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CAA Decision to adopt Acceptable Means of Compliance and Guidance Material pursuant to Article 76(3) UK Reg (EU) 2018/1139

DECISION No. 48

Publication date: 13 May 2025

Decision amending Acceptable Means of Compliance (AMC) to UK Regulation (EU) Reg No. 748/2012 (UK Initial Airworthiness Regulation) regarding instructions for continued airworthiness, the production of parts to be used during maintenance and the consideration of ageing aircraft aspects during certification.

Background

1. Statutory Instrument (SI) 2023 No. 588, The Aviation Safety (Amendment) Regulations 2023, laid before Parliament on 30 May 2023, amended and corrected UK Regulation (EU) No. 748/2012 as regards the instructions for continued airworthiness, the production of parts to be used during maintenance and the consideration of ageing aircraft aspects during certification.

2. The regulatory changes addressed three primary objectives:

    a. To mitigate the risks linked to the uncertainty of the status of the instructions for continued airworthiness (ICA) and, therefore, to avoid leaving room for interpretation in the rules, leading to differences in the use of ICA and causing possible safety risks. The amendment provides a definition for ICA and clarifies that the ICA are part of the Type Certificate (TC). They also merge the requirements related to record keeping, manuals and ICA in the various subparts into a single requirement for each of these aspects in Subpart A (new points 21.A.5, 21.A.6 and 21.A.7). These changes are expected to improve the harmonisation of the ICA among the design approval holders (DAHs) in relation to the identification, approval, formatting and availability of the ICA to the end users.

    b. To permit the production of certain parts and appliances (where their effect on the safety of the operation of aircraft is negligible) without the need to certify their conformity with the approved design data through the issuance of a CAA Form 1 (or equivalent), and to permit the installation of such appliances in type-certified

products. This will allow for more proportionate and efficient requirements by introducing commensurate manufacturing requirements for new spare parts. It will also reduce the regulatory burden on maintenance organisations that use these parts during their maintenance work, so they will be able to easily obtain the parts, without decreasing the level of safety.

c. To address the need to continuously update knowledge about the structural integrity of ageing aircraft, Statutory Instrument (SI) 2021 No. 1203 introduced new requirements to UK Reg (EU) 2015/640 "Additional airworthiness specifications for operations (Part-26)" for aircraft in service. These new requirements were needed to keep up to date knowledge about ageing factors on the basis of real time operational experience and with the use of modern tools of analysis and testing. To achieve the same level of safety as that applicable to new aircraft, it was necessary to also amend the rules to require that when large aeroplane structures are subject to future structural changes or repairs, any future holder of the type certificate or restricted type certificate must ensure the continuing structural integrity programme remains valid throughout the operational life of the aeroplane. This will ensure that the design approval holders follow procedures, produce the data and make instructions and manuals for existing design available to operators for them to implement in a timely manner in order to prevent ageing structure failures.

3. By this Decision, the CAA is amending the AMC and GM to the relevant parts of Part 21 to UK Regulation (EU) No. 748/2012 to support the regulation changes described above. AMC and GM changes in support of objectives (a) and (b) above are contained in Schedule 1. AMC and GM changes in support of objective (c) are contained in Schedule 2. The changes come into immediate effect and are outlined below:

   a. Schedule 1 - New AMC and GM:
      AMC1 21.A.7(a); AMC2 21.A.7(a); GM1 21.A.7(a); GM2 21.A.7(a); AMC3 21.A.7(a); GM3 21.A.7(a); AMC1 21.A.7(b); GM1 21.A.7(c); GM2 21.A.7(b); GM3 21.A.7(b); GM4 21.A.7(b); AMC1 21.A.7(d); GM1 21.A.7(e); GM1 21.A.90C; AMC 21.A.307(b)(3); AMC1 21.A.307(b)(3) and (b)(4); GM1 21.A.307(b)(3) and (b)(4); GM1 21.A.307(b)(4); GM1 21.A.307(b)(5); GM1 21.A.307(b)(6); GM1 21.A.307(c); GM 21.A.609(c) and (d); AMC 21.A.609(c) and (d).
   b. Schedule 1 - Amendment to existing AMC and GM:
      Appendix A to GM 21.A.91; AMC1 21.A.243(a); GM1 21.A.247; GM 21.A.265(h); AMC 21.A.433(b) and 21.A.447 deleted; GM1 21.B.55 retitled and amended.
   c. Schedule 2 - New AMC and GM:
      AMC1 21.A.65; AMC1 21.A.101(ba); GM1 21.A.130, 21.A.163 and 21.A.165; GM1 21.A.139, 21.A.157, 21.A.239, 21.A.257, 21.B.120, 21.B.140, 21.B.220, 21.B.235 and 21.B.240; AMC1 21.A.433(a)(5).

d. Schedule 2 - Amendment to existing AMC and GM:
AMC No. 2 to 21.A.133 (b) and (c).
e. The amendment to AMC-20 “UK Acceptable Means of Compliance for Airworthiness of Products, Parts and Appliances” includes Section AMC 20-20B “Continuing structural integrity programme” which is also in support of Objective (c) and provides guidance to ensure the safe operation of ageing aircraft throughout their operational lives. The adoption of the amendments to AMC-20 was the subject of public consultation by the CAA.

Decision:

4. The CAA, under Article 76(3) of Regulation (EU) 2018/1139, has decided to:

a. Adopt the AMC for UK Reg (EU) No. 748/2012 attached at Schedules 1 and 2;

b. Adopt AMC-20 at EASA Amendment 23 including all amendments since 1 January 2021, Amendment 21 and Amendment 22.

5. This Decision will remain in force unless revoked or amended by the CAA.

Definitions

All references to Regulations are to assimilated law pursuant to the Retained EU Law (Revocation and Reform) Act 2023.

Rob Bishton
For the Civil Aviation Authority

Date of Decision: 13 May 2025

Schedule 1

Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Annex I (Part-21) to UK Regulation (EU) No. 748/2012

Includes the Acceptable Means of Compliance (AMC) and Guidance Material (GM) documents referenced below.

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

(a) ~~Text to be deleted is shown struck through~~;

(b) New text is highlighted in grey;

(c) ~~Text to be deleted is shown struck through~~followed by the replacement text which is highlighted in grey.

The following AMC1 21.A.7(a) is inserted:

AMC1 21.A.7(a) Instructions for Continued Airworthiness content

(a) The instructions for continued airworthiness (ICA) should identify the following, in accordance with the applicable certification specifications:

(1) any limitations that are necessary for the continued airworthiness of the product or article;

(2) the means to determine when the product or article has deteriorated to the extent that it is no longer airworthy;

(3) the minimum actions required to restore the airworthiness of the product or article before the limitations (as per point (1)) have been exceeded or before their deterioration (as per point (2)), as an alternative to the withdrawal of the product or article from service.

(4) the identification of standard parts and parts with a negligible safety effect in accordance with 21.A.307(b)(1) and (b)(3).

(b) The ICA should, therefore, include, in accordance with the applicable certification specifications:

(1) any limitations determined through the certification of the product or article, and instructions on how to determine that the limitations have been exceeded;

(2) any inspection, servicing or maintenance actions determined to be necessary by the certification process;

(3) any inspection or troubleshooting actions determined to be necessary to establish the nature of faults and the necessary remedial actions;

(4) sufficient general information on the operation of the product or article to enable the understanding of the instructions in (a)(1) to (a)(3) above.

The following AMC2 21.A.7(a) is inserted:

AMC2 21.A.7(a) Identification of ICA

The instructions for continued airworthiness (ICA) may be provided together with other, additional or optional, maintenance information, as described in point 21.A.6, or in another acceptable format as per GM1 21.A.7(a), with the following conditions:

(a) The information that is necessary for the continued airworthiness is clearly identified (refer to AMC1 21.A.7(b)).

(b) The ICA may reference additional instructions for continued airworthiness in separate publications, where necessary (for example, those produced by suppliers).

If the product ICA reference the use of supplier's data (e.g. component maintenance manual (CMM) or section of it) as the appropriate location for the ICA, those applicable instructions are incorporated by reference and become part of the complete set of the ICA for the product.

(c) Additional or optional maintenance information not considered as ICA but referenced by the design approval holder (DAH) together with the ICA should be evaluated appropriately by the DAH in order to ensure that its use will not compromise the continued airworthiness of the product or article.

(d) If the maintenance data made available by a DAH includes data from an operator (i.e. in order to customise the data for the operator, and created under the authority of the operator), the operator's data should be identified as such, and the DAH is not required to additionally evaluate it.

The following GM1 21.A.7(a) is inserted:

GM1 21.A.7(a) Scope of ICA, their publication format and typical ICA data

(a) ICA can be published in documents or in a manner other than the traditional understanding of a document — for example, as a series of web pages, or Information Technology (IT) tools, or in a publishing format linked to tasks or data modules rather than pages.

(b) The design approval holder (DAH) can decide — within the framework provided by point 21.A.7 and its acceptable means of compliance and guidance material — to publish the ICA in the most suitable location as part of all the information published to support the airworthiness of an aircraft. Publications typically produced by DAHs (e.g. for the demonstration of compliance with a certification basis established on the basis of CS-25), and which may therefore include ICA, consist of:

— aircraft maintenance manuals (AMMs);

— scheduled maintenance requirements (e.g. MRBRs);

— off-wing component maintenance or overhaul manuals;

— parts catalogues;

— tooling manuals;

— wiring diagram manuals;

— weight and balance manuals;

— electrical loads analyses;

— extended range operations (ETOPS) configuration maintenance programs/plans;

— supplemental structural inspection documentation;

— certification maintenance requirements;

— Airworthiness Limitations items;

— ageing aircraft maintenance requirements;

— fuel tank safety related limitations (e.g. critical design configuration control limitation (CDCCL));

— electrical wiring interconnection system instructions;

— corrosion prevention and control programmes;

— troubleshooting manuals.

Note: The above is only an example of the publications that may contain ICA according to CS-25; the list is not exhaustive, nor does it represent a minimum list of ICA.

(c) The requirement for ICA is not intended to ensure that all products or articles may be restored to an airworthy condition. A certain level of deterioration may require a product or an article to be permanently withdrawn from service, and restoration may not be reasonably achievable. Notwithstanding the above, the existence of a Maintenance Review Board Report (MRBR) task other than 'Discard (DS or DIS)' should be a clear indication of the necessity/obligation to produce a corresponding ICA.

Certain deteriorations or levels of deterioration may require specific instructions (e.g. inspection or restoration) that will only be developed and provided on a case-by-case basis, as needed, for a given product or article, and as such, will not be included in the ICA.

In some exceptional cases, product ICA may ultimately instruct the user to contact the DAH in order to define the specific instructions on a case-by-case basis. This typically happens when the definition of generic instructions covering all possible cases is not possible. For example, following an aircraft hard landing, a detailed analysis may have to

be carried out by the DAH to determine the specific instructions to be followed, which depends on the touchdown loads, recalculated postflight, based on recorded flight data.

The following GM2 21.A.7(a) is inserted:

GM2 21.A.7(a) Determination of which supplier data is part of the ICA

Note 1: For the purpose of this GM, the term 'supplier data' also applies to similar types of data when issued directly by the DAH (e.g. component maintenance manuals issued by the DAH).

Note 2: For the purpose of this GM, the term 'supplier data' has to be understood as data coming from the supplier and related to either a full CMM or to part of a CMM.

Note 3: The link between the aircraft ICA and the engine/propeller CMM, as detailed below, is similar to the link between engine/propeller ICA and the CMM of equipment fitted to the engine/propeller.

Note 4: If the supplier is also the DAH (for instance, an engine or propeller manufacturer), then the ICA for these items will be made available by virtue of the DAH obligations as type-certificate holder (TCH) and need not be included in the aircraft ICA.

(a) When determining whether supplier data is part of the ICA, the following should be considered:

(1) Supplier data related to the Airworthiness Limitations Section (ALS) of the ICA is part of the ICA. A typical CS-25 example is critical design configuration control limitation (CDCCL) items that are included in CMMs.

(2) Supplier data related to instructions on how to accomplish the scheduled maintenance part of the aircraft ICA (such as MRBR) are part of the aircraft ICA. A typical case is the periodical removal of a component to perform a workshop task.

Example: Escape slide removal for restoration in accordance with the supplier data instructions.

(3) Supplier data related to scheduled maintenance on the component should be endorsed by the DAH before becoming part of the aircraft ICA, to define and confirm that the supplier data is applicable and effective.

(4) If the ICA are defined at aircraft level, the following principles apply to the other supplier data that is not related to the ALS nor to scheduled maintenance:

(i) If the supplier data includes a maintenance instruction for an action identified in the aircraft-level ICA, including an engine or propeller, this supplier data should be referenced in the aircraft-level ICA and should be made available like any other ICA.

As an alternative to linking such supplier data to the aircraft-level ICA (e.g. with cross references), it is possible to include the relevant data directly into

the aircraft ICA. In such a case, the supplier data is not part of the aircraft ICA since the aircraft ICA already contain all the required information.

(ii) If an aircraft ICA task only requires a replacement task for an engine, propeller, part or appliance (i.e. 'remove and replace' or 'discard') and does not refer to the supplier data for further maintenance of the removed engine, propeller, part or appliance, this means that the aircraft airworthiness may only be maintained by replacement action, and that the supplier data is not part of the ICA for the aircraft. In such cases, the supplier data does not need to be referenced in the aircraft ICA.

Example: If supplier data provides off-aircraft maintenance instructions for an engine, propeller, or other article (i.e. workshop maintenance), then this data may not be considered as part of the complete set of ICA for the aircraft, but may be considered as part of the complete set of ICA for the engine or propeller. However, the procedure for removal from / installation on the aircraft is necessarily part of the aircraft ICA.

(b) However, for the above cases, aircraft-level ICA can provide, as additional or optional maintenance information, the references to the supplier data even if it is not considered part of the ICA. In such cases, it should be made clear that the supplier data references are provided as additional or optional maintenance information and is not part of the product ICA. Besides, it should be ensured that the use of additional or optional maintenance information not considered as ICA but referenced together with the ICA will not compromise the continued airworthiness of the product or article.

(c) For the supplier data identified as part of the ICA, the DAH should:

(1) identify the supplier data that is part of the ICA; this can be achieved either by creating a listing or by any other acceptable means that allow to identify which data is part of the ICA and which data is not part of the ICA (refer to AMC1 21.A.7(b));

(2) just as for any other ICA, ensure the publication of the supplier data;

(3) ensure the accuracy and the adequacy of the technical content of the supplier data (refer to GM No. 1 to 21.A.239(a), point 3.1.5).

The following AMC3 21.A.7(a) is inserted:

AMC3 21.A.7(a) DAH responsibility to check the supplier data which is part of the ICA or referenced with the ICA

The DAH may carry out a complete check of the supplier data, or may choose to rely, in whole or in part, on the supplier's process. In the latter case, the DAH will propose to, and agree with, the supplier a means to validate the supplier's process. Supplier data may also be issued by the supplier to the DAH under a contract or an arrangement, addressing the following:

(a) the accuracy and the adequacy of the technical documentation, which should be checked through a verification processes (e.g. component workshop verification);

(b) evidence to show that workshop verification was performed by the supplier and confirmation, by a clear statement in the introduction to the supplier data, that component verification is complete;

(c) evidence that the supplier has taken into account all justified feedback and changes to data requested by any person required to use the ICA; typical examples would be the correction of reported errors, or mistakes.

In addition, some validation activities may be decided by the DAH, depending on the articles and the capability level of the supplier.

For articles subject to a UKTSO authorisation, the validation of the supplier's process is not needed. This is also valid for other TSO authorisations (e.g. EASA ETSOs, FAA TSOs) accepted by CAA as stipulated in related bilateral agreements.

The following GM3 21.A.7(a) is inserted:

GM3 21.A.7(a) Non-ICA supplier data (e.g. component maintenance manuals (CMMs))

(a) Non-ICA supplier data referenced together with the ICA

Supplier data, or parts of the supplier data, which is not considered to be part of the ICA but is additional or optional maintenance information referenced together with the product-level ICA, may be issued by the supplier to the DAH under a contract or an arrangement, using the methodology proposed in AMC3 21.A.7(a).

(b) Other non-ICA supplier data

Non-ICA supplier data, which is not referenced together with the ICA, but which can be used for the maintenance of components approved for installation by the DAH, should be acceptable to the DAH. This non-ICA supplier data may be documented in a list.

The following AMC1 21.A.7(b) is inserted:

AMC1 21.A.7(b) Identification of a complete set of instructions for continued airworthiness (ICA)

The design approval holder (DAH) should identify the complete set of ICA according to point 21.A.7(b) in such a way that the complete set can be:

(a) directly listed in the product TCDS; or

(b) indirectly referenced in the TCDS through other means, which allow the complete list of the ICA to be obtained (e.g. a complete listing of ICA contained in a 'principal manual' or a reference to a DAH's website); or

(c) directly listed in the product STC; or

(d) indirectly referenced in the STC through other means, which allow the complete list of the ICA to be obtained; or

(e) if direct reference is made to the ICA in the TCDS or the STC, no reference to the revision level of the ICA should be made; in this case, the revision level should be available elsewhere (e.g. on the DAH's website). In certain circumstances it still may be appropriate to reference a specific revision of ICA in the TCDS/STC e.g., a revision to the TCDS/STC which details a design change which introduces or affects CMR/ALS.

For changes to type certificates and repairs, the identification of 'a complete set of the changes to the instructions for continued airworthiness' should be performed by the DAH either by way of a statement which provides this information, or by confirmation that there are no changes to the ICA. This statement can also be made in the accomplishment document (e.g. embodiment instructions such as modification documents, Service Bulletins, repair schemes etc).

For products and articles for which the DAH holds a design organisation approval (DOA), the ICA are considered to be issued under the authority of the DOA and, therefore, the approval of the ICA should be made explicit to the reader in accordance with point 21.A.265(h), unless otherwise agreed with CAA.

The following GM2 21.A.7(b) is inserted:

GM2 21.A.7(b) Instructions for Continued Airworthiness - format

ICA can be provided or made available by various means (including paper copies, electronic documents, or web-based access). Regardless of the format, the design approval holder (DAH) is expected to furnish or make ICA available in a means that is readily accessible for and useable by the owner and any person required to comply with the ICA. Service documents, such as service information letters, may be used for transmitting ICA information and updates.

(a) Formatting standards

Applicants may use the latest ATA, AECMA/ASD or GAMA formatting standards such as:

(1) AeroSpace and Defence Industries Association of Europe (ASD), ASD-S1000D, International Specification for Technical Publications Utilizing a Common Source Data Base, version 4 or higher;

(2) the Air Transport Association's (ATA) iSpec 2200, Information Standards for Aviation Maintenance, latest edition (ATA is now known as Airlines for America (A4A) but the standard is still listed as ATA); or

(3) General Aviation Manufacturers Association (GAMA) Specification No. 2, Specification for Manufacturers Maintenance Data, latest edition.

In regard to scheduled maintenance, applicants may also refer to the glossary of the ATA MSG-3 standard, latest revision, for standardised task definitions and designations.

(b) General considerations

ICA should be easy to read and to follow. All ICA should include a means to identify their applicability (model, type, etc.), and the associated revision status. Refer to sample formats in the Air Transport Association's iSpec 2200, Information Standards for Aviation Maintenance, latest edition, or AECMA/ASD standards. There is no requirement for any specific format or arrangement of the ICA in document or documents. However, the specific format selected by the applicant should be used and applied in a uniform manner. Empty pages in a document should contain a statement like 'Intentionally left blank' or similar

At the beginning of each procedure, the ICA should contain cautions and warnings regarding possible mistakes that can be made when following the instructions.

Abbreviations, acronyms and symbolisation should be either avoided or explained as part of the ICA documentation.

ICA contain units of measurement. Measurements could be, for instance, instrument readings, temperatures, pressures, torque values with tolerances, limits, and ranges when applicable. If the ICA contain units of measurement of a system other than the metric, the ICA should include a conversion to the metric system for each measurement, tolerance, or torque value. A general conversion table alone should not be provided, as it may introduce an additional source of error.

The DAH should use a means to indicate changes to the ICA directly in relation to each item of the information/data of the ICA, e.g. using a vertical change bar in the margin next to the line.

(c) Publication of ICA in multiple documents

DAHs may prepare ICA as a document, or several documents, depending on how much data is necessary to provide a complete set of ICA.

If there are multiple documents, there should be a principal document that describes the general scope of all other documents, in order to provide an overview of the multiple document structure.

According to different standards, the Airworthiness Limitations Section (ALS) needs to be included in the principal document as a dedicated section. However, CAA may also accept a separate Airworthiness Limitations document, when it is at least referenced as such in the principal document.

DAHs who decide to segregate information dedicated to a specific subject from a principal document into a separate document, e.g. 'Fuel Pipe Repair Manual', 'Cable Fabrication Manual', 'Duct Repair Manual' or 'Instrument Display Manual', should declare these documents to be ICA.

DAHs may decide to integrate certain information in a principal document (as, for example, troubleshooting information as part of the aircraft maintenance manual (AMM) instead of a separate troubleshooting manual (TSM)).

(d) Language

ICA should be provided in English.

(e) Electronic media

ICA may be provided in an electronic format (e.g. CDs, via the internet, etc.) instead of paper copies or microfilms (refer to AMC1 21.A.7(b)).

When an electronic format is used, the DAH should consider aspects such as the traceability of updates, keeping previous versions (record-keeping), data security and the obligations of the person(s) or organisation(s) responsible for the aircraft continuing airworthiness, considering that the ICA form the basis of the data used for continuing airworthiness activities.

The following GM3 21.A.7(b) is inserted:

GM3 21.A.7(b) Approval status of the manual for a component or article

When the ICA refer to a document for a specific component or article, it is possible that this document is used for products from more than one DAH. In such cases, instead of placing approval statements from each DAH in the same manual, it may be more practical to identify the approved status of the relevant document through its inclusion in lists managed by the DAH in accordance with the AMC1 21.A.7(b).

The following GM4 21.A.7(b) is inserted:

GM4 21.A.7(b) Integration of ICA between products (aircraft, engines, propellers)

The aircraft/engine/propeller type-certificate holder (TCH) should ensure the availability of ICA to allow maintenance of the aircraft, including engines/propellers when installed on the aircraft.

When referring to engine/propeller ICA directly in the aircraft ICA, the aircraft TCH should not perform additional verification and validation. However, the integration and interface aspects between the aircraft and the engine/propeller are still under the responsibility of the aircraft TCH.

If the ICA published by the aircraft TCH include some engine/propeller ICA developed by the engine/propeller TCH, the engine/propeller TCH should make an arrangement with the aircraft TCH setting out engine/propeller TCH and aircraft TCH shared responsibilities with respect to the ICA under point 21.A.7.

This arrangement should:

— define the part of the engine/propeller ICA which is published in the aircraft ICA; and

— address the development, publication and update processes of these ICA, including completeness and timely availability aspects.

The incorporated engine/propeller data content remains under the responsibility of the engine/propeller TCH, and the publication is under the responsibility of the aircraft TCH. Therefore, the aircraft TCH must coordinate with the engine/propeller TCH regarding any modification or alteration of the incorporated data.

The following GM1 21.A.7(c) is inserted:

GM1 21.A.7(c) Other persons required to comply

For the purpose of this GM, ‘any other person required to comply’ means:

— any independent certifying staff who performs maintenance on a product or article, in accordance with UK Regulation (EU) No 1321/2014, in the framework of a contract (or work order) with the person or organisation responsible for the aircraft continuing airworthiness;

— any maintenance organisation approved to maintain a product or article, in accordance with UK Regulation (EU) No 1321/2014, in the framework of a contract (or work order) with the owner of the engine or article, or the person or organisation responsible for the aircraft continuing airworthiness;

— any organisation approved to manage the aircraft continuing airworthiness in accordance with UK Regulation (EU) No 1321/2014, in the framework of a contract with the aircraft owner or aircraft operator.

The following AMC1 21.A.7(d) is inserted:

AMC1 21.A.7(d) Completeness and timely availability of the ICA

COMPLETENESS AND TIMELY AVAILABILITY OF THE ICA FOR TYPE-CERTIFICATE (TC) AND RESTRICTED TYPE-CERTIFICATE (RTC) APPLICANTS

(a) An applicant may wish to choose among the three options described below. Once the certification programme starts, it may be necessary to modify the initially selected option to accommodate programme changes. All such changes should be coordinated with CAA.

(1) Option 1: Complete ICA are available at the time of the design approval (TC/RTC)

(i) The ICA will be made available at the time of the design approval. This option minimises the risk of incomplete ICA, especially for changes.

(ii) With all ICA available at the time of the design approval, they should also be furnished / made available to the aircraft operator / aircraft owner and made available to any other person required to comply with any of those instructions in accordance with points 21.A.7, 21.A.21(c)(4) and 21.A.44, without using the provision to delay certain parts of the ICA after the entry into service.

(iii) Frequently, there is only a short period of time between the design approval and the entry into service. Nevertheless, applicants/holders may still wish to apply Option 2 or 3 for a part of their ICA as stated below.

(2) Option 2: Complete ICA are available at entry into service (TC/RTC)

If an applicant plans to make part of the ICA available to CAA at entry into service, the following approach is acceptable:

(i) For the ALS, as part of the type design, notwithstanding the selection of Option 2: the applicant submits the ALS for approval prior to the design approval. Any ALS content that is incomplete, not yet demonstrated for compliance, or delayed beyond the design approval, requires to be compensated through an interim limitation to establish compliance within this limitation. The interim limitation is notified to the aircraft operator(s) concerned as a temporary operational limitation in a manner agreed with CAA.

In this context, ALS content is understood as the task method (e.g. a detailed inspection), including its reference, title and applicability, and the associated threshold / interval / life-limit. The accomplishment procedure itself, i.e. how to carry out the task, is usually described in other parts of the ICA (e.g. in the AMM or NDT manual). However, the feasibility study of the accomplishment procedure is required for compliance with specific requirements (e.g. CS 25.611).

(A) This may typically apply when the aircraft structural full-scale fatigue testing required for compliance with the fatigue- and damage-tolerance requirements, considering the expected operational life, will not be

completed prior to the type certificate being issued. In this case, a temporary operational limitation is assigned and stated in the ALS, dependent on the aircraft full-scale fatigue testing progress. The ALS is effectively incomplete beyond this temporary operational limitation, as the required justification and the resulting ICA are not yet available to support the safe operation of the aircraft beyond this limitation.

(B) A TCDS notation is not necessary, since the product is provided with complete ALS content up to the established temporary operational limitation.

(ii) A compliance plan identifying those parts of the ICA that are only to be made available at entry into service is produced, submitted to CAA and agreed between the applicant and CAA prior to the design approval (refer also to (iv) for ICA considered to be necessary at the time of the design approval.

(iii) A commitment is provided to produce, verify and submit (when requested) to CAA the relevant ICA prior to entry into service. This commitment should be provided in a certification document (e.g. the compliance plan) and should also be addressed in a more general manner in a DOA procedure for UK holders/applicants in accordance with points 21.A.239 and 21.A.263. If the respective DOA holder has not previously exercised the practice of delaying the ICA beyond the design approval in order for the DOA to demonstrate this capability in its design assurance system (DAS), the required procedural changes need to be addressed via a significant change to the DAS in accordance with point 21.A.247.

(iv) ICA considered to be necessary at the time of design approval are provided or made available in a format that adequately defines the data. Furthermore, the way the data is presented at the time of the design approval offers the same understanding of the data as in the final published format.

The applicant should agree with the CAA, in a compliance plan, on all ICA necessary at the time of design approval. The CAA investigation may vary from no involvement or evaluating a limited sample of the ICA to performing a thorough review of specific parts of the ICA.

(v) In cases where the CAA has doubts as to whether the applicant/holder can fulfil the applicable requirements of point 21.A.44 to control and support delaying the ICA beyond the design approval, or TC/RTC, and until entry into service, CAA can decide to assign a condition for entry into service for non-ALS ICA.

As a condition for the entry into service, a note should be included in the type certificate data sheet (TCDS) as a result of these pending issues under the ICA paragraph as follows:

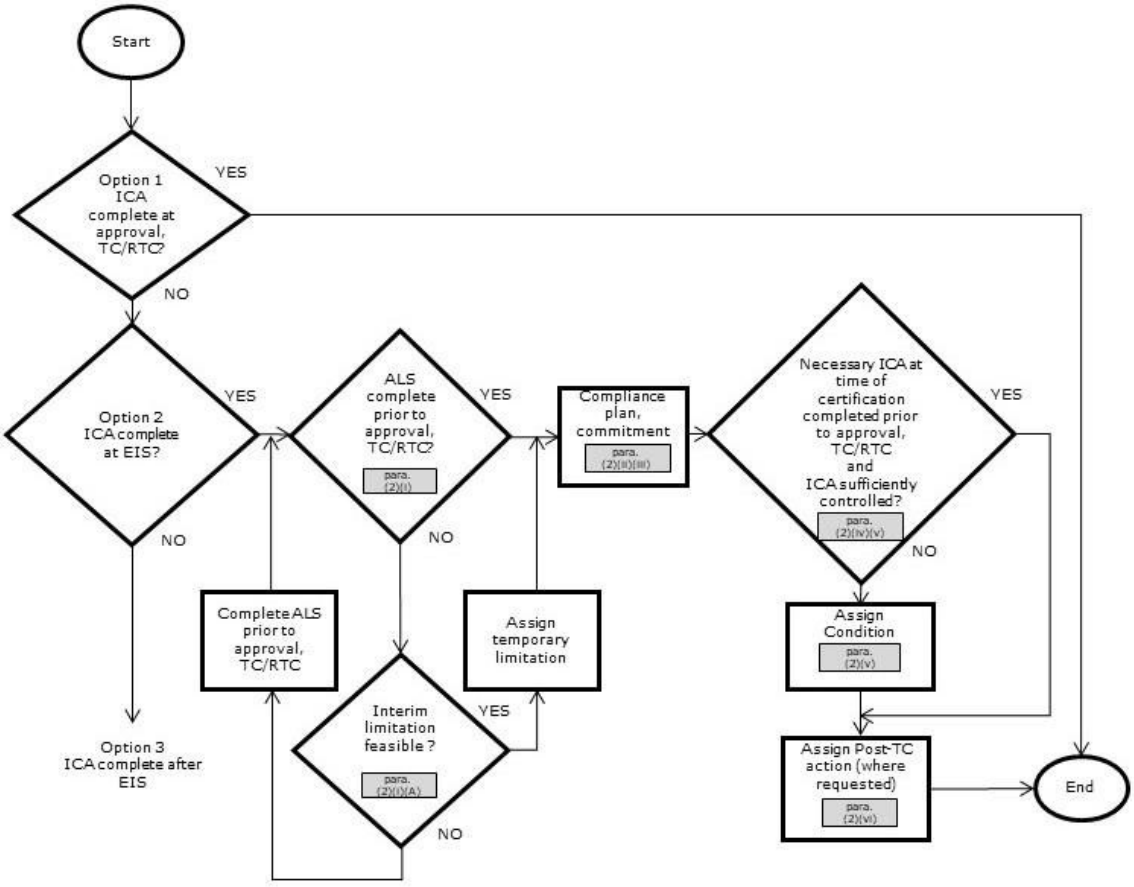
‘Note: The ICA are not complete. As per point 21.A.7 of UK Regulation (EU) No 748/2012, they must be completed before the entry into service of the aircraft. Contact CAA for information on the status.’

The decision to assign a condition may be based on the applicant's performance, e.g. if the applicant has already demonstrated in previous projects that it provided the complete set of ICA before the entry into service, if the applicant has already experienced difficulties in providing the ICA considered necessary at the time of the design approval, or has previously failed on a different project to meet its commitment to complete the ICA prior to entry into service, or if the applicant/holder has no previous experience with the practice of delaying the ICA beyond the design approval.

(vi) Post-TC action is established together with CAA (if CAA requests such a review) to review the ICA status at entry into service.

(vii) If all ICA are made available to CAA at the time of entry into service, they should also be furnished at this time to the aircraft operator / aircraft owner and made available to any other person(s) required to comply with any of those instructions in accordance with points 21.A.21(c)(4), 21.A.44 and 21.A.7, without using the provision to delay certain parts of the ICA beyond the entry into service. This should be supported as part of the DOA/ADOA procedure.

Flow chart A — 'Completeness of ICA', Option 1 and 2



(3) Option 3: Complete ICA are available after the entry into service (TC/RTC)

As per point 21.A.7(d, certain ICA dealing with the 'overhaul or other forms of heavy maintenance' may be delayed until after the aircraft entry into service. The intention of the rule is to provide flexibility to applicants/holders for long-lead ICA of a scheduled nature.

If an applicant plans to make part of the ICA available only after the entry into service, the following is acceptable for the complete set of ICA:

(i) for the Airworthiness Limitations Section of the ICA, as it cannot be delayed until after the entry into service, point (i) of Option 2 applies;

(ii) for ICA considered to be necessary at the time of the design approval, point (iv) of Option 2 applies.

(iii) a detailed compliance plan identifying those parts of the ICA that are to be provided prior to and after the entry into service. For ICA made available after the entry into service, the plan should account for when the ICA are needed

so that they can be complied with. This approach may only be used for scheduled maintenance accomplishment procedures, where threshold / interval / life-limit requirements of the related scheduled tasks are established. In that respect, the following aspects should be considered:

(A) The majority of the ICA are of an unscheduled nature; therefore, these items should be available at entry into service at the latest.

(B) Consideration should be given to the fact that a number of tasks are used for both scheduled and unscheduled maintenance (e.g. an operational check of a system is planned as a scheduled task at a certain point in time, but is also required as part of the installation procedure to determine the operational status of the system).

(C) For ICA to be made available after entry into service, the detailed plan should contain threshold(s) controlled by the applicant/holder, stating the maximum value in flight hours (FH) / flight cycles (FC) or calendar time (CT), or a combination of them as applicable, by which point in time the delayed ICA should be made available.

(D) This detailed plan should be available prior to the time of the design approval and should be either directly integrated or cross-referenced in a compliance plan.

(E) Information on the format in which the ICA delayed until after entry into service will be made available in time (e.g. regular revisions or temporary revisions (TRs) or service information (SBs, SIL, etc.).

(iv) A procedure/programme that ensures a detailed plan is produced and implemented in the applicant's organisation in order to ensure the timely availability (to the aircraft operator / aircraft owner and to any other person required to comply with any of those instructions and to the CAA, if involved and when requested). For A UK applicant, this should be part of the design organisation approval (DOA) procedure in accordance with points 21.A.239 and 21.A.263.

(v) A commitment is made to produce, verify and provide the relevant ICA in accordance with the detailed plan. This commitment should be provided in a certification document (e.g. a compliance plan) and should also be addressed in a more general manner in a DOA procedure for UK holders/applicants in accordance with points 21.A.239 and 21.A.263. If the respective DOA holder has not previously exercised the practice of delaying the ICA beyond the design approval in order for the DOA to demonstrate this capability in its design assurance system (DAS), the required procedural changes need to be addressed via a significant change to the DAS in accordance with point 21.A.247.

(vi) In order to ensure that the applicant/holder can meet their obligations as set out in point 21.A.44 to control and support delaying the ICA, CAA may decide:

(A) for ICA delayed until entry into service, to assign a condition/notation for the entry into service to be included in the TCDS as a result of these pending issues under the ICA paragraph, as per point (v) of Option 2;

(B) for ICA delayed until after entry into service, to assign an interim limitation to be published and included in the ALS as a temporary operational limitation, also for non-ALS ICA, to compensate for the delayed ICA; this approach may only be used for scheduled maintenance accomplishment procedures, where task and interval requirements are available.

The decision to assign a condition/limitation may be based on the applicant's performance, e.g. if the applicant has already demonstrated in previous projects that it provided the complete set of ICA before the entry into service, if the applicant had already difficulties in providing the ICA considered necessary at the time of the design approval, or has failed before in a different project to control and support delaying the ICA, or if the applicant/holder has not previously exercised the practice of delaying the ICA beyond the design approval.

(vii) Post-TC action should be established with the CAA to regularly review the ICA status, if the CAA requests such a review in accordance with 21.A.7(e), taking into account the DOA oversight activities.

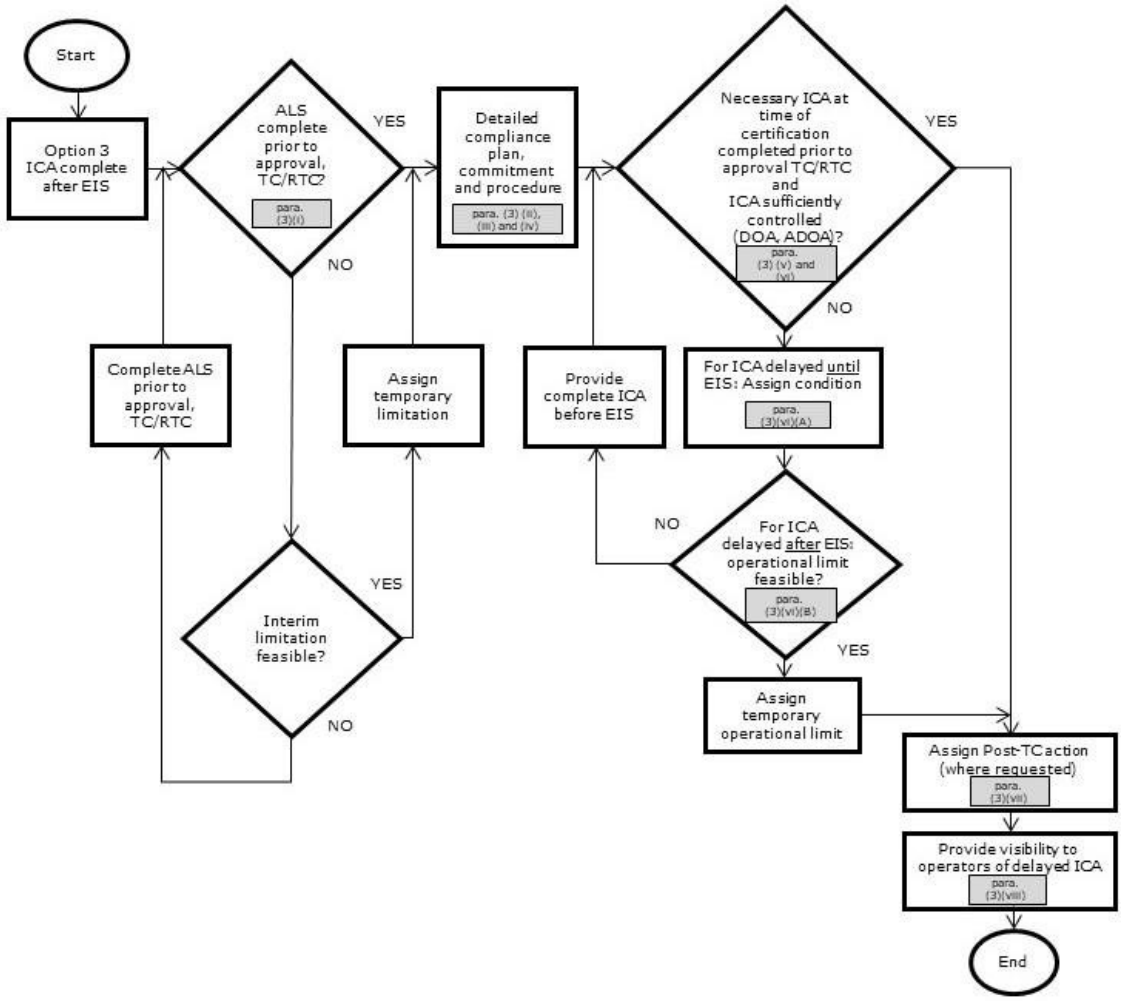
(viii) An applicant/holder should provide visibility, regarding the ICA that are delayed beyond entry into service, to the aircraft operator / aircraft owner and to any other person(s) required to comply with any of those instructions. This can be achieved by providing this information, for example, on a website or in a document, such as an MPD or AMM, preferably in the principal ICA manual. This visibility information is then itself considered to be ICA information.

(ix) It is assumed that for those ICA that are made available to CAA at the time of entry into service, they are also at the same time furnished to the aircraft operator / aircraft owner and made available to any other person(s) required to comply with any of those instructions in accordance with points 21.A.21(c)(4), 21.A.44 and 21.A.7.

This is to satisfy CAA that such a delayed publication will not have an adverse effect on the continuing airworthiness of any individual aircraft.

To allow the timely review and incorporation of a delayed part of the ICA into continuing airworthiness activities and processes (e.g. amendment of the aircraft Maintenance Programme) by the person or organisation responsible for the aircraft continuing airworthiness or for performing maintenance, the delayed ICA should typically be made available two years before the actual ICA has to be used, when using normal revisions as a format. However, shorter time margins may be acceptable, provided that the format used ensures the prompt notification of the availability of the delayed ICA or the ICA itself, but they should not be less than 1 year before the ICA has to be used.

Flow chart B — 'Completeness of ICA', Option 3



The following GM1 21.A.7(e) is inserted:

GM1 21.A.7(e) Completeness and timely availability of changes to the ICA (TC/RTC)

Point 21.A.7(e) regulates the distribution of changes to the ICA required from the TC/RTC holder. Those changes to the ICA could result from the design change process (minor and major changes), in-service experience, corrections, and others.

For a UK TC/RTC holder/applicant, a programme showing how changes to the ICA are distributed is part of the respective procedures (e.g. design organisation procedures, or alternative procedures used to demonstrate capabilities). For changes to the ICA triggered by design changes, typically these procedures follow the same principles as

those available for TC/RTC, Options 1 to 3, while taking into account the relevant privileges, e.g. that a DOA may approve minor changes in accordance with point 21.A.263(c)(2).

The following GM1 21.A.90C is inserted:

GM1 21.A.90C Stand-alone changes

Changes to the ICA are considered to be stand-alone changes when they are not directly prepared together with a change to the type design. Stand-alone changes to the ICA are usually prepared and issued, for example, for the purpose of making corrections, improvements, to include feedback from users, or to provide alternatives.

Also, when the ICA are completed after the product (or change to the product) was approved, this is considered to be a stand-alone change to the ICA.

When a non-ALS ICA change is triggered by a change to the type design, this does not affect the overall classification of the type certificate change as per point 21.A.91.

Stand-alone changes are usually straightforward changes, and are not considered to require additional work in order to show compliance. However, they must be managed in accordance with a process accepted by CAA under point 21.A.239 or point 21.A.14(b), for discharging the obligation to keep the ICA up to date.

Examples of changes that may require additional activities in order to show compliance are changes to the CDCCL, and EWIS ICA.

Appendix A to GM 21.A.91 is replaced by the following:

Appendix A to GM 21.A.91 Examples of Major Changes per discipline

The information below is intended to provide a few major change examples per discipline, resulting from application of 21.A.91 and paragraph 3.3 conditions. It is not intended to present a comprehensive list of all major changes. Examples are categorised per discipline and are applicable to all products (aircraft, engines and propellers). However a particular change may involve more than one discipline, e.g., a change to engine controls may be covered in engines and systems (software).

Those involved with classification should always be aware of the interaction between disciplines and the consequences this will have when assessing the effects of a change (i.e., operations and structures, systems and structures, systems and systems, etc.; see example in paragraph 2 (ii).

Specific rules may exist which override the guidance of these examples.

In the Part 21 a negative definition is given of minor changes only. However in the following list of examples it was preferred to give examples of major changes.

Where in this list of examples the words ‘has effect’ or ‘affect(s)’ are used, they have always to be understood as being the opposite of ‘no appreciable effect’ as in the definition of minor change in 21.A.91. Strictly speaking the words ‘has appreciable effect’ and ‘appreciably affect(s)’ should have been used, but this has not been done to improve readability.

1. Structure

(i) changes such as a cargo door cut-out, fuselage plugs, change of dihedral, addition of floats;

(ii) changes to materials, processes or methods of manufacture of primary structural elements, such as spars, frames and critical parts;

(iii) changes that adversely affect fatigue or damage tolerance or life limit characteristics;

(iv) changes that adversely affect aeroelastic characteristics.

2. Cabin Safety

(i) changes which introduce a new cabin layout of sufficient change to require a re- assessment of emergency evacuation capability or which adversely affect other aspects of passenger or crew safety.

Items to consider include, but are not limited to, :

— changes to or introduction of dynamically tested seats.

— change to the pitch between seat rows.

— change of distance between seat and adjacent obstacle like a divider.

— changes to cabin lay outs that affect evacuation path or access to exits.

— installation of new galleys, toilets, wardrobes, etc.

— installation of new type of electrically powered galley insert.

(ii) changes to the pressurisation control system which adversely affect previously approved limitations.

3. Flight

Changes which adversely affect the approved performance, such as high altitude operation, brake changes that affect braking performance.

Changes which adversely affect the flight envelope.

Changes which adversely affect the handling qualities of the product including changes to the flight controls function (gains adjustments, functional modification to software) or changes to the flight protection or warning system.

4. Systems

For systems assessed under CS 25.1309, the classification process is based on the functional aspects of the change and its potential effects on safety.

(i) Where failure effect is 'Catastrophic' or 'Hazardous', the change should be classified as major.

(ii) Where failure effect is 'major', the change should be classified as major if:

— aspects of the compliance demonstration use means that have not been previously accepted for the nature of the change to the system; or

— the change affects the pilot/system interface (displays, controls, approved procedures); or

— the change introduces new types of functions/systems such as GPS primary, TCAS, Predictive windshear, HUD.

The assessment of the criteria for software changes to systems also needs to be performed. When software is involved, account should be taken also of the following guidelines:

Where a change is made to software produced in accordance with the guidelines of the latest edition of AMC 20-115 (see AMC-20 document) the change should be classified as major if either of the following apply, and the failure effect is Catastrophic, Hazardous or Major:

(i) the executable code for software, determined to be Level A or Level B in accordance with the guidelines, is changed unless that change involves only a variation of a parameter value within a range already verified for the previous certification standard; or

(ii) the software is upgraded to or downgraded from Level A, Level B or Level C; or

(iii) the executable code, determined to be level C, is deeply changed, e.g., after a software re-engineering process accompanying a change of processor.

For software developed to guidelines other than the latest edition of AMC 20-115, the applicant should assess changes in accordance with the foregoing principles.

For other codes the principles noted above may be used. However, due consideration should be given to specific certification specifications/interpretations.

In the context of a product information security risk assessment (PISRA), a change that may introduce the potential for unauthorised electronic access to product systems should be considered to be ‘major’ if there is a need to mitigate the risks for an identified unsafe condition. The following examples do not provide a complete list of conditions to classify a modification as major, but rather they present the general interactions between security

domains. Examples of modifications that should be classified as ‘major’ are when any of the following changes occur:

— A new digital communication means, logical or physical, is established between a more closed, controlled information security domain, and a more open, less controlled security domain.

— For example, in the context of large aircraft, a communication means is established between the aircraft control domain (ACD) and the airline information services domain (AISD), or between the AISD and the passenger information and entertainment services domain (PIESD) (see ARINC 811).

As an exception, new simplex digital communication means (e.g. ARINC 429) from a controlled domain to a more open domain is not considered as major modification, if it has been verified that the simplex control cannot be reversed by any known intentional unauthorised electronic interaction (IUEI).

— A new service is introduced between a system of a more closed, controlled information security domain and a system of a more open, less controlled security domain, which allows the exploitation of a vulnerability of the service that has been introduced, creating a new attack path.

For example:

— opening and listening on a User Datagram Protocol (UDP) port in an end system of an already certified topology;

— activating a protocol in a point-to-point communication channel.

— The modification of a service between a system of a more closed, controlled security domain and a system of a more open, less controlled security domain.

— The modification of a security control between a system of a more closed, controlled information security domain and a system of a more open, less controlled security domain.

5. Propellers Changes to:

— diameter

— airfoil

— planform

— material

— blade retention system, etc.

6. Engines Changes:

(i) that adversely affect operating speeds, temperatures, and other limitations.

(ii) that affect or introduce parts identified by CS E-510 where the failure effect has been shown to be hazardous.

(iii) that affect or introduce engine critical parts (CS E-515) or their life limits.

(iv) to a structural part which requires a re-substantiation of the fatigue and static load determination used during certification.

(v) to any part of the engine which adversely affects the existing containment capability of the structure.

(vi) that adversely affect the fuel, oil and air systems, which alter the method of operation, or require reinvestigation against the type-certification basis.

(vii) that introduce new materials or processes, particularly on critical components.

7. Rotors and drive systems Changes that:

(i) adversely affect fatigue evaluation unless the service life or inspection interval are unchanged. This includes changes to materials, processes or methods of manufacture of parts, such as

— rotor blades

— rotor hubs including dampers and controls

— gears

— drive shafts

— couplings

(ii) affect systems the failure of which may have hazardous or catastrophic effects. The design assessment will include:

— cooling system

— lubrication system

— rotor controls

(iii) adversely affect the results of the rotor drive system endurance test, the rotor drive system being defined in CS 27/29.917.

(iv)
adversely affect the results of the shafting critical speed analysis requ ired by CS 27/29.931.

8. Environment

The introductory text to Appendix A to GM 21.A.91 describes how in Part 21 a negative definition is given of minor changes only. This philosophy is similar to the manner in which the ICAO Standards and Recommended Practices for environmental protection (ICAO

Annex 16) and the associated Guidance Material (ICAO Environmental Technical Manual) define changes affecting a product's environmental characteristics in terms of 'no-acoustical changes', 'no- emissions changes' and 'no-CO_2 changes' (i.e. changes which do not appreciably affect the product's environmental characteristics).

Following the general philosophy of this Appendix, however, it is preferred to give examples of changes which might have an appreciable effect on a product's environmental characteristics (i.e. the effect might be greater than the no-acoustic change, no-emissions change and no-CO_2 change criteria) and might therefore lead to a 'major change' classification.

Where a change is made to an aircraft or aircraft engine, the effect of the change on the product's environmental characteristics should be taken into account. Examples of changes that might have an appreciable effect on the product's environmental characteristics, and might therefore be classified as major changes, are listed below. The examples are not exhaustive and will not, in every case, result in an appreciable change to the product's environmental characteristics, and therefore, will not per se and in every case result in a 'major change' classification.

An appreciable effect is considered to be one which exceeds the ICAO criteria for a no-acoustical change, a no-emissions change or a no-CO_2 change. For the definition of a no-acoustical change refer to the section of the ICAO Environmental Technical Manual, Volume I (ICAO Doc 9501, Volume I – Procedures for the Noise Certification of Aircraft) concerning changes to aircraft type designs involving no-acoustical changes (see also the definitions of a 'derived version' in ICAO Annex 16, Volume I). For the definition of a no-emissions change, refer to the section of the ICAO Environmental Technical Manual, Volume II (ICAO Doc 9501, Volume II – Procedures for the Emissions Certification of Aircraft Engines) concerning no-emissions changes. For the definition of a no-CO_2 change, refer to ICAO Doc 9501 'Environmental Technical Manual', Volume III 'Procedures for the CO_2 Emissions Certification of Aeroplanes', 1st Edition 2018, concerning no-CO_2 changes.

(i) Noise: A change that introduces either:

— an increase in the noise certification level(s); or

— a reduction in the noise certification level(s) for which the applicant wishes to take credit.

Examples of noise-related changes that might lead to a major change classification are:

(1) For jet and heavy (maximum take-off mass greater than 8 618 kg) propeller-driven aeroplanes:

— A change that might affect the aircraft's take-off performance including:

— a change to the maximum take-off mass;

— a change to V2 ('take-off safety speed'); or

— a change to the lift augmentation devices, including their configuration under normal take-off operating conditions.

— A change that might affect the aircraft's landing performance including:

— a change to the maximum landing mass;

— a change to VREF (reference landing speed); or

— a change to the lift augmentation devices, including their deployment under normal landing operating conditions.

— A change to the Centre of Gravity (CG) limits;

— A change that increases the aircraft's drag;

— A change that alters the external profile of the aircraft, including the installation or change of shape or size of any item on the external surface of the aircraft that might protrude into the airflow such as winglets and vortex generators; generally the installation of small antennas does not represent an acoustical change;

— A change that introduces an open-ended hollow cavity at more or less right angles to the airflow (e.g. hollow pins in undercarriage assemblies);

— A change of engine or, if fitted, propeller type;

— A change in engine thrust rating;

— A change to the engine rotating parts or stators, such as geometry, blade profile or blade number;

— A change to the aerodynamic flow lines through the engine;

— A change that affects the engine thermodynamic cycle, including a change to the engine's bypass ratio;

— A change to the engine nacelle, including a change to the acoustic liners;

— A change to the engine exhaust;

— A change to the engine bleed valves, including bleed valve scheduling;

— A change in the operation of engine power off-takes (e.g. the operation of the Environmental Control System (ECS) during a normal take-off or approach);

— A change to the Auxiliary Power Unit (APU), including associated operating limitations (e.g. a change that allows the APU to be

operated during a normal approach when previously it was not allowed);

— A change to the propeller pitch and/or propeller speed during a normal take- off or approach;

— A change that causes a change to the angle at which air flows into the propeller.

(2) For light (maximum take-off mass 8 618 kg or less) propeller-driven aeroplanes:

— A change that might affect the aircraft's take-off performance including:

— a change to the maximum take-off mass;

— a change to the take-off distance;

— a change to the rate of climb; or

— a change to Vy (best rate of climb speed).

— A change that increases the aircraft's drag (e.g. the installation of external cargo pods, external fuel tanks, larger tyres to a fixed undercarriage, floats etc.);

— A change of engine or propeller type;

— A change in take-off power including a change in engine speed (tachometer 'red line') or, for piston engines, a change to the manifold pressure limitations;

— A change to the highest power in the normal operating range ('top of green arc');

— In the case of an aircraft where take-off power/engine speed is time limited, a change in the period over which take-off power/engine speed may be applied;

— A change to the engine inlet or exhaust including, if fitted, the inlet or exhaust muffler;

— A change in propeller diameter, tip shape, blade thickness or the number of blades;

— The installation of a variable or adjustable pitch propeller in place of a fixed pitch propeller and vice versa;

— A change that causes a change to the angle at which air flows into the propeller.

(3) For helicopters:

— A change that might affect the take-off and/or landing performance, including a change in take-off mass and VY (best rate of climb speed);

— A change to VNE (never-exceed airspeed) or to VH (airspeed in level flight obtained using the torque corresponding to minimum engine installed, maximum continuous power available for sea level pressure, 25°C ambient conditions at the relevant maximum certificated mass);

— A change to the maximum take-off engine power or maximum continuous power;

— A change to the gearbox torque limits;

— A change of engine type;

— A change to the engine intake or exhaust;

— A change to the maximum normal operating rpm of the main or tail rotors;

— A change to the main or tail rotors, including a change in diameter, blade thickness or blade tip profile.

Note: The effect on the helicopter's noise characteristics of either carrying external loads or the installation of external equipment need not be considered.

(ii) Emissions: A change that introduces an increase or decrease in the emissions certification levels. Examples of smoke and gaseous engine emission-related changes that might lead to a major change classification are:

— A change in engine thrust rating;

— A change to the aerodynamic flow lines through the engine;

— A change that affects the engine thermodynamic cycle, specifically relevant engine cycle parameters (e.g. combustor pressure P3, combustor entry temperature T3, Air Fuel Ratio (AFR));

— A change to the compressor that might influence the combustor inlet conditions and engine overall pressure ratio;

— A change to the combustor design (geometry);

— A change to the cooling of the combustor;

— A change to the air mass flow through the combustor;

— A change that affects the fuel spray characteristics.

(iii) CO_2: a change that introduces either:

— an increase in the CO_2 emissions certification level; or

— a decrease in the CO_2 emissions certification level for which an applicant wishes to take credit.

Examples of CO_2 emission-related changes that may lead to a 'major change' classification are:

— a change to the maximum take-off mass;

— a change that may affect the aeroplane's specific air range performance, including one or several of the following:

— a change that increases the aircraft's drag;

— a change of engine or, if fitted, propeller type;

— a change in the engine design that affects the engine specific fuel consumption in cruise.

— a change to the aeroplane's reference geometric factor (RGF).

9. Power plant Installation Changes which include:

(i) control system changes which affect the engine/propeller/airframe interface;

(ii) new instrumentation displaying operating limits;

(iii) modifications to the fuel system and tanks (number, size and configuration);

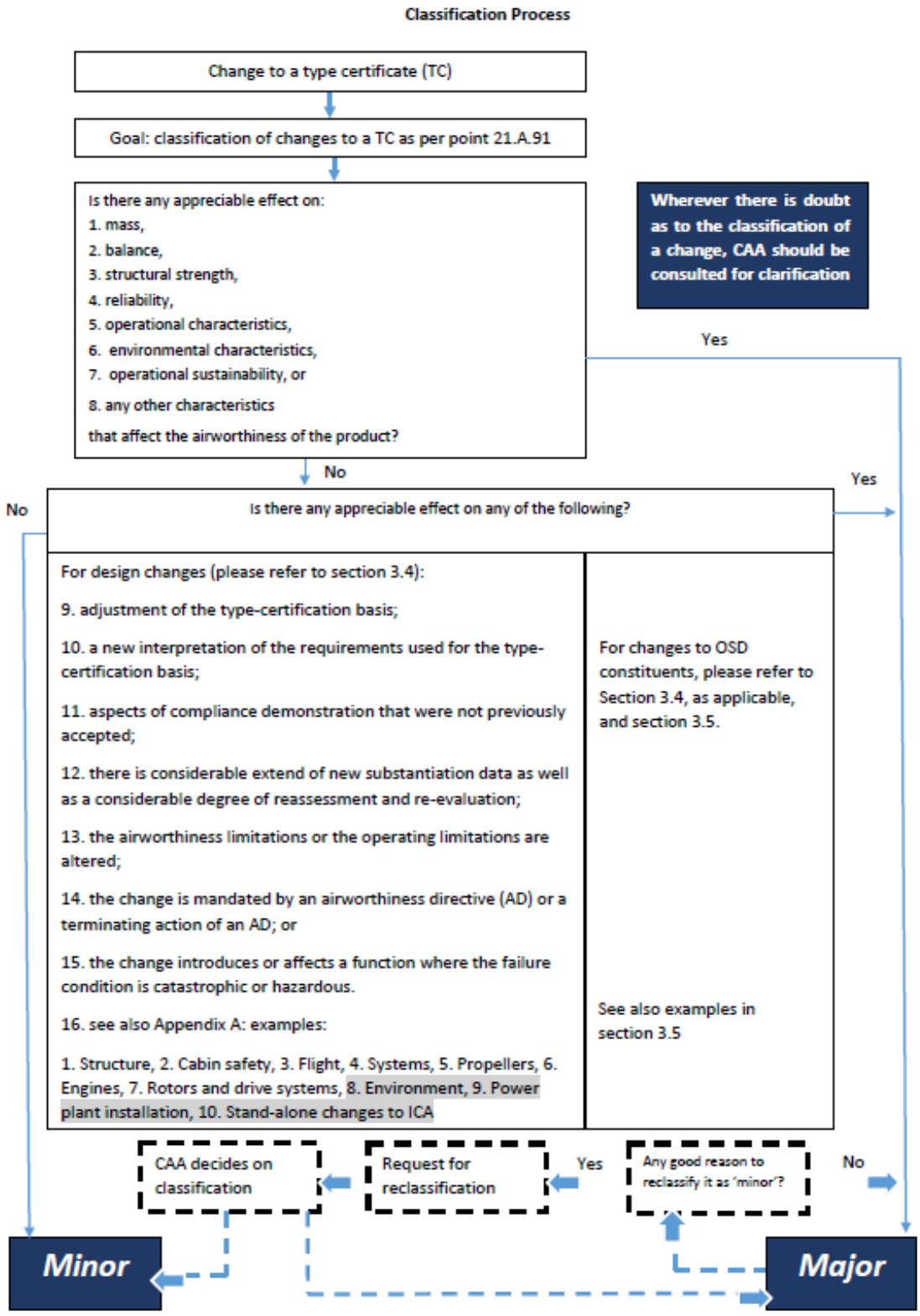
(iv) change of engine/propeller type.

10. Stand-alone changes to non-ALS ICA that require additional work to demonstrate compliance with the applicable certification basis as follows:

(i) changes related to accomplishment instructions (e.g. to the aircraft maintenance manual) related to the CDCCL, or the EWIS ICA, for which the technical content (e.g. gaps, steps) of the procedures is changed;

(ii) the introduction of novel technology for inspection purposes related to an ALS task;

(iii) changes that adversely affect the certification assumptions: e.g. some specific inspection procedures, such as inspection procedures for use after a hard landing, may include a decision-making chart based on the level of exceedance of the load in comparison with the certified limit loads; such criteria, and adverse changes, need to be agreed with CAA.


Classification Process
Change to a type certificate (TC)
Goal: classification of changes to a TC as per point 21.A.91
Is there any appreciable effect on:
1. mass,
2. balance,
3. structural strength,
4. reliability,
5. operational characteristics,
6. environmental characteristics,
7. operational sustainability, or
8. any other characteristics
that affect the airworthiness of the product?
Wherever there is doubt as to the classification of a change, CAA should be consulted for clarification
Yes
No
Yes
No
Is there any appreciable effect on any of the following?
For design changes (please refer to section 3.4):
9. adjustment of the type-certification basis;
10. a new interpretation of the requirements used for the type-certification basis;
11. aspects of compliance demonstration that were not previously accepted;
12. there is considerable extend of new substantiation data as well as a considerable degree of reassessment and re-evaluation;
13. the airworthiness limitations or the operating limitations are altered;
14. the change is mandated by an airworthiness directive (AD) or a terminating action of an AD; or
15. the change introduces or affects a function where the failure condition is catastrophic or hazardous.
16. see also Appendix A: examples:
1. Structure, 2. Cabin safety, 3. Flight, 4. Systems, 5. Propellers, 6. Engines, 7. Rotors and drive systems, 8. Environment, 9. Power plant installation, 10. Stand-alone changes to ICA
For changes to OSD constituents, please refer to Section 3.4, as applicable, and section 3.5.
See also examples in section 3.5
CAA decides on classification
Request for reclassification
Yes
Any good reason to reclassify it as 'minor'?
No
Minor
Major

AMC No. 1 to 21.A.243(a) is replaced by the following:

AMC1 ~~No. 1~~ to 21.A.243(a) Data requirements

HANDBOOK – GENERAL

(a) All personnel should be familiar with those parts of the handbook that are relevant to their tasks.

(b) The handbook should provide the following information for each product that is covered by the design organisation approval (DOA).

(1) A description of the tasks that can be performed under the approval, according to the following classification:

(i) general areas, like subsonic turbojet aeroplanes, turboprop aeroplanes, small aeroplanes, rotorcraft, etc.;

(ii) technologies handled by the organisation (composite, wood or metallic construction, electronic systems, etc.);

(iii) a list of types and models for which the design approval has been granted and for which privileges may be exercised, supported by a brief description for each product; and

(iv) for repair design, classification and (if appropriate) approval activities, it is necessary to specify the scope of activity in terms of structures, systems, engines, etc.

(2) A general description of the organisation, its main departments, their functions and the names of those in charge; a description of the line management and of the functional relationships between the various departments.

(3) A description of the assigned responsibilities and delegated authority of all parts of the organisation, which, taken together, constitute the organisation's design management system, together with a chart indicating the functional and hierarchical relationship of the design management system to the management and to other parts of the organisation; also the chains of responsibilities within the design management system, and the control of the work of all partners and subcontractors.

(4) A general description of the way in which the organisation performs all the design functions in relation to airworthiness, operational suitability and environmental protection approvals, including: (i) the procedures followed and forms used in the certification process to ensure that the design of, or the change to the design of, the product, as applicable, is identified and documented, and complies with the applicable type certification basis, operational suitability data (OSD) certification basis and the environmental protection requirements, including specific requirements for import by importing authorities; (ii) the procedures for classifying design changes as 'major' or 'minor' and for the approval of minor

changes; (iii) the procedures for classifying and approving unintentional deviations from the applicable design data occurring in production (concessions or non-conformity); and (iv) the procedure for classifying and obtaining approval for repairs.

(5) A general description of the way in which the organisation performs its functions in relation to the continuing airworthiness and continued operational suitability of the product it designs, including cooperation with the production organisation when dealing with any continuing airworthiness action that is related to the production of the product, part, or appliance, as applicable.

(6) A description of the human resources, facilities, and equipment, which constitutes the means for design, and, where appropriate, for ground and flight testing.

(7) An outline of a system for controlling and informing the personnel of the organisation of current changes in engineering drawings, specifications, and design management procedures.

(8) A description of the recording system for: (i) the type design, including relevant design information, drawings and test reports, including inspection records of test specimens; (ii) the means of compliance; and (iii) the compliance documentation (compliance checklist, reports, etc.).

(9) A description of the record-keeping system to comply with point 21.A.5.

(10) A description of the means by which the organisation collects, monitors, analyses and responds to problems that cause or might cause an adverse effect on the airworthiness or operational suitability of its product, part, or appliance during design, production, and in service, in particular to comply with point 21.A.3A (see also AMC3 21.A.3A(a) and AMC1 21.A.239(d).

(11) The names of the design organisation (DO)- authorised signatories. Nominated persons with specific responsibilities such as those mentioned in points 21.A.33 and 21.A.35 should be listed as well.

(12) Intentionally left blank.

(13) A clear definition of the tasks, competency and areas of responsibility of the Office of Airworthiness.

(14) A description of the procedures for:

(i) the establishment and control of the manuals and instructions for continued airworthiness (ICA) (see points 21.A.6, 21.A.7 and, where applicable, 21.A.609); and

(ii) where applicable, a description of the procedures for the establishment and control of a part or appliance for which the consequences of a non-conformity with its approved design data has a negligible safety effect on the product and which is identified as such by the holder of the design

approval in the instructions for continued airworthiness in accordance with 21.A.307 including control of supplied parts. The procedures should also detail the documentation to be issued by the manufacturer including reference to the ICA and any verification activity required to be conducted by the installer.

(15) A description of the means by which the continuing evaluation (system monitoring) of the design management system will be performed in order to ensure that it remains effective.

(16) A description of the procedures for the establishment and control of the OSD (see points 21.A.5, 21.A.62, 21.A.108, and 21.A.120B).

(17) A description of the organisation's safety policy and objectives, as required by point 21.A.239(c)(1).

(18) A description of the internal safety reporting scheme, as required by point 21.A.3A(a).

(19) A description of the safety management procedures (including identification of safety hazards, evaluation, and associated risks management), safety assurance procedures, and safety promotion processes.

(20) A statement, signed by the head of the design organisation (HDO) (and countersigned by the chief executive, if different), which confirms that the design management handbook and any associated manuals are complied with at all times.

This statement should read as follows, or embrace the intent of the following text:

'This handbook defines the organisation and procedures upon which the CAA's DOA is based.

These procedures are approved by the undersigned, and must be complied with, as applicable, to ensure that all design activities are performed on time and to an approved standard.

It is understood that the approval of the DO is based on the organisation's continuous compliance with the applicable requirements of Part 21, and with the organisation's procedures that are described in this handbook. The CAA is entitled to limit, suspend, or revoke the approval if the organisation fails to fulfil the obligations that are imposed by Part 21, or any conditions according to which the approval was issued.

Signed .....

Dated .....

HDO and..... (quote the position of the signatory)

Chief Executive

For and on behalf of..... (quote the organisation's name)'

The statement should be reissued at the earliest opportunity when the HDO or Chief Executive changes.

(c) The organisation may document its safety policy, safety objectives, and all the safety management system key processes (as required by point 21.A.239(c)) in a separate manual (e.g. a safety management manual or management system manual) or in its handbook. Organisations that hold multiple organisation approvals, which are issued under UK Regulation (EU) 2018/1139 and the regulation made under it that are adopted on the basis thereof, may prefer to have a separate manual to avoid duplication.

GM1 21.A.247 is replaced by the following:

GM1 21.A.247 Significant changes in the design management system

SIGNIFICANT CHANGES IN THE DESIGN MANAGEMENT SYSTEM

In addition to a change in ownership (see point 21.A.249), the following changes to the design management system should be considered to be 'significant' for the demonstration of compliance, or for the airworthiness, operational suitability, or environmental protection of the products:

(a) Organisation

— Relocation to new premises (see also GM 21.A.249);

— A change in the industrial organisation (partnership, subcontractors, design work sharing), unless it can be shown that the independent verification function of the demonstration of compliance is not affected;

— A change in the parts of the organisation that contribute directly to the airworthiness, operational suitability, or environmental protection (independent verification function, airworthiness function (or equivalent));

— A change to the independent monitoring principles of compliance and adequacy (see point 21.A.239(e)).

(b) Responsibilities

— Change of the management personnel:

— the head of the design organisation (HDO) (see point 21.A.245 (a));

— the head of airworthiness (see point 21.A.245(b)); and

— the head of independent monitoring of compliance and adequacy of the design management system (see point 21.A.245 (b)(2)); and

— the safety manager (see point 21.A.239(c)(2)).

— Reporting lines between the personnel that is nominated in accordance with point 21.A.245(b) and the HDO.

— Allocation of responsibilities that affect safety, airworthiness, operational suitability, or environmental protection.

(c) Procedures

Change to the principles of procedures related to:

— the type certification;

— the classification of changes and repairs as ‘major’ or ‘minor’ (see point 21.A.263(c)(1));

— the handling of major changes and major repairs;

— the approval of the design of minor changes and minor repairs (see point 21.A.263(c)(2));

— the approval of the design of certain major repairs (see point 21.A.435(b) or 21.A.263(c)(5));

— the approval of the conditions under which a permit to fly can be issued (see point 21.A.263(c)(6));

— the issue of a permit to fly (see point 21.A.263(c)(7));

— the approval of certain major changes to a type certificate (TC) (see point 21.A.263(c)(8));

— the approval of certain supplemental type certificates (STCs) (see point 21.A.263(c)(9));

— the approval of certain major changes to certain STCs (see point 21.A.263(c)(9));

— continued airworthiness or continued operational suitability (see point 21.A.3B);

— the configuration control, when airworthiness, operational suitability, or environmental protection is affected;

— the acceptability of design tasks that are undertaken by partners or subcontractors (see point 21.A.239(d)(3));

— the issue of data and information under the obligation of point 21.A.265(h).; ~~and~~

— the delay of the issue of Instructions for Continued Airworthiness (21.A.7 (ICAs)); and

— the safety risk management process (see point 21.A.239(c)(3)).

(d) Resources

— A substantial reduction in the number and/or experience of personnel (see point 21.A.245(e)).

GM1 21.A.265(h) is replaced by the following:

GM 21.A.265(h) Designation of data and information issued under the authority of a design approval (DOA) holder

1. INTENT

This GM provides guidance for complying with the obligation of 21.A.265(h) and addresses the various aspects that the DOA holder should cover in order to have a comprehensive procedure for the designation of data and information.

2. SCOPE

The term ‘data and information’ as used in point 21.A.265(h) also includes instructions.

Data and information referred to in point 21.A.265(h) are issued by a DOA holder and cover the following:

— embodiment instructions for design changes or repairs (usually in the form of a service bulletin, a modification bulletin, repair instructions or engineering order, etc.);

— manuals required by Part 21 or the applicable CSs (such as the aircraft flight manual (AFM), rotorcraft flight manual, instructions for continuing airworthiness (ICAs), etc.);

— operation suitability data (OSD);

— continued-airworthiness instructions (usually in the form of service bulletins) which may be covered by airworthiness directives (ADs);

— additional data to be defined by the DOA holder (e.g. alternative maintenance instructions that are not, per se, ICAs).

Note: This data and information may be issued in a digital or paper format.

The obligation does not apply to, and the statement provided with the data and information should not be used on, the following documents:

— certification documents (e.g. the certification programme, compliance checklist, etc.);

— compliance documents;

— design data transferred to production organisations; and

— production deviations (also referred to as ‘unintended deviations’ or ‘concessions’).

3. RATIONALE

The purpose of this obligation is to give certainty to the end users about the approval status of the data and information issued by the DOA holder.

4. PROCEDURE

For the information and instructions issued under point 21.A.265(h), the DOA holder should establish a procedure that addresses the following aspects:

— their preparation;

— verification of their technical consistency with the corresponding approved change(s), repair(s) or approved data, including their effectivity, description, effects on airworthiness and environmental protection, especially when limitations are changed;

— verification of their feasibility in practical applications, when relevant and feasible;

— the authorised signatories.

The procedure should include the information or the instructions prepared by suppliers, and declared applicable to its products by the DOA holder.

45. STATEMENT

The statement provided with the data and information should also cover those items prepared by subcontractors or vendors that the DOA holder has declared as applicable to their products. The technical content of the statement is related to the type certificate data and information.

The approval included in the statement means that:

— the type certificate data has been appropriately approved; and

— the information contains practical and well-defined installation or inspection methods, and, when those methods are implemented, the product is in conformity with the approved type certificate data.

Note: Data and information related to the measures required by point 21.A.3B(b) (airworthiness directives (ADs)) are submitted to the CAA to ensure their compatibility with the content of an AD (see point 21.A.265(e)), and contain a statement that they are, or will be, subject to an AD issued by the CAA.

The following AMC 21.A.307(b)(3) is inserted:

AMC 21.A.307(b)(3) Agreement of DAH procedures

The design approval holder's procedures in the design organisation handbook relating to the identification and management of parts for which the consequences of a non-conformity with its approved design data has a negligible safety effect on the product should be verified by the CAA before initial implementation with reference to points 21.B.430 and 21.A.247. The design approval holder is responsible for parts provided by suppliers and original equipment manufacturers (OEMs).

The following AMC1 21.A.307(b)(3) and (b)(4) is inserted:

AMC1 21.A.307(b)(3) and (b)(4) Verification activities to be conducted on the part or appliance or release documentation prior to installation

To prevent a non-negligible safety effect on the product, due to the installation of a part or appliance referred to in point 21.A.307(b)(3) and (b)(4) that could potentially not conform to its design, the design approval holder (DAH) or the CAA may identify, in the ICA (in the case of 21.A.307(b)(3)) or in CS-STAN (in the case of 21.A.307(b)(4)), any specific verification activities to be conducted by the installer on the part or appliance before installing it on the product in accordance with UK Regulation (EU) No 1321/2014.

When assessing the safety effect of a part or appliance identified in point 21.A.307(b)(3) or (b)(4), the DAH or CAA should assume that the installer would conduct, in accordance with Regulation (EU) No 1321/2014, any specific verification activities on the part or appliance or release documentation, as identified in the ICA or in CS-STAN.

Example: Information from the DAH contained in the ICA: 'Part XXX-YY must comply with flammability requirement JJJ-KKK'.

The following GM1 21.A.307(b)(3) and (b)(4) is inserted:

GM1 21.A.307(b)(3) and (b)(4) Meaning of 'negligible safety effect'

For the purpose of 21.A.307(b)(3) and (b)(4), when 'a part or appliance for which the consequences of non-conformity to its design has a negligible safety effect when installed on the product' is mentioned, it means that any non-conformity of the part or appliance not identified by the installer that conducted the specific verification activities mentioned in 21.A.307 (c):

(a) for ELA1 and ELA2 aircraft, at worst:

(1) slightly reduces the operational or functional certified capabilities of the aircraft or its safety margins;

(2) causes some physical discomfort to its occupants; and

(3) slightly increases the workload of the flight crew; and

(b) for any other aircraft:

(1) has no effect on the operational or functional certified capabilities of the aircraft, or on its safety margins;

(2) causes no physical discomfort to the occupants; and

(3) has no effect on the flight crew.

The following GM1 21.A.307(b)(4) is inserted:

GM1 21.A.307(b)(4) Certification specifications referred to in point 21.A.307(b)(4)

The corresponding certification specifications issued by CAA and mentioned in point 21.A.307(b)(4) are the Certification Specifications for Standard Changes and Standard Repairs (CS-STAN).

The following GM1 21.A.307(b)(5) is inserted:

GM1 21.A.307(b)(5) Equipment exempted from an airworthiness approval in accordance with UK Regulation (EU) No 965/2012

The equipment exempted from an airworthiness approval in accordance with UK Regulation (EU) No 965/2012 that can be installed during maintenance as new equipment on an aircraft under point 21.A.307(b)(5) is the equipment identified in the following points:

— CAT.IDE.A.100(a),

— CAT.IDE.H.100(a),

— NCC.IDE.A.100(b) and (c),

— NCC.IDE.H.100(b) and (c),

— NCO.IDE.A.100(b) and (c),

— NCO.IDE.H.100(b) and (c),

— NCO.IDE.S.100(b) and (c),

— NCO.IDE.B.100(b) and (c),

— SPO.IDE.A.100(b) and (c),

— SPO.IDE.H.100(b) and (c),

— SPO.IDE.S.100(b) and (c), and

— SPO.IDE.B.100(b) and (c)

of UK Regulation (EU) No 965/2012.

The following GM1 21.A.307(b)(6) is inserted:

GM1 21.A.307(b)(6) Part or appliance that is part of a higher-level assembly

A CAA Form 1 is not required for a part or appliance when that part or appliance is an element of a higher-level assembly for which a CAA Form 1 is not required.

The following GM1 21.A.307(c) is inserted:

GM1 21.A.307(c) Acceptable production conformity documentation

A document issued by an OEM or a commercial certificate of conformity issued under an accredited quality system such as ISO 9001 or EN 9100 accepted by the design approval holder is an example of a document issued by the person or organisation that manufactured the part or appliance and which declares the name of the part or appliance, the part number, and the conformity of the part or appliance with its design data, and which contains the issuance date.

AMC 21.A.433(b), 21.A.5 and 21.A.447 is deleted:

~~AMC 21.A.433(b), 21.A.5 and 21.A.447 Repair design and record keeping~~

~~1. Relevant substantiation data associated with a new major repair design and record keeping should include:~~

~~a. the identification of the damage and the reporting source;~~

~~b. the major repair design approval sheet identifying the applicable specifications and references of justifications;~~

~~c. the repair drawing and/or instructions and scheme identifier;~~

~~d. the correspondence with the holder of the type certificate (TC), supplemental type certificate (STC), or auxiliary power unit UK technical standard order (APU UKTSO) authorisation, if its advice on the design has been sought;~~

~~e. the structural justification (static strength, fatigue, damage tolerance, flutter, etc.) or references to this data;~~

~~f. the effect on the aircraft, engines and/or systems (performance, flight handling, etc., as appropriate);~~

~~g. the effect on the maintenance programme;~~

~~h. the effect on airworthiness limitations, the flight manual and the operating manual;~~

~~i. any weight and moment changes; and~~

~~j. special test requirements.~~

~~2. Relevant minor repair documentation includes paragraphs 1(a) and (c). Other points of paragraph 1 may be included where necessary. If the repair is outside the approved data, a justification for the classification is required.~~

~~3. Special consideration should be given to repairs that impose subsequent limitations on the part, product or appliance (e.g. engine turbine segments that may only be repaired a finite number of times, the number of repaired turbine blades per set, oversizing of fastener holes, etc.).~~

~~4. Special consideration should also be given to life-limited parts and critical parts, notably with the involvement of the TC or STC holder, when deemed necessary under 21.A.433(a)(4).~~

~~5. Repairs to engine or APU critical parts would normally only be accepted with the involvement of the TC holder.~~

The following GM1 21.A.609(c) and (d) is inserted:

GM 21.A.609(c) and (d) Obligations of holders of UKTSO authorisations

In CS-UKTSO, there is no specification related to ICA, either in Subpart A, or in each specific UKTSO.

Although a UKTSO article itself typically does not require ICA, the applicable airworthiness standards may require the design approval holder (DAH) or the design approval applicant (DAA) who install a UKTSO article into their product to develop ICA that describe a UKTSO article's installation requirements, within the context of the product, to the extent necessary to ensure the product's continued airworthiness.

In addition, if the DAH or the DAA who install a UKTSO article into their product explicitly uses UKTSO provisions to demonstrate compliance with an installation requirement, they should review all the maintenance and inspection instructions for the particular UKTSO article when defining the ICA of the product.

It may be necessary for the DAH or the DAA to incorporate these instructions into the ICA of the product to ensure that the UKTSO article continues to satisfy the terms of its UKTSO authorisation after installation.

The following AMC 21.A.609(c) and (d) is inserted:

AMC 21.A.609(c) and (d) Obligations of holders of UKTSO authorisations

Any DAH or DAA who wishes to install a UKTSO article should comply with point 21.A.303.

For this, the applicant for a UKTSO authorisation may provide by the time of the application and before the authorisation is issued (in accordance with point 21.A.605) the following:

— instructions that cover periodic maintenance, calibration, and repair for the continued airworthiness of the article, including specific guidance on the limits of wear and damage that would warrant replacement;

— the recommended inspection intervals, which may be affected by storage and operating conditions (i.e. temperature, humidity, etc.).

GM1 21.B.55 is replaced by the following:

GM1 21.B.55 Record keeping ~~for design approvals transferred to the CAA~~

~~Record keeping related to design approvals, for which the responsibility is transferred to the CAA, will remain initially with the CAA that has granted the approvals, at the disposal of the CAA.~~ This GM specifies the administrative documents to be kept for the various kinds of design approvals. It does not repeat the requirements for ~~put on holders of~~ design approval~~s~~ holders to keep records (ref.: 21.A.5~~,~~ and ~~21.A.105, 21.A.118A(a)(1), 21.A.447,~~ 21.A.605).

1. Type-certificate

a) Copy of the type-certificate

b) Copy of the type-certificate data sheet

c) Environmental protection approval data

d) Documents defining the type-certification basis including information to justify special conditions, equivalent safety findings and exemptions (Certification Review Items or equivalent)

e) List of approved modifications,

f) List of the CAA's approved publications (Flight Manual, Repair Manual, Airworthiness Limitations, Certification Maintenance Requirements)

g) Airworthiness directives

h) Master Minimum Equipment List

i) Maintenance Review Board Report

2. Supplemental type certificate

— Copy of supplemental type certificate

— Environmental protection approval data

— Documents defining the certification basis including information to justify special conditions, equivalent safety findings and exemptions (Certification Review Items or equivalent)

— List of the CAA's approved documents

— Airworthiness directives

3. JTSO Authorisation

— Copy of JTSO authorisation letter

— Copy of Declaration of Design and Performance

— Statement of compliance with applicable standards

— Airworthiness directives

4. Other part or appliance approvals

a) Copy of approval letter,

b) Copy of Declaration of Design and Performance or equivalent

c) Statement of compliance with applicable standards

d) Airworthiness Directives

5. Changes from non-TC or STC holders

a) Modification approval sheet, or equivalent document

b) Documents required by 21.A.105, or equivalent national requirement

Note: Not applicable to minor design changes approved under a DOA privilege, for which record keeping is under the DOA holder responsibility.

6. Repair design approvals

a) Repair approval sheet

b) Documents listed in 21.A.447, or equivalent national requirement

Note: Not applicable to repair design approved under a DOA privilege, for which record keeping is under the DOA holder responsibility.

Schedule 2

Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Annex I (Part-21) to UK Regulation (EU) No. 748/2012

Includes the Acceptable Means of Compliance (AMC) and Guidance Material (GM) documents referenced below.

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

(a) ~~Text to be deleted is shown struck through~~;

(b) New text is highlighted in grey;

(c) ~~Text to be deleted is shown struck through~~followed by the replacement text which is highlighted in grey.

The following AMC1 21.A.65 is inserted:

AMC1 21.A.65 Continuing structural integrity programme for aeroplane structures

Type-certificate (TC) or restricted type-certificate (RTC) holders for large aeroplanes should implement a programme which includes a process to ensure the continuing structural integrity of the aeroplane's structures following its entry into service.

For other large aeroplanes, the process should be established considering the points described below:

(a) Overall objectives

The objective of point 21.A.65 of Part 21 is to ensure that the continuing structural integrity programme remains valid throughout the operational life of the aeroplane and will preclude unsafe levels of fatigue cracking and other forms of structural degradation.

The intent is for (R)TC holders for large aeroplanes to monitor the continued validity of the assumptions upon which the ICA related to the aeroplane structures are based, and to ensure that unsafe levels of fatigue cracking or other structural deterioration will be precluded in service.

To achieve this objective, (R)TC holders are expected to work together with aircraft operators.

The process should apply to all structures whose failure could contribute to a catastrophic failure, and it is not limited to metallic structures or fatigue cracking, but should also encompass composite and hybrid structures and associated failure modes.

(b) Description of the process to maintain the validity of the continuing structural integrity programme

The process to maintain the validity of the continuing structural integrity programme is either continuous with each service finding, or is a regular review following several findings, or a combination of both. It should include the following:

(1) a plan to audit and report to CAA the effectiveness of the continuing structural integrity programme, including the continuing validity of the assumptions upon which it is based, prior to reaching any significant point in the life of the aeroplane;

(2) criteria for summarising findings of fatigue, environmental or accidental damage and their causes, and recording them in a way that allows any potential interaction to be evaluated;

(3) criteria to assess and record the relevance of each potential contributing factor to the finding, including operational usage, fatigue load spectra, environmental conditions, material properties, manufacturing processes and the fatigue- and damage-tolerance analytical methods of analysis and their implementation;

(4) criteria for establishing and revising sampling programmes to supplement the inspections and other procedures established in compliance with the applicable fatigue- and damage- tolerance requirements;

(5) criteria for establishing when structures should be modified, or the inspection programme revised, in the light of in-service damage findings;

(6) sunset criteria: the extent to which the above elements of the process require definition may be tailored to the size of the fleet and its expected useful remaining life.

(7) Additional AMC which are relevant to the continuing structural integrity programme appear in paragraph 5 and Appendix 5 to AMC 20-20B.

The following AMC1 21.A.101(ba) is inserted:

AMC1 21.A.101(ba) Type-certification basis for changes to large aeroplanes subject to point 26.300 of Part-26

Compliance with point 21.A.101(ba) is demonstrated through compliance with Amdt 19 to CS 25.571 or subsequent amendments, or with the following:

(a) For turbine-powered large aeroplanes with a certified maximum take-off weight (MTOW) greater than 34 019 kg (75 000 lbs):

(1) For changes that affect or introduce fatigue critical structures susceptible to widespread fatigue damage (WFD), WFD evaluations should substantiate

freedom from WFD up to the existing limit of validity (LOV) or a new reduced LOV approved by CAA;

(2) The extension of an existing LOV is a major change.

(3) The extent of the test evidence required in support of the WFD evaluation should be agreed with CAA;

(4) Inspections and other maintenance actions upon which the LOV is dependent are established and submitted to CAA for approval in accordance with point 21.A.7 of Part 21;

(5) Additional AMC which are relevant to this subject appear in paragraph 8 to AMC 20-20B.

(b) For turbine-powered large aeroplanes certified to carry 30 passengers or more, or with a payload capacity of 3 402 kg (7 500 lbs) or more:

(1) For changes that affect or introduce fatigue critical structures, damage-tolerance evaluations must be performed according to the certification basis of the aeroplane unless it precedes JAR 25.571 Change 7 or 14 CFR §25.571 Amendment 45, in which case the certification basis for the change should be:

(i) JAR 25.571 Change 7 or 14 CFR §25.571 Amendment 45, or later amendments; or

(ii) the specifications used for compliance with the applicable points of Part-26 for the structures affected by the change.

(2) Develop or amend the list of fatigue-critical modified structures (FCMS) as necessary and make it available to aircraft operators as part of the ICA of the change.

(c) For turbine-powered large aeroplanes, the baseline corrosion prevention and control programme should be amended or supplemented to address the influence of the change on the effectiveness of the programme, as necessary.

AMC No. 2 to 21.A.133(b) and (c) is replaced by the following:

AMC No. 2 to 21.A.133(b) and (c) Eligibility – Link between design and production organisations

In accordance with AMC No 1 to 21.A.133(b) and (c) the POA holder must demonstrate to the CAA that it has entered into an arrangement with the design organisation. The arrangement must be documented irrespective of whether the two organisations are separate legal entities or not.

The documented arrangement must facilitate the POA holder to demonstrate compliance with the requirement of 21.A.133(b) and (c) by means of written documents agreed.

In the case where the design organisation and POA holder are part of the same legal entity these interfaces may be demonstrated by company procedures accepted by the CAA.

In all other cases to define such a design/production interface the following sample format is offered:

Arrangement Sample Form

<table>
<tr><th colspan="2">ARRANGEMENT

in accordance with 21.A.133(b) and (c)</th></tr>
<tr><td>The undersigned agree on the following commitments:</td><td>Relevant interface procedures</td></tr>
<tr><td>The design organisation [NAME] takes responsibility to

— assure correct and timely transfer of up-to-date applicable design data (e.g., drawings, material specifications, dimensional data, processes, surface treatments, shipping conditions, quality requirements, etc.) to the production organisation approval holder [NAME]

— provide visible statement(s) of approved design data.</td><td></td></tr>
<tr><td>The production organisation approval holder [NAME] takes responsibility to

— assist the design organisation [NAME] in dealing with continuing airworthiness matter and for required actions

— assist the design organisation [NAME] in case of products prior to type certification in demonstrating compliance with certification specifications

— develop, where applicable, its own manufacturing data in compliance with the airworthiness data package.</td><td></td></tr>
<tr><td>The design organisation [NAME] and the POA holder [NAME] take joint responsibility to

— deal adequately with production deviations and non-conforming parts in accordance with the applicable procedures of the design organisation and the production organisation approval holder

— achieve adequate configuration control of manufactured parts, to enable the POA holder to make the final determination and identification for conformity.</td><td></td></tr>
<tr><td colspan="2">The scope of production covered by this arrangement is detailed in [DOCUMENT REFERENCE/ATTACHED LIST]</td></tr>
<tr><td colspan="2">[When the design organisation is not the same legal entity as the production organisation approval holder]

Transfer of approved design data:

The TC/STC/UKTSO holder [NAME] acknowledges that the approved design data provided, controlled and modified in accordance with the arrangement are recognised as approved by the CAA and therefore the parts and appliances manufactured in accordance with these data and found in a condition for safe operation may be released certifying that the item was manufactured in conformity to approved design data and is in a condition for safe operation..</td></tr>
</table>

[*When the design organisation is not the same legal entity as the production organisation approval holder*] Direct Delivery Authorisation: This acknowledgment includes also [OR does not include] the general agreement for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.

For the [NAME of the design organisation/DOA holder] {DOA/ADOA number} Signature: [NAME in block letters] Date: xx.xx.xxxx	For the [NAME of the POA holder] {POA number} Signature: [NAME in block letters] Date: xx.xx.xxxx

Instructions for completion:

Title: The title of the relevant document must clearly indicate that it serves the purpose of a design/production interface arrangement in accordance with 21.A.133(b) and (c).

Commitment: The document must include the basic commitments between the design organisation and the POA holder as addressed in AMC 21.A.4 and AMC No 1 to 21.A.133(b) and (c).

Relevant Procedures: Identify an entry point into the documentary system of the organisations with respect to the implementation of the arrangement (for example a contract, quality plan, handbooks, common applicable procedures, working plans etc.).

Scope of arrangement: The scope of arrangement must state by means of a list or reference to relevant documents those products, parts or appliances that are covered by the arrangement.

Transfer of applicable design data: Identify the relevant procedures for the transfer of the applicable design data required by 21.A.131 and GM 21.A.131 from the design organisation to the POA holder. The means by which the design organisation advises the POA holder whether such data is approved or not approved must also be identified (ref. 21.A.4/AMC 21.A.4).

Direct Delivery Authorisation: Where the design organisation and the POA holder are separate legal entities the arrangement must clearly identify whether authorisation for direct delivery to end users is permitted or not.

Where any intermediate production/design organisations are involved in the chain between the original design organisation and the POA holder evidence must be available that this intermediate organisation has received authority from the design organisation to grant Direct Delivery Authorisation.

Signature: AMC No 1 to 21.A.133(b) and (c) requests the identification of the responsible persons/offices who control the commitments laid down in the arrangement. Therefore the basic document must be signed mutually by the authorised representatives of the design organisation and the POA holder in this regard.

The following GM1 21.A.130, 21.A.163 and 21.A.165 is inserted:

GM1 21.A.130, 21.A.163 and 21.A.165 Performance of tasks in real time for the issuance of a 'CAA Form 1' for prototype and new parts, appliances and products other than complete aircraft, using information and communication technologies (ICT)

This GM provides technical guidance on the use of remote ICT to support the issuance of a 'CAA Form 1' for prototype and newly produced parts, appliances and products other than complete aircraft.

It is the responsibility of the production organisation to assess whether the use of remote ICT constitutes a suitable alternative to the physical inspection of the part, appliance or product in accordance with the applicable requirements set out in 21.A.130(a). Consequently, the production organisation that intends to use the remote ICT for such purposes should first discuss the feasibility aspects with the CAA.

(a) **Terminology**

In the context of this GM, the following terminology is used:

— 'issue of a CAA Form 1' means:

i. the issue of a CAA Form 1 under Part 21 Subpart G by certifying staff;

ii. the raising of a CAA Form 1 under Part 21 Subpart F by an authorised person; and

iii. the validation of a CAA Form 1 under Part 21 Subpart F by the CAA inspector;

except in the case of issue of a CAA Form 1 for the correction of error(s) on a previously issued certificate and for the recertification of an item from 'prototype' to 'new' provided that the design data has not changed;

— 'authorised staff' means certifying staff as defined in Part 21 Subpart G, and 'authorised person' and 'CAA inspector' as defined in Part 21 Subpart F;

— 'item' means any part, appliance or product other than a complete aircraft;

— 'applicable design data' means non-approved design data for a prototype item and approved design data for a newly produced item;

— 'task' means any inspection, test and/or verification, as described in a documented procedure, which is needed to be performed by an authorised staff before signing a CAA Form 1;

— ‘remote ICT’ means any real-time video and audio communication tools using information and communication technologies (ICT) whose aim is to enable the performance of the task(s) by the authorised staff from a location different from that where the item is located (on-site).

(b) **Regulatory context**

The following entities may issue a CAA Form 1 for produced items in order to certify their conformity to the applicable design data and, for new items, their condition for safe operation:

— the holder of a letter of agreement (LoA) that is issued in accordance with Part 21 Subpart F (refer to point 21.A.130(a));

— the CAA in the context of Part 21 Subpart F (refer to point 21.A.130(d));

— the holder of a production organisation approval (POA) in accordance with Part 21 Subpart G (refer to point 21.A.163(c)).

A CAA Form 1 has to be issued by appropriately qualified authorised staff. Part 21 does not require authorised staff to be on-site when issuing a CAA Form 1, nor how the production organisation and the CAA shall determine whether the part/appliance/product other than a complete aircraft conforms to the applicable design data and, for a new item, is in a condition for safe operation. These should be detailed in a documented procedure accepted by the CAA.

Part 21 requires:

— in point 21.A.130(d) that the CAA validate the CAA Form 1 following inspections performed in accordance with 21.B.135(b) if it finds after the inspection that the product, part or appliance conforms to the applicable design data and is in a condition for safe operation;

— in point 21.A.165(c) that the POA holder has to determine that:

— other products, parts or appliances are complete and conform to the approved design data and are in a condition for safe operation before issuing a CAA Form 1;

— other products, parts or appliances conform to the applicable data before issuing a CAA Form 1.

Typically, compliance with these requirements is ensured through the on-site presence of the authorised staff in order to guarantee they have appropriate access to the item, as needed.

However, compliance with these requirements may be also ensured in certain circumstances, determined as per the considerations described in point (c) below, by remotely conducting the tasks which are needed before the issuance of a CAA Form 1 by the use of remote ICT. The following considerations should be used as guidelines when the on-site presence of the authorised staff is to be replaced by virtual presence,

using remote ICT.

(c) **The use of remote ICT to support the issuance of a CAA Form 1**

Remote ICT may have limitations that could render it unsuitable for some applications. Accordingly, careful consideration and risk management should be applied when determining when to use remote ICT. These considerations, listed below, are however not exhaustive and should not be treated as a checklist.

(1) **General considerations**

— As an overarching principle, it needs to be determined whether the nature of the tasks to be performed by the authorised staff allows the use of remote ICT.

— The facility where the item is located:

— should be referred to in CAA Form 65 or CAA Form 55, directly or indirectly by reference to the corresponding section of the manual or production organisation exposition (POE); or

— for a POA, should be a facility from where a POE procedure related to point 21.A.139(b)(1)(xv) authorises the issuance of a CAA Form 1.

— The complexity, novelty and safety criticality of the item to be released with the CAA A Form 1 should be taken into account.

— The level of competence and experience of the personnel in the use of the particular procedures and equipment that will be used to perform the tasks before issuing CAA Form 1.

— Previous experience of the organisation / confidence in the organisation's inspection system / quality system / management system.

— The appropriateness of the inspection and test instruments and/or equipment, especially if used to evaluate qualitative aspects of a product, part or appliance.

(2) **Equipment and set-up considerations**

— The suitability of video resolution, fidelity, and field of view for the task being performed.

— The need for multiple cameras, imaging systems or microphones, and whether the person that performs or witnesses the tasks can switch between them, or direct them to be switched, and has the possibility to stop the process, ask a question, move the equipment, etc.

— The controllability of viewing direction, zoom, and lighting.

— The appropriateness of audio fidelity for the evaluation being conducted.

— Whether real-time, uninterrupted communication between the person(s) authorised to remotely witness the activity (authorised staff) and the personnel performing it exists at the location where the item is located.

— The need for unique testing devices or equipment (for example, fast-frame cameras, special lighting conditions, sensitive listening devices, mobile phones with cameras for HD video calls).

— Whether personnel have been adequately trained in the proper set-up, validation and use of the technology, tools and/or equipment to be used.

— The need for the recording of audio and video data, as well for its retention or for the retention of other information.

(3) **Cybersecurity considerations**

There are cases where the facilities where the tasks have to be performed are subject to strict security limitations. When using remote ICT for the tasks needed before issuing a CAA Form 1, it is the responsibility of the organisation to provide an equivalent level of security, therefore the person that is responsible for IT security within the organisation should concur to the ICT technology before proceeding.

(4) **Documenting the use of the remote ICT**

The documented procedures developed by the holder of a LoA or a POA should be contained within the POE and submitted to the CAA for acceptance. The procedures should describe the following:

— the risk assessment process required to determine the appropriateness of the remote ICT taking into account the above-mentioned considerations;

— the tasks to be performed, including preparation activities, inspections, tests, verifications to be done, personnel involved in the remote ICT activities and their level of competence;

— that authorised staff have access to all necessary data (e.g. drawings, schematics, datasheets, etc.) they require in order to determine that the item conforms to the applicable design data, and how this can be ensured;

— how remote ICT will be used in real time (not pre-recorded) so that authorised staff may direct the performance of the tasks as if it were conducted in-person, on-site, with the aid of the equipment or the personnel supporting the activity at the remote location;

— the procedures for conducting a reinspection in case the equipment malfunctions or the process fails to yield acceptable results; a reinspection using remote ICT may be accomplished after correcting the malfunction or process, or by an actual on- site inspection;

— how authorised staff should record and communicate any difficulties or concerns regarding the process so that the organisation can improve its programme;

— how the use of the remote ICT will be documented in the required records; and

— how the organisation's IT security is ensured throughout the remote ICT process (data protection and intellectual property of the organisation also need to be safeguarded).

The following GM1 21.A.139, 21.A.157, 21.A.239, 21.A.257, 21.B.120, 21.B.140, 21.B.220, 21.B.235 and 21.B.240 is inserted:

GM1 21.A.139, 21.A.157, 21.A.239, 21.A.257, 21.B.120, 21.B.140, 21.B.220, 21.B.235 and 21.B.240 The use of information and communication technologies (ICT) for performing remote audits

This GM provides technical guidance on the use of remote information and communication technologies (ICT) to support:

— regulated organisations when conducting internal audits / monitoring compliance of their organisation with the relevant requirements, and when evaluating vendors, suppliers and subcontractors;

— the CAA when overseeing regulated organisations.

In the context of this GM:

— remote audit' means an audit that is performed with the use of any real-time video and audio communication tools in lieu of the physical presence of the auditor on-site;

— 'auditing entity' means the CAA or organisation that performs the remote audit;

— 'auditee' means the entity being audited/inspected (or the entity audited/inspected by the auditing entity via a remote audit).

It is the responsibility of the auditing entity to assess whether the use of remote ICT constitutes a suitable alternative to the physical presence of an auditor on-site in accordance with the applicable requirements.

The specificities of each type of approval / LoA need to be considered in addition to the general overview (described below) when applying the 'remote audit' concept.

The conduct of a remote audit

The auditing entity that decides to conduct a remote audit should describe the remote audit process in its documented procedures and should consider at least the following elements:

— The methodology for the use of remote ICT is sufficiently flexible and non-prescriptive in nature to optimise the conventional audit process.

— Adequate controls are defined and are in place to avoid abuses that could compromise the integrity of the audit process.

— Measures to ensure that the security and confidentiality are maintained throughout the audit activities (data protection and intellectual property of the organisation also need to be safeguarded).

Examples of the use of remote ICT during audits may include but are not limited to:

— meetings by means of teleconference facilities, including audio, video and data sharing;

— assessment of documents and records by means of remote access, in real time;

— recording, in real time during the process, of evidence to document the results of the audit, including non-conformities, by means of exchange of emails or documents, instant pictures, video or/and audio recordings;

— visual (livestream video) and audio access to facilities, stores, equipment, tools, processes, operations, etc.

An agreement between the auditing entity and the auditee should be established when planning a remote audit, which should include the following:

— determining the platform for hosting the audit;

— granting security and/or profile access to the auditor(s);

— testing platform compatibility between the auditing entity and the auditee prior to the audit;

— considering the use of webcams, cameras, drones, etc., when the physical evaluation of an event (product, part, process, etc.) is desired or is necessary;

— establishing an audit plan which will identify how remote ICT will be used and the extent of their use for the audit purposes to optimise their effectiveness and efficiency while maintaining the integrity of the audit process;

— if necessary, time zone acknowledgement and management to coordinate reasonable and mutually agreeable convening times;

— a documented statement from the auditee that they will ensure full cooperation and provision of the actual and valid data as requested, including ensuring any supplier or subcontractor cooperation, if needed; and

— data protection aspects.

The following equipment and set-up elements should be considered:

— the suitability of video resolution, fidelity, and field of view for the verification being conducted;

— the need for multiple cameras, imaging systems, or microphones, and whether the person that performs the verification can switch between them, or direct them to be switched and has the possibility to stop the process, ask a question, move the equipment, etc.;

— the controllability of viewing direction, zoom, and lighting;

— the appropriateness of audio fidelity for the evaluation being conducted; and

— real-time and uninterrupted communication between the person(s) participating to the remote audit from both locations (on-site and remotely).

When using remote ICT, the auditing entity and the other persons involved (e.g. drone pilots, technical experts) should have the competence and ability to understand and utilise the remote ICT tools employed to achieve the desired results of the audit(s)/assessment(s). The auditing entity should also be aware of the risks and opportunities of the remote ICT used and the impacts they may have on the validity and objectivity of the information gathered.

Audit reports and related records should indicate the extent to which remote ICT have been used in conducting remote audits and the effectiveness of remote ICT in achieving the audit objectives, including any item that it has not been able to be completely reviewed.

The following AMC1 21.A.433(a)(5) is inserted:

AMC1 21.A.433(a)(5) Requirements for the approval of repairs to large aeroplanes subject to point 26.302 of Part-26

For repairs that affect fatigue-critical structures of turbine-powered large aeroplanes certified to carry 30 passengers or more, or with a payload capacity of 3 402 kg (7 500 lbs) or more, damage-tolerance evaluations demonstrate compliance with point 21.A.433(a)(5) when the certification basis used for the repair is:

(a) Amdt 19 to CS 25.571, or subsequent amendments; or

(b) the certification basis of the aeroplane, unless it precedes JAR 25.571 Change 7 or 14 CFR §25.571 Amendment 45, in which case the certification basis for the repair should be:

(1) JAR 25.571 Change 7 or 14 CFR §25.571 Amendment 45, or later amendments; or

(2) the specifications used for compliance with the applicable points of Part-26 for the fatigue-critical structures affected by the repair.