1 CAO.UAS.020 Scope of work and terms of approval

INCLUSION OF UA AND CMU(s) IN THE SCOPE OF WORK

When the continuing airworthiness of a CMU is managed by different Part-CAO.UAS organisations (ref. GM1 ML.UAS.201(a)), those Part-CAO.UAS organisations should provide this information in the scope of work. The relevant organisation manuals should provide the details of the arrangement with the other Part-CAO.UAS organisation(s) and a procedure should be established detailing how the risks associated with this set-up will be mitigated, including which records and information are expected to be shared between these organisations, as specified in GM1 ML.UAS.201(a).

To include a UA or a CMU, or both, in the identification of the UA and the CMU(s) managed (point CAO.UAS.020(d)(2)) within the scope of work of a Part-CAO.UAS organisation (i.e. UAS phase-in), that organisation should ensure that the records and information received are accurate and complete. This process may require verifying that the information received corresponds to the status of the UA or the CMU(s), as well as verifying:

— whether the UA and the CMU have been previously subject to the continuing airworthiness requirements established by Commission Delegated Regulation (EU) 2024/1107;

— whether the CMU has been included in the airworthiness review of an UA of the same type in the last 6 months.

AMC1 CAO.UAS.025 Organisation manual

This AMC provides an outline of the layout of an acceptable organisation manual.

Chapter	Description	Regulation reference
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A.2	General presentation of the organisation	CAO.UAS.035(a); CAO.UAS.100(e)
A.3	Description and location of the facilities	CAO.UAS.025(b)(4); CAO.UAS.030
A.4	Scope of work	CAO.UAS.020; CAO.UAS.025(b)(2); CAO.UAS.025(b)(6); CAO.UAS.025(b)(11) CAO.UAS.095; point (a) of the Appendix 'Part-CAO.UAS certificate — EASA Form 3-CAO.UAS' to the Annex (Part-AR.UAS) to Commission Implementing Regulation (EU) 2024/1109
A.5	Exposition amendments and changes to the organisation including 'phase-in'	CAO.UAS.025(b)(5)/(d); CAO.UAS.105; CAO.UAS.020
A.6	Procedure for alternative means of compliance	CAO.UAS.017

Chapter	Description	Regulation reference
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A.8	Organisation chart	CAO.UAS.025(b)(3)
A.9	Manpower	CAO.UAS.035(f)
A.10	List of certifying staff	CAO.UAS.025(b)(7)
A.11	List of staff responsible for the development and approval of the aircraft maintenance programme (AMP)	CAO.UAS.025(b)(8)
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B.4	Qualification, assessment and training of staff	CAO.UAS.035(e);(f);(g);(h); CAO.UAS.040; CAO.UAS.045(a);(b)
B.5	Subcontracting	CAO.UAS.095(a)(2);(c)(3); CAO.UAS.100(e)
B.6	Maintenance data and continuing airworthiness management data	CAO.UAS.055(a); CAO.UAS.080
B.7	Records management and retention	CAO.UAS.050(b); CAO.UAS.075(a);(b)(9); CAO.UAS.090; CAO.UAS.085
B.8	Carrying out the airworthiness review	CAO.UAS.085; CAO.UAS.095(d)
B.9	Conformity with approved flight conditions	CAO.UAS.095(e); CAO.UAS.086
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C.3	Components, equipment, tools and materials (supply, acceptance, segregation, storage, calibration, etc.)	CAO.UAS.050; CAO.UAS.060(b)(3); CAO.UAS.030(b)(2)
C.4	Maintenance facility (selection, organisation, cleanliness and environmental limitations)	CAO.UAS.060(b)(1);(b)(4);(b)(5)
C.5	Maintenance accomplishment and maintenance standards	CAO.UAS.095(a)(1); CAO.UAS.060(b)(2); points (b), (c) and (d) of the Appendix 'Part-CAO.UAS certificate — EASA Form 3-CAO.UAS' to the Annex (Part-AR.UAS) to Commission Implementing Regulation (EU) 2024/1109

Chapter	Description	Regulation reference
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C.7	Critical maintenance tasks and error-capturing methods	CAO.UAS.060(7)
C.8	Fabrication	CAO.UAS.095(a)(5)
C.9	Certifying staff responsibilities, maintenance and installation release	CAO.UAS.040(a); CAO.UAS.065; CAO.UAS.070; CAO.UAS.071; CAO.UAS.072; CAO.UAS.095(a)(4); CAO.UAS.095(b)
C.10	Defects arising during maintenance	CAO.UAS.060(a); CAO.UAS.075(b)(6)
C.11	Maintenance outside approved locations	CAO.UAS.095(a)(3); CAO.UAS.025(b)(6);
C.12	Procedure for component maintenance under UAS or engine rating	Points (b) and (c) of the Appendix 'Part-CAO.UAS certificate — EASA Form 3-CAO.UAS' to the Annex (Part-AR.UAS) to Commission Implementing Regulation (EU) 2024/1109
C.13	Procedure for maintenance of installed engine (or component) under engine (or component) rating	Points (c) and (d) of the Appendix 'Part-CAO.UAS certificate — EASA Form 3-CAO.UAS' to the Annex (Part-AR.UAS) to Commission Implementing Regulation (EU) 2024/1109
C.14	Special procedures (specialised tasks, non-destructive testing (NDT), engine running, etc.)	CAO.UAS.030(a); point (e) of the Appendix 'Part-CAO.UAS certificate — EASA Form 3-CAO.UAS' to the Annex (Part-AR.UAS) to Commission Implementing Regulation (EU) 2024/1109
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D.5	Modifications and repairs	CAO.UAS.075(b)(3)
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D.7	Management of defects	CAO.UAS.075(b)(6); CAO.UAS.060(a)

Chapter	Description	Regulation reference
D.8	Establishment of contracts and work orders for the maintenance	CAO.UAS.075(a);(b)(4);(b)(7)
D.9	Coordination of maintenance activities	CAO.UAS.075(b)(8)
D.10	Mass and balance statement	CAO.UAS.075(a);(b)(10)
D.11	Issue of ARC or ARC recommendation	CAO.UAS.095(d)
D.12	ARC extension	CAO.UAS.095(c)(4)
D.13	Maintenance check flights	CAO.UAS.075(a)
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E.4	List of currently approved alternative means of compliance	
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AMC1 CAO.UAS.025(b)(6) Organisation manual

MAINTENANCE OUTSIDE APPROVED LOCATIONS

(a) When carrying out maintenance outside the locations listed in the organisation manual, certain safeguards offered by these locations are not present. Therefore, a procedure needs to be established to define the prerequisites and conditions that must be fulfilled before and during such maintenance so as to ensure that appropriate maintenance standards are met, as specified in point CAO.UAS.060.

The procedure should ensure that all the aspects relevant to the work to be performed are addressed, such as:

— Manpower:

— Manpower availability should account for additional time required to reach the location where the maintenance will be performed, including but not limited to fatigue and travel time.

— If applicable, availability of staff to ensure the implementation of error-capturing methods (e.g. independent inspection) after the performance of critical maintenance tasks.

— Work environment:

— Ensure that the area where maintenance is performed is well organised and clean.

— When necessary, the appropriate conditions must be ensured to protect the UAS, components, and staff from adverse weather such as rain, hail, ice, snow, and

wind, as well as from wildlife (including birds and rodents) and dust. This can be achieved by performing the maintenance in appropriate facilities or by using other means such as an inflatable shelter, maintenance tent, or inside a van.

— Maintenance resources and supplies:

— Ensure the availability and proper condition of components, standard parts, materials, tools, and equipment required for maintenance. The corresponding documentation, such as EASA Form 1 and certificate of conformity (CofC), should be readily available upon request.

— When necessary, ensure the appropriate conditions to transport, store, and segregate components, standard parts, materials, tools, and equipment.

— Maintenance data, records, and occurrence reporting:

— Ensure that current maintenance data is readily available.

— The records system allows for proper records of all stages of maintenance, and ensures they are properly stored and protected.

— Ensure the necessary conditions for both mandatory and voluntary reporting.

— If applicable, ensure there are alternatives in case of no internet connection.

— Information security:

— Access to computers and networks is secured and restricted to authorised personnel.

(b) The scope of maintenance allowed to be carried out outside approved locations should be defined in point A.4 of the organisation manual. It should be considered that having the capability to perform specific maintenance at a location listed in the organisation manual does not necessarily mean the organisation has the same capability at another location. For example, the lack of a proper facility to carry out maintenance may limit the scope of tasks that are allowed to be performed elsewhere.

AMC1 CAO.UAS.035(e) Personnel requirements

BASIC KNOWLEDGE FOR CERTIFYING STAFF

(a) The Part-CAO.UAS organisation should ensure that all certifying staff receive basic training that encompasses:

— maintenance standards and good practices;

— general knowledge of Commission Delegated Regulation (EU) 2024/1107 and of UAS operations;

— general technical knowledge.

The basic training should consist of both theoretical and practical components. By the end of the training, certifying staff should be able to:

(1) provide a simple description of the UAS matters using common words and examples and typical terms, and identify general safety precautions related to UAS;

(2) use and understand general maintenance data (e.g. maintenance manual, troubleshooting manual, structural repair manual, component maintenance data, airworthiness directive);

(3) use standard tools and equipment;

(4) report any event which could negatively impact on safety;

(5) demonstrate knowledge of Commission Delegated Regulation (EU) 2024/1107, particularly of the limitations and privileges related to maintenance;

(6) demonstrate basic knowledge of the applicable regulations that cover UAS operations;

(7) demonstrate knowledge of maintenance standards as specified in point CAO.UAS.060 and good practices (e.g. applying and recording the proper torque settings), ensuring accurate and thorough record-keeping of all maintenance activities (e.g. identifying the P/N of the components installed), and maintaining a clean and organised work environment;

(8) properly handle and store a UAS and its components.

The practical elements of the basic training may be replaced by aircraft maintenance experience in:

— servicing,

— inspection,

— operational testing,

— simple functional testing,

— simple defect rectification,

— replacing components.

The basic training may have different formats, such as a single full course, several training sessions over time, or combined with training in a particular aircraft in accordance with point CAO.A.040. The basic training may be provided, whole or parts of it, by the Part-CAO.UAS organisation or any other organisation that is acceptable to the Part-CAO.UAS organisation.

The basic training should be delivered at least once to certifying staff.

(b) The Part-CAO.UAS organisation should ensure that the certifying staff for components receive:

— theoretical and practical component training; for simple components, this may be replaced by experience and/or previous training in a component from the same family and technology;

— training in bench tests, when applicable;

— training for the use of specific tools, when applicable.

AMC2 CAO.UAS.035(e) Personnel requirements

EXPERIENCE RECENCY FOR CERTIFYING STAFF

The Part-CAO.UAS organisation should ensure that in any consecutive 2-year period all certifying staff are involved in the maintenance of that particular or similar aircraft, CMUs or components for a period of at least of 6 months. For the purposes of this AMC, 'involved in the maintenance' means that the staff has either exercised the privileges of the certification authorisation and/or has carried out maintenance.

For the meaning of 'similar aircraft or CMUs', please refer to GM1 CAO.UAS.040(b).

AMC1 CAO.UAS.040(b) Certifying staff

INITIAL TRAINING RELEVANT TO A PARTICULAR UA AND CMU

The initial training for UA or CMU certifying staff should consist of theoretical and practical training.

The theoretical training should provide detailed knowledge of the UA and CMU applicable systems, structure, operations, maintenance, repair and troubleshooting according to maintenance data.

The objectives of the theoretical training should be such that the trainee will be able, as applicable to the scope of the certification authorisation, to:

— define the general layout of the UA's and CMU's major systems and characteristics of the engine(s) and identify the locations of the principal components;

— identify special tooling and test equipment used with the UA and the CMU;

— apply knowledge in a practical manner using detailed procedures;

— recall the safety precautions to be observed when working on or near the UA, engine and systems;

— describe systems and UA handling particularly access, power availability and sources;

— explain the normal functioning of each major system, including terminology and nomenclature;

— perform servicing associated with the UA;

— demonstrate proficiency in the use of pilot reports and on-board reporting systems (minor troubleshooting) and determine aircraft airworthiness per MEL/CDL when they exist;

— demonstrate the use, interpretation and application of appropriate documentation including instructions for continued airworthiness, maintenance manual, illustrated parts catalogue, structural repair manual, troubleshooting manual, etc.;

— demonstrate theoretical knowledge of UAS systems and structures (see AMC2 CAO.UAS.040(b)) and interrelationships with other systems, provide a detailed description of the subject using theoretical fundamentals and specific examples, and interpret results from various sources and measurements, and apply corrective action where appropriate;

— perform system, engine, component and functional checks as specified in the maintenance manual;

— correlate information for the purpose of making decisions in respect of fault diagnosis and rectification to maintenance manual level;

— describe procedures for the replacement of components unique to the UA and CMU type;

— demonstrate maintenance knowledge of the parts related to the transportation of goods, such as payloads, hooks, and winches;

— demonstrate knowledge of the most common defects with associated consequences.

The objective of the practical training is to gain the required competence in performing maintenance, inspections and routine work safely according to the maintenance manual and other relevant instructions and tasks as appropriate for the type of UA and CMU, for example, troubleshooting, repairs, adjustments, replacements, rigging and functional checks. It includes awareness of the use of all technical literature and documentation for the UA and CMU, the use of specialist/special tooling and test equipment for performing removal and replacement of components and modules unique to the UA and CMU type.

When the practical training is delivered by a Part-CAO.UAS organisation, the source of the training material should be described. For example, training directly in operator's maintenance documentation, or in training material issued by the operator, or in training material provided by the UAS manufacturer, or another third party.

AMC2 CAO.UAS.040(b) Certifying staff

KNOWLEDGE OF UAS SYSTEMS AND STRUCTURES

The following topics should be part of the knowledge of the UA and CMU systems and structures, as applicable to the UAS configuration and CONOPs:

— Storage, transportation, and preparation for flight.

— Rotors and rotor-drive system: drive, transmission, control, indications.

— Structure: fuselage, nacelles, arms, stabilisers, wings, control surfaces, fairings.

— Lifting fluid in airships.

— Autopilot/control system: flight controller, accelerometers, servos and command system.

— Communications: command and monitoring data link, payload data link, antennas.

— Navigation: GNSS, IMU, airspeed, compass, altimeters.

— Electrical energy: generation, storage, distribution, and control. Protections, wiring, and connections.

— Placards and markings.

— Accessories and payloads: systems, installations, lights, stabilisation, cameras, others.

— CMU: flight controls, instruments, indication.

— Fuel system: storage, distribution, filtering, control, and indications.

— Batteries: maintenance, storage, and indication.

— Engines: structural layout, indication and operation:

  — electrical;

  — turbine (installation intake, compressors, combustion section, turbine section, bearings and seals, lubrication systems);

  — piston (installation, carburettors, fuel injection systems, induction, exhaust and cooling systems, supercharging/turbocharging, lubrication systems);

  — others.

— Landing gear: fixed or retractable.

— Propellers: structure, pitch control, synchronisation, electronic control.

— Software functionalities, updates, and maintenance.

— Other systems: Detect and Avoid / Sense and Avoid, Flight Termination System, Parachutes, Flight Vision System / First-Person View (FPV), Geocaging, Geofencing, etc.

GM1 CAO.UAS.040(b) Certifying staff

Two aircraft, regardless of being manned or unmanned, or two CMUs are considered similar when they have similar technology, construction, and comparable systems, which means:

(a) aircraft equipped with equivalent:

  — propulsion systems (e.g. piston, turboprop, turbofan, turboshaft, jet engine, push propellers, electrical engine); and

  — power/energy systems (e.g. similar power supply requirements, whether battery operated, solar powered, or fuel based); and

  — flight control systems (only mechanical controls, hydromechanically powered controls or electromechanically powered controls); and

  — avionics systems (analogue or digital systems); and

  — structure (manufactured of metal, composite, or wood);

(b) a CMU that is used to operate the same or similar UA and is equipped with equivalent:

  — human–machine interface (e.g. touchscreen, physical controls, or remote interface); and

  — control systems (e.g. manual control, semi-automatic control, or fully autonomous control systems); and

  — monitoring systems (e.g. sensor types and capabilities, such as GPS, gyroscopes, accelerometers, cameras, and environmental sensors); and

  — communication systems (e.g. similar communication protocols and technologies, such as Wi-Fi, Bluetooth, radio frequency, or satellite); and

— physical attributes (e.g. fixed or mobile).

AMC1 CAO.UAS.102(a) Protection of information and communication systems and data

PROTECTION OF SOFTWARE, DATA AND HARDWARE

The Part-CAO.UAS organisation should establish procedures to:

(a) procure software from trusted suppliers;

(b) verify the authenticity and integrity of software;

(c) update software and hardware timely;

(d) secure and restrict access to computers and networks to authorised personnel.

GM1 CAO.UAS.102 Protection of information and communication systems and data

GENERAL

Practical recommendations to secure small organisations may be found in the publications of the European Union Agency for Cybersecurity (ENISA).

Network protection can be implemented by:

(a) securing internal networks with user access control;

(b) protecting end point devices used to access the network with anti-malware software that is kept up to date;

(c) enabling and properly configuring state-of-the-art secure protocols on Wi-Fi networks;

(d) establishing virtual private networks with multi-factor authentication for all remote connections.