

**Acceptable Means of Compliance  
and  
Guidance Material  
to Annex Ib (Part 21 Light)  
to Commission Regulation (EU) No 748/2012**

Issue 1

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## GM1 21L.2 Competent authority

### RESPONSIBILITY FOR IMPLEMENTATION

Each certificate or registration of a declaration of capability in accordance with Part 21 Light Section A Subparts G, H, I, P and R is normally issued and overseen by the competent authority of the Member State in which the natural or legal person is located. Therefore, to ensure consistency between the competent authorities of the Member States in issuing certificates and registering declarations of capability, the implementation of Part 21 Light should be based on the following three principles:

- (a) The establishment and maintenance of an effective organisation and the corresponding processes by all competent authorities.
- (b) The operation of all the competent authorities in accordance with Part 21 Light and the acceptable means of compliance (AMC) and guidance material (GM) thereto; and
- (c) A standardisation process that is established and applied by EASA to assess the standard(s) achieved, and to provide timely advice and guidance to the competent authorities.

As a result, the responsibility for implementation consists of two main objectives:

- (d) to ensure that certificates and registration of declarations of capability are only granted to natural or legal persons that comply with the requirements of Part 21 Light; and
- (e) to ensure that there is sufficient visibility of the processes to give the Agency and the Member States the necessary confidence in the certificates granted or the capability of natural or legal persons that have a registered declaration of design or production capability or use Subpart R for production.

## GM2 21L.2 Competent authority

### PERMIT TO FLY

An aircraft registered in a Member State is under the responsibility of that Member State regarding continuing airworthiness aspects. Consequently, permits to fly under Part 21 Light may be issued by that Member State, including any cases in which the aircraft flies in another State. The permit to fly contains all the conditions and restrictions to ensure safe flight, but other airspace and operational rules remain within the competence of the authority of the State where the flight takes place, and may apply. Therefore, the applicant is also required to ensure compliance with the relevant applicable regulations of that State.

## **SECTION A**

### **TECHNICAL REQUIREMENTS**

#### **SUBPART A — GENERAL PROVISIONS**

### **GM1 21L.A.3 Reporting system**

#### **LINK BETWEEN POINT 21L.A.3 AND REGULATION (EU) No 376/2014**

Regulation (EU) No 376/2014<sup>2</sup> of the European Parliament and of the Council lays down requirements on the reporting, analysis and follow-up of occurrences in civil aviation. Compliance with point 21L.A.3 of Part 21 Light does not exempt organisations from compliance with Regulation (EU) No 376/2014. For each category of reporter, Regulation (EU) 2015/1018<sup>3</sup> defines the nature of items to be mandatorily reported. Regulation (EU) No 376/2014 also considers voluntary reporting of other items that are perceived by the reporter as a threat to aviation safety.

Point 21L.A.3 lays down requirements for the mandatory reporting of events to the competent authority in view of performing the necessary activities linked to the continued airworthiness of products or parts.

For Part 21 Light design and production organisations and natural or legal persons that use Subpart R for production, the reportability criteria (i.e. potential unsafe condition) are the same as for Regulation (EU) No 376/2014.

Furthermore, compliance with Regulation (EU) No 376/2014 does not exempt organisations from compliance with point 21L.A.3. However, this should not give rise to two parallel reporting systems, and point 21L.A.3 and Regulation (EU) No 376/2014 should be seen as complementary in that respect.

In practice, this means that reporting obligations under point 21L.A.3 on one hand and reporting obligations under Regulation (EU) No 376/2014 on the other hand are compatible. These reporting obligations may be discharged using one reporting channel.

In addition, any natural or legal person that has more than one role subject to the obligation to report may discharge all those obligations through a single report. Natural or legal persons (organisations) are encouraged to properly describe this in their procedures, to address cases in which the responsibilities are discharged on behalf of the organisation.

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<sup>2</sup> Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007 (OJ L 122, 24.4.2014, p. 18) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014R0376&qid=1678272619346>).

<sup>3</sup> Commission Implementing Regulation (EU) 2015/1018 of 29 June 2015 laying down a list classifying occurrences in civil aviation to be mandatorily reported according to Regulation (EU) No 376/2014 of the European Parliament and of the Council (OJ L 163, 30.6.2015, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015R1018&qid=1669631925416>).

## AMC1 21L.A.3(a) Reporting system

### COLLECTION, INVESTIGATION AND ANALYSIS OF EVENTS

In the context of the following AMC and GM, the term ‘event’ refers to any failure, malfunction, defect, error, near miss, hazard identification, incident, accident or other occurrence that is subject to a reporting system.

The ‘collection’, ‘investigation’ and ‘analysis’ functions of the reporting system should include means to:

- analyse events and related available information;
- identify adverse trends;
- investigate the associated root cause(s); and
- determine any necessary corrective action(s).

It should also allow the determination of reportable occurrences as required under points 21L.A.3(a)(3) or 21L.A.3(b)(3), as applicable.

In addition, for parts whose failure could lead to an unsafe condition, the ‘analysis’ function of the reporting system should ensure that reports and information sent, or available, to the design approval holder or declarant of a declaration of design compliance are fully investigated so that the exact nature of any event and its effect on continuing airworthiness is understood. This may then result in changes to the design and/or to the instructions for continued airworthiness (ICAs), and/or in establishing a mitigation plan to prevent or minimise the possibility of such occurrences in the future, as necessary. The ‘analysis’ is not limited to those occurrences that require the involvement of the Agency under point 21L.A.3(e).

## GM1 21L.A.3(a);(b) Reporting system

### GENERAL — SYSTEM FOR COLLECTING OCCURRENCE REPORTS

The term ‘collecting’ means the setting up of systems and procedures which should enable relevant failures, malfunctions and defects, or other occurrences, to be properly collected when they occur.

As the collection system needs to accept reports that originate outside the organisation (from operators, maintenance organisation, suppliers, etc.), it is necessary to inform possible reporters of the existence of the system and the appropriate means to introduce reports into it. This does not presume that direct access to the system is to be granted if other mechanisms are more appropriate.

The collection system should also ensure the collection, through an internal reporting scheme, of internal errors, near misses and hazards that are perceived by the reporter as an actual or potential aviation safety risk.

Considerations for the collection of information related to events should include the following:

- grouping of events;
- analysis of failure rates;
- the early rejection of parts from service; and

- comparison with the certification assumptions.

## **GM1 21L.A.3(a);(e);(f) Reporting system**

### **GENERAL**

Approval holders of minor changes and minor repairs or declarants of a design compliance for a minor change or minor repair other than the natural or legal person that submitted the declaration under Part 21 Light Subpart C do not have to comply with the requirements in point 21L.A.3(a), since according to the classification criteria for design changes and repairs (see points 21L.A.63 and 21L.A.203), minor changes and minor repairs have no appreciable effect on the characteristics affecting the airworthiness of a product. However, it should be noted that the obligations under Regulation (EU) No 376/2014 and its implementing acts still apply.

## **GM2 21L.A.3(a);(e);(f) Reporting system**

### **GENERAL**

A certificate is 'deemed to have been issued under this Annex' if a certificate holder has elected to use Article 2a of Regulation (EU) No 748/2012 and that certificate is now governed by the provisions of Annex Ib (Part 21 Light) to Regulation (EU) No 748/2012 as detailed in the type-certificate data sheet or supplemental type-certificate data sheet.

## **GM1 21L.A.3(a)(1);(b)(1) Reporting system**

### **EVENTS REPORTED VOLUNTARILY TO THE ORGANISATION**

Any natural person or legal person may voluntarily report to an organisation any event that is perceived by that person as posing an actual or potential hazard to aviation safety.

Voluntary reports may be originated by:

- persons that are not listed in Article 4(6) of Regulation (EU) No 376/2014; or
- persons that are listed in Article 4(6) of Regulation (EU) No 376/2014, even though such events are not included in Regulation (EU) 2015/2018;
- an organisation, if such organisation cannot determine whether the event should be mandatorily reported.

#### *Example:*

A maintenance staff member in a maintenance organisation reports to their maintenance organisation a perceived aircraft design issue that is not covered by Regulation (EU) 2015/2018. The maintenance organisation should make a final assessment on the voluntary report and if it assesses that the reported event 'may involve an actual or potential aviation safety risk', then it should mandatorily report it to the type-certificate holder or declarant, the competent authority, etc., as per point 145.A.60 'Occurrence reporting' of Annex II (Part-145) to Regulation (EU) No 1321/2014<sup>4</sup>. If the

<sup>4</sup> Commission Regulation (EU) No 1321/2014 of 26 November 2014 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks (OJ L 362, 17.12.2014, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014R1321&qid=1669641196734>).

maintenance organisation cannot determine whether a safety risk exists (due to a lack of competence, lack of data, etc.), it could voluntarily report it to the type-certificate holder or declarant for further assessment.

## **GM2 21L.A.3(a)(1);(b)(1) Reporting system**

### **INTERNAL SAFETY REPORTING SCHEME**

The internal safety reporting scheme is part of the overall collection system. The objective of this GM is to provide specific guidance on the internal safety reporting scheme only.

- (a) The overall objectives of the internal safety reporting scheme are to:
- collect information that is reported by the organisation's staff; and
  - use that reported information to improve the safety of operations.

Each internal safety reporting scheme should include provisions for confidentiality and enable and encourage free and frank reporting of events as those listed in point 21L.A.3(a)(1)(i) and (ii). This is facilitated by the establishment of a just culture.

- (b) The specific objectives of the internal safety reporting scheme are to:
- (1) enable an assessment of the safety implications of each relevant event that is reported, including previous similar events, so that any necessary action can be initiated; and
  - (2) ensure that lessons from relevant events are shared so that other persons and other entities within the organisation may learn from them.
- (c) The internal safety reporting scheme is an essential part of the overall management system or the production control system and should be complementary to the routine procedures and control systems; it is not intended to duplicate or supersede any of them. The internal safety reporting scheme is a tool to identify those instances in which routine procedures have failed or may fail.
- (d) All safety-related reports should be retained, as the significance of such reports may only become obvious later.
- (e) The collection and analysis of timely, appropriate and accurate data will allow the organisation to react to the information that it receives, and to take the necessary action.

## **AMC1 21L.A.3(a)(3);(b)(3);(d) Reporting system**

### **REPORTING TO THE COMPETENT AUTHORITY**

Within the overall limit of 72 hours, the degree of urgency for the submission of a report should be determined by the level of risk that is judged to have resulted from the occurrence.

If an occurrence is judged by the person identifying the possible unsafe condition to have resulted in an immediate and particularly significant hazard, the Agency (or the competent authority of the Member State as required) should be advised immediately and by the fastest possible means (telephone, fax, email, telex, etc.) of whatever details are available at the time. The initial report must

be followed up by a full written report within 72 hours. An example would be an uncontained engine failure resulting in damage to the aircraft's primary structure.

In all other cases, the submission of the report may be delayed up to a maximum of 72 hours after determination of the possible unsafe condition, in order to provide more details.

## **GM1 21L.A.3(a)(3);(b)(3) Reporting system**

### **REPORTING TO THE COMPETENT AUTHORITY — GENERAL**

- (a) The reference to 'aware of' an occurrence implies that the organisation identifies the event as one that falls into the category of occurrences to be reported — usually when the organisation determines that the event is reportable. The 72-hour period starts when the possible unsafe condition is identified.
- (b) Regulation (EU) 2015/1018 lays down a generic 'list classifying occurrence in civil aviation to be mandatorily reported'. This list should not be understood as being an exhaustive collection of all issues that may pose a significant risk to aviation safety and, therefore, reporting should not be limited to the items listed in that Regulation.
- (c) AMC-20 'General Acceptable Means of Compliance for Airworthiness of Products, Parts and Appliances' provides further details on occurrence reporting (AMC 20-8).
- (d) Point 21L.A.3(a)(3) requires the reporting of occurrences that may result in an unsafe condition. AMC1 21L.B.23(b) may be used to assist in the determination of an unsafe condition.

## **AMC1 21L.A.3(e) Reporting system**

### **FOLLOW-UP AND CLOSURE OF REPORTED OCCURRENCES**

- (a) The organisation should transmit the following information to the competent authority within 30 days from the date of notification of the occurrence to the competent authority:
  - (1) the latest position of the organisation responsible for design as to whether an unsafe condition is confirmed;
  - (2) the results of the analysis and of the first investigation — including the cause(s) of the occurrence, if known; and
  - (3) the measures it has taken, intends to take or proposes to be taken, including:
    - (i) containment measures that have already been defined by the reporting organisation and put in place (if any); and
    - (ii) in the case of reports made by the organisation responsible for design, for unsafe conditions, a risk assessment supporting that the product can be operated safely until the corrective action is defined and implemented, or that immediate mitigation measures need to be implemented until a more refined risk assessment can be provided.

Organisations are encouraged to provide a complete analysis and follow-up as soon as available and, in principle, no later than 3 months after the occurrence notification. It is recognised that analysing an occurrence may take longer than 3 months, especially if the investigation is complex or where the services of a specialist investigator are required.

The requirements for follow-up are not intended to jeopardise the quality and thoroughness of an occurrence analysis. It may be detrimental to safety if the analysis is completed in a rush within the encouraged 3-month period without properly establishing the root cause(s), making a risk assessment and determining whether remedial action is required.

The designer (any natural or legal person that holds a type certificate, supplemental type certificate, major repair design approval, or that has declared the compliance of an aircraft design, or a design change or repair design to it under this Annex) and the production organisation (any natural or legal person that has declared their production capability under Subpart G of this Annex, or that produces a product or part under Subpart R) should cooperate, as necessary, to ensure that any corrective action can be implemented. In addition, affected organisations are expected to cooperate under their respective regulatory framework from the reporting of an occurrence until its closure, to ensure complete results.

The final (close-out) report should include:

- the final designer position as to whether an unsafe condition exists;
  - the results of the occurrence analysis and of the final investigation, including the cause(s) of the occurrence;
  - any corrective and preventive action by the reporting organisation; and
  - in the case of reports made by the organisation responsible for the design, a risk assessment supporting that those corrective and preventive measures allow the product to be operated safely.
- (b) Notwithstanding point (a), when the organisation identifies that no unsafe condition exists as a result of its analysis of a voluntarily reported occurrence, it can delay further communication to the competent authority up to the issue of the final report and report the occurrence as closed upon issue (data exchange). In such cases, no follow-up report should be submitted. The final report to EASA should include confirmation and justification that no unsafe condition exists. The organisation is requested to provide information on the cause(s) of the occurrence and on the corrective or preventive action that was taken by the organisation.

This way of reporting should not be understood as an accepted deviation from the requirements of Part 21 Light. If at any stage during the investigation, the organisation identifies that a possible unsafe condition exists, it should communicate it to EASA by means of a mandatory report within 72 hours.

## AMC1 21L.A.5 Collaboration between design and production

### TRANSFER OF INFORMATION ON ELIGIBILITY AND STATUS FROM THE DESIGNER TO A PRODUCTION ORGANISATION

Where there is a need to provide (normally outside the organisation or entity responsible for design) a visible statement of approved or declared design data or airworthiness, or environmental protection data associated with the approved or declared design data, the following minimum information should be provided. The need for a visible statement may be in relation to an organisation that holds a production organisation approval (POA) in relation to point 21.A.163(c) or a registered declaration of production capability (declared production organisation) or a natural or legal person using Subpart R.

Information to be provided:

**Company name:** the name of the responsible organisation (or natural or legal person) for design (type certificate, supplemental type certificate, approval of repair or minor change design, declarant of a declaration of design compliance) that issues the information.

**Date:** the date at which the information is released.

**Eligibility:** indicate the specific products for which data has been approved or declared.

**Identification:** the part number of the part. Preference should be given to the use of the Illustrated Parts Catalogue (IPC) designation. Alternatively, the reference to the instructions for continued airworthiness (e.g. service bulletins (SBs), aircraft maintenance manual (AMM), etc.) could be stated. Marking requirements of Part 21 Light Section A Subpart Q should be taken into account.

**Description:** the name or description of the part or document should be given. In the case of a part, preference should be given to the use of the IPC designation. The description should include reference to any applicable European Parts Approval (EPA) marking, or previous national approvals still valid.

**Purpose of data:** the reason for the provision of the information should be stated by the organisation responsible for design.

*Examples:*

- (a) Provision of approved or declared design data to a production organisation to permit manufacture (AMC1 21L.A.122(c), AMC1 21L.A.272 or AMC No 1 to 21.A.133(b) and (c)).
- (b) Information regarding eligibility for installation (replacement parts, repair, modification, etc.).
- (c) Direct Delivery Authorisation (AMC1 21L.A.122(c), AMC1 21L.A.272 or AMC No 1 to 21.A.133(b) and (c)).

If the data is in support of a change or repair, then reference to the aircraft level approval or declarations should be given (make reference to the approved supplemental type certificate, declaration, change or repair).

**Limitations/remarks:** state any information, either directly or by reference to supporting documentation, which identifies any particular data or limitations (including specific importing requirements) needed by a production organisation to complete Block 12 of the EASA Form 1.

**Approval/declaration:** provide reference information related to the approval or declaration of the data (EASA document / DOA privilege / registered declaration).

**Authorised signature:** name and handwritten or electronic signature of the person who has written authority from the organisation responsible for design, as indicated in the procedures overseen by EASA.

## AMC1 21L.A.7 Record-keeping

- (a) The record-keeping system should ensure that all the records required by point 21L.A.7 are accessible within a reasonable time. Those records should be organised in a manner that ensures their traceability and retrievability throughout the required retention period.
- (b) The records should remain legible throughout the required retention period and be protected against damage, alteration and tampering.
- (c) The format of the records should be specified in the organisation's procedures.
- (d) The organisation should ensure that copies of all the documents and supporting information that are developed:
  - (1) under the privileges that are defined under points 21.A.163 and 21.A.263 of Annex I (Part 21); or
  - (2) under the design and production activities conducted under points 21L.A.126, 21L.A.176 or 21L.A.274;
  - (3) for type certificates, supplemental type certificates, major changes and major repair design approvals that are not issued under the privileges defined under point 21.A.263 of Annex I (Part 21),  
or
  - (4) for declarations of design compliance in accordance with Subpart C, F or N,  
are retained throughout the operational life of the product or part.
- (e) The retention period starts when the record is created or when it was last amended.

If the organisation transfers a certificate to another natural or legal person, the records related to the certificate should be transferred to the new holder.

## GM1 21L.A.7 Record-keeping

For organisations that hold or have applied for a type certificate, supplemental type certificate, change to the type-certificate approval, repair design approval, permit to fly or have submitted a declaration of design compliance or a declaration of design or production capability under Part 21 Light or produces (or intends to) using Subpart R, the relevant design information/data should include at least, as applicable:

- design data such as type design data as defined in points 21L.A.26 and 21L.A.46 and changes to that data, and repair design data;
- drawings and test reports, including inspection records for the product tested;
- the certification demonstration plan, including related certification basis data (certification review items (CRIs), special conditions (SCs), equivalent safety findings (ESFs)); and
- compliance-demonstration data.

For production organisations, the relevant records should include at least:

- conformity justification data; and

- conformity attestation data (e.g. EASA Form 1, EASA Form 52B).

## AMC1 21L.A.7(a) Record-keeping

### REPAIR DESIGN AND RECORD-KEEPING

- (a) The relevant substantiation data associated with a new major repair design and record-keeping should include:
  - (1) identification of the damage and the source of the report;
  - (2) the major repair design approval/declaration sheet, identifying the applicable specifications and the references of the justifications;
  - (3) the repair drawing and/or instructions, and the scheme identifier;
  - (4) any correspondence with the type-certificate holder, supplemental type-certificate holder or declarant, if their advice on the design was sought;
  - (5) the structural justification (static strength, fatigue, damage tolerance, flutter, etc.) or references to that data;
  - (6) the effect on the aircraft, engines and/or systems (performance, flight handling, etc., as appropriate);
  - (7) the effect on the maintenance programme;
  - (8) the effect on the airworthiness limitations, the flight manual and the operating manual;
  - (9) any change in the weight and moment;
  - (10) any special test requirements; and
  - (11) the justification that the certified or declared noise or emissions level remain unchanged after the repair.
- (b) The relevant minor repair documentation includes points (a)(1) and (a)(3). Other elements of point (a) may be included where necessary. If the repair is outside the approved or declared data, a justification for the classification is required.
- (c) Special consideration should be given to repairs that impose subsequent limitations on the part or product (e.g. oversizing of fastener holes, etc.).
- (d) Special consideration should also be given to life-limited parts and critical parts, notably with the involvement of the type-certificate or supplemental type-certificate holder, when deemed necessary under point 21.A.208(c).
- (e) Repairs to engines and/or propeller critical parts would normally only be accepted with the involvement of the type-certificate holder or the declarant if compliance of the engine has been included within the aircraft declaration of compliance.

## **GM1 21L.A.7(a);(b) Record-keeping**

### **RECORD-KEEPING AND ARCHIVING SYSTEM**

The main purpose of record-keeping for organisations responsible for design and production is to ensure the retrievability of data required for the continued airworthiness of in-service products.

In addition, the records within a design environment are essential to ensure a proper control of the configuration of type design and its compliance with the certification basis or applicable technical specifications.

In the production environment, the records are required to ensure that products or parts are in conformity with the applicable data throughout the manufacturing cycle. In addition, certain records of milestones are needed to subsequently provide objective evidence that all the prescribed stages of the production process have been satisfactorily completed.

Therefore, organisations responsible for design or production are required to implement a system for the compilation and retention of records during all stages of design or production, which covers short-term and long-term records as appropriate to the nature of the product and its processes.

The management of such information is subject to the appropriately documented procedures in the management system required by points 21L.A.124, 21L.A.174 or in the manual/procedures required by point 21L.A.273 as appropriate.

All forms of recording media (paper, film, magnetic, etc.) are acceptable, including the use of electronic records\*, provided they can meet the required duration for archiving under the conditions provided and that the continued readability of the records is ensured.

The related procedures are required to:

- identify the records to be kept;
- describe the organisation of, and responsibility for, the archiving system (its location, compilation, format) and the conditions for access to the information (e.g. by product, subject, etc.);
- control access to the data and provide effective protection against deterioration or accidental damage;
- ensure the continued readability of the records;
- demonstrate to the competent authority the proper functioning of the records system;
- define an archiving period for each type of data subject as follows:
  - production data that supports the conformity of a product or part, is kept for not less than 3 years from the issue date of the related statement of conformity or authorised release certificate; and
  - design data, including data which supports the compliance of a product or part with the certification basis or applicable technical specifications, as well as data that is considered essential for continuing airworthiness is kept throughout the operational life of the product or part; such continued airworthiness data may include but are not limited to in-service occurrence reports and mandatory continuing airworthiness information;

- organisations responsible for design or production should ensure that the recording and record-keeping system used by the partners, suppliers and subcontractors meet the record-keeping objectives with the same level of confidence as for their own system; in each case, it should be defined who should retain the data record (organisation, partner, supplier or subcontractor) as well as the method of surveillance of the recording / record-keeping system of the partners, suppliers or subcontractors.

\* In relation to electronic records, the following definitions apply:

- ‘electronic record’: electronic or digital data that is created, generated, sent, communicated, received, or stored by electronic means;
- ‘electronic data’: it is typically in the form of documentation that is statically stored in a computer file that is not modifiable (e.g. pdf of a scanned document with wet ink signatures);
- ‘digital data’: it is typically in the form of computer-generated bytes of information that is stored in a computer-workable file (e.g. MS Word file, MS Excel file, 3D CAD file).

## AMC1 21L.A.7(d) Record-keeping

### RECORDS OF PERSONNEL INVOLVED IN DESIGN OR PRODUCTION

- (a) The following should be the minimum information to be recorded for personnel that are involved in design or production and in the independent function to monitor the compliance, if required by points 21L.A.125(c), 21L.A.125(d), 21L.A.175(b) or 21L.A.175(e):
- (b)
  - (1) first name and surname;
  - (2) date of birth;
  - (3) basic training received and qualifications attained;
  - (4) specific training received and qualifications attained;
  - (5) continuation training (if appropriate);
  - (6) experience gained;
  - (7) scope of the authorisation;
  - (8) date of first issue of the authorisation;
  - (9) expiry date of the authorisation (if appropriate);
  - (10) identification number of the authorisation (or equivalent means to identify the link between the authorisation and the individual that holds the authorisation);
  - (11) changes to the data.
- (c) The record may be kept in any format and should be controlled by an internal procedure of the organisation. That procedure is part of the management system of the organisation.
- (d) Staff members should be given reasonable access, on request, to their own records as per Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free

movement of such data, and repealing Directive 95/46/EC (General Regulation) (OJ L 119, 4.5.2016, p. 1).

- (e) A design or production organisation should keep the record of a particular staff member for at least 3 years after the staff member is no longer employed by the organisation or has changed their position in the organisation, or after the withdrawal of the authorisation, whichever occurs first.

## AMC1 21L.A.9(a) Instructions for continued airworthiness

### INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICAs) — CONTENTS

- (a) The ICAs should identify the following, in accordance with the applicable certification specifications or applicable technical 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 part from service.
- (b) The ICAs should, therefore, include, in accordance with the applicable certification specifications or applicable technical specifications:
- (1) any limitations determined through the certification or demonstration of compliance resulting in a declaration of compliance 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 or demonstration of compliance resulting in a declaration of compliance;
  - (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 points (a)(1) to (a)(3) above.

## AMC2 21L.A.9(a) Instructions for continued airworthiness

### IDENTIFICATION OF THE INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICAs)

The ICAs may be provided together with other, additional or optional, maintenance information, or in another acceptable format as per GM1 21L.A.9(a), with the following conditions:

- (a) The information that is necessary for the continued airworthiness is clearly identified (refer to AMC1 21L.A.9(b)).
- (b) The ICAs may reference additional instructions for continued airworthiness in separate publications, where necessary (for example, those produced by suppliers).

If the product's ICAs reference the use of supplier data (e.g. component maintenance manual (CMM) or section of it) as the appropriate location for the ICAs, those applicable instructions

are incorporated by reference and become part of the complete set of the ICAs for the particular product.

- (c) Additional or optional maintenance information that is not considered ICAs but referenced by the design approval holder (DAH) or declarant together with the ICAs should be evaluated appropriately by the DAH or declarant 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 or declarant 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 data should be identified as such, and the DAH or declarant is not required to additionally evaluate it.

### **AMC3 21L.A.9(a) Instructions for continued airworthiness**

#### **DESIGN APPROVAL HOLDER (DAH) OR DECLARANT RESPONSIBILITY TO CHECK THE SUPPLIER DATA WHICH IS PART OF THE ICAs OR REFERENCED TOGETHER WITH THE ICAs**

The DAH or declarant 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 for ensuring the accuracy and completeness of the data. In the latter case, the DAH or declarant will propose a means to validate the supplier's process. Supplier data may also be issued by the supplier to the DAH or declarant 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 process (e.g. component workshop verification);
- (b) evidence showing that workshop verification has been performed should be kept by the supplier and a clear statement should be given in the introduction to the supplier data as a confirmation 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 ICAs; typical examples would be the correction of reported errors, or mistakes.

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

For articles subject to an ETSO authorisation, the validation of the supplier's process for ensuring the accuracy and completeness of the data is not needed. This is also valid for other national TSO authorisations (e.g. FAA TSOs) accepted by EASA as stipulated in related bilateral agreements.

### **GM1 21L.A.9(a) Instructions for continued airworthiness**

#### **SCOPE OF THE INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICAs), THEIR PUBLICATION FORMAT AND TYPICAL ICA DATA**

- (a) The ICAs may 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) or declarant may decide, within the framework provided by point 21L.A.9 and its acceptable means of compliance and guidance material, to publish the ICAs in the most suitable location as part of all the information published to support the airworthiness of a given aircraft.

- (c) The requirement for ICAs 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.

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 ICAs.

In some exceptional cases, ICAs for products may ultimately instruct the user to contact the DAH or declarant 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 or declarant to determine the specific instructions to be followed, which depend on the touchdown loads.

## GM2 21L.A.9(a) Instructions for continued airworthiness

### DETERMINATION OF WHICH SUPPLIER DATA IS PART OF THE INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICAs)

*Note 1:* For the purposes of this GM, the term ‘supplier data’ also applies to similar types of data when issued directly by the DAH or declarant (e.g. component maintenance manuals (CMMs) issued by the DAH or declarant).

*Note 2:* For the purposes of this GM, the term ‘supplier data’ should 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 ICAs and the engine/propeller CMM, as detailed below, is similar to the link between engine/propeller ICAs 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 ICAs 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 ICAs.

*Note 5:* If the supplier is an engine or propeller manufacturer, then the ICAs 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 ICAs. If the supplier is an engine or propeller manufacturer that is not the TCH due to the aircraft TC or declaration of design compliance also including the compliance of the engine or propeller, then the supply of ICAs from the engine or propeller manufacturer will need to be subject to a suitable arrangement.

- (a) When determining whether a supplier data is part of the ICAs, the following should be considered:
- (1) Supplier data related to the Airworthiness Limitations Section (ALS) of the ICAs is part of the ICAs.
  - (2) Supplier data related to instructions on how to accomplish the scheduled maintenance part of the aircraft ICAs are part of the aircraft ICAs. A typical case is the periodical removal of a component to perform a workshop task.
  - (3) Supplier data related to scheduled maintenance on the component should be endorsed by the DAH or declarant before becoming part of the aircraft ICAs, to define and confirm that the supplier data is applicable and effective.

- (4) If the ICAs 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 ICAs, including an engine or propeller, this supplier data should be referenced in the aircraft-level ICAs and should be made available like any other ICAs.
- As an alternative to linking such supplier data to the aircraft-level ICAs (e.g. with cross references), it is possible to include the relevant data directly into the aircraft ICAs. In such a case, the supplier data is not part of the aircraft ICAs since the aircraft ICAs already contain all the required information.
- (ii) If an aircraft ICAs' task only requires a replacement task for an engine, propeller or part (i.e. 'remove and replace' or 'discard') and does not refer to the supplier data for further maintenance of the removed engine, propeller or part, this means that the aircraft airworthiness may only be maintained by replacement action, and that the supplier data is not part of the ICAs for the particular aircraft. In such cases, the supplier data does not need to be referenced in the aircraft ICAs.
- 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 the ICAs for the aircraft, but may be considered as part of the complete set of the ICAs for the engine or propeller. However, the procedure for removal from / installation on the aircraft is necessarily part of the aircraft ICAs.
- (b) However, for the above cases, aircraft-level ICAs can provide, as additional or optional maintenance information, the references to the supplier data even if it is not considered part of the ICAs. 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 ICAs. Besides, it should be ensured that the use of additional or optional maintenance information not considered as ICAs but referenced together with the ICAs will not compromise the continued airworthiness of the product or article.
- (c) For the supplier data identified as part of the ICAs, the DAH or declarant should:
- (1) identify the supplier data that is part of the ICAs; 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 ICAs and which data is not part of the ICAs (refer to AMC1 21L.A.9(b));
  - (2) just as for any other ICAs, ensure the publication of the supplier data;
  - (3) ensure the accuracy and the adequacy of the technical content of the supplier data.

## GM3 21L.A.9(a) Instructions for continued airworthiness

### NON-ICAs SUPPLIER DATA (e.g. COMPONENT MAINTENANCE MANUALS (CMMs))

- (a) Non-ICAs supplier data referenced together with the ICAs
- Supplier data, or parts of the supplier data, which is not considered part of the ICAs but is additional or optional maintenance information referenced together with the product-level ICAs may be issued by the supplier to the DAH or declarant under a contract or an arrangement, using the methodology proposed in AMC3 21L.A.9(a).
- (b) Other non-ICAs supplier data

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

## **AMC1 21L.A.9(b) Instructions for continued airworthiness**

### **IDENTIFICATION OF A COMPLETE SET OF INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICAs)**

The design approval holder (DAH) or declarant should identify the complete set of ICAs according to point 21L.A.9(b) in such a way that the complete set can be:

- (a) directly listed in the product's type certificate data sheet (TCDS) or airworthiness data sheet; or
- (b) indirectly referenced in the TCDS or airworthiness data sheet through other means, which allow the complete list of the ICAs to be obtained (e.g. a complete listing of ICAs contained in a 'principal manual' or a reference to the DAH's or declarant's website); or
- (c) directly listed in the product's supplemental type certificate (STC); or
- (d) indirectly referenced in the STC through other means, which allow the obtainment of the complete list of the ICAs; or
- (e) if direct reference is made to the ICAs in the product's TCDS or the STC or airworthiness data sheet, no reference to the revision level of the ICAs should be made; in this case, the revision level should be available elsewhere (e.g. on the DAH's or declarant's website).

For design changes and repairs to type certified or declared aircraft, the identification of 'a complete set of the changes to the instructions for continued airworthiness' should be performed by the DAH or declarant by a statement to provide this information, or by confirmation that there are no changes to the ICAs. This statement may also be made in the accomplishment document (e.g. embodiment instructions).

For products and articles for which the DAH or declarant holds a design organisation approval (DOA), the ICAs are considered to have been issued under the authority of the DOA and, therefore, the approval of the ICAs should be made explicit to the reader in accordance with point 21.A.265(h) of Annex I (Part 21) to this Regulation, unless otherwise agreed with EASA.

## **GM1 21L.A.9(b) Instructions for continued airworthiness**

### **ANY OTHER PERSONS REQUIRED TO COMPLY**

For the purposes of this GM, 'any other person required to comply' means:

- (a) any independent certifying staff that performs maintenance on a product or article, in accordance with 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;
- (b) any maintenance organisation approved to maintain a product or article, in accordance with 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;
- (c) any organisation approved to manage the aircraft continuing airworthiness in accordance with Regulation (EU) No 1321/2014, in the framework of a contract with the aircraft owner or aircraft operator.

## GM2 21L.A.9(b) Instructions for continued airworthiness

### INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICAs) — FORMAT

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

#### (a) Formatting standards

DAHs or declarants 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.

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

#### (b) General considerations

The ICAs should be easy to read and to follow. All ICAs 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 ICAs in a document or documents. However, the specific format selected by the DAH or declarant should be used and applied in a uniform manner. Empty pages in a document should contain the statement 'Intentionally left blank' or similar.

At the beginning of each procedure, the ICAs 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 ICAs documentation.

The ICAs contain units of measurement. Measurements could be, for instance, instrument readings, temperatures, pressures, torque values with tolerances, limits, and ranges when applicable. If the ICAs contain units of measurement of a system other than the metric, the ICAs 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 or declarant should use a means to indicate changes to the ICAs directly in relation to each item of the information/data of the ICAs, e.g. using a vertical change bar in the margin next to the line.

#### (c) Publication of the ICAs in multiple documents

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

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, EASA may also accept a separate Airworthiness Limitations document when it is at least referenced as such in the principal document.

DAHs or declarants that 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 ICAs.

DAHs or declarants 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

The ICAs should be provided in any of the official language(s) of the European Union which is (are) acceptable to the competent authority.

*Note:* In certain countries, such as the USA, English is required for ICAs. EASA, therefore, recommends that DAHs or declarants include a version of the ICAs in simplified technical English (e.g. in accordance with ASD Specification STE100).

(e) Electronic media

The ICAs may be provided in an electronic format (e.g. CDs, via the internet, etc.) instead of paper copies or microfilms (refer to AMC1 21L.A.9(b)).

When electronic format is used, the DAH or declarant 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 ICAs form the basis of the data used for continuing airworthiness activities.

## GM3 21L.A.9(b) Instructions for continued airworthiness

### APPROVAL STATUS OF THE MANUAL FOR A COMPONENT OR ARTICLE

When the ICAs 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 AMC1 21L.A.9(b).

## GM4 21L.A.9(b) Instructions for continued airworthiness

### INTEGRATION OF THE INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICAs) BETWEEN PRODUCTS (AIRCRAFT, ENGINES, PROPELLERS)

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

When referring to engine/propeller ICAs directly in the aircraft ICAs, the aircraft TCH or declarant 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 or declarant.

If the ICAs published by the aircraft TCH or declarant include some engine/propeller ICAs 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 or declarant shared responsibilities with respect to the ICAs under point 21L.A.9.

This arrangement should:

- define the part of the engine/propeller ICAs which is published in the aircraft ICAs; and
- address the development, publication and update processes of these ICAs, 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 or declarant. Therefore, the aircraft TCH or declarant should coordinate with the engine/propeller TCH regarding any modification or alteration of the incorporated data.

### AMC1 21L.A.9(d) Completeness and timely availability of the Instructions for Continued Airworthiness

#### COMPLETENESS AND TIMELY AVAILABILITY OF THE INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICAs) FOR TYPE-CERTIFICATE (TC) APPLICANTS OR DECLARATION OF DESIGN COMPLIANCE

- (a) An applicant or declarant may wish to choose among the three options described below. Once the certification programme or demonstration of compliance for a declaration starts, it may be necessary to modify the initially selected option to accommodate programme changes. All such changes should be coordinated with EASA.
- (1) *Option 1:* Complete ICAs are available at the time of the design approval (type certificate (TC)) or submission of a declaration of design compliance
- (i) The ICAs will be made available at the time of the design approval or submission of the declaration of design compliance. This option minimises the risk of incomplete ICAs, especially for changes.
  - (ii) With all ICAs available at the time of the design approval or submission of the declaration of design compliance, 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 point 21L.A.9, without using the provision to delay certain parts of the ICAs after the entry into service of the product.
  - (iii) Frequently, there is only a short period of time between the design approval or submission of the declaration of design compliance and the entry into service. Nevertheless, applicants/DAHs or declarants may still wish to apply Option 2 or 3 for a part of their ICAs as stated below.

- (2) *Option 2*: Complete ICAs are available at entry into service (TC or submission of the declaration of design compliance)

If an applicant or declarant plans to make part of the ICAs available to EASA upon entry into service, the following approach is acceptable:

- (i) For the Airworthiness Limitations Section (ALS), as part of the type design, notwithstanding the selection of Option 2: the applicant or declarant submits the ALS prior to the design approval or submission of the declaration of design compliance. Any ALS content that is incomplete, not yet demonstrated for compliance, or delayed beyond the design approval or submission of the declaration of design compliance, 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 EASA.

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 ICAs (e.g. in the aircraft maintenance manual (AMM) or the non-destructive testing (NDT) manual). However, a feasibility study of the accomplishment procedure is required for compliance with specific requirements.

- (A) This may typically apply when the aircraft's 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's full-scale fatigue testing progress. The ALS is effectively incomplete beyond this temporary operational limitation, as the required justification and the resulting ICAs are not yet available to support the safe operation of the aircraft beyond this limitation.
- (B) A type certificate data sheet (TCDS) or airworthiness data sheet 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 ICAs that are only to be made available upon entry into service is produced, submitted to EASA and agreed between the applicant/declarant and EASA prior to the design approval or registration of the declaration of design compliance (refer also to point (iv) for the ICAs considered necessary at the time of the design approval/registration of a declaration of design compliance).
- (iii) A commitment is made to produce, verify and, when requested, submit to EASA the relevant ICAs prior to entry into service. This commitment should be provided in a compliance document (e.g. the compliance plan). If the respective organisation responsible for design has not previously exercised the practice of delaying the ICAs beyond the design approval or submission of a declaration of design compliance, the required procedure should be agreed with EASA.
- (iv) The ICAs considered necessary at the time of design approval or submission of the declaration of design compliance 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 or submission of the declaration of design compliance offers the same understanding of the data as the final published format does.

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

- (v) In cases where EASA has doubts as to whether the applicant/holder or declarant can fulfil the applicable requirements of point 21L.A.9 to control and support delaying the ICAs beyond the design approval, or type certificate (TC), or submission of the declaration of design compliance and until entry into service, EASA may decide to assign a condition for entry into service for non-ALS ICAs or withhold the registration of the declaration of design compliance.

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

*'Note: The ICAs are not complete. As per point 21L.A.9 of Annex Ib (Part 21 Light) to Commission Regulation (EU) No 748/2012, they must be completed before the entry into service of the aircraft. Contact EASA for information on the status.'*

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

- (vi) Post-TC action or the submission of the declaration of design compliance is established together with EASA (if EASA requests such a review) to review the ICAs' status upon entry into service.
- (vii) If all ICAs are made available to EASA at the time of entry into service, they should also be furnished at that 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 point 21.A.7, without using the provision to delay certain parts of the ICAs beyond the entry into service.
- (3) *Option 3: Complete ICAs are available after the entry into service (TC or registration of declaration of design compliance)*

As per point 21L.A.9(d), certain ICAs dealing with the 'overhaul or other forms of heavy maintenance' may be delayed until after the aircraft entry into service. Although there is no definition of what is meant by 'overhaul or other forms of heavy maintenance', the intention of the requirement is to provide flexibility to applicants/holders or declarants for long-lead ICAs of a scheduled nature.

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

- (i) For the ALS, as it cannot be delayed until after the entry into service, point (i) of Option 2 applies.
- (ii) For ICAs considered necessary at the time of the design approval or submission of the declaration of design compliance, point (iv) of Option 2 applies.
- (iii) A detailed compliance plan identifying those parts of the ICAs that are to be provided prior to and after the entry into service. For ICAs made available after the entry into service, the plan should account for when the ICAs 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 ICAs 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 ICAs 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 (FHs) / flight cycles (FCs) or calendar time (CT), or a combination of them as applicable, by which point in time the delayed ICAs should be made available.
  - (D) This detailed plan should be available prior to the time of the design approval or submission of the declaration of design compliance and should be either directly integrated or cross-referenced in a compliance plan.
  - (E) Information on the format in which the ICAs 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 or declarant's organisation in order to ensure the timely availability (to the aircraft operator / aircraft owner and to any other person(s) required to comply with any of those instructions and to EASA, if involved and when requested).
- (v) A commitment is made to produce, verify and provide the relevant ICAs in accordance with the established detailed plan. This commitment should be provided in an appropriate document (e.g. a compliance plan). If the respective organisation responsible for design has not previously exercised the practice of delaying the ICAs beyond the design approval or submission of the declaration of design compliance, the required procedure should be agreed with EASA.
- (vi) In order to ensure that the applicant/holder or declarant can meet their obligations as set out in point 21L.A.9 to control and support delaying the ICAs, EASA may decide:
  - (A) for ICAs delayed until entry into service, to assign a condition/notation for the entry into service to be included in the TCDS or airworthiness data sheet as a result of these pending issues under the ICAs paragraph, as per point (v) of Option 2;

- (B) for ICAs 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 ICAs, to compensate for the delayed ICAs; 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 or declarant's performance, e.g. if the applicant or declarant has already demonstrated in previous projects that it has provided the complete set of ICAs before the entry into service, if the applicant or declarant had already difficulties in providing the ICAs considered necessary at the time of the design approval or submission of the declaration of design compliance, or has failed before in a different project to control and support delaying the ICAs, or if the applicant/holder or declarant has not previously exercised the practice of delaying the ICAs beyond the design approval or submission of the declaration of design compliance.

- (vii) Post-TC action or the submission of the declaration of design compliance should be established with EASA to regularly review the ICAs' status, if EASA requests such a review, taking into account other oversight activities.
- (viii) An applicant/holder or declarant should provide visibility, regarding the ICAs 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 a maintenance planning document (MPD) or an aircraft maintenance manual (AMM), preferably in the principal ICAs manual. This visibility information is then itself considered ICAs information.
- (ix) It is assumed that for those ICAs that are made available to EASA 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 point 21L.A.9.

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

To allow the timely review and incorporation of a delayed part of the ICAs 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, EASA considers that the delayed ICAs should typically be made available 2 years before the actual ICAs have 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 ICAs or the ICAs itself, but they should not be shorter than 1 year before the ICAs have to be used.

- (b) Completeness and timely availability of changes to the ICAs (TC or declaration of design compliance)

Point 21L.A.9(e) regulates the distribution of changes to the ICAs required from the TC holder or declarant. Those changes to the ICAs could result from the design change process (minor and major changes), in-service experience, corrections, and others.

A programme showing how changes to the ICAs are distributed is part of the respective procedures (e.g. design organisation procedures, or other procedures used to demonstrate

design capabilities). For changes to the ICAs triggered by design changes, typically these procedures follow the same principles as those available for TCs or the initial declaration of design compliance (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) of Annex I (Part 21).

## GM1 21L.A.10 Access and investigation

### ARRANGEMENTS

Natural or legal persons that hold or that have applied for a type certificate (TC), a supplemental type certificate (STC), a major repair design approval, a permit to fly, a certificate of airworthiness, a restricted certificate of airworthiness, a noise certificate or a restricted noise certificate, that have declared design compliance, that have declared their design or production capability or that produce aircraft, engines, propellers or parts under Subpart R are required to allow the competent authority to make investigations that include the complete organisation including its partners, subcontractors and suppliers, whether they are in the State of the natural or legal person or not.

The investigations may include audits, enquiries, questions, discussions and explanations, monitoring, witnessing, inspections, checks, flight and ground tests, and inspections of completed products or parts that are either designed or produced.

In order to maintain its confidence in the standards achieved by the natural or legal person, the competent authority may conduct an investigation of a sample product or part and of its associated records, reports and certifications/declarations.

The arrangements are required to enable the natural or legal person to assist the competent authority and cooperate with it in conducting the investigation during the initial assessment and for the subsequent surveillance.

‘Cooperation in performing investigations’ means the competent authority has been granted full and free access to the facilities and to any information relevant to demonstrating compliance with the Part 21 Light requirements, and has provided assistance as necessary.

‘Assistance to the competent authority’ includes all the appropriate means regarding the facilities of the natural or legal person to allow the competent authority to conduct the investigation, such as meeting rooms, offices, support personnel, records, documentation, computer data, and communication facilities, all properly and promptly made available as necessary.

The competent authority seeks to have a good working relationship with the natural or legal person, and suitable liaison staff are required to be nominated to facilitate this, including one or more suitable representative(s) to accompany competent authority staff during visits, not only at the natural or legal person’s own facilities, but also with subcontractors, partners or suppliers.

## GM1 21L.A.11(a) Findings and observations

### ROOT-CAUSE ANALYSIS

- (a) It is important that the analysis does not primarily focus on establishing who or what caused the non-compliance, but on why it was caused. Establishing the root cause(s) of non-compliance often requires an overarching view of the events and circumstances that led to it, to identify all

the possible systemic and contributing factors (human factors (HFs), regulatory, organisational, technical factors, etc.) in addition to the direct factors.

- (b) A narrow focus on single events or failures, or the use of a simple, linear model, such as a fault tree, to identify the chain of events that led to the non-compliance, may not properly reflect the complexity of the issue and, therefore, there is a risk that important factors that must be considered to prevent reoccurrence will be ignored.

Such an inappropriate or partial root-cause analysis often leads to applying ‘quick fixes’ that only address the symptoms of the non-compliance. A peer review of the results of the root-cause analysis may increase its reliability and objectivity.

## **AMC1 21L.A.11(a) Findings and observations**

### **FINDINGS — CORRECTIVE ACTION PLAN AND IMPLEMENTATION**

After receipt of notification of findings, the natural or legal person (‘organisation’) should identify and define the action for all findings, to address the effects of the non-compliance, as well as the root cause(s) and contributing factor(s).

Depending on the issues identified, the organisation may need to take immediate corrective action.

The respective corrective action plan should:

- include the rectification of the issue, corrective and preventive action, as well as the planning to implement them; and
- be timely submitted to the competent authority for acceptance before it is effectively implemented.

After receiving the competent authority’s acceptance of the corrective action plan, the organisation should implement the associated action.

Within the agreed period, the organisation should inform the competent authority that the corrective action plan has been implemented and should send the associated pieces of evidence, on request from the competent authority.

## **AMC1 21L.A.11(b) Findings and observations**

### **DUE CONSIDERATION TO OBSERVATIONS**

For each observation that is notified by the competent authority, the natural or legal person (‘organisation’) should analyse the related issues and determine when action is needed.

The handling of observations may follow a process similar to the handling of findings by the organisation.

The organisation should record the analysis and the related outputs, such as action taken, or the reasons why no action was taken.

## AMC1 21L.A.12(b) Means of compliance

### DESCRIPTION SUPPORTING THE ALTERNATIVE MEANS OF COMPLIANCE (AltMoC)

- (a) The description of the AltMoC should include:
  - (1) a summary of the AltMoC;
  - (2) the content of the AltMoC;
  - (3) a statement that compliance with the applicable regulation is achieved; and
  - (4) in support of that statement, an assessment which demonstrates that the AltMoC reach(es) an acceptable level of safety, taking into account the level of safety that is achieved by the corresponding Agency's AMC.
- (b) All these elements that describe the AltMoC are an integral part of the management system records, in accordance with point 21L.A.7.

## GM1 21L.A.12 Means of compliance

### GENERAL

- (a) Acceptable means of compliance (AMC), as referred to in Article 76(3) of Regulation (EU) 2018/1139<sup>5</sup>, are a tool to standardise the demonstration of compliance with, and facilitate the verification activities of the competent authorities in relation to, that Regulation and its delegated and implementing acts. AMC are published by EASA to achieve those objectives. While competent authorities and regulated entities are not legally bound to use the AMC, applying them is recommended.
- (b) If an organisation wishes to use other means to comply with Regulation (EU) 2018/1139 and its delegated and implementing acts, which are different from the AMC that are published by EASA, that organisation may need to demonstrate compliance by using AltMoC that are established:
  - (1) by its competent authority (see GM1 21L.B.24); orby that organisation and approved by its competent authority (see point (c)).

An AltMoC does not allow deviation from Regulation (EU) 2018/1139 and its delegated or implementing acts.
- (c) AltMoC that are established by an organisation and approved by its competent authority  

An organisation that wishes to use a different means of compliance than the one published by EASA may propose an AltMoC to the competent authority and use it only once the competent authority has approved it. In that case, the organisation is responsible for demonstrating how that AltMoC establishes compliance with the relevant regulation.

<sup>5</sup> Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535612134845&uri=CELEX:32018R1139>).

The approval of an AltMoC is granted to the organisation by its competent authority on an individual basis and is restricted to that specific organisation. Other organisations that wish to use the same AltMoC should go through the AltMoC process (i.e. demonstrate how that AltMoC establishes compliance with the relevant regulation) and obtain an individual approval from their competent authority.

## GM2 21L.A.12 Means of compliance

### WHEN AN ALTERNATIVE MEANS OF COMPLIANCE (AltMoC) IS REQUIRED

When there is no Agency AMC to a certain point of a given regulation, the means of compliance that are proposed by an organisation to that point do not need to go through the AltMoC process. It is the responsibility of the competent authority to verify that compliance with a given regulation is achieved. However, in certain cases, the organisation may propose, and the competent authority may agree, to have such means of compliance go through the AltMoC process.

When there is an Agency AMC, the AltMoC process is required in the following cases (non-exhaustive list):

- an AltMoC to a given regulation is technically different from the AMC that is published by EASA; and
- a form is significantly different from the one that is included in the EASA AMC.

*Note: A form that is required by a delegated or implementing act cannot be modified.*

Examples of issues that are not considered to require the AltMoC process include but are not limited to:

- editorial changes to an Agency AMC, as long as they do not change the intent of the AMC; and
- incorporating an Agency AMC into the organisational structure, organisational processes, or standard operating procedures of an organisation with different wording and terminology that are customised to the organisation's environment if it does not change the intent of the AMC and its associated level of safety.

## SUBPART B — TYPE CERTIFICATES

### GM1 21L.A.21 Scope

A type certificate (TC) that is issued under Subpart B of Annex I (Part 21) has the same validity as a TC that is issued under Subpart B of Annex Ib (Part 21 Light). However, the eligibility for design organisations is different (e.g. declared design organisations using Subpart J of Annex Ib are permitted to apply for a TC), and also the means of verifying compliance is different.

In addition, the production organisation requirements are also different, and organisations are permitted to become declared production organisations using Subpart G of Annex Ib (Part 21 Light) and produce products and parts within the scope of point 21L.A.21.

As per point 21L.A.23(b), an organisation that holds a design organisation approval (DOA) issued under Subpart J of Annex I (Part 21) meets the eligibility criteria of Subpart B of Annex Ib (Part 21 Light). Such organisations may use the privileges that are granted under that approval (as per points (2), (5) and (8) of point 21.A.263(c) of Annex I (Part 21)) and further described in points 21L.A.69(a) and 21L.A.209(a) of Annex Ib (Part 21 Light).

Furthermore, an organisation that holds a production organisation approval (POA) issued under Subpart G of Annex I (Part 21) is permitted to use that approval to release products and parts within the scope of Subpart B of Annex Ib (Part 21 Light), and use the privileges that are granted under that approval (as per point 21.A.163(b) of Annex I (Part 21)) and further described under points 21L.A.143(c)(1)(ii) and 21L.A.163(c)(1)(i)(C) of Annex Ib (Part 21 Light).

### GM1 21L.A.23(a) Demonstration of design capability

#### TERMS OF APPROVAL COVERING THE RESPECTIVE PRODUCT CATEGORY

If an applicant holds a design organisation approval (DOA) issued under Subpart J of Annex I (Part 21) and it wishes to use this approval to meet the eligibility criteria of point 21L.A.23, that applicant will need to apply for a change to the terms of approval to include the new aircraft type within the list of products.

### GM1 21L.A.23(b) Demonstration of design capability

#### DECLARATION OF DESIGN CAPABILITY

Organisations that have declared their design capability under Subpart J of Annex Ib (Part 21 Light) should update their declaration of design capability to include the new product type when submitting a new application for a type certificate (see point 21L.A.173 'Scope of work').

## AMC1 21L.A.24(a) Application for a type certificate

### FORM AND MANNER

The applicant should file an application using the web-based ‘EASA Applicant Portal’<sup>6</sup> or the application form for a type certificate, which may be downloaded from the EASA website.

The form should be completed for a type certificate in accordance with the instructions embedded at the bottom of the application form, and sent to the Agency by fax, email or regular mail following the information provided on the EASA website<sup>7</sup>.

## AMC1 21L.A.24(b)(4) Application for a type certificate

### COMPLIANCE-DEMONSTRATION PLAN

The compliance-demonstration plan is a document that allows the applicant and EASA to manage and control the evolving product type design, as well as the process of compliance demonstration by the applicant and its verification by EASA when required.

In particular, the following information should typically be expected:

- Identification of the relevant personnel that make decisions affecting airworthiness and environmental protection, and that will interface with EASA during the critical design review prior to the issue of the flight conditions and during the first-article inspection, unless otherwise identified to EASA (e.g. within the design organisation procedures).
- A project schedule, including major milestones.
- Subcontracting arrangements for design, environmental protection and/or production.

As requested under Point 21L.A.24(b)(2), ‘preliminary descriptive data of the product, the intended use, and the kind of operation of the product for which certification is requested’

*Note:* An example of an Aeroplane General Description is provided in ABCD-GD-01-00 – Aeroplane General Description – 17.02.16 – v1 (1)<sup>8</sup>.

An overview of the following:

- architecture, functions, systems;
- dimensions, design weights, payloads, design speeds;
- engines and power/thrust rating;
- materials and technologies;
- cabin configuration aspects;
- options (e.g. weight variants, power/thrust rating variants, optional avionics equipment items, brake options, tyre options, floats, skids);
- operating speed limitations;

<sup>6</sup> <https://ap.easa.europa.eu> (accessed: 20 October 2023)

<sup>7</sup> <https://www.easa.europa.eu/document-library/application-forms/certificates-and-approvals> (accessed: 20 October 2023)

<sup>8</sup> <https://www.easa.europa.eu/download/general-aviation/documents-guidance-and-examples/ABCD-GD-01-00%20-%20Aeroplane%20General%20Description%20-%2017.02.16%20-%20v1.docx>

- service ceiling, maximum airfield elevation;
- limit load factors;
- number of passengers, payload, range;
- weight and centre-of-gravity (CG) envelope and fuel loading;
- performance;
- environmental envelope;
- runway surface conditions.

As requested under Point 21L.A.24(b)(3), ‘a proposal for the type-certification basis and the applicable environmental protection requirements, prepared in accordance with the requirements and options specified in points 21L.B.43 and 21L.B.45’

The proposed certification basis should include applicable certification specifications, proposed special conditions, proposed equivalent safety findings, as well as a proposed ‘elect to comply’ and proposed deviations, as applicable.

The applicant should provide detailed information about the proposed means of compliance with the applicable airworthiness and environmental protection requirements identified under point 21L.A.24(b)(3). The information provided should be sufficient for EASA to easily determine the means of compliance used.

This should include the following:

- a compliance checklist addressing each requirement, the proposed means of compliance (see Appendix A to AMC1 21L.A.24(b) below for the relevant codes), and the related compliance document(s);
- identification of industry standards (Society of Automotive Engineers (SAE), American Society for Testing and Materials (ASTM), European Organisation for Civil Aviation Equipment (EUROCAE), AeroSpace and Defence Industries Association of Europe (ASD), etc.), methodology documents, handbooks, technical procedures, technical documents and specifications specified in the type certificate data sheet, certification memoranda, policy statements, guidance material, etc., that are proposed in the demonstration of compliance;
- when the compliance demonstration involves testing (point 21L.A.25(c) and (d)), a description of the ground- and flight-test article(s), test method(s), test location(s), test schedule, test house(s), test conditions (e.g. limit load, ultimate load), as well as of the intent/objective(s) of the testing; and
- when the compliance demonstration involves analyses/calculations, a description/identification of the tools (e.g. name and version/release of the software programs) and methods used, the associated assumptions, limitations and/or conditions, as well as of the intended use and purpose; furthermore, the validation and verification of such tools and methods should be addressed.

For every aspect mentioned above, the applicant should clearly identify whether the demonstration of compliance involves any method (analysis or test) which is novel or unusual for the applicant. In addition, the applicant should identify any deviations from the published AMC to the relevant CSs.

## Appendix A to AMC1 21L.A.24(b) Means-of-compliance codes

Type of compliance	Means of compliance	Associated compliance documents
Engineering evaluation	MC0: (a) compliance statement (b) reference to design data (c) election of methods, factors, etc. (d) definitions	(a) Design data (b) Recorded statements
	MC1: design review	(c) Descriptions (d) Drawings
	MC2: calculation/analysis	(e) Substantiation reports
	MC3: safety assessment	(f) Safety analyses
Tests	MC4: laboratory tests	(g) Test programmes (h) Test reports (i) Test interpretations
	MC5: ground tests on related product(s)	
	MC6: flight tests	
	MC8: simulation	
Inspection	MC7: design inspection/audit	(j) Inspection or audit reports
Equipment qualification	MC9: equipment qualification	<i>Note:</i> Equipment qualification is a process that may include all previous means of compliance at equipment level.

## AMC2 21L.A.24(b)(4) Application for a type certificate

### UPDATES TO THE COMPLIANCE-DEMONSTRATION PLAN

It is acceptable to provide an initial compliance-demonstration plan that is not fully complete, e.g. due to schedule constraints of the design, analysis and testing activities.

The applicant should provide information in the compliance-demonstration plan that is provided to EASA about the applicable certification specifications and the environmental protection requirements (e.g. for aircraft noise: in terms of the applicable chapter of Volume I of Annex 16 to the Chicago Convention and the related limits).

Furthermore, even if the initial compliance-demonstration plan is complete, it may be necessary to amend it throughout the duration of the project.

The compliance-demonstration plan should be updated and resubmitted to EASA during the certification project. In particular, updates to the following elements should be provided:

- any complementary information that was not included in the initial compliance-demonstration programme;
- any change that may have an impact on the certification basis or means of compliance;
- any change to the intended use or kind of operation of the product;
- a change to the key characteristics of the product such as but not limited to any declared limits that are intended to be recorded in the type certificate data sheet (TCDS);
- any change to the initial type-certification basis or environmental protection requirements, as applicable to the product, regardless whether the change is initiated by EASA or by the applicant;
- any change to the proposed means of compliance, including its/their methodology;

- any relevant change to the design organisation personnel (and design organisation (DO) suppliers) that are involved in the project; and
- any change to the project schedule affecting planned Agency verification activities under point 21L.B.46.

## GM1 21L.A.24(c) Application for a type certificate

### PERIOD OF VALIDITY OF AN APPLICATION FOR A TYPE CERTIFICATE

An extension of the 3-year validity period for the initial application for a type-certificate is not possible.

After the 3-year validity period of the application for a type certificate, the new application made in accordance with points (a) and (b) of point 21L.A.24 will be again valid for a period of 3 years.

## AMC1 21L.A.25(a);(b) Demonstration of compliance

### COMPLIANCE DOCUMENTATION

- (a) Compliance documentation comprises one or more test or inspection programmes/plans, reports, drawings, design data, specifications, calculations, analyses, etc., and provides a record of the means by which compliance with the applicable type-certification basis and environmental protection requirements is demonstrated.
- (b) Each compliance document should normally contain:
  - the reference of the certification specifications, special conditions or environmental protection requirements addressed by the document;
  - substantiation data demonstrating compliance (except test or inspection programmes/plans);
  - a statement by the applicant declaring that the document provides the proof of compliance for which it has been created; and
  - the appropriate authorised signature.
- (c) Each compliance document should be unequivocally identified by its reference and issue date. The various issues of a document should be controlled and comply with point 21L.A.7 'Record-keeping'.

## AMC1 21L.A.25(c) Demonstration of compliance

### INSPECTIONS AND TESTS

Proposed type design: this term defines the type design (or the portion of the type design) as it is determined at the time when the testing and inspections are performed.

Verification document (also known as 'statement of conformity'): before each testing and inspection the verification document must confirm that the test specimen conforms with the proposed type design and that the test and measuring equipment is adequate for the test and that the sensors and measuring system are appropriately calibrated.

Conformity of the test specimen: the documented verification is intended to ensure that the manufactured test specimen, even in the presence of non-conformities, adequately represents the proposed type design. Possible types of non-conformity may be the following:

- Non-conformity between the design of the test specimen and the proposed type design at the time of the test. These are typically identified in the early stage of the testing and inspection planning, and should be addressed as early as possible (e.g. in the test plan). There may be several reasons for such a non-conformity: to account for interfaces with the test equipment, to conservatively cover several existing or future design configurations, etc.
- Non-conformity between the manufactured test specimen and the design of the test specimen. Such a non-conformity may be the result of the manufacturing of the test specimen.

While it is convenient to define any possible non-conformity as early as possible, the applicant does not need to make the distinction between the two types of non-conformity above as long as they are explicitly addressed, justified in the verification document or by cross reference to the test plan or other documents. However, testing for the demonstration compliance with the applicable environmental protection requirements should be conducted in the final design of the product.

Type certification is typically an iterative process in which the design is under continuous evolution. If the type design evolves after the time of the testing and inspections, then the final type design should be checked against the proposed type design (as it was at the time of the testing and inspections), and the differences (if any) should be analysed to ensure that the testing and inspection results are representative of the final configuration. However, such changes made to the type design may lead to the invalidation of the testing and inspection results, and the need to repeat the testing and inspections. It is recommended that the design organisation should have a thorough configuration management process to track the evolving type design.

Conformity of test and measuring equipment: the configuration of the test and measuring equipment should be defined in the test plan and include the following:

- definition/design of the test equipment (relevant tools, mechanical parts, electronic components used to execute the test); and
- definition of the measuring equipment:
  - type/model of sensors, together with their technical characteristics;
  - position and orientation of exciters and sensors; and
  - electronic measuring equipment (in some cases, this may also include the acquisition and post-processing of data).

The configuration of the test and measuring equipment should be defined and controlled through certification test plans and supporting documentation, according to the design assurance system, if applicable. The test plan should also include the following elements:

- the test cases, methods, and procedures for test execution;
- the pass–fail criteria; and
- pre-, during- and post-test inspections.

The verification document should confirm that the test and measuring equipment conforms to its purpose, and that the sensors and measuring system are appropriately calibrated. Any non-conformity should be assessed, and it should be justified that it will not compromise the test purpose and results. This can be done either in the verification document or by cross reference to other documents (test minutes of meetings, test notes, etc.).

Use of the term ‘adequate’: the test specimen, as well as the test and measuring equipment, is considered ‘adequate’ as long as the test execution on the manufactured test specimen (including any non-conformity) and the use of the installed test set-up does not compromise the test purpose and results (for example, by providing better performance than the proposed type design, or masking any potential failure mode or behaviour).

Changes that affect the validity of the verification document: if changes need to be introduced to the test specimen or to the test and measuring equipment after the verification is documented (and before the test is undertaken), then the verification document must be updated. The updated verification document must be made available to EASA before the test if EASA has informed the applicant that it will witness or carry out the tests or inspections.

Development versus certification tests: sometimes, tests of specimens that conform to a preliminary design, but are not intended for certification (known as development tests), are performed as part of a risk control strategy and to develop knowledge of a subject. Problems and failures found during development are part of the process of increasing the understanding of the design, including its failure modes and the potential for optimisation. Such development tests do not need to meet the requirements of point 21L.A.25(c).

Any planned test event should be classified in advance as either a development test or a certification test. Tests that support the compliance demonstration should be classified as certification tests.

It is acceptable for a development test to finally form part of the compliance demonstration, and it may be declared afterwards to be a certification test as long as it meets the requirements of point 21L.A.25(c). For this reason, it is important to keep the configuration of such tests under control.

If the test specimen used for a certification test has already undergone a series of previous tests that may affect or ultimately invalidate its acceptance as required by point 21L.A.25(c), this aspect should be considered when documenting the verification, and specific analyses or inspections may be required.

Because of the above aspects, EASA advises applicants to inform it if they intend to conduct a campaign of development tests that may eventually be used as certification tests to establish whether EASA would wish to witness the test.

## **GM1 21L.A.25(d) Demonstration of compliance**

### **FLIGHT TESTING**

Detailed material on flight testing for compliance demonstration is included in the applicable CSs and GM. Information on flight testing for compliance demonstration with the environmental protection requirements especially in terms of aircraft noise may be found in Annex 16 to the Chicago Convention and in ICAO Doc 9501 'Environmental Technical Manual'.

The objective of the period of operation in the final configuration is to expose the aircraft to the variety of uses, including training, that are likely to occur when in routine service to provide an assurance that it performs its intended functions to the standard required for certification and should continue to do so in service. The flight tests should include a range of representative ambient operating conditions and airfields.

This period of operation may fully overlap with the compliance-demonstration flight testing if it can be demonstrated that the above criteria are met.

The duration of this period as well as the approach selected (i.e. use of compliance-demonstration flights or extending the period of operation) should be proposed in the compliance-demonstration plan.

The flight testing should cover both routine operations and some simulation of abnormal conditions. The details of the programme should be agreed with EASA prior to commencement of the testing.

It may be possible to combine this testing with any testing required to demonstrate compliance with the applicable CSs. This will be agreed on a case-by-case basis with EASA.

A substantial proportion of the flying should be on a single aircraft (and, if applicable, a combination of engine and propeller). The flying should be carried out to a continuous schedule on an aircraft that is very close to the final type design, operated as though it were in service and should include a range of representative ambient operating conditions and airfields.

### **AMC1 21L.A.25(e)(1) Demonstration of compliance**

#### **REVIEW OF DATA AND INFORMATION RELATED TO THE DEMONSTRATION OF COMPLIANCE**

Availability of compliance data (see point 21L.A.25(e)): data and information required to be provided by the applicant should be made available to EASA in a reliable and efficient way as agreed by EASA.

### **AMC1 21L.A.25(e)(2) Demonstration of compliance**

#### **TESTS AND INSPECTIONS**

The applicant should inform EASA sufficiently in advance about the execution of tests and inspections that:

1. are used for compliance-demonstration purposes; and
2. have been identified as being of particular interest to EASA during the review and approval of the compliance-demonstration plan

in order to permit EASA the opportunity to witness or carry out these inspections or tests.

The applicant may propose to EASA to witness or carry out flight or other tests of particular aspects of the product during its development and before the type design is fully defined.

However, in case of flight tests, the applicant should perform the tests before EASA witnesses or performs them to ensure that no features of the product preclude the safe conduct of the evaluation requested. The Agency may require any such tests to be repeated once the type design is fully defined to ensure that subsequent changes have not adversely affected the conclusions from any earlier evaluation.

A verification document as per point 21L.A.25(c) is required for the above tests.

### **AMC1 21L.A.25(e)(3) Demonstration of compliance**

#### **PHYSICAL INSPECTION OF THE FIRST ARTICLE**

*Note:* The applicant should be prepared for any additional investigations as notified by EASA according to point 21L.B.46(d).

##### 1. Purpose

The purposes of the first-article inspection (of the article that is in conformance with the proposed type design for certification) prior to the issuance of the type certificate for a particular aircraft, propeller or engine design are the following:

- a. for EASA to verify completion of the demonstration-of-compliance activities conducted by the applicant under point 21L.A.25 and in accordance with the approved compliance-demonstration plan;

- b. for EASA to verify<sup>1</sup> that the type design complies with the type-certification basis and the applicable environmental protection requirements;
- c. In case the applicant is a declared design organisation, for EASA to conduct a further oversight visit in accordance with point 21L.B.183(b) of Subpart J in order to ensure that the applicant is able to discharge its obligations.

<sup>1</sup> The verification of compliance is limited to the scope of the activities that can be conducted under point 2 and the elements of the design that are selected for review based upon a risk-based approach to compliance.

## 2. Methodology and evidence

The first-article inspection will be conducted by EASA at an appropriate location(s) selected by the applicant for a type certificate. This (these) location(s) should:

- include the physical location of the aircraft, engine or propeller for which a type certificate has been requested; and
- be in the principal place of business (which in accordance with Article 8(2) of Regulation (EU) No 748/2012 must be in an EU Member State).

*Note:* The principal place of business is defined as follows: ‘The head office or registered office of the organisation within which the principal financial functions and operational control of the activities referred to in this Regulation are exercised.’

The Agency will conduct a physical inspection of the aircraft, engine or propeller for which a type certificate has been requested. This inspection, along with any other activity that EASA deems necessary (see point 21L.A.25(e)), should ensure that the objectives mentioned in point 1 are met.

The applicant for a type certificate should make the following arrangements to support the first-article inspection:

- a. prepare the aircraft engine, propeller, systems or components for live testing (including flight testing) upon EASA’s request;
- b. make available the final version of the compliance-demonstration plan;
- c. make available the declaration of compliance for the product (aircraft, engine and/or propeller);
- d. provide access to the supporting compliance documentation and test reports;
- e. provide access to key design and production personnel;
- f. make available any design processes and procedures that were used.

When the applicant has selected to use flight testing to demonstrate compliance (see MC6 in Appendix A to AMC1 21L.A.24(b)), EASA may decide to conduct flight testing to verify compliance. This flight testing will be performed according to a plan proposed by the applicant prior to the first-article inspection and agreed by EASA.

The above list of additional sources of evidence is not exhaustive.

It is possible that during the first-article inspection, EASA may discover evidence that:

- a. the design is not in compliance with the type-certification basis or the applicable environmental protection requirements (this could be due to the applicant misinterpreting or misunderstanding the applicable design requirements);

- b. the applicant has not fulfilled its design obligations as a declared design organisation;
- c. there are shortfalls in the applicant's design management system (in accordance with point 21.A.239 or point 21L.A.174) that result in a non-compliance or loss of control of the design.

If such evidence is discovered, the applicant should support EASA in conducting a more in-depth investigation into the compliance documentation and/or the design practices of the design organisation. The purpose of this in-depth investigation should be to determine whether or not compliance was demonstrated, the root cause and the corrective actions. This investigation should also serve to prevent a reoccurrence of the issue.

### 3. Aircraft condition and configuration

The aircraft, engine or propeller presented to EASA should be in the final configuration for which a type certificate has been requested and the compliance demonstration has been declared.

The applicant may arrange visits with EASA prior to the declaration of compliance, in accordance with point 21L.A.25(f) (for example, for noise testing).

Any differences between the configuration presented to EASA for the first-article inspection and the final configuration in the declaration of compliance (in accordance with point 21L.A.25(f)) should be justified by the applicant and may, therefore, depending upon their criticality, be subject to more focused scrutiny during the first-article inspection. It is possible that some differences from the final configuration may delay the issuance of the type certificate.

### 4. Findings and resolution

In the process of the activities mentioned in point 2, EASA will raise an appropriate finding or observation against the aircraft or declared design organisation if a non-compliance is discovered. Findings of non-compliance should be resolved by the applicant before the type certificate is issued.

### 5. Duration and schedule

The first-article inspection may be a single visit or multiple visits depending on the complexity of the design. For example, EASA may wish to witness or participate to compliance-demonstration testing (for example, noise testing) prior to the first-article inspection.

The applicant should coordinate with the competent authority so that the first-article-inspection activities conducted under point 21L.B.143(b) are conducted as far as practicable at the same time as first-article-inspection activities conducted under point 21L.B.46(c).

## **GM1 21L.A.25(f) Demonstration of compliance**

### **DECLARATION OF COMPLIANCE**

All compliance-demonstration activities conducted in accordance with the compliance-demonstration plan, including all the testing and inspections conducted in accordance with point 21L.A.25(c) and all flight testing conducted in accordance with point 21L.A.25(d) and those necessary to determine compliance with the applicable environmental protection requirements should be completed before the issuance of the final declaration of compliance.

'No feature or characteristic' that may make the product unsafe in point 21L.A.25(f)(2) means the following: while every effort is made to address in the applicable certification basis all the risks to

product safety that may be caused by the product, experience shows that safety-related events may occur with products in service, even though compliance with the certification basis is fully demonstrated. One of the reasons may be that some existing risks are not properly addressed in the certification basis. Therefore, the applicant should declare that it has not identified any such features or characteristics.

‘No feature or characteristic’ that may make the product environmentally incompatible (point 21L.A.25(f)(2)):

It is assumed that environmental compatibility is demonstrated when the product complies with the applicable environmental protection requirements. Therefore, the applicant, when declaring that the aircraft complies with the applicable environmental protection requirements under point 21L.A.25(f)(1), shall also declare that they have not identified any such feature or characteristic.

## GM1 21L.A.27(c)(1) Requirements for the issuance of a type certificate

### CLARIFICATION OF THE TERM ‘DETERMINE’

A type certificate ‘determined’ in accordance with Part 21 Light means a type certificate or a document that allows the issuance of a certificate of airworthiness issued before 28 September 2003 by a Member State that complies with Article 3(1)(a) of Regulation (EU) No 748/2012.

## AMC1 21L.A.27(d) Requirements for the issuance of a type certificate

### DEMONSTRATION OF NO UNRESOLVED ISSUES

After the physical inspection and investigation carried out by EASA in accordance with points 21L.A.46(c) and (d), and upon notification from EASA in accordance with point 21L.B.46(d), the applicant should carry out the necessary actions, such as:

- redesign,
- retesting,
- additional compliance-demonstration activities,
- corrections and updates to compliance-demonstration documents

to ensure that no unresolved issues remain.

When any findings from the first-article inspection are resolved by the applicant to the satisfaction of EASA or no findings are raised by EASA or the competent authority, then point 21L.A.27(d) will be considered met.

## AMC1 21L.A.29 Transferability of a type certificate

The applicant should file an application using the form for the transfer of a certificate (FO.CERT.00038), which may be downloaded from the EASA website<sup>9</sup>.

<sup>9</sup> <https://www.easa.europa.eu/document-library/application-forms/certificates-and-approvals> (accessed: 20 October 2023)

This form should be completed in accordance with the instructions embedded at the bottom of the application form, and sent to EASA by fax, email or regular mail following the information provided on the EASA website<sup>10</sup>.

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<sup>10</sup> <https://www.easa.europa.eu/document-library/application-forms/certificates-and-approvals> (accessed: 20 October 2023)

## SUBPART C — DECLARATIONS OF AIRCRAFT DESIGN COMPLIANCE

### AMC1 21L.A.43(b) Declaration of design compliance

#### FORM AND MANNER

The request for registration should be completed as well as the declaration of design compliance which can be found on the EASA Website and sent to EASA by email or regular mail following the information provided on the EASA website<sup>11</sup>.

An 'EASA project' will be initiated by EASA in order to provide the declarant with a means to provide the required supporting documentation to EASA.

#### EASA Form 200

#### PART 2 – DECLARATION OF DESIGN COMPLIANCE

1. Request for Registration of a Declaration of Design Compliance (Part 21 Light Subpart C)		
1.1 EASA Request No	6XXXXX	
1.2 Date of Request for Registration		
1.3 Applicability	Designated Type Name (this must be a unique means to identify the aircraft)	
	Designated Model Name(s)	
<b>Important Note:</b> Points 1.1. and 1.2. should be left blank when the Declaration of Design Compliance (EASA Form 200 – Part 2) is submitted together with the request for registration.		

2. Design Compliance		
2.1 Technical Specifications used for Compliance	Please specify the technical specifications used and the amendment/issue number (e.g. CS-23 Amendment 6)	
2.2 Environmental Protection Requirements if applicable	Please specify the environmental protection requirements with which compliance has been determined	
2.3 Engine Details if applicable	<input type="checkbox"/> Engine has been issued with an EASA type certificate	Please provide the EASA type-certificate number and engine details
	<input type="checkbox"/> Compliance of the engine with the applicable technical specifications (as detailed in 2.1 above) has been declared within this Declaration	

<sup>11</sup> <https://www.easa.europa.eu/document-library/application-forms/certificates-and-approvals> (accessed: 20 October 2023)

<b>2.4 Propeller Details</b> if applicable	<input type="checkbox"/> Propeller has been issued with an EASA type certificate	Please provide the EASA type-certificate number and propeller details
	<input type="checkbox"/> Compliance of the propeller with the applicable technical specifications (as detailed in 2.1 above) has been declared within this Declaration	
<b>2.5 Compliance Demonstration Plan</b>	Please specify the reference, revision number and date of the compliance demonstration plan	
<b>2.6 Documentation</b> in accordance with 21L.A.43 (b)	Documents/information to submit for registration of the Declaration: <ul style="list-style-type: none"> <li>• Airworthiness Data Sheet</li> <li>• Aircraft Flight Manual including any limitations</li> <li>• Instructions for Continued Airworthiness</li> <li>• Any other conditions/limitations which the declarant wishes to declare</li> <li>• EASA Noise Record Number</li> </ul>	
<p><b>Important Note:</b> The Declaration of Design Compliance for the aircraft described in point 1.3 must be submitted along with the documentation detailed in point 21L.A.43 (b) 8, 9, 10, 11 and 12 and 21L.A.43 (c) of Annex Ib to Regulation (EU) 748/2012.</p> <p>The supporting documents to the Declaration of Design Compliance can be provided to the Agency using the EASA data repository and do not need to be physically attached to the Declaration of Design Compliance.</p>		

<h3>3. Declaration of Compliance</h3>		
<p>I declare that I have the legal capacity to submit this declaration to EASA and that all information provided in this Declaration form is correct and complete.</p> <p>I hereby declare that the design of the aircraft identified in Section 1.3 is in compliance with the applicable detailed technical specifications detailed in Section 2.1 and the applicable environmental protection requirements detailed in Section 2.2 in accordance with the compliance demonstration plan detailed in Section 2.5.</p> <p><input type="checkbox"/> <i>(in the case that the engine is not issued with an EASA type certificate)</i> The engine that is included within the design of the aircraft is compliant with the applicable technical specifications detailed in Section 2.1.</p> <p><input type="checkbox"/> <i>(in the case that the propeller is not issued with an EASA type certificate)</i> The propeller that is included within the design of the aircraft is compliant with the applicable technical specifications detailed in Section 2.1.</p> <p>I hereby declare that no features or characteristics have been identified that may make the aircraft unsafe or environmentally incompatible for the intended use.</p> <p>I hereby commit to undertake the obligations of a Declarant of a Declaration of Design Compliance as detailed in point 21L.A.47 of Annex Ib (Part 21 Light) to Regulation (EU) No 748/2012.</p> <p>I declare that I have provided the information required in Section 2.6, and that it is accurate and complete and indicated where it is not applicable.</p>		
Date/Location	Name	Signature
<p><b>Important Note:</b> EASA cannot accept Declarations without signature. Please make sure that you sign the Declaration.</p>		

This Declaration should be sent by email to:

[applicant.services@easa.europa.eu](mailto:applicant.services@easa.europa.eu)

## GM1 21L.A.43(b)(10) Declaration of design compliance

### DATA SHEET FOR AIRWORTHINESS (point 21L.A.43(b)(10))

Templates for the data sheet for airworthiness for aeroplanes, sailplanes and balloons can be requested from the nominated EASA focal point for the project.

## AMC1 21L.A.43(b)(11) Declaration of design compliance

### DATA SHEET FOR NOISE

The required noise data for the data sheet for noise (as required by point 21L.A.43(b)(11)) should be provided by the declarant using the EASA's Part 21 Light database of declared noise levels. The declarant should submit a request to EASA for an account to access EASA's Part 21 Light database prior to submitting the declaration of design compliance.

All applicable fields in EASA's Part 21 Light database of declared noise levels should be completed by the declarant before EASA may check the provided noise data. After a reasonability and completeness check, EASA will publish the declared data in the database. This data will be utilised to support the registration of the declaration of design compliance under point 21L.B.63.

The noise data that is provided in EASA's Part 21 Light database of declared noise levels by the declarant is under the sole responsibility of the declarant of the declaration of design compliance.

The individual records in the published version of EASA's Part 21 Light database of declared noise levels are considered 'data sheet for noise'.

It is important that the declarant uses EASA's Part 21 Light database of declared noise levels to ensure that the declared noise levels and supporting data are made available to the competent authority for the issuance of a restricted noise certificate under point 21L.B.172. Otherwise, the competent authority may not be able to issue such a certificate.

## **GM1 21L.A.43(b)(4);(b)(5) Declaration of design compliance**

### **SIGNED STATEMENTS**

All compliance-demonstration activities conducted in accordance with the compliance-demonstration plan, including all the inspections and tests and all flight tests conducted in accordance with point 21L.A.44, should be completed before signing the statements required in points (4) and (5) of point 21L.A.43(b).

‘No feature or characteristic’ that may make the aircraft unsafe in point 21L.A.43(b)(5) means the following: while every effort is made to address in the applicable detailed technical specifications all the risks to product safety that may be caused by the product, experience shows that safety-related events may occur with products in service, even though compliance with the applicable detailed technical specifications is fully demonstrated. One of the reasons may be that some existing risks are not properly addressed in the applicable detailed technical specifications. Therefore, the declarant should declare that they have not identified any such features or characteristics.

‘No features or characteristics’ that may make the aircraft environmentally incompatible (point 21L.A.43(b)(5)):

It is assumed that environmental compatibility is demonstrated when the aircraft complies with the applicable environmental protection requirements. Therefore, the declarant when declaring that the aircraft complies with the applicable environmental protection requirements under point 21L.A.43(b)(4), shall also declare that they have not identified any such features or characteristics.

## **GM1 21L.A.43(c) Information to be provided to the Agency**

The documents and information that are required to be provided to EASA under point 21L.A.43(c) may be provided to EASA by the declarant in advance of the submission of the declaration of design compliance. This would be advantageous for the declarant to facilitate EASA’s investigations prior to the issuance of the flight conditions for a permit to fly under point 21L.B.242(a)(2) and the first-article inspection under AMC 21L.A.47(a).

If so requested, EASA may provide the declarant with an appropriate account for EASA’s document management system (for example, SEPIAC) with which the declarant may provide the documents and information listed in point 21L.A.43(c). This would also include the data related to compliance with the environmental protection requirements for noise that is required to be provided under point 21L.A.43(b)(11) which can be facilitated by requesting access to EASA’s Part 21 Light database of declared noise levels (see AMC1 21L.A.43(b)). Such data will be required to enable the competent authority to issue a restricted noise certificate under point 21L.B.172(b).

## **AMC1 21L.A.43(c) Declaration of design compliance**

Data and information required to be provided by the declarant should be made available to EASA in a reliable and efficient way as agreed by EASA.

## **GM1 21L.A.44 Compliance activities for a declaration of design compliance**

### **VOLUNTARY INVOLVEMENT OF THE AGENCY PRIOR TO THE SUBMISSION OF THE DECLARATION**

The declarant may choose to involve EASA prior to submitting the declaration of design compliance. This would allow EASA to:

- (a) check that the product is within the scope of Subpart C;
- (b) provide guidance on the completeness of the compliance-demonstration plan and the selection of the means of compliance;
- (c) provide guidance on the selection of the applicable detailed technical specifications and applicable noise requirements;
- (d) provide guidance about and witnessing and participating to noise tests;
- (e) avoid any issues or delays during the first-article inspection (after submission of the declaration of design compliance).

The initiation of the project by the declarant by submitting a request to EASA may occur before starting the compliance activities or during those activities. The assignment of a dedicated project number would facilitate any subsequent communication with EASA. This will facilitate the provision of compliance documentation required by point 21L.A.43(c) which can be provided by the declarant to EASA at key stages in the compliance demonstration prior to submission of the declaration of design compliance.

The declarant should also request access to EASA's Part 21 Light database of declared noise levels referring to the given Agency project number<sup>12</sup> in order to provide the required data under point 21L.A.43(b)(11) (see AMC1 21L.A.43(b)).

In accordance with point 21L.B.61, the environmental protection requirements are defined in Regulation (EU) 2018/1139 to be those contained in Annex 16 to the Chicago Convention. As regards aircraft noise, noise testing is generally conducted making use of technical and equivalent procedures that are described in ICAO Doc 9501 'Environmental Technical Manual', Volume I 'Procedures for the Noise Certification of Aircraft'. The use of such procedures demands a deeper knowledge of the environmental protection requirements. In case of doubt and to minimise the risk of any re-test after the first-article inspection, the declarant is encouraged to contact EASA well before the noise flight test.

## **AMC1 21L.A.44(a) Compliance activities for a declaration of design compliance**

### **COMPLIANCE-DEMONSTRATION PLAN**

The compliance-demonstration plan is a document that allows the declarant to manage and control the evolving aircraft design, as well as the process of compliance demonstration that enables EASA to investigate the root cause(s) in the event of a safety issue being discovered.

In particular, the following information should typically be expected:

- Identification of the relevant personnel that make decisions affecting airworthiness and environmental compatibility, and that will interface with EASA during the physical inspection (safety review) prior to the issuance of the flight conditions and during the first-article inspection.
- A project schedule, including major milestones.
- Subcontracting arrangements for design, environmental compatibility and/or production.

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<sup>12</sup> The access to the Agency's Part 21 Light database of declared noise levels will be granted when the declarant initiates their first Part 21 Light declared project at EASA. Access to this database will also enable the declarant to use this database for future projects.

## Point 21L.A.43(c)(2) 'Configurations covered by the declaration'

An overview of the following:

- architecture, functions, systems;
- dimensions, design weights, payloads, design speeds;
- engines and power/thrust rating;
- materials and technologies;
- cabin configuration aspects;
- options (e.g. weight variants, power/thrust rating variants, optional avionics equipment items, brake options, tyre options, floats, skids).

## Point 21L.A.43(c)(2) 'Operating characteristics and limitations'

- operating speed limitations;
- service ceiling, maximum airfield elevation;
- limit load factors;
- number of passengers, payload, range;
- weight and centre-of-gravity (CG) envelope and fuel loading;
- performance;
- environmental envelope;
- runway surface conditions;
- other items, if considered to be more appropriate, that address the specific aeronautical product.

The declarant should provide detailed information about the means of compliance with the applicable requirements identified under point 21L.A.45. This should include the following:

- a compliance checklist addressing each requirement, the proposed means of compliance (see Appendix A to AMC1 [21L.A.44\(a\)](#) below for the relevant codes), and the related compliance document(s);
- identification of industry standards, methodology documents, handbooks and any other acceptable means of compliance, specified in the airworthiness data sheet, that have been followed in the demonstration of compliance;
- identification of methodologies and procedures laid down in Annex 16 to the Chicago Convention that have or will be followed in the demonstration of compliance with the applicable environmental protection requirements;
- when the compliance demonstration involves testing, a description of the ground-and flight-test article(s), test method(s), test location(s), test schedule, test house(s), test conditions (e.g. limit load, ultimate load), as well as of the intent/objective(s) of the testing; and
- when the compliance demonstration involves analyses/calculations, a description/identification of the tools (e.g. name and version/release of the software programs) and methods used, the associated assumptions, limitations and/or conditions, as well as of the intended use and purpose.

For every aspect related to airworthiness compliance mentioned above, the declarant should clearly identify whether the demonstration of compliance involves different means than those contained in the published AMC to the relevant CSs and any method (analysis or test) which is novel or unusual for the declarant.

For every aspect related to compliance with the applicable environmental protection requirements mentioned above, the declarant should clearly identify whether the demonstration of compliance involves means that are described in ICAO Doc 9501 ‘Environmental Technical Manual’.

## Appendix A to AMC1 21L.A.44(a) Compliance activities for a declaration of design compliance

### MEANS-OF-COMPLIANCE CODES

Type of compliance	Means of compliance	Associated compliance documents
Engineering evaluation	MC0: (a) compliance statement (b) reference to design data (c) election of methods, factors, etc. (d) definitions	(a) Design data (b) Recorded statements
	MC1: design review	(c) Descriptions (d) Drawings
	MC2: calculation/analysis	(e) Substantiation reports
	MC3: safety assessment	(f) Safety analysis
Tests	MC4: laboratory tests	(g) Test programmes (h) Test reports (i) Test interpretations
	MC5: ground tests on related product(s)	
	MC6: flight tests	
	MC8: simulation	
Inspection	MC7: design inspection/audit	(j) Inspection or audit reports
Equipment qualification	MC9: equipment qualification	<i>Note:</i> Equipment qualification is a process that may include all previous means of compliance at equipment level.

## GM1 21L.A.44(a) Compliance activities for a declaration of design compliance

### UPDATES TO THE COMPLIANCE-DEMONSTRATION PLAN

The initial compliance-demonstration plan may not be fully complete, e.g. due to schedule constraints of the design, analysis and testing activities.

Furthermore, even if the initial compliance-demonstration plan is complete, it may be necessary to amend it throughout the duration of the compliance-demonstration activities.

In particular, updates to the following elements should be conducted by the declarant:

- any complementary information that was not included in the initial compliance-demonstration plan;
- any change to the intended use or kind of operation of the product;

- a change to the key characteristics of the product such as but not limited to any declared limits that are intended to be recorded in the airworthiness data sheet and noise data sheet;
- any change to the initial detailed technical specifications or environmental protection requirements, as applicable to the product;
- any change to the proposed means of compliance, including the related methodology;
- any changes to the schedule that impacts on the first-article inspection.

The declarant should submit an updated and final version of the compliance-demonstration plan when submitting the declaration of design compliance to EASA (point 21L.A.43(c)(3)).

If a declarant has chosen to involve EASA prior to the declaration (GM1 21L.A.44) and has already submitted a preliminary version of the compliance-demonstration plan to EASA, they should resubmit the updated and final version of it.

## AMC1 21L.A.44(b) Compliance activities for a declaration of design compliance

### COMPLIANCE DOCUMENTATION

1. Compliance documentation comprises one or more test or inspection programmes/plans, reports, drawings, design data, specifications, calculations, analyses, etc., and provides a record of the means by which compliance with the applicable detailed technical specifications and environmental protection requirements has been demonstrated.
2. Each compliance document should normally contain:
  - the reference of the detailed technical specifications or environmental protection requirements addressed by the document;
  - substantiation data demonstrating compliance (except test or inspection programmes/plans);
  - a statement by the declarant declaring that the document provides the proof of compliance for which it has been created; and
  - the declarant's signature.
3. Each compliance document should be unequivocally identified by its reference and issue date. The various issues of a document should be controlled and comply with point 21L.A.7 'Record-keeping'.

## AMC1 21L.A.44(c);(d);(e) Compliance activities for a declaration of design compliance

### INSPECTIONS AND TESTS

In accordance with point 21L.A.44(d), the declarant should address the conformity of the test specimen as well as of the test and measuring equipment.

#### Conformity of the test specimen

The recorded justification of the conformity of the test articles is intended to ensure that the manufactured test specimen adequately represents the declared applicable design data. Possible types of non-conformity may be the following:

- Non-conformity between the design of the test specimen and the originally intended design data at the time of the test. These are typically identified in the early stage of the test planning, and should be addressed as early as possible (e.g. in the test plan). There may be several reasons for such a non-conformity: to account for interfaces with the test equipment, to conservatively cover several existing or future design configurations, etc.
- Non-conformity between the manufactured test specimen and the design of the test specimen. Such a non-conformity may be the result of the manufacturing of the test specimen.

While it is convenient to define any possible non-conformity as early as possible, the declarant does not need to make the distinction between the two types of non-conformity above as long as they are explicitly addressed and justified by cross reference to the test plan or other documents. However, testing for the demonstration of compliance with the environmental protection requirements should be conducted with the final design of the product.

Compliance demonstration is typically an iterative process in which the design is under continuous evolution. If the aircraft design evolves after the time of the inspection or test, then the final aircraft design should be checked against the originally intended design (as it was at the time of the inspection or test), and the differences (if any) should be analysed to ensure that the inspection or test results are representative of the final configuration. However, such changes made to the aircraft design may lead to the invalidation of the inspection or test results and the need to repeat the inspection or test. It is recommended that the declarant should have a thorough configuration management process to track the evolving aircraft design.

Conformity of the test and measuring equipment: the configuration of the test and measuring equipment should be defined in the test plan and include the following:

- definition/design of the test equipment (relevant tools, mechanical parts, electronic components used to execute the test); and
- definition of the measuring equipment:
  - type/model of sensors, together with their technical characteristics;
  - position and orientation of exciters and sensors; and
  - electronic measuring equipment (in some cases, this may also include the acquisition and post-processing of data).

The configuration of the test and measuring equipment should be defined and controlled through test plans and supporting documentation. The test plan should also include the following elements:

- the test cases, methods, and procedures for test execution;
- the pass–fail criteria; and
- pre-, during- and post-test inspections.

The declarant should confirm that the test and measuring equipment conform to its definition in the test plan, and that the sensors and measuring system are appropriately calibrated. Any non-conformity should be assessed, and it should be justified that it will not compromise the test purpose and results. This can be done either in the recorded justification of the conformity of the test articles and equipment or by cross reference to other documents (test minutes of meetings, test notes, etc.).

Use of the term ‘adequate’: the test and measuring equipment is considered ‘adequate’ as long as the test execution on the manufactured test specimen (including any non-conformity) and the use of the installed test set-up do not compromise the test purpose and results (for example, by providing better performance than the proposed type design, or by masking any potential failure mode or behaviour).

Changes that affect the validity of the recorded justification of the conformity of the test articles and equipment: if changes need to be introduced to the test specimen or to the test and measurement equipment after the justification has been recorded (and before the test is undertaken), then it must be updated.

Development versus compliance-demonstration tests: sometimes, tests of specimens that conform to a preliminary design, but are not intended for demonstration of compliance (known as development tests), are performed as part of a risk-control strategy and to develop knowledge of a subject. Problems and failures found during development are part of the process of increasing the understanding of the design, including its failure modes and the potential for optimisation. Such development tests do not need to meet the requirements of point 21L.A.44(d) and (e).

Any planned test event should be classified in advance as either a development test or a compliance-demonstration test.

It is acceptable for a development test to finally form part of the compliance demonstration, and it may be declared afterwards to be a compliance-demonstration test as long as it meets the requirements of point 21L.A.44(d) and (e). For this reason, it is important to keep the configuration of such tests under control.

If the test specimen used for a compliance-demonstration test has already undergone a series of previous tests that may affect or ultimately invalidate its validity due to potential non-conformity to point 21L.A.44(d) as required by point 21L.A.43(c)(5), this aspect should be considered when justifying the conformity, and specific analyses or inspections may be required to support such a statement.

Because of the above aspects, declarants may wish to inform EASA if they intend to conduct a campaign of development tests that may eventually be used as demonstration of compliance tests to establish whether EASA would wish to witness the test.

## **GM1 21L.A.44(f) Compliance activities for a declaration of design compliance**

### **INSPECTIONS AND TESTS PERFORMED BY THE AGENCY**

The declarant should inform EASA sufficiently in advance about the execution of significant inspections and tests that are used for compliance-demonstration purposes in order to permit EASA the opportunity to perform or witness these inspections or tests in advance of the first-article inspection required by point 21L.A.47(a).

This would be advantageous for the declarant to avoid any issues or delays during the physical inspection (safety review) for the flight-conditions approval and during the first-article inspection.

Additionally, the declarant may propose to EASA to perform or witness flight or other tests of particular aspects of the product during its development and before the type design is fully defined. However, before EASA performs or witnesses any flight test, the declarant should first perform these tests and should ensure that no features of the product preclude the safe conduct of the evaluation requested.

A recorded justification of the conformity of the test articles and equipment as per point 21L.A.43(c)(5) is required for the above tests.

The declarant should inform EASA of its intent to conduct demonstration-of-compliance testing for the environmental protection requirements for noise in order to provide EASA with the opportunity to witness and participate to the testing. This will ensure that there are no unforeseen issues with the registration of the declaration of design compliance after the first-article inspection.

## **GM1 21L.A.44(g) Compliance activities for a declaration of design compliance**

### **FLIGHT TESTING TO ENSURE NO SAFETY ISSUES EXIST WHEN AN AIRCRAFT ENTERS INTO SERVICE**

The objective of the period of operation in the final configuration is to expose the aircraft to the variety of uses, including training, that are likely to occur when in routine service to provide an assurance that it performs its intended functions without safety issues and should continue to do so in service.

The testing should cover typical routine operations and also some simulation of abnormal conditions.

It may be possible to combine flight testing with the testing required to demonstrate compliance with the applicable detailed technical specifications and environmental protection requirements.

A substantial proportion of the flying should be on a single aircraft. The flying should be carried out to a continuous schedule on an aircraft that is very close to the final type design, operated as though it were in service and should include a range of representative ambient operating conditions and airfields.

## **GM2 21L.A.44(g) Compliance activities for a declaration of design compliance**

### **FLIGHT TESTING TO ENSURE NO ENVIRONMENTAL COMPATABILITY ISSUES EXIST WHEN AN AIRCRAFT ENTERS INTO SERVICE**

The objective of noise flight tests is to establish the environmental performance of the product that occurs during the in-service operation and to confirm that the aircraft is environmentally compatible in terms of aircraft noise.

## **GM1 21L.A.45 Detailed technical specifications and environmental protection requirements that are applicable to aircraft subject to declarations of design compliance**

### **ENVIRONMENTAL PROTECTION REQUIREMENTS**

(See GM1 21L.B.61(c)(1))

Volumes I, II and III of Annex 16 to the Chicago Convention are available at <https://elibrary.icao.int/>.

Since the Standards and Recommended Practices in Annex 16 Volumes I, II and III apply only to certain categories of products and as such do not necessarily apply to all products that are within the scope of Subpart C, it is recommended that the declarant may contact the Environment and Sustainability Section of EASA to confirm the environmental protection requirements that are applicable to their particular product and at any stage of the declared process for further guidance.

## AMC 21L.A.47(a) Physical inspection and flight tests of the first article of that aircraft (first-article inspection) prior to registration of a declaration of design compliance

### 1. Purpose

The purposes of the first-article inspection (of the article that is in conformance with the declared design) prior to the registration of a declaration of design compliance for a particular aircraft design are:

- a. for EASA to ensure the completion of the demonstration-of-compliance activities conducted by the declarant under point 21L.A.44 in accordance with the information provided in accordance with point 21L.A.43 and in particular the compliance-demonstration plan;
- b. for EASA to ensure<sup>1</sup> that the designed aircraft is capable of conducting safe flight during in-service operations and does not have any environmental incompatibilities;
- c. in case the declarant is a declared design organisation, for EASA to conduct further oversight in accordance with point 21L.B.183(b) of Subpart J in order to ensure that the declarant is able to discharge its obligations.

*Note:* Under Subpart C of Section A there is no obligation for a declarant of an aircraft declaration of design compliance to submit a declaration of design capability.

<sup>1</sup> This is limited to the scope of the activities that can be conducted under point 2 and the elements of the product that are selected for inspection based upon a risk-based approach to safety and environmental incompatibility.

### 2. Methodology and evidence

The first-article inspection will be conducted by EASA at an appropriate location(s) selected by the declarant where an effective review and inspection activities can take place. This (these) location(s) should:

- include the location of the aircraft for which the declaration of design compliance has been submitted under point 21L.A.43;
- be in the principal place of business (which in accordance with Article 8(2) of Regulation (EU) No 748/2012 must be in an EU Member State); and
- in case the declarant is a declared design organisation, be in a location that enables the competent authority to conduct the oversight stated in point 1(c) above.

*Note:* The principal place of business is defined as follows: ‘The head office or registered office of the organisation within which the principal financial functions and operational control of the activities referred to in this Regulation are exercised.’

The Agency will conduct a physical inspection of the aircraft, engine or propeller for which the registration of a declaration of design compliance has been requested. This inspection, along with any other activity that EASA deems necessary (see point 21L.A.44(f)), should ensure that the objectives mentioned in point 1 are met.

The declarant should make the following arrangements to support the first-article inspection:

- a. prepare the aircraft, engine, propeller, systems or components for live testing (including flight testing) upon EASA's request;
- b. make available the final version of the compliance-demonstration plan;
- c. provide access to supporting compliance documentation and test reports;
- d. provide access to key design and production personnel;
- e. if relevant (the declarant has opted to become a declared design organisation), make available any design processes and procedures that were used.

It will be necessary for EASA to conduct flight testing of the final configuration of the aircraft. This flight testing will be performed according to a plan proposed by the declarant prior to the first-article inspection and agreed by EASA.

Flight testing could be a combination of:

- a. a predefined flight-test plan that is not specific to the particular aircraft type;
- b. specific flight testing to focus on targeted aspects after a review of the declarant's flight-testing data/reports.

The above list of additional sources of evidence is not exhaustive.

It is possible that during the first-article inspection EASA may discover evidence that indicates that the declarant has:

- a. misunderstood, misinterpreted or not demonstrated compliance with the applicable technical specifications or the applicable environmental protection requirements, which could lead to an unsafe or an environmentally incompatible design;
- b. not fulfilled its design obligations as a declared design organisation (if applicable);
- c. not utilised good design management principles to ensure compliance or control of the design.

If such evidence is discovered, the declarant should support EASA in conducting a more in-depth investigation into the compliance documentation and/or the design practices of the declarant. The purpose of this in-depth investigation should be to determine whether or not compliance was demonstrated, the root cause(s) and the corrective actions. This investigation should also serve to prevent a reoccurrence of the issue.

### 3. Aircraft condition and configuration

The declarant should present to EASA the aircraft, engine or propeller (if applicable) in the final configuration for which compliance has been declared by the declarant.

It is possible for the declarant to arrange inspection visits with EASA prior to the declaration of compliance (for example, for noise testing).

Any differences between the configuration presented to EASA for the first-article inspection and the final configuration in the declaration of design compliance should be justified by the declarant and may, therefore, depending upon their criticality, be subject to more focussed scrutiny during the first-article inspection. It is possible that some differences from the final configuration may delay the registration of the declaration of design compliance.

### 4. Findings and resolution

In the process of the activities mentioned in point 2, EASA will raise an appropriate finding or observation against the aircraft if a non-compliance is discovered. Findings will need to be resolved by the declarant before the declaration of design compliance is registered.

#### 5. Duration and schedule

The first-article inspection may be a single visit or multiple visits depending on the complexity of the design. For example, EASA may wish to witness or participate to compliance-demonstration testing (for example, noise testing) prior to the first-article inspection.

The declarant should coordinate with the competent authority so that the first-article-inspection activities conducted under point 21L.B.143(b) or point 21L.B.251(b) are conducted as far as practical at the same time as first-article-inspection activities conducted under point 21L.B.62(b).

## SUBPART D — CHANGES TO TYPE CERTIFICATES

### GM1 21L.A.61 Scope

The term ‘changes to the type certificate’ is consistently used in Subparts D and E of Part 21 Light, as well as in the related AMC and GM. This term does not refer to changing the document that reflects the type certificate (TC) but to changing the elements of the TC as defined in point 21L.B.47(b). Therefore, the processes contained in Subparts D and E of Part 21 Light should be used for the approval of changes to the elements listed in point 21L.B.47(b).

### GM1 21L.A.62 Standard changes

#### APPLICABLE CERTIFICATION SPECIFICATIONS

CS-STAN<sup>13</sup> contains the certification specifications referred to in point 21L.A.62. Guidance on the implementation of Standard Changes and Standard Repairs may be found in AMC M.A.801 of the AMC to Part-M.

### AMC1 21L.A.63(c) Classification of changes to a type certificate

Major changes that are classified as being ‘substantial’ will require a new application for a type certificate in accordance with Subpart B of Part 21 Light.

Examples of major changes that are considered substantial may be found in Appendix B to GM1 21L.A.63.

### GM1 21L.A.63 Classification of changes to a type certificate

#### (a) PURPOSE OF CLASSIFICATION

The purpose of classification of changes to a type certificate (TC) into ‘minor’ or ‘major’ is to determine the approval route to be followed in accordance with Part 21 Light Subpart D, i.e. either point 21L.A.67 or point 21L.A.68, or alternatively whether application and approval have to be made in accordance with Part 21 Light Subpart E.

#### (b) INTRODUCTION

- (1) Point 21L.A.63 proposes criteria for the classification of changes to a TC as ‘minor’ or ‘major’.
  - (i) This GM is intended to provide guidance on the term ‘appreciable effect’ that affects the airworthiness of the product, the certified noise or emissions levels or affects any of the other characteristics mentioned in point 21L.A.63, where ‘airworthiness’ is interpreted in the context of a product that is in conformity with type design and in condition for safe operation. It provides complementary guidelines to assess a change to the TC in order to meet the requirements of points 21L.A.63 and 21L.A.91 where classification is the first step of a procedure.

<sup>13</sup> <https://www.easa.europa.eu/en/certification-specifications/cs-stan-standard-changes-and-standard-repairs>

Characteristics that affect the environmental compatibility of the product are characteristics that affect the compliance of the product with the applicable environmental protection requirements.

*Note:* For the classification of repairs, see GM 21L.A.203(a).

- (ii) Although this GM provides guidance on the classification of major changes, as opposed to minor changes as defined in point 21L.A.63, the GM and point 21L.A.63 are deemed entirely compatible.

Appendix A to GM1 21L.A.63 provides examples of major changes and a classification process.

(c) ASSESSMENT OF A CHANGE FOR CLASSIFICATION

(1) Changes to the TC

Point 21L.A.63 addresses all changes to any of the aspects of a TC. This includes changes to a type design, as defined in point 21L.A.26, as well as to the other constituents of a TC, as defined in point 21L.B.47(b).

(2) Reserved

(3) Classification process (see also the flow chart 'Classification process' in Appendix A to GM 21L.A.63)

Point 21L.A.63 requires all changes to be classified as either 'major' or 'minor', using the criteria of point 21L.A.63.

Wherever there is doubt as to the classification of a change, EASA should be consulted for clarification.

When the strict application of the point (c)(4) criteria results in a major classification, the applicant may request reclassification, if justified, and EASA could take the responsibility for reclassifying the change.

A simple design change planned to be mandated by an airworthiness directive may be reclassified as minor due to the involvement of EASA in the continued airworthiness process when this is agreed between EASA and the design organisation.

The reasons for a classification decision should be recorded.

(4) General guidance on the classification of major changes

A change to the TC that is judged to have an 'appreciable effect on the mass, balance, structural strength, reliability, certified noise or emissions levels, operational characteristics, or other characteristics affecting the airworthiness or the environmental compatibility' is classified as major, in particular, but not only, when one or more of the following conditions are met:

- (i) where the change requires an adjustment of the type-certification basis (special conditions or equivalent safety findings) other than electing to comply with later certification specifications or an adjustment to the applicable environmental protection requirements (e.g. when a new requirement becomes applicable after the type certification);
- (ii) where the applicant proposes a new interpretation of the certification specifications used for the type-certification basis that has not been published as AMC material or otherwise agreed with EASA;

- (iii) where the demonstration of compliance uses methods that have not been previously accepted as appropriate for the nature of the change;
- (iv) where the extent of new substantiation data necessary to comply with the applicable certification specifications and the degree to which the original substantiation data has to be reassessed and re-evaluated is considerable;
- (v) where the change alters the airworthiness limitations or the operating limitations;
- (vi) where the change is made mandatory by an airworthiness directive or the change is the terminating action of an airworthiness directive (ref. point 21L.A.4), see *Note 1*; and
- (vii) where the design change introduces or affects functions where the failure effect is classified as catastrophic or hazardous.

*Note 1:* A change previously classified as minor and approved prior to the decision to issue an airworthiness directive needs no reclassification. However, EASA retains the right to review the change and reclassify/reapprove it if found necessary.

*Note 2:* The conditions listed in points (i) through (vii) above are an explanation of the criteria noted in point 21L.A.63, and of point 21L.A.103 that refers to this point for the classification of changes in Subpart F.

For an understanding of how to apply the above conditions, it is useful to take note of the examples given in Appendix A to GM 21L.A.63.

(5) Guidance on the classification of changes to aircraft flight manuals (AFMs)

The following changes to the AFM are deemed to be minor:

- (i) revisions to the AFM associated with changes to the type design that are classified as minor in accordance with point 21L.A.63;
- (ii) revisions to the AFM that are not associated with changes to the type design (also identified as stand-alone revisions) which fall into one of the following categories:
  - (A) changes to limitations or procedures that remain within already certified limits (e.g. weight, structural data, etc.);
  - (B) consolidation of two or more previously approved and compatible AFMs into one, or the compilation of different parts taken from previously approved and compatible AFMs that are directly applicable to the individual aircraft (customisation); and
  - (C) the introduction into a given AFM of compatible and previously approved AFM amendments, revisions, appendices or supplements; and
  - (D) changes that affect the certified noise or emissions levels of the product; and
- (iii) administrative revisions to the AFM, defined as follows:
  - (A) for the AFMs issued by the TC holder:
    - (a) editorial revisions or corrections to the AFM;
    - (b) changes to parts of the AFM that do not require approval by EASA;
    - (c) conversions of previously Federal Aviation Administration (FAA)- or EASA-approved combinations of units of measurement added to the AFM in a previously approved manner;

- (d) the addition of aircraft serial numbers to an existing AFM where the aircraft configuration, as related to the AFM, is identical to the configuration of the aircraft already covered by that AFM;
  - (e) the removal of references to aircraft serial numbers no longer applicable to that AFM; and
  - (f) the translation of an EASA-approved AFM into the official language of the State of design or State of registry;
- (B) for AFM supplements issued by STC holders:
- (a) editorial revisions or corrections to the AFM supplement;
  - (b) changes to parts of the AFM supplement that are not required to be approved by EASA;
  - (c) conversions of previously FAA- or EASA-approved combinations of units of measurement added to the AFM supplement in a previously approved manner;
  - (d) the addition of aircraft serial numbers to an existing AFM supplement where the aircraft configuration, as related to the AFM supplement, is identical to that of the aircraft already in that AFM supplement; 'identical' means here that all aircraft must belong to the same type and model/variant;
  - (e) the addition of a new STC to an existing AFM supplement, when this supplement is fully applicable to the new STC;
  - (f) the removal of references to aircraft serial numbers that are no longer applicable to that AFM supplement;
  - (g) the translation of an EASA-approved AFM supplement into the official language of the State of design or State of registry.
- (6) Guidance on the classification of changes to certified aircraft noise levels and aircraft engine emissions levels

Volumes I and II of ICAO Doc 9501 'Environmental Technical Manual' define 'no-acoustical changes' and 'no-emissions changes' respectively as changes that would result in very small changes in the certified levels and provide criteria for their determination. These changes have 'no appreciable effect' on the certified levels. Consequently, they are classified as minor changes for environmental protection and the certified levels remain unchanged.

If the 'no-acoustical change' or 'no-emissions change' is demonstrated using an equivalent procedure to the one specified in ICAO Annex 16, the applicant should seek the agreement of EASA on the classification of the change. An equivalent procedure is a test or analysis procedure which, while differing from the one specified in ICAO Annex 16, effectively yields the same noise or emission levels as the specified procedure according to the technical judgement of EASA.

All other changes to the certified aircraft noise levels and aircraft engine emissions levels are classified as major changes.

Examples of major changes are provided in Appendix A to GM1 21L.A.63.

## Appendix A to GM1 21L.A.63 Classification of changes to a type certificate

### EXAMPLES OF MAJOR CHANGES PER DISCIPLINE

The information below is intended to provide a few examples of major changes per discipline, resulting from the application of point 21L.A.63 and point 3.3 below. 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, 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 in the classification of changes 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.).

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

In Part 21 Light, 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 point 21L.A.63. Strictly speaking, the phrases '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 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 reassessment of the emergency evacuation capability, or changes 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;
- changes to cabin layouts that affect evacuation path or access to exits;
- changes to the cabin area in striking distance of the occupant's head or torso introducing potentially injurious objects

#### 3. Flight

Changes which adversely affect the approved performance or 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 23.2510, the classification process is based on the functional aspects of the change and its potential effects on safety.

- (i) Where the failure effect is 'catastrophic' or 'hazardous', the change should be classified as 'major'.
- (ii) Where the failure effect is 'major', the change should be classified as 'major' if:
  - aspects of the compliance demonstration will use a means that has 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 should also 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 applies, 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 the 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.

*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,
- aerofoil,

- 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 resubstantiation 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 is 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 whose failure may have ‘hazardous’ or ‘catastrophic’ effects; the design assessment should include:
  - the cooling system,
  - the lubrication system,
  - rotor controls;
- (iii) adversely affect the results of the rotor drive system endurance test, the rotor drive system being defined in CS 27.917;
- (iv) adversely affect the results of the shafting critical speed analysis required by CS 27.931.

**8. Noise and emissions**

The examples provided below are not exhaustive and will not, in every case, result in an appreciable effect on the certified noise or emissions levels and, therefore, will not per se and in every case result in a major change classification.

- (i) Examples of noise-related changes that might lead to a major change classification are:
- (1) for 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  $V_Y$  (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;
- (2) for helicopters:
- a change that might affect the take-off and/or landing performance, including a change in take-off mass and  $V_Y$  (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 certified 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) Examples of smoke-engine-emissions-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.

9. Power plant installation

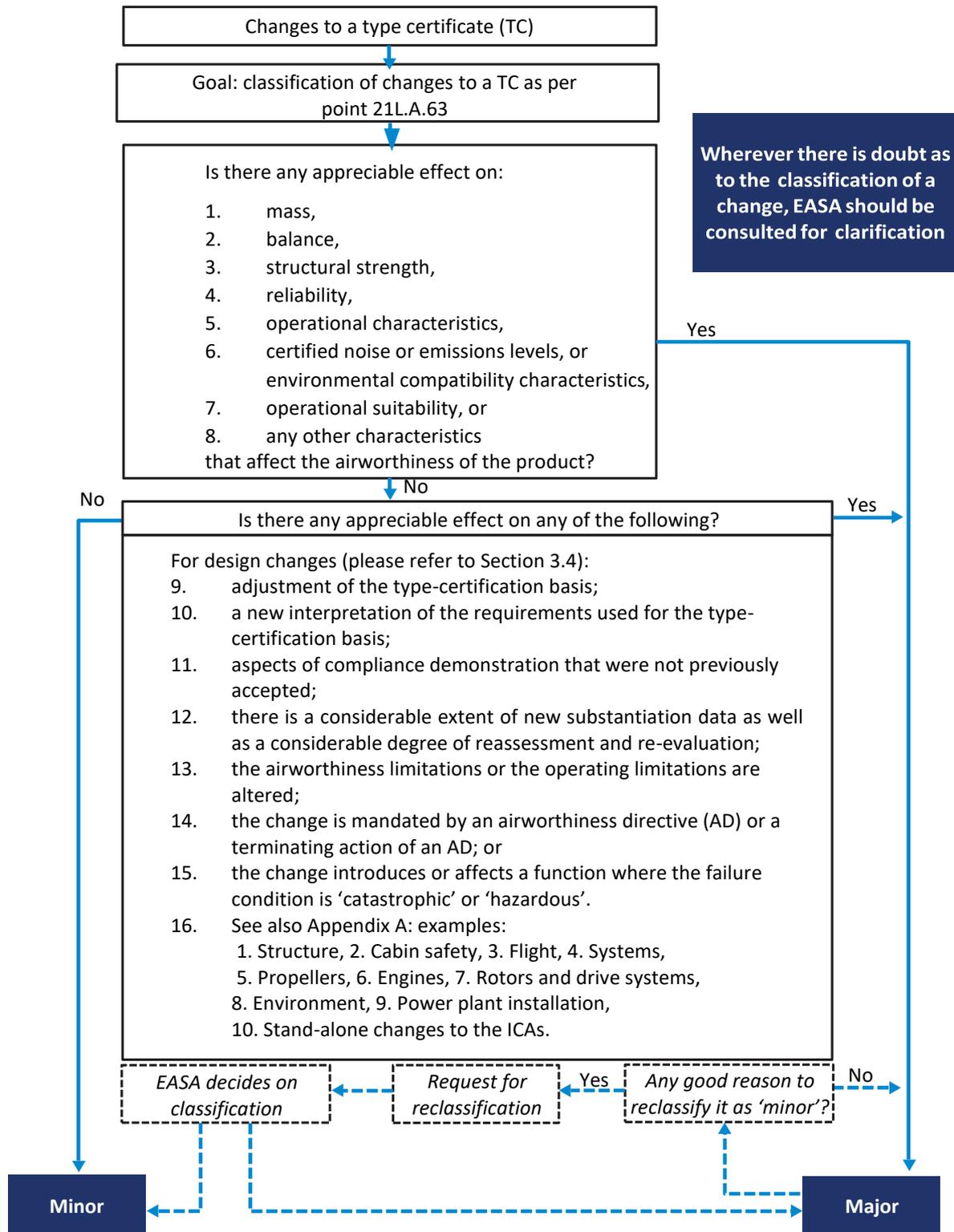
Changes which include:

- (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 ICAs that require additional work to demonstrate compliance with the applicable certification basis as follows:

- (i) the introduction of novel technology for inspection purposes related to an ALS task;
- (ii) 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, should be agreed with EASA.

Classification process



## Appendix B to GM 21L.A.63 Classification of changes to a type certificate

The following tables provide examples of ‘substantial’ changes. The classification may change due to cumulative effects and/or combinations of individual changes.

### A.1 Examples of ‘substantial’ changes for small aeroplanes (CS-23)

A.1.1 Table A-1 contains examples of changes that are ‘substantial’ for small aeroplanes (CS-23).

**Table A-1 — Examples of ‘substantial’ changes for small aeroplanes (CS-23)**

Example	Description of change	Notes
1.	Change to wing location (tandem, forward, canard, high/low).	Proposed change to the design is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.
2.	Fixed wing to tilt wing.	Proposed change to the design is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.
3.	A change to the number of engines.	Proposed change to the design is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.
4.	Replacement of piston or turboprop engines with turbojet or turbofan engines.	Proposed change to the design is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.
5.	Change to engine configuration (tractor/pusher).	Proposed change to the design is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.
6.	Change from an all-metal to all-composite aeroplane.	Proposed change to the design is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.

### A.2 Examples of ‘substantial’ changes for rotorcraft (CS-27)

A.2.1 Table A-2 contains examples of changes that are ‘substantial’ for rotorcraft (CS-27).

**Table A-2 — Examples of ‘substantial’ changes for rotorcraft (CS-27)**

Example	Description of change	Notes
1.	Change to the number and/or configuration of rotors (e.g. main and tail rotor system to two main rotors).	Proposed change to the design is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.
2.	Change from an all-metal rotorcraft to all-composite rotorcraft.	Proposed change to the design is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.

### A.3 Examples of ‘substantial’ changes for propellers (CS-P)

A.3.1 Table A-3 contains an example of a change that is ‘substantial’ for propellers (CS-P).

**Table A-3 — Example of a ‘substantial’ change for propellers (CS-P)**

Example	Description of change	Notes
1.	Change to the number of blades.	Proposed change to the design is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.

## AMC1 21L.A.65 Application for a change to a type certificate

### FORM AND MANNER

The applicant should file an application using the web-based ‘EASA Applicant Portal’<sup>14</sup> or the application forms for the approval of major changes/major repair designs or for the approval of minor changes/minor repair designs, which may be downloaded from the EASA website.

The forms should be completed in accordance with the instructions embedded at the bottom of the application forms, and sent to EASA by fax, email or regular mail following the information provided on the EASA website<sup>15</sup>.

## AMC1 21L.A.65(b) Application for a change to a type certificate

### CERTIFICATION BASIS

Point 21L.A.65(b) ‘a proposal for the type-certification basis and the applicable environmental protection requirements, prepared in accordance with the requirements and options specified in point 21L.B.81’.

The proposed type-certification basis should include applicable certification specifications, proposed special conditions, proposed equivalent safety findings, as well as a proposed ‘elect to comply’ and proposed deviations, as applicable.

## AMC1 21L.A.66 Demonstration of compliance

### DEMONSTRATION OF COMPLIANCE FOR A CHANGE TO A TYPE CERTIFICATE

The description of the change should include an explanation of the purpose of the change, the pre-modification and post-modification configuration(s) of the product, schematics/pictures, and any other detailed features and boundaries of the physical change (this may be supplemented by drawings or outlines of the design, if this helps to understand the design change), as well as the identification of the changes in areas of the product that are functionally affected by the change, and the identification of any changes to the approved manuals.

The applicant should identify any reinvestigations that are necessary to demonstrate compliance. This is a list of affected items of the applicable type-certification basis for which a new demonstration is necessary, together with the means (e.g. calculation, test or analysis) by which it is proposed to demonstrate compliance.

Before submitting the application for a change, the analysis and classification activities under point 21L.A.63 should be performed using the corresponding GM. For repair designs, the analysis under point 21L.A.63 should be performed using GM 21L.A.203.

For a major change, AMC1 21L.A.24(b)(4) should be used as applicable to the change for the development of the compliance-demonstration plan.

<sup>14</sup> <https://ap.easa.europa.eu> (accessed: DD.MM.2023)

<sup>15</sup> <https://www.easa.europa.eu/document-library/application-forms/certificates-and-approvals> (accessed: 20 October 2023)

Compliance documentation for the demonstration of compliance under point 21L.A.66(a) comprises one or more test or inspection programmes/plans, reports, drawings, design data, specifications, calculations, analyses, etc., and provides a record of the means by which compliance with the applicable type-certification basis and environmental protection requirements is demonstrated.

Each compliance document should typically contain:

- the reference of the certification specifications, special conditions or environmental protection requirements addressed by the document;
- substantiation data demonstrating compliance (except test or inspection programmes/plans);
- a statement by the applicant declaring that the document provides the proof of compliance for which it has been created; and
- the appropriate authorised signature.

Each compliance document should be unequivocally identified by its reference and issue date. The various issues of a document should be controlled and comply with point 21L.A.7.

The level of detail of the compliance documentation that is referred to in point 21L.A.66(a) should be the same regardless of whether the change is approved by EASA or under a design organisation approval (DOA) privilege, to allow the change to be assessed in the frame of the DOA surveillance.

The compliance-demonstration process always takes into account the specific configuration(s) in the type certificate (TC) to which the major change under approval is applied. This (these) configuration(s) may be defined by type models/variants or by design changes to the type design. The demonstration of compliance covers this (these) applicable specific configuration(s). Consequently, the approval of the major change excludes any other configurations, in particular those that already exist but are not considered in the compliance-demonstration process, as well as those that may be certified in the future.

For major changes approved by a design organisation approval (DOA) holder on the basis of its privilege as per point 21.A.263(c)(8) of Annex I (Part 21), the process described under AMC No 2 to 21.A.263(c)(5), (8) and (9) applies.

## AMC1 21L.A.66(c) Demonstration of compliance

### INSPECTIONS AND TESTS

Proposed type design: this term defines the type design (or the portion of the type design) as it is determined at the time when the testing and inspections are carried out.

Verification document (also known as ‘statement of conformity’): before each testing and inspection, the verification document must confirm that the test specimen conforms with the proposed design, the test and measuring equipment is adequate for the test, and the sensors and measuring system are appropriately calibrated.

Conformity of the test specimen: the documented verification is intended to ensure that the manufactured test specimen adequately represents the proposed type design. Possible types of non-conformity may be the following:

- Non-conformity between the design of the test specimen and the proposed type design at the time of the test. These are typically identified in the early stage of the testing and inspection planning, and should be addressed as early as possible (e.g. in the test plan). There may be several reasons for such a non-conformity: to account for interfaces with the test equipment, to conservatively cover several or future design configurations, etc.

- Non-conformity between the manufactured test specimen and the design of the test specimen. Such a non-conformity may be the result of the manufacturing of the test specimen.

While it is convenient to define any possible non-conformity in as early as possible, the applicant does not need to make the distinction between the two types of non-conformity above as long as they are explicitly addressed, justified in the verification document or by cross reference to the test plan or other documents. However, testing for the demonstration of compliance with the applicable environmental protection requirements should be conducted in the final design of the product having incorporated the change.

Certification is typically an iterative process in which the design is under continuous evolution. If the type design evolves after the time of the testing and inspections, then the final type design should be checked against the proposed type design (as it was at the time of the testing and inspections), and the differences (if any) should be analysed to ensure that the testing and inspections' results are representative of the final configuration. However, such changes made to the type design may lead to the invalidation of the testing and inspections' results and the need to repeat the testing and inspections. It is recommended that the design organisation should have a thorough configuration management process to track the evolving type design.

Conformity of test and measuring equipment: the configuration of the test and measuring equipment should be defined in the test plan and should include the following:

- definition/design of the test equipment (relevant tools, mechanical parts, electronic components used to execute the test); and
- definition of the measuring equipment:
  - type/model of sensors, together with their technical characteristics;
  - position and orientation of exciters and sensors; and
  - electronic measuring equipment (in some cases, this may also include the acquisition and post-processing of data).

The configuration of the test and measuring equipment should be defined and controlled through certification test plans and supporting documentation, according to the design assurance system, if applicable. The test plan should also include the following elements:

- the test cases, methods, and procedures for test execution;
- the pass-fail criteria; and
- pre-, during- and post-test inspections.

The verification document should confirm that the test and measuring equipment conforms to its purpose, and that the sensors and measuring system are appropriately calibrated. Any non-conformity should be assessed, and it should be justified that it will not compromise the test purpose and results. This may be done either in the verification document or by cross reference to other documents (test minutes of meetings, test notes, etc.).

Use of the term 'adequate': the test specimen, as well as the test and measuring equipment, is considered 'adequate' as long as the test execution on the manufactured test specimen (including any non-conformity) and the use of the installed test set-up do not compromise the test purpose and results (for example, by providing better performance than the proposed type design, or masking any potential failure mode or behaviour).

Changes that affect the validity of the verification document: if changes need to be introduced to the test specimen or to the test and measurement equipment after the verification is documented (and before the test is undertaken), then the verification document must be updated. The updated

verification document must be made available to EASA before the test if EASA has informed the applicant that it will witness or carry out the tests or inspections.

Development versus certification tests: sometimes, tests on specimens that conform to a preliminary design, but are not intended for certification (known as development tests), are performed as part of a risk control strategy and to develop knowledge of a subject. Problems and failures found during development are part of the process of increasing the understanding of the design, including its failure modes and the potential for optimisation. Such development tests do not need to meet the requirements of point 21L.A.66(c).

Any planned test event should be classified in advance as either a development test or a certification test. Tests that support the compliance demonstration should be classified as certification tests.

It is acceptable for a development test to finally form part of the compliance demonstration, and it may be declared afterwards to be a certification test as long as it meets the requirements of point 21L.A.66(c). For this reason, it is important to keep the configuration of such tests under control.

If the test specimen used for a certification test has already undergone a series of previous tests that may affect or ultimately invalidate its acceptance as required by point 21L.A.66(c), this aspect should be considered when documenting the verification, and specific analyses or inspections may be required.

Because of the above aspects, EASA advises applicants to inform EASA if they intend to conduct a campaign of development tests that may eventually be used as certification tests to establish whether EASA would wish to witness the test(s).

## **GM1 21L.A.66(d) Demonstration of compliance**

### **FLIGHT TESTING**

Detailed material on flight testing for compliance demonstration is included in the applicable CSs and GM. Information on flight testing for compliance demonstration with the applicable environmental protection requirements may be found in Volumes I, II and III of Annex 16 to the Chicago Convention and in ICAO Doc 9501 'Environmental Technical Manual'.

## **AMC1 21L.A.66(e)(1) Demonstration of compliance**

### **DATA AND INFORMATION REVIEW**

Availability of compliance data (see point 21L.A.66(e)): data and information required to be provided by the applicant should be made available to EASA in a reliable and efficient way.

## **AMC1 21L.A.66(e)(2) Demonstration of compliance**

### **TESTS AND INSPECTIONS**

The applicant should inform EASA sufficiently in advance about the execution of tests and inspections that:

- are used for compliance-demonstration purposes; and
- have been identified as being of particular interest to EASA during the review and approval of the compliance-demonstration plan

in order to permit EASA the opportunity to witness or carry out these inspections or tests.

The applicant may propose to EASA to witness or carry out flight or other tests of particular aspects of the product during its development and before the type design is fully defined.

However, in case of flight tests, the applicant should perform the tests before EASA witnesses or performs them to ensure that no feature of the product precludes the safe conduct of the evaluation requested. EASA may require any such tests to be repeated once the type design is fully defined to ensure that subsequent changes have not adversely affected the conclusions from any earlier evaluation.

A verification document as per point 21L.A.66(c) is required for the above tests.

## **AMC1 21L.A.66(e)(3) Demonstration of compliance**

### **FIRST-ARTICLE PHYSICAL INSPECTION**

The applicant should be prepared for any additional investigations as notified by EASA according to point 21L.B.83(c).

Refer to AMC1 21L.A.25(e)(3) for an explanation of the activities performed under the first-article inspection.

## **GM1 21L.A.66(f) Demonstration of compliance**

### **DECLARATION OF COMPLIANCE**

All compliance demonstrations in accordance with the compliance-demonstration plan, including all the testing and inspections in accordance with point 21L.A.66(c) and all flight testing in accordance with point 21L.A.66(d) and those necessary to determine compliance with the applicable environmental protection requirements, should be completed before the issuance of the final declaration of compliance.

‘No feature or characteristic’ that may make the changed product unsafe under point 21L.A.66(f)(2) means the following: while every effort is made to address in the applicable certification basis all the risks to product safety that may be caused by the product, experience shows that safety-related events may occur with products in service, even though compliance with the certification basis is fully demonstrated. One of the reasons may be that some existing risks are not properly addressed in the certification basis. Therefore, the applicant should declare that it has not identified any such feature or characteristic.

‘No feature or characteristic’ that may make the changed product environmentally incompatible under point 21L.A.66(f)(2):

It is assumed that environmental compatibility is demonstrated when the changed product complies with the applicable environmental protection requirements. Therefore, the applicant, when declaring that the changed product complies with the applicable environmental protection requirements under point 21L.A.66(f)(1), should also declare that it has not identified any such feature or characteristic.

## **AMC1 21L.A.67 Requirements for the approval of a minor change to a type certificate**

(a) Applicability of point 21L.A.67

Point 21L.A.67 should be complied with by applicants for the approval of a minor change to a type certificate (TC), and by design organisation approval (DOA) holders that approve minor changes under their own privileges.

Point 21L.A.67(c), however, only applies to projects for which an application is submitted to EASA. For DOA holders that approve minor changes under their privileges, the justification of compliance and the declaration of compliance required by point 21L.A.67(b) should be produced but do not need to be submitted to EASA. They should be, however, kept on record and submitted to EASA on request during its DOA continued surveillance process.

(b) The approval process

The approval process comprises the following steps:

*Note:* Steps 1, 2 and 4 should be followed only by applicants for minor changes approved by EASA. DOA holders that approve minor changes under their privileges should refer to AMC No 1 to 21.A.263(c)(2) or AMC No 2 to 21.A.263(c)(2), as applicable to their approval process.

(1) Application

When the minor change is approved by EASA, an application should be submitted to EASA as described in point 21L.A.65 and in AMC 21L.A.65.

(2) Certification basis

(3) Justification of compliance

(4) Declaration of compliance

(c) Certification basis

The certification basis for a minor change consists of a subset of the elements of the product's certification basis 'incorporated by reference in the type certificate'.

The certification basis 'incorporated by reference in the type certificate' is the certification basis for the product as recorded in the type certificate data sheet (TCDS) for the product type/model in the applicable configuration(s).

The certification basis contains the applicable airworthiness and environmental protection requirements specified by reference to their amendment level, as complemented by special conditions, equivalent safety findings, deviations, a proposed 'elect to comply', etc., as applicable.

By way of derogation from the above, CSs that became applicable after those incorporated by reference in the TC may be used for the approval of a minor change (see the guidance below on certification specifications that became applicable after those 'incorporated by reference in the type certificate').

If other changes are required for the embodiment of the minor change, the certification basis corresponding to the product modified by these other changes should also be considered when determining the certification basis for the minor change.

(d) Justification of compliance required by point 21L.A.67(c)

The applicant should justify compliance with the certification basis under point 21L.A.67(a) for all areas that are either physically changed or functionally affected by the minor change.

- (1) Means of compliance: the applicant should define and record the means (calculation, test or analysis, etc.) by which compliance is demonstrated. Appendix A to AMC1 21L.A.24(b) may be used to describe how compliance is demonstrated.

- (2) Compliance documents: the compliance demonstration should be recorded in compliance documents. For minor changes, one comprehensive compliance document may be sufficient, provided that it contains evidence of all aspects of the compliance demonstration.

See also the additional guidance in point (e) below.

- (3) Aircraft manuals: where applicable, supplements to manuals (e.g. aircraft flight manual (AFM), aircraft maintenance manual (AMM), etc.) may be issued.

See also additional guidance in point (f) below on embodiment/installation instructions.

- (e) Definition of the change to the type certificate

The change to the type certificate should be defined in accordance with GM 21L.A.61.

- (f) Embodiment/installation instructions

The instructions for the embodiment/installation of the change (e.g. service bulletin, modification bulletin, production work order, etc.) should be defined. This may include the installation procedure, the required material, etc.

- (g) Certification specifications that are applicable to the product on the date of the application for the change

- (1) Minor changes are those changes that do not affect the airworthiness of the product. This means that the certification basis for the minor change may consist of the items of the certification basis incorporated by reference in the TCDS of the product type/model, and normally it should not be necessary for a minor change to use certification specifications that became applicable after those that are incorporated by reference in the type certificate.

- (2) On the other hand, the applicant may elect to use the certification specifications that are applicable to the product on the date of the application for the change for the compliance demonstration. This does not affect the classification of the change.

- (h) Feature or characteristic that affects the airworthiness or environmental compatibility of the changed product

The term 'no feature or characteristic' applies to a minor change, in which case the effect of the change on the product safety or environmental compatibility is quite low. Minor changes should not be approved if either the design organisation approval (DOA) holder approving minor changes under its privileges or EASA is aware of a feature or characteristic that may make the changed product unsafe or environmentally incompatible for the uses for which the approval is requested.

## **GM1 21L.A.67(c) Requirements for the approval of a minor change to a type certificate**

The level of detail of the justification that is referred to in point 21L.A.67(c) should be the same regardless of whether the change is approved by EASA or under a design organisation approval (DOA) privilege, to allow the change to be assessed in the frame of the DOA surveillance.

## AMC1 21L.A.68 Requirements for the approval of a major change to a type certificate

- (a) For major changes approved by EASA, the applicant should use all the AMC and GM to point 21L.A.25.
- (b) For major changes approved by the design organisation approval (DOA) holder on the basis of its privileges under point 21.A.263(c)(8) of Annex I (Part 21), the process described in AMC No 2 to 21.A.263(c)(5), (8) and (9) applies.

## AMC1 21L.A.68(c) Requirements for the approval of a major change to a type certificate

For the demonstration by the applicant that there are no unresolved issues, see AMC1 21L.A.27(d).

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## SUBPART E — SUPPLEMENTAL TYPE CERTIFICATES

### GM1 21L.A.81 Scope

The term ‘changes to the type certificate’ is consistently used in Subparts D and E of Part 21 Light, as well as in the related AMC and GM. This term does not refer to changing the document that reflects the type certificate (TC) but to changing the elements of the TC as defined in point 21L.B.47(b). Therefore, the processes contained in Subparts D and E of Part 21 Light should be used for the approval of changes to the elements listed in point 21L.B.47(b).

### GM1 21L.A.83(a) Demonstration of design capability

#### TERMS OF APPROVAL COVERING THE RESPECTIVE CATEGORY OF THE PRODUCT

If an applicant has a design organisation approval (DOA) issued under Subpart J of Annex I (Part 21) and it wishes to use this approval to meet the eligibility criteria of point 21L.A.83, it will need to apply for a change to the Terms of Approval to include the new aircraft type within the list of products.

### GM1 21L.A.83(b) Demonstration of design capability

#### DECLARATION OF PRODUCT CATEGORY

Organisations that have declared their design capability under Subpart J of Annex Ib (Part 21 Light) should update their declaration of design capability to include the new product when submitting a new application for a type certificate (see point 21L.A.173(c) ‘Declaration of design capability’).

### AMC1 21L.A.84(a) Application for a supplemental type certificate

#### FORM AND MANNER

The applicant should file an application using the web-based ‘EASA Applicant Portal’<sup>16</sup> or the application form for a supplemental type certificate (STC), which may be downloaded from the EASA website.

If the form is filled in offline, it should be completed in accordance with the instructions embedded at the bottom of the application form and sent to EASA by email or regular mail following the information provided on the EASA website<sup>17</sup>.

### AMC1 21L.A.84(b)(1) Application for a supplemental type certificate

#### CERTIFICATION BASIS

Point 21L.A.65(b) ‘a proposal for the type-certification basis and the applicable environmental protection requirements, prepared in accordance with the requirements and options specified in point 21L.B.101’.

<sup>16</sup> <https://ap.easa.europa.eu> (accessed: 20 October 2023)

<sup>17</sup> <https://www.easa.europa.eu/document-library/application-forms/certificates-and-approvals>  
<https://ap.easa.europa.eu> (accessed: 20 October 2023)

The proposed type-certification basis should include applicable certification specifications, proposed special conditions, proposed equivalent safety findings, as well as a proposed 'elect to comply' and proposed deviations, as applicable.

## **AMC1 21L.A.85 Demonstration of compliance**

### **DEMONSTRATION OF COMPLIANCE FOR A SUPPLEMENTAL TYPE CERTIFICATE**

The description of the design change should include an explanation of the purpose of the change, the pre-modification and post-modification configuration(s) of the product, schematics/pictures, and any other detailed features and boundaries of the physical change (this may be supplemented by drawings or outlines of the design, if this helps to understand the design change), as well as the identification of the changes in areas of the product that are functionally affected by the change, and the identification of any changes to the approved manuals.

The applicant should identify any reinvestigations that are necessary to demonstrate compliance. This is a list of any affected items of the applicable certification basis for which a new demonstration is necessary, together with the means (e.g. calculation, test or analysis) by which it is proposed to demonstrate compliance.

- (a) Compliance documentation for the demonstration of compliance under point 21L.A.85(a) comprises one or more test or inspection programmes/plans, reports, drawings, design data, specifications, calculations, analyses, etc., and provides a record of the means by which compliance with the applicable type-certification basis and environmental protection requirements is demonstrated.
- (b) Each compliance document should typically contain:
  - the reference of the certification specifications, special conditions or environmental protection requirements addressed by the document;
  - substantiation data demonstrating compliance (except test or inspection programmes/plans);
  - a statement by the applicant declaring that the document provides the proof of compliance for which it has been created; and
  - the appropriate authorised signature.
- (c) Each compliance document should be unequivocally identified by its reference and issue date. The various issues of a document should be controlled and comply with point 21L.A.7.

The level of detail of the compliance documentation that is referred to in point 21L.A.85(a) should be the same regardless of whether the change is approved by EASA or under a design organisation approval (DOA) privilege, to allow the change to be assessed in the frame of the DOA surveillance.

For major changes (STCs) approved by a design organisation approval (DOA) holder on the basis of its privileges as per point 21.A.263(c)(8) of Annex I (Part 21), the process described in AMC No 2 to 21.A.263(c)(5), (8) and (9) applies.

## AMC1 21L.A.85(b) Demonstration of compliance

### COMPLIANCE-DEMONSTRATION PLAN

The compliance-demonstration plan is a document that allows the applicant and EASA to manage and control the evolving supplemental type certificate design, as well as the process of compliance demonstration by the applicant and its verification by EASA when required.

In particular, the following information should typically be expected:

- identification of the relevant personnel that make decisions affecting airworthiness and environmental protection, and that will interface with EASA during the critical design review prior to issuance of the flight conditions and during the first-article inspection (if required), unless otherwise identified to EASA (e.g. within the design organisation procedures);
- a project schedule, including major milestones;
- subcontracting arrangements for design, environmental protection and/or production.

The applicant should provide detailed information about the proposed means of compliance with the applicable airworthiness and environmental protection requirements identified under point 21L.B.101. The information provided should be sufficient for EASA to easily determine the means of compliance used.

This should include the following:

- a compliance checklist addressing each requirement, the proposed means of compliance (see Appendix A to AMC1 21L.A.85 below for the relevant codes), and the related compliance document(s);
- identification of industry standards (Society of Automotive Engineers (SAE), American Society for Testing and Materials (ASTM), European Organisation for Civil Aviation Equipment (EUROCAE), AeroSpace and Defence Industries Association of Europe (ASD), etc.), methodology documents, handbooks, technical procedures, technical documents and specifications specified in the type certificate data sheet, certification memoranda, policy statements, guidance material, etc., that are proposed in the demonstration of compliance;
- when the compliance demonstration involves testing (point 21L.A.85(c) and (d)), a description of the ground- and flight-test article(s), test method(s), test location(s), test schedule, test house(s), test conditions (e.g. limit load, ultimate load), as well as of the intent/objective(s) of the testing; and
- when the compliance demonstration involves analyses/calculations, a description/identification of the tools (e.g. name and version/release of the software programs) and methods used, the associated assumptions, limitations and/or conditions, as well as of the intended use and purpose; furthermore, the validation and verification of such tools and methods should be addressed.

For every aspect mentioned above, the applicant should clearly identify whether the demonstration of compliance involves any method (analysis or test) which is novel or unusual for the applicant. In addition, the applicant should identify any deviations from the published AMC to the relevant CSs.

## Appendix A to AMC1 21L.A.85 Demonstration of compliance

### MEANS-OF-COMPLIANCE CODES

Type of compliance	Means of compliance	Associated compliance documents
Engineering evaluation	MC0: (a) compliance statement (b) reference to design data (c) election of methods, factors, etc. (d) definitions	(a) Design data (b) Recorded statements
	MC1: design review	(c) Descriptions (d) Drawings
	MC2: calculation/analysis	(e) Substantiation reports
	MC3: safety assessment	(f) Safety analyses
Tests	MC4: laboratory tests	(g) Test programmes (h) Test reports (i) Test interpretations
	MC5: ground tests on related product(s)	
	MC6: flight tests	
	MC8: simulation	
Inspection	MC7: design inspection/audit	(j) Inspection or audit reports
Equipment qualification	MC9: equipment qualification	<i>Note:</i> Equipment qualification is a process that may include all previous means of compliance at equipment level.

## AMC1 21L.A.85(a);(b) Demonstration of compliance

### COMPLIANCE DOCUMENTATION

- (a) Compliance documentation comprises one or more test or inspection programmes/plans, reports, drawings, design data, specifications, calculations, analyses, etc., and provides a record of the means by which compliance with the applicable type-certification basis and environmental protection requirements is demonstrated.
- (b) Each compliance document should typically contain:
- the reference of the certification specifications, special conditions or environmental protection requirements addressed by the document;
  - substantiation data demonstrating compliance (except test or inspection programmes/plans);
  - a statement by the applicant declaring that the document provides the proof of compliance for which it has been created; and
  - the appropriate authorised signature.
- (c) Each compliance document should be unequivocally identified by its reference and issue date. The various issues of a document should be controlled and comply with point 21L.A.7.

## AMC1 21L.A.85(c) Demonstration of compliance

### INSPECTIONS AND TESTS

Proposed type design: this term defines the type design (or the portion of the type design) as it is determined at the time when the testing and inspections are carried out.

Verification document (also known as ‘statement of conformity’): before each testing and inspection, the verification document must confirm that the test specimen conforms with the proposed design, the test and measuring equipment is adequate for the test, and the sensors and measuring system are appropriately calibrated.

Conformity of the test specimen: the documented verification is intended to ensure that the manufactured test specimen, even in the presence of non-conformities, adequately represents the proposed type design. Possible types of non-conformity may be the following:

- Non-conformity between the design of the test specimen and the proposed type design at the time of the test. These are typically identified in the early stage of the testing and inspection planning, and should be addressed as early as possible (e.g. in the test plan). There may be several reasons for such a non-conformity: to account for interfaces with the test equipment, to conservatively cover several or future design configurations, etc.
- Non-conformity between the manufactured test specimen and the design of the test specimen. Such a non-conformity may be the result of the manufacturing of the test specimen.

While it is convenient to define any possible non-conformity as early as possible, the applicant does not need to make the distinction between the two types of non-conformity above as long as they are explicitly addressed, justified in the verification document or by cross reference to the test plan or other documents. However, testing for the demonstration compliance with the applicable environmental protection requirements should be conducted in the final design of the product having incorporated the change.

Type certification is typically an iterative process in which the design is under continuous evolution. If the type design evolves after the time of the testing and inspections, then the final type design should be checked against the proposed type design (as it was at the time of the testing and inspections), and the differences (if any) should be analysed to ensure that the testing and inspection results are representative of the final configuration. However, such changes made to the type design may lead to the invalidation of the testing and inspection results and the need to repeat the testing and inspections. It is recommended that the design organisation should have a thorough configuration management process to track the evolving type design.

Conformity of test and measuring equipment: the configuration of the test and measuring equipment should be defined in the test plan and include the following:

- definition/design of the test equipment (relevant tools, mechanical parts, electronic components used to execute the test); and
- definition of the measuring equipment:
  - type/model of sensors, together with their technical characteristics;
  - position and orientation of exciters and sensors; and
  - electronic measuring equipment (in some cases, this may also include the acquisition and post-processing of data).

The configuration of the test and measuring equipment should be defined and controlled through certification test plans and supporting documentation, according to the design assurance system, if applicable. The test plan should also include the following elements:

- the test cases, methods, and procedures for test execution;
- the pass–fail criteria; and
- pre-, during- and post-test inspections.

The verification document should confirm that the test and measuring equipment conforms to its purpose, and that the sensors and measuring system are appropriately calibrated. Any non-conformity should be assessed, and it should be justified that it will not compromise the test purpose and results. This may be done either in the verification document or by cross reference to other documents (test minutes of meetings, test notes, etc.).

Use of the term ‘adequate’: the test specimen, as well as the test and measuring equipment, is considered ‘adequate’ as long as the test execution on the manufactured test specimen (including any non-conformity) and the use of the installed test set-up do not compromise the test purpose and results (for example, by providing better performance than the proposed type design, or masking any potential failure mode or behaviour).

Changes that affect the validity of the verification document: if changes need to be introduced to the test specimen or to the test and measurement equipment after the verification is documented (and before the test is undertaken), then the verification document must be updated. The updated verification document must be made available to EASA before the test if EASA has informed the applicant that it will witness or carry out the tests or inspections.

Development versus certification tests: sometimes, tests of specimens that conform to a preliminary design, but are not intended for certification (known as development tests), are performed as part of a risk control strategy and to develop knowledge of a subject. Problems and failures found during development are part of the process of increasing the understanding of the design, including its failure modes and the potential for optimisation. Such development tests do not need to meet the requirements of point 21L.A.85(c).

Any planned test event should be classified in advance as either a development test or a certification test. Tests that support the compliance demonstration should be classified as certification tests.

It is acceptable for a development test to finally form part of the compliance demonstration, and it may be declared afterwards to be a certification test as long as it meets the requirements of point 21L.A.85(c). For this reason, it is important to keep the configuration of such tests under control.

If the test specimen used for a certification test has already undergone a series of previous tests that may affect or ultimately invalidate its acceptance as required by point 21L.A.85(c), this aspect should be considered when documenting the verification, and specific analyses or inspections may be required.

Because of the above aspects, EASA advises applicants to inform EASA if they intend to conduct a campaign of development tests that may eventually be used as certification tests to establish whether EASA would wish to witness the tests.

## GM1 21L.A.85(d) Demonstration of compliance

### FLIGHT TESTING

Detailed material on flight testing for compliance demonstration is included in the applicable CSs and GM. Information on flight testing for compliance demonstration with the applicable environmental protection requirements, especially in terms of aircraft noise, may be found in Volumes I, II and III of Annex 16 to the Chicago Convention and in ICAO Doc 9501 ‘Environmental Technical Manual’.

## AMC1 21L.A.85(e)(1) Demonstration of compliance

### REVIEW OF DATA AND INFORMATION RELATED TO THE DEMONSTRATION OF COMPLIANCE

Availability of compliance data (see point 21L.A.85(e): data and information required to be provided by the applicant should be made available to EASA in a reliable and efficient way as agreed with EASA.

## AMC1 21L.A.85(e)(2) Demonstration of compliance

### TESTS AND INSPECTIONS

The applicant should inform EASA sufficiently in advance about the execution of tests and inspections that:

- are used for compliance demonstration purposes; and
- have been identified as being of particular interest to EASA during the review and approval of the compliance demonstration plan

in order to permit EASA the opportunity to witness or carry out these inspections or tests.

The applicant may propose to EASA to witness or carry out flight or other tests of particular aspects of the product during its development and before the type design is fully defined.

However, in case of flight tests, the applicant should perform the tests before EASA witnesses or performs them to ensure that no features of the product preclude the safe conduct of the evaluation requested. EASA may require any such tests to be repeated once the type design is fully defined to ensure that subsequent changes have not adversely affected the conclusions from any earlier evaluation.

A verification document as per point 21L.A.85(c) is required for the above tests.

## AMC1 21L.A.85(e)(3) Demonstration of compliance

### PHYSICAL INSPECTION OF THE FIRST ARTICLE

The applicant should be prepared for any additional investigations as notified by EASA according to point 21L.B.102(c).

Refer to AMC1 21L.A.25(e)(3) for the description of the compliance activities of the first-article inspection.

## GM1 21L.A.85(f) Demonstration of compliance

### DECLARATION OF COMPLIANCE

All compliance-demonstration activities conducted in accordance with the compliance-demonstration plan, including all the testing and inspections conducted in accordance with point 21L.A.85(c) and all flight testing conducted in accordance with point 21L.A.85(d) and those necessary to determine compliance with the applicable environmental protection requirements should be completed before the issuance of the final declaration of compliance.

‘No feature or characteristic’ that may make the product unsafe in point 21L.A.85(f)(2) means the following: while every effort is made to address in the applicable certification basis all the risks to product safety that may be caused by the product, experience shows that safety-related events may occur with products in service, even though compliance with the certification basis is fully

demonstrated. One of the reasons may be that some existing risks are not properly addressed in the certification basis. Therefore, the applicant should declare that it has not identified any such feature or characteristic.

‘No feature or characteristic’ that may make the changed product environmentally incompatible (point 21L.A.85(f)(2)):

It is assumed that environmental compatibility is demonstrated when the changed product complies with the applicable environmental protection requirements. Therefore, the applicant, when declaring that the changed product complies with the applicable environmental protection requirements under point 21L.A.85(f)(1), should also declare that they have not identified any such feature or characteristic.

### **AMC1 21L.A.86 Requirements for approval of a supplemental type certificate**

- (a) For supplemental type certificates (STCs) approved by EASA, the AMC and GM to point 21L.A.25 should be followed by the applicant.
- (b) In accordance with point 21L.A.86(b), the compliance-demonstration process must always cover the specific configuration(s) in the type certificate (TC) to which the STC under approval is applied. This (these) configuration(s) should be defined by the change to the type certificate considering the type certificate data sheet (TCDS) and the relevant optional installations. The demonstration of compliance covers this (these) applicable specific configuration(s). Consequently, the approval of the STC excludes any other configurations, in particular those that already exist, but are not considered in the compliance-demonstration process, as well as those that may be certified in the future.
- (c) For STCs approved by the design organisation approval (DOA) holder under its privilege as per point 21.A.263(c)(9) of Annex I (Part 21), the process described under AMC No 2 to 21.A.263(c)(5), (8) and (9) applies.

### **AMC1 21L.A.86(a)(5) Requirements for approval of a supplemental type certificate**

For the demonstration by the applicant that there are no unresolved issues, see AMC1 21L.A.27(d).

## **SUBPART F — CHANGES TO AIRCRAFT FOR WHICH DESIGN COMPLIANCE HAS BEEN DECLARED**

### **GM1 21L.A.101 Scope**

The term ‘change to the design of an aircraft which was subject to a declaration’ is used in Part 21 Light Subpart F, as well as in the related AMC and GM, to refer to any changes to the elements of the aircraft design data as defined in point 21L.A.46. Therefore, a declaration of design compliance should be required for any changes to the aircraft design data defined in point 21L.A.46.

### **GM1 21L.A.102 Standard changes**

#### **APPLICABLE CERTIFICATION SPECIFICATIONS**

CS-STAN<sup>18</sup> contains the certification specifications referred to in point 21L.A.102(a)(1). Guidance on the implementation of Standard Changes and Standard Repairs may be found in AMC M.A.801 of the AMC to Part-M.

### **GM1 21L.A.103 Classification of changes to the design of an aircraft for which design compliance has been declared**

Major changes that are classified as being ‘substantial’ should require a new declaration of design compliance to be submitted in accordance with Subpart C of Annex Ib (Part 21 Light).

Examples of major changes that are considered substantial may be found in Appendix B to GM1 21L.A.103.

#### **(a) PURPOSE OF CLASSIFICATION**

The purpose of the classification of changes to the design of an aircraft that was subject to a declaration made in accordance with point 21L.A.63 of Subpart C is to allow the declarants to determine the route to be followed for the declaration and whether they need to submit the declaration to EASA (major change) or to maintain it in order to make it available to EASA upon request (minor change).

Point 21L.A.63, as referenced by point 21L.A.103(a), requires that all changes be classified as either ‘major’ or ‘minor’ using the criteria in point 21L.A.63.

#### **(b) INTRODUCTION**

(1) Point 21L.A.63(b) and (c), as referenced by point 21L.A.103(a), proposes criteria for the classification of design changes as either ‘minor’ or ‘major’.

This GM is intended to provide guidance on the term ‘appreciable effect’ affecting the airworthiness of the product, the declared noise or emissions levels or affecting any of the other characteristics mentioned in point 21L.A.63, where ‘airworthiness’ is interpreted in the context of a product in conformity with the applicable detailed technical specifications and is in condition for safe operation. It provides complementary

<sup>18</sup> <https://www.easa.europa.eu/en/certification-specifications/cs-stan-standard-changes-and-standard-repairs>

guidelines to assess a change to the declared aircraft in order to meet the requirements of point 21L.A.103 where classification is the first step of a procedure.

Characteristics affecting the environmental compatibility of the product are characteristics affecting the compliance of the product with the applicable environmental protection requirements.

*Note:* For classification of repairs, see GM 21L.A.223.

Although this GM provides guidance on the classification of major changes, as opposed to minor changes as defined in point 21L.A.103, the GM and point 21L.A.103 are deemed entirely compatible.

Appendix A to GM1 21L.A.103 provides examples of major changes and a classification process.

(c) **ASSESSMENT OF A CHANGE FOR CLASSIFICATION**

(1) **Changes to the declared design**

Point 21L.A.103 addresses all changes to any of the aspects of a declaration of design compliance that was submitted under Subpart C.

(2) **Reserved**

(3) **Classification process (see also the flow chart ‘Classification process’ in Appendix A to GM 21L.A.103)**

Point 21L.A.103 requires all changes to be classified as either ‘major’ or ‘minor’, using the criteria of point 21L.A.63.

Wherever there is doubt as to the classification of a change, EASA should be consulted for clarification.

When the strict application of the point (c)(4) criteria results in a major classification, the declarant may request reclassification by EASA.

A simple design change planned to be mandated by an airworthiness directive may be reclassified as minor due to the involvement of EASA in the continued airworthiness process when this is agreed between EASA and the declarant.

The reasons for a classification decision should be recorded.

(4) **General guidance on the classification of major changes**

A change that is judged to have an ‘appreciable effect on the mass, balance, structural strength, reliability, declared noise or emissions levels, operational characteristics, or other characteristics affecting the airworthiness or the environmental compatibility’ is classified as major, in particular, but not only, when one or more of the following conditions are met:

- (i) where the change requires an adjustment of the detailed technical specifications other than electing to comply with later certification specifications;
- (ii) where the declarant proposes a new interpretation of the certification specifications used to define the applicable detailed technical specifications;
- (iii) where the demonstration of compliance uses methods that have not been previously determined as appropriate for the nature of the change;

- (iv) where the extent of new substantiation data necessary to comply with the applicable detailed technical specifications and the degree to which the original substantiation data has to be reassessed and re-evaluated is considerable;
- (v) where the change alters the airworthiness limitations or the operating limitations;
- (vi) where the change is made mandatory by an airworthiness directive or the change is the terminating action of an airworthiness directive (ref. point 21L.A.4), see *Note 1*; and
- (vii) where the design change introduces or affects functions where the failure effect is classified as ‘catastrophic’ or ‘hazardous’.

*Note 1:* A change previously classified as minor and approved prior to the decision to issue an airworthiness directive needs no reclassification. However, EASA retains the right to review the change and reclassify/reapprove it if found necessary.

*Note 2:* The conditions listed in points (i) through (vii) above are an explanation of the criteria noted in point 21L.A.63 as referenced by point 21L.A.103.

For an understanding of how to apply the above conditions, it is useful to take note of the examples given in Appendix A to GM 21L.A.103.

(5) Guidance on the classification of changes to aircraft flight manuals (AFMs)

The following changes to the AFM are deemed to be minor:

- (i) revisions to the AFM associated with changes to the design that are classified as minor in accordance with point 21L.A.103;
- (ii) revisions to the AFM that are not associated with changes to the design (also identified as stand-alone revisions) which fall into one of the following categories:
  - (A) changes to limitations or procedures that remain within already declared limits (e.g. weight, structural data, etc.);
  - (B) consolidation of two or more previously declared and compatible AFMs into one, or the compilation of different parts taken from previously declared and compatible AFMs that are directly applicable to the individual aircraft (customisation); and
  - (C) the introduction into a given AFM of compatible and previously declared AFM amendments, revisions, appendices or supplements; and
- (iii) administrative revisions to the AFM, defined as follows:
  - (A)
    - (a) editorial revisions or corrections to the AFM;
    - (b) conversions of previously Federal Aviation Administration (FAA)- or EASA-approved combinations of units of measurement added to the AFM in a previously approved manner;
    - (c) the addition of aircraft serial numbers to an existing AFM where the aircraft configuration, as related to the AFM, is identical to the configuration of aircraft already covered by that AFM;
    - (d) the removal of references to aircraft serial numbers no longer applicable to that AFM; and

- (e) the translation of an AFM into the official language of the State of design or State of registry.
- (6) Guidance on the classification of changes to declared aircraft noise levels
  - (i) Volume I of ICAO Doc 9501 'Environmental Technical Manual' defines 'no-acoustical changes' as changes that would result in very small changes in the declared noise level(s) and provide criteria for their determination. These changes have 'no appreciable effect' on the declared noise levels. Consequently, they are classified as minor changes and the declared noise level(s) remain unchanged.
  - (ii) All other changes to the declared aircraft noise levels are classified as major changes.
  - (iii) Examples of major changes are provided in Appendix A to GM1 21L.A.103.

## Appendix A to GM1 21L.A.103 Classification of changes to the design of an aircraft for which design compliance has been declared

### EXAMPLES OF MAJOR CHANGES PER DISCIPLINE

The information below is intended to provide a few examples of major changes per discipline, resulting from the application of point 21L.A.103. 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, 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).

The persons that assess the change for its 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.).

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

In Part 21 Light, 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 should always be understood as being the opposite of 'no appreciable effect' as in the definition of minor change in point 21L.A.63. Strictly speaking, the phrase '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 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 reassessment of the emergency evacuation capability, or changes 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;
- changes to cabin layouts that affect evacuation path or access to exits;
- changes to the cabin area in striking distance of the occupant's head or torso introducing potentially injurious objects.

### 3. Flight

Changes which adversely affect the approved performance or 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 23.2510, the classification process is based on the functional aspects of the change and its potential effects on safety.

- (i) Where the failure effect is 'catastrophic' or 'hazardous', the change should be classified as 'major'.
- (ii) Where the failure effect is 'major', the change should be classified as 'major' if:
  - aspects of the compliance demonstration will use a means that has not been previously utilised 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 should also 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 applies, 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 declarant should assess the 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.

### 5. Propellers

Changes to:

- (i) diameter,
- (ii) aerofoil,
- (iii) planform,
- (iv) material,
- (v) 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 resubstantiation of the fatigue and static load determination used during the original compliance demonstration;
- (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 original detailed technical specifications;
- (vii) that introduce new materials or processes, particularly on critical components.

## 7. Noise

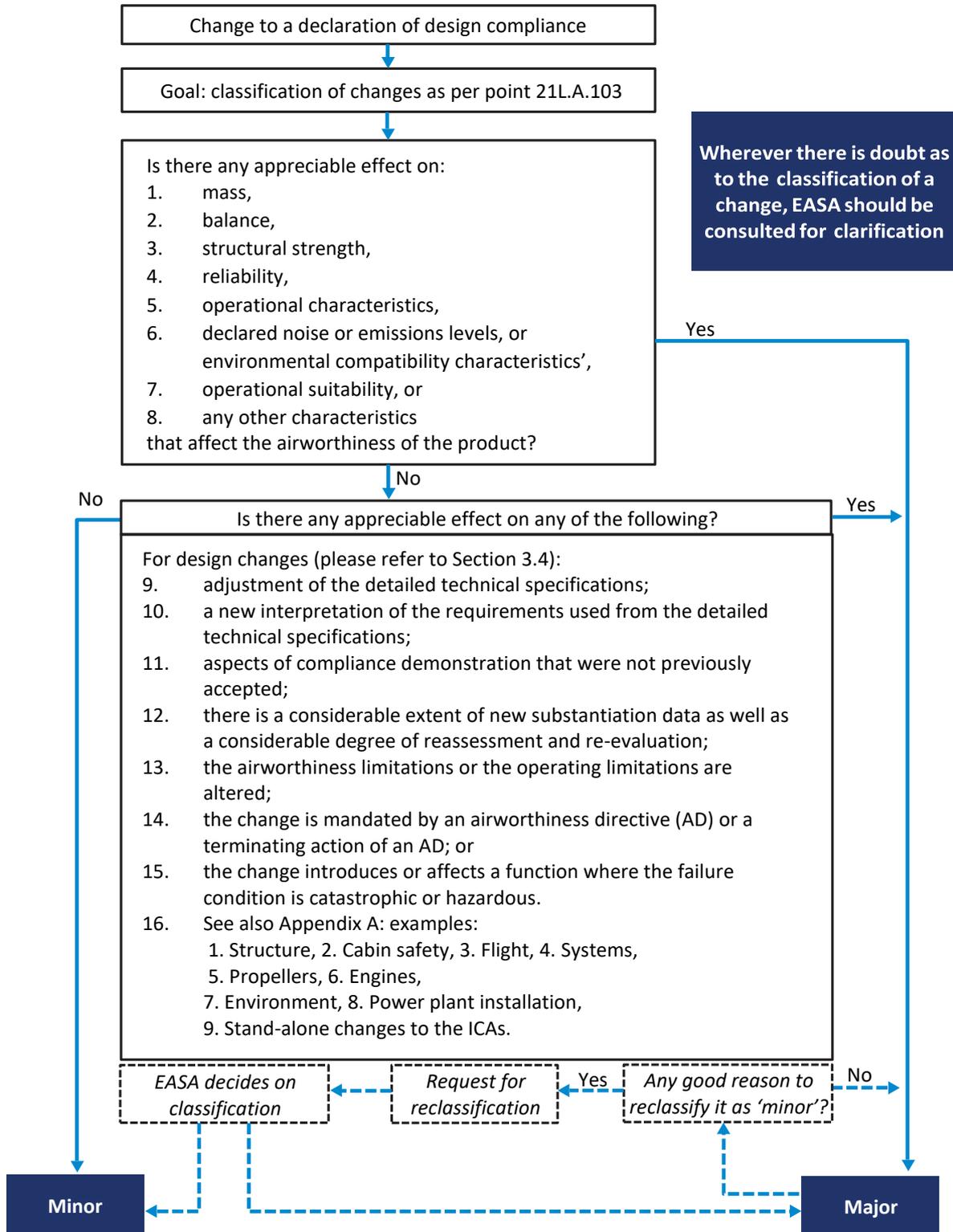
The examples provided below are not exhaustive and will not, in every case, result in an appreciable effect on the declared noise levels and, therefore, will not per se and in every case result in a major change classification.

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

- (i) 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  $V_Y$  (best rate of climb speed);
- (ii) 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.);
- (iii) a change of engine or propeller type;
- (iv) 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;
- (v) a change to the highest power in the normal operating range ('top of green arc');
- (vi) 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;
- (vii) a change to the engine inlet or exhaust including, if fitted, the inlet or exhaust muffler;

- (viii) a change in propeller diameter, tip shape, blade thickness or the number of blades;
  - (ix) the installation of a variable or adjustable pitch propeller in place of a fixed pitch propeller and vice versa;
  - (x) a change that causes a change to the angle at which air flows into the propeller.
8. 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.
9. Stand-alone changes to non-ALS ICAs that require additional work to demonstrate compliance with the applicable detailed technical specifications as follows:
- (i) the introduction of novel technology for inspection purposes related to an ALS task;
  - (ii) changes that adversely affect the assumptions made during the original demonstration of compliance: 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 limit loads; such criteria, and adverse changes, should be taken into consideration.

Declaration process



## Appendix B to point 21L.A.103 Classification of changes to the design of an aircraft for which design compliance has been declared

The following tables provide examples of ‘substantial’ changes. The classification may change due to cumulative effects and/or combinations of individual changes.

### A.1 Examples of ‘substantial’ changes for small aeroplanes (CS-23)

A.1.1 Table A-1 contains examples of changes that are ‘substantial’ for small aeroplanes (CS-23).

**Table A-1 — Examples of when a new declaration of design compliance would be required under Subpart C for substantial changes for small aeroplanes (CS-23)**

Example	Description of change	Notes
1.	Change to wing location (tandem, forward, canard, high/low).	Proposed change to the design is so extensive that a substantially complete demonstration of compliance with the applicable detailed technical specifications is required.
2.	Change to engine configuration (tractor/pusher).	Proposed change to the design is so extensive that a substantially complete demonstration of compliance with the applicable detailed technical specifications is required.
3.	Change from an all-metal to all-composite aeroplane.	Proposed change to the design is so extensive that a substantially complete demonstration of compliance with the applicable detailed technical specifications is required.

## AMC1 21L.A.105(a) Declaration of design compliance for minor changes

### REQUIREMENTS FOR THE DECLARATION OF A MINOR CHANGE

(a) Applicability of point 21L.A.105

Point 21L.A.105 should be complied with by declarants for the declaration of compliance of a minor change, including design organisation approval (DOA) holders that declare compliance of minor changes under their privileges as per point (c)(3) of point 21.A.263 of Annex I (Part 21).

In accordance with point 21L.A.105(c) for declarations of compliance for minor changes, the substantiating data and the declaration of compliance required by point 21L.A.105(a) should be produced but does not need to be submitted to EASA. They should be, however, kept on record and made available to EASA upon request during any oversight visit.

(b) The declaration process

The declaration process comprises the following steps:

- (1) classification of the change;
- (2) applicable detailed technical specifications;
- (3) determination of compliance;
- (4) declaration of design compliance.

(c) Detailed technical specifications

The detailed technical specifications for a minor change consist of the detailed technical specifications that were incorporated by reference in the declaration of design compliance that was submitted for the particular aircraft under Subpart C unless EASA has determined that these are no longer appropriate, and the latest detailed technical specifications should be complied with or the declarant elects to comply with these detailed technical specifications.

(d) Determination of compliance required by point 21L.A.105(a)

The declarant should determine compliance with the applicable detailed technical specifications established for the minor change for all areas that are either physically changed or functionally affected by the minor change.

- (1) **Means of compliance:** the declarant should define and record the means (calculation, test or analysis, etc.) by which compliance is determined. Appendix A to AMC1 21L.A.108(a) may be used for this purpose.
- (2) **Compliance documents:** the compliance determination should be recorded in compliance documents. For minor changes, one comprehensive compliance document may be sufficient, provided that it contains evidence of all aspects for compliance. AMC1 21L.A.108(b) may also be used, where applicable.
- (3) **Aircraft manuals:** where applicable, supplements to manuals (e.g. aircraft flight manual (AFM), aircraft maintenance manual (AMM), etc.) may be issued.

See also additional guidance below (point (e)) on embodiment/installation instructions.

(e) Embodiment/installation instructions

The instructions for the embodiment/installation of the change (e.g. service bulletin, modification bulletin, production work order, etc.) should be defined. This may include the installation procedure, the required material, etc.

## AMC1 21L.A.105(b) Declaration of design compliance for minor changes

### FORM AND MANNER

The declarant should complete and file a declaration of compliance for the minor change using the form which can also be downloaded from the EASA website for the declaration of minor changes/minor repair designs.

If there are any changes to the data (e.g. propeller or engine designation) that was provided in the EASA Part 21 Light database of declared noise levels as a result of the minor change, then this data should be added by the declarant.

The justification of the classification of the change should also be recorded.

**Declaration of design compliance for a Minor Change / Minor Repair Design**

<b>1. Designation</b>	
<b>Minor Change</b> <input type="checkbox"/>	<b>Minor Repair</b> <input type="checkbox"/>

<b>2. Product Identification</b>	
<input type="checkbox"/> Small Aeroplane with a MTOM of 1200Kg or less and a max seating configuration of 2 persons.	<input type="checkbox"/> Sailplane with a MTOM of 1200kg or less <input type="checkbox"/> Powered Sailplane with a MTOM of 1200kg or less <input type="checkbox"/> Balloon designed for no more than 4 persons <input type="checkbox"/> Hot Airship designed for no more than 4 persons.
<b>2.2 Applicability</b>	
<b>2.2.1 Design details</b>	Registered Declaration Number for the original product
	Original Declarant
	Type Name
	Model(s)
<b>2.3 Applicable technical specifications</b>	Please specify the applicable airworthiness code, e.g. CS-23 (if these are not the original technical specifications against which compliance was originally declared in accordance with Part 21 Light Subpart C due to the reasons stated in 21L.A.105 (a)(1) or (2) then this should be indicated here).

<b>3. Description</b>	
<b>3.1 Title</b>	Please limit to 40 characters
<b>3.2 Description</b>	
<b>3.3 Affected Areas</b> (including manuals)	
<b>3.4 Re-Investigations</b>	

**4. Declarants' declaration and acceptance of the General Conditions**

I declare that I have the legal capacity to make this declaration and that all information provided in this declaration is correct and complete.

I hereby declare that the design of the minor change/repair described in Section 3 is in compliance with the applicable detailed technical specifications detailed in Section 2.3 and the applicable environmental protection requirements.

I hereby declare that no features or characteristics have been identified that may make the aircraft after the minor change or repair has been incorporated unsafe or environmentally incompatible for the intended use.

I hereby commit to undertake the obligations of a declarant of a declaration of design compliance as detailed in point 21L.A.106 of Annex Ib to Regulation (EU) 748/2012.

I declare that I have provided the required information and that it is accurate and complete and indicated where it is not applicable.

Date/Location	Name	Signature

This Declaration should be retained by the declarant and made available upon request by EASA

## AMC1 21L.A.105(c) Declaration of design compliance for minor changes

### REGISTER OF DECLARATIONS FOR MINOR CHANGES

The register that is used by the declarant to record the declarations of design compliance for minor changes should also comply with point 21L.A.7 and be easily accessible in case EASA requests the details of a specific minor change during oversight.

## AMC1 21L.A.107(b) Declaration of design compliance for a major change

### FORM AND MANNER

The request for registration should be completed along with the declaration of design compliance and sent to EASA by email or regular mail following the information provided on the EASA website<sup>19</sup>.

If the data sheet for airworthiness needs to be adapted, then an amended version should also be provided.

If there are any changes to the data that was provided in the EASA Part 21 Light database of declared noise levels as a result of the major change, then this data should be added by the declarant as a new record within the EASA Part 21 Light database identifying that it is applicable after the major change.

**EASA Form 202**

### PART 1 – REQUEST FOR REGISTRATION AND DECLARATION OF DESIGN COMPLIANCE FOR A MAJOR CHANGE/ MAJOR REPAIR

<b>1. Identification of Activity</b>	
Major Change <input type="checkbox"/> Major Repair <input type="checkbox"/>	
<b>2. Product Identification</b>	
<b>2.1 Applicability</b>	Declared Type Name (this must be a unique means to identify the aircraft)
	Declared Model Name(s)
	Original Declarant
	Registered Declaration No
<b>2.2 Product Category</b>	<input type="checkbox"/> Small Aeroplane with a MTOW of 1 200 kg or less and a max. seating configuration of 2 persons

<sup>19</sup> <https://www.easa.europa.eu/document-library/application-forms/certificates-and-approvals> (accessed: 20 October 2023).

	<input type="checkbox"/> Sailplane with a MTOW of 1 200 kg or less <input type="checkbox"/> Powered Sailplane with a MTOW of 1 200 kg or less <input type="checkbox"/> Balloon designed for no more than 4 persons <input type="checkbox"/> Hot Air Airship designed for no more than 4 persons
<b>2.3 Technical Specifications</b>	Please specify the applicable technical specifications, e.g. CS-23 (if these are not the original technical specifications against which compliance was originally declared in accordance with Part 21 Light Subpart C due to the reasons stated in 21L.A.107 (a)(1) or (2) then this should be indicated here).
<b>2.4 Environmental Protection Requirements</b> (if applicable)	Please specify the environmental protection requirements with which compliance has been determined

<b>3. Description</b>	
<b>3.1 Title</b>	Please limit to 40 characters
<b>3.2 Description</b>	
<b>3.3 Affected Areas</b> including manuals	
<b>3.4 Re-Investigations</b>	<p>Compliance Demonstration Plan – doc. Ref.:</p> <p>(Please provide the reference of the Compliance Demonstration Plan required by 21L.A.107(d)(3) or 21L.A.226(d)(3), respectively)</p> <p>Documentation, if changed, to submit with the Declaration in accordance 21L.A.107 (c):</p> <ul style="list-style-type: none"> <li>• Airworthiness Data Sheet</li> <li>• Aircraft Flight Manual including any limitations</li> <li>• Instructions for Continued Airworthiness</li> <li>• Any other conditions/limitations which the declarant wishes to declare</li> <li>• EASA Noise Record Number</li> </ul>

<b>4. Declarant's Statement</b>
<b>4.1. Declaration of Compliance</b>

I declare that I have the legal capacity to submit this Declaration to EASA and that all information provided in this Declaration form is correct and complete.

I hereby declare that the design of the major change/repair described in Section 3 is in compliance with the applicable detailed technical specifications detailed in Section 2.3 and the applicable environmental protection requirements (if applicable) in Section 2.4 in accordance with the compliance demonstration plan detailed in Section 3.4.

I hereby declare that no features or characteristics have been identified that, after the major change or repair has been incorporated, may make the aircraft unsafe or environmentally incompatible for the intended use.

I hereby commit to undertake the obligations of a Declarant of a Declaration of Design Compliance as detailed in point 21L.A.47 and for major repairs (if applicable) point 21L.A.228 of Annex Ib to Regulation (EU) 748/2012.

I declare that I have provided the required information in 3.4 and that it is accurate and complete and indicated where it is not applicable.

Date/Location	Name	Signature

**Important Note:** EASA cannot accept Declarations without signature. Please make sure that you sign the Declaration.

**This declaration should be sent by email to:**

[applicant.services@easa.europa.eu](mailto:applicant.services@easa.europa.eu)

## GM1 21L.A.107(c) Declaration of design compliance for a major change

### INFORMATION TO BE PROVIDED TO EASA

The documents and information that are required to be provided to EASA under point 21L.A.107(c) may be provided to EASA by the declarant in advance of the submission of the declaration of design compliance for the major change. This would be advantageous for the declarant to facilitate EASA's investigations and to determine the need for the first-article inspection under point 21L.B.121(b).

## AMC1 21L.A.107(e) Declaration of design compliance for a major change

### SPECIFIC CONFIGURATION(S)

The compliance-demonstration process always takes into account the specific configuration(s) in the declaration of design compliance to which the major change relates. This (these) configuration(s) may be defined by product models/variants or by design changes to the declaration. The demonstration of compliance applies to this (these) applicable specific configuration(s). Consequently, the declaration of the major change excludes any other configurations, in particular those that already exist but are not considered in the compliance-demonstration process, as well as those that may be declared in the future.

## **GM1 21L.A.108 Compliance activities for declaring compliance of a major change**

### **VOLUNTARY INVOLVEMENT OF EASA PRIOR TO THE SUBMISSION OF DECLARATION**

The declarant may choose to involve EASA prior to submitting the declaration of design compliance for a major change. This would allow EASA to:

- (f) check the scope of the product is still within the scope of Subpart C;
- (g) provide guidance on the completeness of the compliance-demonstration plan and the selection of means of compliance;
- (h) advise on the selection of the applicable detailed technical specifications and applicable noise requirements;
- (i) provide guidance about noise tests (if applicable) and witness them;
- (j) avoid any issues or delays during the the physical inspection and assessment of the aircraft (if considered necessary prior to issuing flight conditions under point 21L.B.242(a)4) or if considered to be necessary under point 21L.B.121(b)).

The initiation of the project may occur before starting the compliance activities or during those activities. The assignment of a dedicated project number would facilitate any subsequent communication with EASA. This will facilitate the provision of compliance documentation required by point 21L.A.107(d), which may be provided by the declarant to EASA at key stages in the compliance demonstration prior to the submission of the declaration of design compliance for the major change.

## **AMC1 21L.A.108(a) Compliance activities for declaring compliance of a major change**

### **COMPLIANCE-DEMONSTRATION PLAN FOR A MAJOR CHANGE**

The compliance-demonstration plan for a major change is a document that allows the declarant to manage and control the design of the major change, as well as the process of compliance demonstration, and that enables EASA to investigate the root cause(s) in the event of a safety issue being discovered.

The description of the change should include an explanation of the purpose of the change, the pre-modification and post-modification configuration(s) of the aircraft, schematics/pictures, and any other detailed features and boundaries of the physical change (this may be supplemented by drawings or outlines of the design, if this helps to understand the design change), as well as the identification of the changes in areas of the aircraft that are functionally affected by the change, and the identification of any changes to the approved manuals.

The items of the declaration of aircraft design compliance made in accordance with Subpart C that are affected by the change and for which a new demonstration of compliance is necessary should be identified together with the means (e.g. calculation, test or analysis) by which it is proposed to demonstrate compliance.

The compliance demonstration should include the analysis for the classification of the change in accordance with GM1 21L.A.103.

In particular, the following information should typically be expected:

- identification of the relevant personnel that make decisions affecting airworthiness and environmental compatibility, and that will interface with EASA during any physical inspection and assessment of the changed product if required under point 21L.B.121(b);
- subcontracting arrangements for design, environmental compatibility and/or production (if applicable).

Point 21L.A.107(d)(1) 'Description of the major change'

An overview of the:

- architecture, functions, systems;
- dimensions, design weights, payloads, design speeds;
- engines and power/thrust rating;
- materials and technologies;
- cabin configuration aspects;
- options (e.g. weight variants, power/thrust rating variants, optional avionics equipment items, brake options, tyre options, floats, skids).

Point 21L.A.107(d)(2) 'Operating characteristics, design features and limitations'

- operating speed limitations;
- service ceiling, maximum airfield elevation;
- cabin pressure;
- limit load factors;
- number of passengers, minimum crew, payload, range;
- weight and centre-of-gravity (CG) envelope and fuel loading;
- performance;
- environmental envelope;
- runway surface conditions;
- other items, if considered to be more appropriate, which address the specific aeronautical product.

The declarant should provide detailed information about the means of compliance with the applicable requirements identified under point 21L.A.107(a). This should include the following:

- a compliance checklist addressing each requirement, the proposed means of compliance (see Appendix A to AMC1 21L.A.107(a) below for the relevant codes), and the related compliance document(s);
- identification of industry standards, methodology documents, handbooks and any other acceptable means of compliance, specified in the airworthiness or noise data sheet, which have been followed in the demonstration of compliance;

- when the compliance demonstration involves testing, a description of the ground- and flight-test article(s), test method(s), test location(s), test schedule, test house(s), test conditions (e.g. limit load, ultimate load), as well as of the intent/objective(s) of the testing; and
- when the compliance demonstration involves analyses/calculations, a description/identification of the tools (e.g. name and version/release of the software programs) and methods used, the associated assumptions, limitations and/or conditions, as well as of the intended use and purpose.

For every aspect mentioned above, the declarant should clearly identify whether the demonstration of compliance involves different means than those contained in the published AMC to the relevant CSs and any method (analysis or test) which is novel or unusual for the declarant.

For every aspect related to compliance with the applicable environmental protection requirements mentioned above, the declarant should clearly identify whether the demonstration of compliance involves means that are described in ICAO Doc 9501 ‘Environmental Technical Manual’.

## Appendix A to AMC1 21L.A.108(a) Compliance activities for declaring compliance of a major change

### MEANS-OF-COMPLIANCE CODES

Type of compliance	Means of compliance	Associated compliance documents
Engineering evaluation	MC0: (a) compliance statement (b) reference to design data (c) election of methods, factors, etc. (d) definitions	(a) Design data (b) Recorded statements
	MC1: design review	(c) Descriptions (d) Drawings
	MC2: calculation/analysis	(e) Substantiation reports
	MC3: safety assessment	(f) Safety analyses
Tests	MC4: laboratory tests	(g) Test programmes (h) Test reports (i) Test interpretations
	MC5: ground tests on related product(s)	
	MC6: flight tests	
	MC8: simulation	
Inspection	MC7: design inspection/audit	(j) Inspection or audit reports
Equipment qualification	MC9: equipment qualification	<i>Note:</i> Equipment qualification is a process that may include all previous means of compliance at equipment level.

## AMC1 21L.A.108(b) Compliance activities for declaring compliance of a major change

### COMPLIANCE DOCUMENTATION

- (a) Compliance documentation comprises one or more test or inspection programmes/plans, reports, drawings, design data, specifications, calculations, analyses, etc., and provides a record

of the means by which compliance with the applicable detailed technical specifications and environmental protection requirements has been demonstrated.

- (b) Each compliance document should typically contain:
- the reference of the detailed technical specifications or environmental protection requirements addressed by the document;
  - substantiation data demonstrating compliance (except test or inspection programmes/plans);
  - a statement by the declarant declaring that the document provides the proof of compliance for which it has been created; and
  - the declarant's signature.
- (c) Each compliance document should be unequivocally identified by its reference and issue date. The various issues of a document should be controlled and comply with point 21L.A.7.

## **AMC1 21L.A.108(c);(d);(e) Compliance activities for declaring compliance of a major change**

### **INSPECTIONS AND TESTS**

In accordance with point 21L.A.108(d), the declarant must address the conformity of the test specimen, as well as of the test and measuring equipment.

#### Conformity of the test specimen

The recorded justification of the conformity of the test articles is intended to ensure that the manufactured test specimen adequately represents the declared applicable design data. Possible types of non-conformity may be the following:

- Non-conformity between the design of the test specimen and the originally intended design data at the time of the test. These are typically identified in the early stage of the test planning, and should be addressed as early as possible (e.g. in the test plan). There may be several reasons for such a non-conformity: to account for interfaces with the test equipment, to conservatively cover several or future design configurations, etc.
- Non-conformity between the manufactured test specimen and the design of the test specimen. Such a non-conformity may be the result of the manufacturing of the test specimen.

While it is convenient to define any possible non-conformity as early as possible, the declarant does not need to make the distinction between the two types of non-conformity above as long as they are explicitly addressed and justified by cross reference to the test plan or other documents. However, testing for the demonstration compliance with the applicable environmental protection requirements should be conducted with the final design of the product having incorporated the change.

Compliance demonstration is typically an iterative process in which the design is under continuous evolution. If the aircraft design evolves after the time of the inspection or test, then the final major change design should be checked against the originally intended design (as it was at the time of the inspection or test), and the differences (if any) should be analysed to ensure that the inspection or test results are representative of the final configuration. However, such changes made to the design may lead to the invalidation of the inspection or test results and the need to repeat the inspection or test. It is recommended that the declarant should have a thorough configuration management process to track the evolving design of the major change.

Conformity of the test and measuring equipment: the configuration of the test and measuring equipment should be defined in the test plan and include the following:

- definition/design of the test equipment (relevant tools, mechanical parts, electronic components used to execute the test); and
- definition of the measuring equipment:
  - type/model of sensors, together with their technical characteristics;
  - position and orientation of exciters and sensors; and
  - electronic measuring equipment (in some cases, this may also include the acquisition and post-processing of data).

The configuration of the test and measuring equipment should be defined and controlled through test plans and supporting documentation. The test plan should also include the following elements:

- the test cases, methods, and procedures for test execution;
- the pass–fail criteria; and
- pre-, during- and post-test inspections.

The declarant should confirm that the test and measuring equipment conforms to its definition in the test plan, and that the sensors and measuring system are appropriately calibrated. Any non-conformity should be assessed, and it should be justified that it will not compromise the test purpose and results. This may be done either in the recorded justification of the conformity of the test articles and equipment or by cross reference to other documents (test minutes of meetings, test notes, etc.).

Use of the term ‘adequate’: the test and measuring equipment is considered ‘adequate’ as long as the test execution on the manufactured test specimen (including any non-conformity) and the use of the installed test set-up do not compromise the test purpose and results (for example, by providing better performance than the proposed type design, or by masking any potential failure mode or behaviour).

Changes that affect the validity of the recorded justification of the conformity of the test articles and equipment: if changes need to be introduced to the test specimen or to the test and measurement equipment after the justification has been recorded (and before the test is undertaken), then it must be updated.

Development versus compliance-demonstration tests: sometimes, tests of specimens that conform to a preliminary design, but are not intended for demonstration of compliance (known as development tests), are performed as part of a risk control strategy and to develop knowledge of a subject. Problems and failures found during development are part of the process of increasing the understanding of the design, including its failure modes and the potential for optimisation. Such development tests do not need to meet the requirements of point 21L.A.108(d) and (e).

Any planned test event should be classified in advance as either a development test or a compliance-demonstration test.

It is acceptable for a development test to finally form part of the compliance demonstration, and it may be declared afterwards to be a compliance-demonstration test as long as it meets the requirements of point 21L.A.108(d) and (e). For this reason, it is important to keep the configuration of such tests under control.

If the test specimen used for a compliance-demonstration test has already undergone a series of previous tests that may affect or ultimately invalidate its validity due to potential non-conformity to 21L.A.108(d) as required by point 21L.A.107(d)(6), this aspect should be considered when justifying the conformity, and specific analyses or inspections may be required to support such a statement.

Because of the above aspects, declarants may wish to inform EASA if they intend to conduct a campaign of development tests that may eventually be used as demonstration-of-compliance tests to establish whether EASA would wish to witness the tests.

## **AMC1 21L.A.108(f) Compliance activities for declaring compliance of a major change**

### **PHYSICAL INSPECTION OF THE FIRST ARTICLE**

The declarant should be prepared for any additional investigations as notified by EASA according to point 21L.B.121(b).

Refer to AMC 21L.A.47(a) for an explanation of the activities performed under the first-article inspection.

## **GM1 21L.A.108(f) Compliance activities for declaring compliance of a major change**

### **INSPECTIONS AND TESTS PERFORMED BY EASA**

The declarant should inform EASA sufficiently in advance about the execution of significant inspections and tests that are used for compliance-demonstration purposes in order to permit EASA the opportunity to perform or witness these inspections or tests in advance of any physical inspection and assessment of the changed product if required by point 21L.B.121(b).

This would be advantageous for the declarant to avoid any issues or delays if a physical inspection and assessment of the changed product is required (see point 21L.B.121(b)).

Additionally, the declarant may propose to EASA to perform or witness flight or other tests of particular aspects of the product during its development and before the design of the major change is fully defined. However, before EASA performs or witnesses any flight test, the declarant should perform these tests and should ensure that no features of the product preclude the safe conduct of the evaluation requested.

A recorded justification of the conformity of the test articles and equipment as per point 21L.A.107(d)(6) is required for the above tests.

## **SUBPART G — DECLARED PRODUCTION ORGANISATIONS**

### **GM1 21L.A.121(a) Scope**

#### **APPLICABLE DESIGN DATA**

Applicable design data is defined as all necessary drawings, specifications and other technical information provided by the applicant for, or holder of, a design approval to be issued in accordance with this Annex or by a natural or legal person that has declared or intends to declare the compliance of the aircraft design in accordance with this Annex, and has released it in a controlled manner to a declared production organisation. This should be sufficient for the development of production data to enable repeatable manufacture to take place in conformity with the applicable design data.

Prior to the issuance of the type certificate (TC), supplemental type certificate (STC), approval of the changes to the TC/STC or approval of the repair design, design data is defined as 'non-approved' but parts may be released with an EASA Form 1 as a certificate of conformity.

After the issuance of the TC, STC, approval of the changes to the TC/STC or approval of the repair design, the design data is defined as 'approved' and items manufactured in conformity with this data are eligible for release on an EASA Form 1 for airworthiness purposes.

When the compliance of the aircraft design and any subsequent compliance of any changes to the design or the repair design are subject to a declaration according to the requirements of Subparts C, F or N respectively of Annex Ib (Part 21 Light) to Regulation (EU) No 748/2012, the design data is considered 'non-approved'. However, a distinction can be made between the status of the data before the issuance of the declaration and after. This will be indicated in Block 12 'Remarks' of the EASA Form 1.

*Note:* For the EASA Form 1 layout, contents and instructions for completion, please refer to Appendix I to Annex I (Part 21) to Regulation (EU) No 748/2012.

For the purpose of Subpart G of Part 21 Light, the term 'applicable design data' includes the information related to the applicable environmental protection requirements.

### **GM1 21L.A.122(a);(b) Eligibility**

#### **INTERFACE BETWEEN DESIGN AND PRODUCTION**

In the natural or legal person that declares the production capability there is a need for an interface between staff responsible for design and staff responsible for production. This interface may be achieved through common design and production procedures.

Other ways to document this interface may be also used. For example, by defining simple flow charts supported by self-explanatory forms, or by task descriptions of the responsible functions in the organisation. IT-based enterprise resource planning (ERP) systems may be used to ensure and to demonstrate that there is a correct flow of information on the basis of defined and visible workflows with assigned roles and release gates.

Such interface normally covers the following aspects:

- the transfer of applicable design data from design to production (including their status: approved / non-approved);
- the development of own manufacturing data;
- the management of continued airworthiness matters and required actions;

- the cooperation in compliance-demonstration activities (e.g. manufacturing and testing prototype models and test specimens);
- the management of production deviations and non-conforming parts; and
- the configuration control of manufactured parts.

## **AMC1 21L.A.122(c) Eligibility**

### **ARRANGEMENTS BETWEEN DESIGN AND PRODUCTION ORGANISATIONS**

In accordance with point 21L.A.122(c), the natural or legal person that declares their production capability (referred to as 'declared production organisation' in this AMC and in GM1 21L.A.122(c)) must collaborate with the applicant for, or holder of, an approval of the design of the product, or with the organisation that has declared or intends to declare the compliance of that aircraft design (referred to as 'design organisation' in this AMC and in GM1 21L.A.122(c)) to ensure that the manufactured product or part is in conformity to that design, and to ensure the continued airworthiness of the product or part.

An acceptable means of compliance with point 21L.A.122(c) is an arrangement documented between the declared production organisation and the design organisation that are separate legal entities.

## GM1 21L.A.122(c) Eligibility

### ARRANGEMENT BETWEEN DESIGN AND PRODUCTION ORGANISATIONS — FORMAT

To define such a design–production interface, the following sample form is offered:

#### ARRANGEMENT SAMPLE FORM

<b>ARRANGEMENT</b> in accordance with point 21L.A.122(c) of Annex Ib (Part 21 Light)	
- <b>The undersigned agree to commit to the following:</b>	- <b>Relevant interface procedures</b>
The design organisation [NAME] takes responsibility to: assure the 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 declared production organisation [NAME]; provide visible statement(s) of approved or declared design data.	
The declared production organisation [NAME] takes responsibility to: assist the design organisation [NAME] in dealing with continuing airworthiness matters and for required actions; assist the design organisation [NAME] in case of products prior to type certification in demonstrating compliance with the applicable certification specifications and environmental protection requirements; develop, where applicable, its own manufacturing data in compliance with the airworthiness data package.	
The design organisation [NAME] and the declared production organisation [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 declared production organisation; achieve adequate configuration control of manufactured parts to enable the declared production organisation to make the final determination and identification for conformity.	
The scope of production covered by this arrangement is detailed in [DOCUMENT REFERENCE / ATTACHED LIST].	
- <b>Transfer of applicable design data:</b> - (keep only the text relevant for either a design-approval case or a declaration-of-design-compliance case) -	
The design approval holder [NAME] acknowledges that the approved data provided, controlled, and modified in accordance with the arrangement is recognised as approved by the competent authority and, therefore, the parts manufactured in accordance with this data and found in a condition for safe operation may be released certifying that the item(s) has (have) been manufactured in conformity to approved design data and is in a condition for safe operation. When indicated so by the applicant for design approval [NAME], before the issuance of the design approval, the design data provided is considered not approved and, therefore, the parts manufactured in accordance with this data may be released certifying only their conformity.	
The declarant of the design compliance [NAME] acknowledges that the declared data provided, controlled and modified in accordance with the arrangement is recognised as declared by the competent authority and, therefore, the parts manufactured in accordance with this data and found in a condition for safe operation may be released certifying that the parts have been manufactured in accordance with the design data of a declaration of design compliance in accordance with Subpart C, F or N of Section A of Annex Ib (Part 21 Light). When indicated so by [NAME] that intends to submit a declaration of design compliance, before the declaration of design compliance, the design data provided is considered not approved and, therefore, the parts manufactured in accordance with this data may be released certifying only their conformity.	
- <b>Direct delivery authorisation:</b> 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.	



5.	<b>Intended scope of work</b>	
	<b>5.1. Category of products</b>	
	<b>Products certified under Part 21 Light Subpart B</b>	<b>Products declared under Part 21 Light Subpart C</b>
	<input type="checkbox"/> Aeroplanes with a maximum take-off mass (MTOM) of 2 000 kg or less with a seating configuration of maximum 4 persons	<input type="checkbox"/> Aeroplanes with a maximum take-off mass (MTOM) of 1 200 kg or less that is not jet powered, and has a seating configuration of maximum 2 persons.
	<input type="checkbox"/> Sailplanes or powered sailplanes with a MTOM of 2 000 kg or less	<input type="checkbox"/> Sailplanes or powered sailplanes with a MTOM of 1 200 kg or less
	<input type="checkbox"/> Balloons	<input type="checkbox"/> Balloons designed for not more than 4 persons
	<input type="checkbox"/> Hot-air airships	<input type="checkbox"/> Hot-air airships designed for not more than 4 persons
	<input type="checkbox"/> Passenger gas airships designed for not more than 4 persons	
	<input type="checkbox"/> Rotorcraft with a MTOM of 1 200 kg or less and a maximum seating configuration of 4 persons	
	<input type="checkbox"/> Piston engines	
	<input type="checkbox"/> Fixed pitch propellers	
	<input type="checkbox"/> Gyroplanes	
	<b>5.2. Conformity documents</b>	
	<input type="checkbox"/> For complete aircraft, issue EASA Form 52B for new aircraft	
<input type="checkbox"/> For other products or parts, issue EASA Form 1		
<input type="checkbox"/> Maintain a new aircraft and issue EASA Form 53B		
<b>5.3. Detailed description of the scope of work</b> (aircraft type ...) (parts for aircraft type ...)		
6.	<b>Date of intended commencement of production:</b>	
7.	<p><b>Statements</b></p> <p>The DPO has established and implemented a management system for production in accordance with point 21L.A.124. This management system will be maintained in compliance with Subpart G of Annex Ib (Part 21 Light) to Regulation (EU) No 748/2012.</p> <p>The references of the elements of the management system for production are included in the annex to this declaration.</p> <p>All the personnel of the DPO must adhere to the processes and procedures referred to in the annex to this declaration.</p> <p>[Company Name] agrees to undertake the obligations of a declared production organisation in accordance with point 21L.A.127.</p> <p>I confirm that all the information contained in this declaration, including its annex, is complete and correct.</p>	
8.		
	Date / Location	Signature of the accountable manager

## ANNEX TO THE DECLARATION OF PRODUCTION CAPABILITY

This annex includes references to the DPO documentation showing compliance with the requirements of Annex Ib (Part 21 Light) to Regulation (EU) No 748/2012.

No	Part 21 Light	Subject	DPO reference (DPOE reference, as relevant)
<b>Quality system</b>			
1.	21L.A.124(b)(2)(i)	Document issue, approval, or change	
2.	21L.A.124(b)(2)(ii)	Vendor and subcontractor assessment, audit and control	
3.	21L.A.124(b)(2)(iii)	Verification that incoming products, parts, materials, and equipment, including items supplied new or used by buyers of products, are as specified in the applicable design data	
4.	21L.A.124(b)(2)(iv)	Identification and traceability	
5.	21L.A.124(b)(2)(v)	Manufacturing processes	
6.	21L.A.124(b)(2)(vi)	Inspection and testing	
7.	21L.A.124(b)(2)(vi)	Production flight tests, flight test operations manual (FTOM) (if relevant)	
8.	21L.A.124(b)(2)(vii)	Calibration of tools, jigs, and test equipment	
9.	21L.A.124(b)(2)(viii)	Non-conforming item control	
10.	21L.A.124(b)(2)(ix) 21L.A.5	Collaboration with the applicant for, or holder of, the design approval or the declarant of a declaration of design compliance	
11.	21L.A.124(b)(2)(x)	Completion and retention of records	
12.	21L.A.124(b)(2)(xi) 21L.A.125(a)	Competence and qualifications of personnel	
13.	21L.A.124(b)(2)(xii)	Issue of airworthiness release documents	
14.	21L.A.124(b)(2)(xiii)	Handling, storage and packing	
15.	21L.A.124(b)(2)(xiv) 21L.A.124(c)	Internal quality audits and the resulting corrective actions	
16.	21L.A.124(b)(2)(xv)	Work performed at any location other than the operating sites included in the declaration	
17.	21L.A.124(b)(2)(xvi) 21L.A.124(e)	Work carried out after the completion of production but prior to delivery, to maintain the aircraft in a condition for safe operation	
18.	21L.A.124(b)(2)(xvii)	Request for the issuance of permits to fly and the approval of associated flight conditions	

No	Part 21 Light	Subject	DPO reference (DPOE reference, as relevant)
<b>Airworthiness and environmental compatibility data</b>			
20.	21L.A.125(b)(2)	Procedure to ensure that airworthiness and environmental compatibility data is correctly incorporated into production data	
21.	21L.A.125(b)(3)	Such data is kept up to date and made available to all personnel that need access to such data to perform their duties	
<b>Organisation, key personnel and certifying staff</b>			
22.	21L.A.125(c)(4)	Organisational structure documented and kept updated	
23.	21L.A.125(c)(2)	Identification of key personnel nominated by the accountable manager to ensure that the organisation is in compliance with the requirements of Subpart G of Part 21 Light	
24.	21L.A.125(c)(2)	Nomination process for key personnel ensuring they have the appropriate knowledge, background and experience to discharge their responsibilities	
25.	21L.A.125(c)(3)	Staff at all levels have been given appropriate authority to be able to discharge their allocated responsibilities and that there is full and effective coordination within the declared production organisation in respect of airworthiness and environmental compatibility data matters	
26.	21L.A.125(d)(1)	Nomination procedure for certifying staff	
27.	21L.A.125(d)(2)	List of certifying staff	
<b>Changes to the DPO</b>			
28.	21L.A.128	Procedure for the notification of organisational changes to the competent authority according to point 21L.A.128	
<b>Obligations</b>			
29.	21L.A.3	Reporting system	
30.	21L.A.6	Marking	
31.	21L.A.7	Record-keeping	

**Instructions:** If the DPO, for the purpose of compliance with point 21L.A.124(d), has produced a declared production organisation exposition (DPOE), then the DPOE sections should be referenced in the right-hand column of the form.

## **GM1 21L.A.124(b) Management system for production**

### **QUALITY SYSTEM DOCUMENTATION**

The quality system is an organisational structure, included in the management system for production, with responsibilities, procedures, processes, and resources, which implements a management function to determine and enforce quality principles.

The quality system should be documented in such a way that the documentation can be made easily available to personnel that need to use the material for performing their normal duties, in particular:

- the procedures, instructions and data to cover the issues of point 21L.A.124(b)(2) are available in a written form;
- the distribution of relevant procedures to offices/staff is made in a controlled manner;
- the job descriptions (or equivalent) providing staff with a clear list of their tasks and responsibilities; and
- the updating process is clearly described.

The person or group of persons responsible for ensuring that the quality system is implemented and maintained should be identified.

Other methods to document the quality system may be used if they ensure that members of the organisation can obtain the actual and relevant information in a reasonable way. Such other methods may include the provision of such information by electronic means, for example, on the intranet of the organisation, by the use of an electronic database such as document management system (DMS), on paper, by illustration, by using workflow definitions within IT-based enterprise resource planning (ERP) systems, etc.

## **GM2 21L.A.124(b) Management system for production**

### **USE OF RECOGNISED STANDARDS**

An organisation that has a quality system designed to meet a recognised standard such as ISO 9001, EN 9100, or ASTM F2972 (relevant to the scope of work of the declared production organisation), should ensure that the existing quality system covers all the aspects defined in point 21L.A.124(b).

For example, if the standard that is used is ISO 9001, the quality system should be expanded to include at least the following additional topics, as appropriate, in order to demonstrate compliance with the requirements of this Annex:

- mandatory and voluntary reporting system as required by point 21L.A.3;
- control of work occasionally performed outside the operating sites included in the declaration;
- collaboration with the applicant for, or holder of, an approved design, or with the organisation that has declared or intends to declare the compliance of a particular aircraft design as required by point 21L.A.122(c);
- issue certificates within the scope of work of point 21L.A.126;
- incorporation of airworthiness data in production and inspection data as required by point 21L.A.125(b);
- when applicable, ground test and/or production flight test of products in accordance with the procedures defined by the applicant for, or holder of, the design approval or the declarant of a declaration of design compliance;

- procedures for traceability including the definition of clear criteria of which items require such traceability; traceability is defined as a means of establishing the origin of an article by reference to historical records for the purpose of providing evidence of conformity; and
- personnel training and qualification procedures especially for certifying staff as required by point 21L.A.125(d).

## **GM1 21L.A.124(b)(1);(b)(2)(iii) Management system for production**

### **QUALITY SYSTEM — CONFORMITY OF SUPPLIED ITEMS**

The declared production organisation is responsible for determining and applying acceptance standards for the physical condition, configuration status and conformity of supplied products, parts, materials or equipment, whether to be used in production or delivered to customers as spare parts. This responsibility also includes items of buyer-furnished equipment (BFE).

To discharge this responsibility, the quality system needs an organisational structure and procedures to adequately verify the supplied items.

The below list provides examples of verification techniques to be used as appropriate to ensure conformity of the product or part:

- qualification and auditing (desktop and on-site audits) of the supplier's quality system;
- evaluation of the supplier's capability in performing all the manufacturing activities, inspections and tests necessary to establish the conformity of parts, materials or equipment to the applicable design data;
- first-article inspections of supplied parts, including destruction, if necessary, to verify that the article conforms to the applicable data for a new production line or a new supplier;
- incoming inspections and tests of supplied parts, materials or equipment that can be satisfactorily inspected on receipt;
- identification of incoming documentation and data relevant to the showing of conformity to be included in the certification documents; and
- any additional work, tests or inspection which may be needed for parts that are to be delivered as spare parts and which are not subjected to the checks normally provided by subsequent production or inspection stages.

The declared production organisation could for example rely on the results of inspections/tests performed by the supplier, if the supplier can establish that:

- the personnel responsible for these tasks satisfy the competency standards of the declared production organisation quality system;
- quality measurements are clearly identified; and
- the records or reports showing evidence of conformity are available for review.

For the purpose of showing conformity, a declared production organisation could for example rely upon an EASA Form 1 issued by the supplier.

If the items are not delivered with an EASA Form 1, the supplier is considered a subcontractor under the direct control of the quality system of the declared production organisation.

Since the declared production organisation is responsible for the verification of the supplied items, it retains direct responsibility for inspections/tests carried out either at its own facilities or at the supplier's facilities.

## **GM1 21L.A.124(b)(2)(vi) Management system for production**

### **INSPECTION OF PARTS IN PROCESS**

The purpose of the inspection is to check at suitable points during production and provide objective evidence that the correct specifications are used, and that processes are carried out strictly in accordance with those specifications.

During the manufacturing process, each part should be inspected in accordance with a plan that identifies the nature of all inspections required and the production stages at which they occur. The plan should also identify any particular skills or qualification required of person(s) carrying out the inspections (e.g. NDT personnel). This plan should be considered part of the documentation required by point 21L.A.124(d).

If the parts are such that, if damaged, they could compromise the safety of the aircraft, additional inspections for such damage should be performed at the completion of each production stage.

## **GM1 21L.A.124(b)(2)(vi) Management system for production**

### **TESTS**

If relevant, the declared production organisation will have to perform functional, ground and flight tests for the manufactured products.

The production ground and flight tests for new aircraft are specified by the aircraft design organisation. These tests typically include:

- a check on handling qualities;
- a check on flight performance (using normal aircraft instrumentation);
- a check on the proper functioning of all aircraft equipment and systems;
- a determination that all instruments are properly marked, and that all placards and required flight manuals are installed before flight test;
- a check of the operational characteristics of the aircraft on the ground;
- a check on any other items peculiar to the aircraft being tested.

The functional test required for a new engine will be specified by the engine design organisation and are normally including the following:

- Break-in runs that include a determination of fuel and oil consumption and a determination of power characteristics at rated maximum continuous power or thrust and, if applicable, at rated take-off power or thrust.
- A period of operation at rated maximum continuous power or thrust. For engines that have a rated take-off power or thrust, part of that period should be at rated take-off power or thrust.

The test equipment used for the test run should be capable of output determination of a level of accuracy sufficient to assure that the engine output delivered complies with the specified rating and operation limitations.

The functional tests required for a new propeller will be specified by the propeller design organisation and are normally including several complete cycles of control throughout the propeller pitch and rotational speed ranges. In addition, for feathering and/or reversing propellers, several cycles of feathering operation and reversing operation from the lowest normal pitch to the maximum reverse pitch should normally be required.

Following functional testing, each engine or propeller will need to be inspected to determine that the engine or propeller is in condition for safe operation. Such inspections are specified by the design organisation and are normally including internal inspection and examination. The degree of internal inspections should normally be determined on the basis of the positive results of previous inspections conducted on the first production engines or propeller, and on the basis of in-service experience.

## **GM1 21L.A.124(b)(2)(viii) Management system for production**

### **NON-CONFORMING ITEM CONTROL**

All parts, materials and equipment that have been identified at any stage in the manufacturing process as not conforming to the specific design data should be suitably identified by clearly marking or labelling to indicate their non-conforming status.

All such non-conforming material or parts should be removed from the production area and held in a segregated area with restricted access until their appropriate disposition is determined.

The non-conformities, which cannot be solved by restoring full conformity with the design data, should be recorded and presented to the relevant design organisation for review and disposition. The results of the review and actions taken consequently as regards the part/product should be recorded as well.

## **GM1 21L.A.124(b)(2)(xiii) Management system for production**

### **HANDLING, STORAGE AND PACKING**

Storage areas should be protected from dust, dirt or debris, and adequate blanking and packaging of stored items should be practised. All parts should be protected from extremes of temperatures and humidity and, where needed, environment-controlled facilities should be provided.

Racking and handling equipment should be provided such as to allow storage, handling and movement of parts without damage.

Lighting should be such as to allow safe and effective access and handling, but should also cater for items which are sensitive to light (e.g. rubber items).

Care should be taken to segregate and shield items which can emit fumes (e.g. wet batteries), substances or radiation (e.g. magnetic items) which are potentially damaging to other stored items.

Particular attention should be paid to shelf life-limited items (e.g. sealants, adhesives) to ensure the storage conditions and monitor the expiry date.

Procedures should be in place to maintain and record stored parts' identities and batch information.

Access to storage areas should be restricted to authorised personnel that are fully trained to understand and maintain the storage control arrangements and procedures.

Provisions should be made for segregated storage of non-conforming items pending their disposition (see AMC1 21L.A.124(b)(2)(viii)).

## **GM1 21L.A.124(c) Management system for production**

### **INDEPENDENT MONITORING FUNCTION**

The purpose of the independent monitoring function is to ensure that:

- the management system for production remains compliant with the applicable requirements of the Part 21 Light and with any additional requirements as established by the production organisation;
- the staff of the production organisation follow the documented procedures of the management system when performing their tasks; and
- the management system for production is adequate and enables the organisation through the use of its procedures to meet the conformity objectives identified in point 21L.A.124.

An objective review of the complete set of production-management-related activities is provided through independent monitoring activities, such as audits, inspections and reviews. The independence of the monitoring activities is established by always ensuring that those activities are performed by staff that are not involved in the function, procedure or products that they monitor and that are independent from the operating managers of the function(s) being monitored; however, this should not exclude support by domain experts during monitoring.

The monitoring is usually performed based on a monitoring plan. This plan is established to show when and how often the activities required by this Subpart will be audited. This plan normally includes, in a defined period of time, all the elements of the management system, including all workshops and subcontractors. The defined period of time for the audit planning is typically not exceeding 24 months.

When a non-compliance is found, the root cause(s) and contributing factor(s) should be identified and corrective actions should be defined and followed up. When providing feedback, the compliance-monitoring function should define who is required to address any non-compliance in each particular case, and the procedure to be followed if the corrective action is not completed within the defined time frame.

Also, as required in point 21L.A.124(c), feedback has to be regularly provided to the accountable manager on the overall status of the compliance and adequacy of the management system for production, including main issues identified and cases where corrective actions have not been satisfactorily implemented.

The staff that perform an independent monitoring function should have access to all the parts of the production organisation and, as necessary, to any subcontracted organisations.

## **GM1 21L.A.124(d) Management system for production**

### **DOCUMENTATION**

Point 21L.A.124(d) requires the declared production organisation to document its processes and procedures.

In order to do so, the declared production organisation may consider to establish a declared production organisation exposition (DPOE). The purpose of a DPOE is to set forth in a concise document format the organisational relationships, responsibilities, terms of reference, and the associated authority, procedures, means and methods of the organisation.

If utilised, the DPOE typically contains the following:

- (a) a statement signed by the accountable manager confirming that the DPOE and any associated manuals/procedures/instructions which define the organisation's compliance with this Subpart will be complied with at all times;
- (b) the title(s) and name(s) of the person(s) nominated in accordance with point 21L.A.125(c)(2);

- (c) the duties and responsibilities of the accountable manager and the persons as specified by points 21L.A.125(c)(1) and (2), including matters on which they may deal directly with the competent authority on behalf of the organisation;
- (d) an organisational chart showing associated chains of responsibility of the managers as required by point 21L.A.125(c)(4);
- (e) the list of certifying staff as referred to in point 21L.A.125(d)(2);
- (f) a general description of manpower;
- (g) a general description of the facilities located at each address specified in the declaration of production capability;
- (h) a general description of the declared production organisation's scope of work as defined in the declaration of production capability (see also point 21L.A.126);
- (i) the procedure for the notification of changes to the competent authority according to point 21L.A.128;
- (j) the amendment procedure for the DPOE;
- (k) a procedure to develop, where applicable, the production organisation's own manufacturing data in compliance with the airworthiness and environmental compatibility data package;
- (l) a description of the quality system and the procedures as required by point 21L.A.124(b);
- (m) a list of those outside parties referred to in point 21L.A.124(b)(1); and
- (n) if flight tests are to be conducted, a flight test operations manual (FTOM) defining the organisation's policies and procedures in relation to flight testing; for the contents of the FTOM, refer to AMC1 21L.A.127(b).

If this information is documented and integrated in manuals, procedures and instructions, the DPOE may provide a summary of the information and an appropriate cross reference.

When changes to the organisation occur, the DPOE should be kept up to date. Changes to the organisation shall be notified to the competent authority as required by point 21L.A.128.

If the organisation holds one or more additional organisation certificates (DOA, MOA, POA, etc.) within the scope of Regulation (EU) 2018/1139 and the delegated and implementing acts that are adopted on the basis thereof, so that the organisation is required to establish another exposition, the organisation may combine the documents by producing a separate manual or supplement that covers the differences between the DPOE and the other exposition. In that case, the separate manual or supplement should identify where in the other exposition the remaining information on the declared production organisation is covered. That remaining information then formally becomes part of the exposition.

## **GM1 21L.A.124(e) Management system for production and 21L.A.126(e) Scope of work**

### **MAINTENANCE ACTIVITIES**

Point 21L.A.124(e) requires the declared production organisation to have procedures that cover maintenance activities for new aircraft it has manufactured, as necessary to keep them in an airworthy condition. The declared production organisation shall not maintain newly manufactured aircraft beyond the point at which the applicable operational rules require maintenance to be performed by an approved maintenance organisation (point 21L.A.126(e)). If the declared production organisation

intends to maintain aircraft beyond that point, it would have to apply for and obtain an appropriate maintenance approval (see Articles 3 and 4 of Regulation (EU) No 1321/2014).

### **MAINTENANCE OF AIRCRAFT**

Examples of maintenance activities within the scope of work of a declared production organisation are:

preservation, periodic inspection visits, etc.;

embodiment of a service bulletin (SB);

application of airworthiness directives;

repairs;

maintenance tasks resulting from special flights; and

maintenance tasks to maintain airworthiness during flight training, demo flights and other non-revenue flights.

Any package of maintenance activities should be recorded in the aircraft logbook. It should be signed by certifying staff for attesting the conformity of the maintenance work with the applicable airworthiness data.

If the aircraft logbook is not available or if the production organisation prefers to use a separate form (for instance, for a large work package or for delivery of the aircraft to the customer), the production organisation should use EASA Form 53B which should subsequently become part of the aircraft maintenance records.

### **MAINTENANCE OF COMPONENTS OUTSIDE THE DPO CAPABILITY**

Such a maintenance activity outside the capability of the aircraft declared production organisation may still be accomplished under the original release organisation. In such circumstances, the engine(s), propeller(s), parts and appliances will require re-release in accordance with point 21.A.163(c) or point 21L.A.126(c) (EASA Form 1).

## **GM1 21L.A.125(a) Resources of the declared production organisation**

### **GENERAL**

#### **1. FACILITIES AND WORKING CONDITIONS**

A facility is a working area where the working conditions and the environment are controlled as appropriate in respect of cleanliness, temperature, humidity, ventilation, lighting, space/access, noise, and air pollution.

#### **2. EQUIPMENT AND TOOLS**

The organisation's equipment and tools enables all the specified tasks to be accomplished in a repeatable manner without any detrimental effects. The calibration control of the equipment and tools that affect the dimensions and values of products makes it possible for the organisation to demonstrate compliance with, and be traceable to, national or international standards.

#### **3. NUMBER OF STAFF**

Sufficient staff means that, for each function, according to the nature of the work and the production rate, the organisation has a sufficient number of qualified staff to accomplish all the specified manufacturing tasks and to attest the conformity of such task. The number of staff should be such that the relevant airworthiness considerations may be applied in all areas without any undue pressure.

#### 4. COMPETENCE OF STAFF

An evaluation of the competence of the staff is performed as part of the quality system. This should include, where appropriate, verification that specific qualification standards have been implemented, for example, for NDT, welding, etc.

Adequate initial and recurrent training should be provided in relation to the job function to ensure that staff remain competent. That training should be adapted based on experience that is gained within the organisation.

### **GM1 21L.A.125(b) Resources of the declared production organisation**

#### **MANUFACTURING DATA**

When a declared production organisation develops its own manufacturing data, such as computer-based data, from the design data package that is delivered by a design organisation, procedures are required to ensure the correct transcription of the original design data.

Procedures are required to define the manner in which airworthiness and environmental compatibility data is used to issue and update the production/quality data, which determines the conformity of products and parts. The procedure should also define the traceability of such data to each individual product or part for the purpose of certifying their condition for safe operation and issuing a statement of conformity or an EASA Form 1.

### **AMC1 21L.A.125(c)(1) Resources of the declared production organisation**

#### **ACCOUNTABLE MANAGER**

The term ‘accountable manager’ refers to the manager that is responsible and has corporate authority for ensuring that all production work is carried out to the required standards. This function may be performed by the chief executive officer or by another person in the organisation, nominated by the chief executive officer to fulfil the function, provided that the position and authority of that person in the organisation allows that person to discharge the associated responsibilities.

The accountable manager should:

- (a) have sufficient knowledge and authority to be able to respond to the competent authority regarding major issues concerning the declared production organisation, and to implement any necessary improvements;
- (b) have an understanding of this Annex, sufficient to discharge the relevant responsibilities.

## **AMC1 21L.A.125(c)(2) Resources of the declared production organisation**

### **NOMINATED MANAGERS**

The person or group of persons nominated in accordance with point 21L.A.125(c)(2) should represent the management structure of the organisation and be responsible for all the functions specified in Subpart G. Depending on the size of the declared production organisation, the functions may be subdivided among individual managers (and, in fact, may be further subdivided) or combined in a variety of ways.

The responsibilities and the duties of each individual manager should be clearly defined in such a way that all the responsibilities are covered.

Where a declared production organisation chooses to appoint managers for all or for any combination of the functions identified in Part 21 Light because of the size of the undertaking, those managers should ultimately report to the accountable manager nominated in accordance with point 21L.A.125(c)(1). Where a manager does not directly report to the accountable manager, that manager should have direct access to the accountable manager formally established.

One such manager, normally known as the 'quality manager', should be responsible for the independent monitoring function as defined in point 21L.A.124(c). The independent monitoring function should be independent from other functions. As such, the quality manager should not be at the same time one of the other persons that are referred to in point 21L.A.125(c)(2). The role of the quality manager should be to ensure that:

- (a) the activities of the organisation are monitored for compliance with the applicable requirements and any additional requirements as established by the organisation, and that those activities are performed properly under the supervision of the nominated persons that are referred to in point 21L.A.125(c)(2);
- (b) an audit plan is properly implemented, maintained, and continually reviewed and improved; and
- (c) corrective actions are requested, as necessary, and their implementation is followed up.

## **GM1 21L.A.125(c)(4) Resources of the declared production organisation**

### **DOCUMENTATION OF ORGANISATIONAL STRUCTURE AND KEY PERSONNEL**

Point 21L.A.125(c)(4) requires that the organisational structure together with the key personnel are documented. The key personnel are those managers nominated according to point 21L.A.125(c)(1) and (c)(2).

This could be achieved through the information included in the declared production organisation exposition (DPOE) (see AMC1 21L.A.124(d)).

The above information should be kept updated to reflect changes made within the organisation.

## **AMC1 21L.A.125(d)(1) Resources of the declared production organisation**

### **CERTIFYING STAFF**

- (a) Certifying staff should be nominated by the declared production organisation to ensure that each of the products and/or parts that are produced within the organisation's scope of work, qualifies for a statement of conformity or a release certificate. The position and number of certifying staff should be appropriate to the complexity of the product and the production rate.
- (b) The qualifications of certifying staff should be based on their knowledge, background and experience and on specific training (or testing) that is established by the organisation appropriate to the product or part to be released.
- (c) Training should be given to develop a satisfactory level of knowledge of product/part specifications, the organisation's procedures, the management system for production (including compliance monitoring), aviation legislation, and the associated regulations, AMC and GM that are relevant to their particular role. Training should include on-the-job training, as relevant.
- (d) For that purpose, in addition to the general training policy, the organisation should define its own standards for training, including pre-qualification standards, for personnel to be identified as certifying staff.
- (e) The training policy is part of the quality system.
- (f) The training should be updated in response to experience gained and changes in technology.
- (g) A feedback system to ascertain that the required standards are being maintained should be put in place to ensure the continuing compliance of personnel with authorisation requirements.
- (h) For the release of products or parts, the responsibilities to issue statements of conformity or authorised release certificates (EASA Form 1) are allocated to the certifying staff that is identified in point 21L.A.125(d)(2).

## **AMC1 21L.A.125(d)(2) Resources of the declared production organisation**

### **EVIDENCE OF AUTHORISATION**

- (a) Certifying staff should be provided with evidence of their authorisation. This should be done through an internal authorisation document. That document should be in a style that makes its scope clear to the certifying staff and any entitled person that may require to examine the authorisation. It should include the privileges that are granted to the certifying staff and the category of products upon which they may exercise those privileges. Where codes are used to define the scope, an interpretation document should be readily available.
- (2) Certifying staff are not required to carry the authorisation document at all times, but they should be able to make it available within a reasonable time following a request from an entitled person, which includes the competent authority.

- (3) The list of certifying staff should be included in the declared production organisation exposition (DPOE) (see AMC 21L.A.124(d)), if utilised, or in equivalent processes and procedures.

## **GM1 21L.A.126(a) Scope of work**

### **CONFORMITY OF PROTOTYPE MODELS AND TEST SPECIMENS**

Points 21L.A.25(c) and 21L.A.44(d) require the determination of conformity of prototype models and test specimens to the applicable design data.

The EASA Form 1 may be used as a conformity certificate as part of the assistance that a declared production organisation provides to a design approval holder/applicant or a declarant of a declaration of design compliance.

The EASA Form 1 should only be used for conformity release purposes when it is possible to indicate (in Block 12) the reason that prevents its issuance for airworthiness release purposes.

## **GM1 21L.A.126(d) Scope of work**

### **FLIGHT CONDITIONS**

The need to recommend flight conditions for an aircraft is related to the performance of the production flight tests.

Production flight tests of a newly manufactured aircraft should be performed under the conditions specified in point 21L.A.241 and under Subpart P of Annex I (Part 21) to this Regulation.

For this purpose, the declared production organisation should apply for a permit to fly to the competent authority. EASA Form 21 (see AMC 21.B.520(b)) should be obtained from the competent authority.

Where the flight conditions are not approved at the time of application for a permit to fly, the declared production organisation should also apply for approval of the flight conditions (refer to point 21L.A.241(a) (and by inference to point 21.A.709 of Annex I (Part 21))).

## **GM1 21L.A.127(a) Obligations of the declared production organisation**

### **WORK CARRIED OUT IN ACCORDANCE WITH DEFINED PROCEDURES, PRACTICES AND PROCESSES**

The establishment of a declared production organisation exposition (DPOE) (if chosen to be utilised by the organisation (see AMC1 21L.A.124(d))) or the equivalent processes and procedures are a prerequisite for the registration of a declaration for production capability and for maintaining such registration.

The declared production organisation should make the DPOE or the equivalent processes and procedures available to its personnel, where necessary, for the performance of their duties. A distribution list should, therefore, be established. If utilised, and if the DPOE mainly refers to separate manuals or procedures, the distribution of the DPOE could be limited.

The declared production organisation should ensure that personnel have access to and are familiar with that part of the content of the DPOE or the referenced documents, at the latest revision level, which covers their activities.

Monitoring of compliance with the DPOE or the equivalent processes and procedures is normally the responsibility of the independent monitoring function.

## **AMC1 21L.A.127(b) Obligations of the declared production organisation and AMC1 21L.A.177(b) Obligations of the declared design organisation**

### **FLIGHT TEST OPERATIONS MANUAL (FTOM)**

#### **(a) General**

##### **(1) Scope: The FTOM covers flight-test operations.**

The FTOM complexity should be proportionate to the organisation complexity's as well as to the complexity of a particular aircraft.

##### **(2) Format**

The FTOM may:

be included in the declared production organisation's (DPO) / declared design organisation's (DDO) documents; or

be a separate manual.

The FTOM may make reference to other documents to cover the contents listed in point (b) below (e.g. for record-keeping).

##### **(3) Use by subcontractors**

When flight tests are performed by subcontractors, they should comply with the FTOM of the declared production or design organisations, unless they have established an FTOM in compliance with Part 21 or Part 21 Light, the use of which has been agreed between the two organisations.

#### **(b) The FTOM should contain the following elements:**

##### **(1) Exposition**

If the FTOM is presented as a separate document, it should include a chart indicating the structure of the organisation and, more specifically, the functional links of the staff in charge of flight-test activities. It should also mention the coordination between all departments affecting flight test, e.g. design office, production and maintenance, in particular the coordination for the establishment and update of flight-test programmes.

##### **(2) Risk and safety management**

The FTOM should describe the organisation's policy in relation to risk and safety assessment, mitigation, and associated methodologies.

(e.g. see additional guidance on the EASA webpage at

<https://www.easa.europa.eu/en/domains/general-aviation/documents-guidance-and-examples>)

##### **(3) Crew members**

According to the flight-test category, the FTOM should describe the organisation's policy on the composition of the crew and the competence and currency of its flight-test pilots, including procedures for appointing crew members for each specific flight.

*Note:* For flight tests performed for demonstration-of-compliance activities required by points 21L.A.25 and 21L.A.44, the flight crew conditions or restrictions are part of the flight conditions approved by EASA. As part of the investigations required under point 21L.B.242, EASA will also check the flight crew qualifications to ensure that the flight testing can be conducted safely.

All crew members should be listed in the FTOM.

A flight time limitation policy should be established.

(4) Carriage of persons other than crew members

According to the flight-test category, the FTOM should describe the organisation's policy in relation to the presence and safety onboard of people other than crew members (i.e. with no flying duties).

People other than crew members should not be allowed on board for Category 1 flight tests (for the definition of the flight categories, refer to Appendix XII to Annex I (Part 21) to this Regulation).

(5) Instruments and equipment

The FTOM should list, depending on the nature of the flight, the specific safety-related instruments and equipment that should be available on the aircraft or carried by people on board.

The FTOM should contain provisions to allow flights to take place in case of defective or missing instruments or equipment.

(6) Documents

The FTOM should list the documents to be produced for flight testing, and include (or refer to) the procedures for their issuance, update and follow-up to ensure the documents' configuration control:

(i) documents associated with a flight-test programme:

flight order for a given flight, which should include:

a list of the tests to be performed and associated conditions;

safety considerations relevant to the flight;

category of the flight (e.g. certification flight, production flight);

composition of the crew;

names of persons other than crew members;

aircraft configuration items relevant to the test to be highlighted to the crew;

loading of the aircraft;

reference to approved flight conditions; and

restrictions relevant to the flight to be highlighted to the crew;

flight crew report;

(ii) documentation and information to be carried on board the aircraft during flight test;

(iii) record-keeping: the FTOM should describe the policy relative to record-keeping.

(7) Permit to fly

The FTOM should describe the involvement of the flight-test organisation or flight-test team (as appropriate) in the process for the approval of flight conditions and the issuance of permits to fly in accordance with Part 21 Light Subpart P (and by reference to Part 21 Subpart P).

(8) Currency and training

The FTOM should describe how training for flight test is organised.

Currency of the flight-test crew may be ensured either through recent experience or refresher training.

The FTOM should specify the requirements for a refresher training in order to ensure that crew members are sufficiently current to perform the required flight-test activity.

A system should be established to record the currency of the flight test crew's training.

A valid national document (i.e. licence), issued by an EASA Member State under its national regulations and ensuring compliance with the agreed currency requirements, may be an acceptable means of compliance to demonstrate currency for a pilot that holds a flight-test rating.

## GM1 to 21L.A.127(c) Obligations of the declared production organisation

### CONFORMITY WITH APPROVED OR DECLARED DESIGN DATA

Individual configurations are often based on the needs of the customer and improvements or changes which may be introduced by the type-certificate holder or the declarant of a declaration of design compliance. There are also likely to be unintentional deviations (concessions or non-conformances) during the manufacturing process. All these changes should be subject to approval by the design approval holder or the declarant, as relevant, or, when necessary, by EASA.

## GM2 21L.A.127(c) Obligations of the declared production organisation

### AIRCRAFT — CONDITION FOR SAFE OPERATION

Before submitting the aircraft statement of conformity (EASA Form 52B) to the competent authority of the Member State of registry, the declared production organisation should make an investigation so as to be satisfied in respect of items listed below (as applicable for the respective type of aircraft). The documented results of this investigation should be kept on file by the declared production organisation. Some of these items may be required to be provided (or made available) to the operator or owner of the aircraft (and in some cases the competent authority of the Member State of registry):

1. Equipment or design changes that do not meet the requirements of the State of manufacture but have been accepted by the competent authority of the importing country.
2. Identification of products or parts that:
  - (a) are not new;
  - (b) are furnished by the buyer or future operator (including those identified in point 21L.A.252(b)(1)).

3. Technical records which identify the location and serial numbers of components for which special traceability requirements apply for continued-airworthiness purposes, including those identified in point 21L.A.252(b)(1).
4. Logbook and a modification record book for the aircraft as required by EASA.
5. Logbooks for products identified in point 21L.A.252(b)(1) installed as part of the type design as required by EASA.
6. A weight and balance report for the completed aircraft.
7. A record of missing items or defects which do not affect airworthiness. These, for example, could be furnishings or buyer-furnished equipment (BFE) (items of equipment may be recorded in a technical log or other suitable arrangement such that the operator and EASA are formally aware of).
8. Product support information required by other implementing rules and associated CSs or GM, such as a maintenance manual, a parts catalogue, all of which should reflect the actual build standard of the particular aircraft. Also, an electrical load analysis and a wiring diagram.
9. Records which demonstrate completion of maintenance tasks appropriate to the test flight flying hours recorded by the aircraft. These records should show the relationship of the maintenance status of a particular aircraft to the manufacturer's recommended maintenance task.
10. Details of the serviceability state of a particular aircraft in respect of:
  - (a) the fuel and oil contents;
  - (b) provision of operationally required emergency equipment.
11. An approved flight manual which conforms to the build standard and modification state of a particular aircraft shall be available.
12. Show that inspections for foreign objects at all appropriate stages of manufacture have been satisfactorily performed.
13. The registration has been marked on the exterior of the aircraft as required by national legislation. Where required by national legislation, affix a fireproof owner's nameplate.
14. Where applicable, there should be a certificate for noise and for the aircraft radio station.
15. The installed compass and/or compass systems have been adjusted and compensated, and a deviation card displayed in the aircraft.
16. A record of rigging and control surface movement measurements.
17. Where maintenance work has been performed under point 21L.A.126(e), issue a release to service that includes a statement that the particular aircraft is in a condition for safe operation.
18. List of all applicable service bulletins (SBs) and airworthiness directives (ADs) that have been implemented.

## **GM1 21L.A.127(I) Obligations of the declared production organisation**

### **APPLICABLE SUBPART A REQUIREMENTS**

The following requirements in Subpart A are applicable to declared production organisations:

- points 21L.A.3(b), (c), (d), (e) and (f) Reporting system

- point 21L.A.5 Collaboration between design and production
- point 21L.A.6(b) Marking
- points 21L.A.7(b), (c) and (d) Record-keeping
- point 21L.A.10 Access and investigation
- point 21L.A.11 Findings and observations
- point 21L.A.12 Means of compliance

## **AMC1 21L.A.128 Notification of changes and cessation of activities**

### **CHANGES AND THEIR TIMELY NOTIFICATION**

The declared production organisation should notify the competent authority of the following changes:

- (a) Changes to the information that has been declared in accordance with point (c) of point 21L.A.123 (according to point 21L.A.128(a)):
- change of the registered name of the organisation;
  - change of the registered address of the organisation's principal place of business and, where applicable, change of the operating sites and/or their addresses;
  - change of the accountable manager and/or their contact details; and
  - change of the scope of work.

These changes are notified to the competent authority by submitting a revised declaration of production capability.

- (b) Significant changes to the management system for production (according to point 21L.A.128(b)):
- significant changes to production capacity;
  - change to the manufacturing methods;
  - changes in the organisation structure, especially to those parts of the organisation in charge of quality;
  - change of the managers nominated according to point 21L.A.125(c)(2);
  - changes in the management system for production or quality system that may have an important impact on the conformity/airworthiness of each product or part; and
  - changes in the placement or control of significant subcontracted work or supplied parts.

These changes are notified without revising the declaration of production capability.

Timely notification: The declared production organisation should notify the change(s) as soon as it has taken the decision to introduce the respective change(s) but no later than 10 working days after the change(s) became effective.

**SUBPART H — CERTIFICATES OF AIRWORTHINESS AND RESTRICTED  
CERTIFICATES OF AIRWORTHINESS****GM1 21L.A.143(c)(1)(ii) Application for a certificate of airworthiness  
or a restricted certificate of airworthiness****APPROVED PRODUCTION ORGANISATIONS THAT APPLY FOR A CERTIFICATE OF AIRWORTHINESS**

The holder of a production organisation approval issued under Subpart G of Annex I (Part 21) to Regulation (EU) No 748/2012 should use EASA Form 52 (and not EASA Form 52B) when it uses its privileges under point 21.A.163(b) and applies for a certificate of airworthiness for an aircraft with a type certificate. This indicates to the competent authority that the production organisation utilises its privileges to apply for a certificate of airworthiness without further showing.

**GM1 21L.A.143(d)(1)(iii) Application for a certificate of  
airworthiness or a restricted certificate of airworthiness****APPROVED PRODUCTION ORGANISATIONS THAT APPLY FOR A RESTRICTED CERTIFICATE OF  
AIRWORTHINESS**

The holder of a production organisation approval issued under Subpart G of Annex I (Part 21) to Regulation (EU) No 748/2012 should use EASA Form 52B (and not EASA Form 52) when it uses its privileges under point 21.A.163(b) and applies for a restricted certificate of airworthiness for an aircraft with a registered declaration of design compliance (declared aircraft). Only EASA Form 52B may be used for declared aircraft because references to the declaration are included in that form. The holder of a production organisation approval should include its approval number on EASA Form 52B and indicate that this is an approved organisation so that the competent authority is made aware that the production organisation utilises its privileges to apply for a restricted certificate of airworthiness without further showing.

**SUBPART I — NOISE CERTIFICATES AND RESTRICTED NOISE CERTIFICATES****GM1 21L.A.163(b)(2) Application****RESTRICTED NOISE CERTIFICATE**

In accordance with Article 18(2)(a) of Regulation (EU) 2018/1139, a restricted noise certificate is issued for individual aircraft for which noise requirements apply and which conform to a design that has been subject to a declaration of design compliance in accordance with Subpart C of Annex Ib (Part 21 Light).

**GM1 21L.A.163(c)(1)(ii) Application****NOISE RECORDS FOR A NOISE CERTIFICATE**

The applicant for a noise certificate to be issued for an aircraft within the scope of Subpart B of Annex Ib (Part 21 Light) should find the supporting noise data in the EASA database of noise levels<sup>20</sup>.

**GM2 21L.A.163(c)(1)(ii) Application****NOISE RECORDS FOR A RESTRICTED NOISE CERTIFICATE**

The applicant for a restricted noise certificate to be issued for an aircraft within the scope of Subpart C of Annex Ib (Part 21 Light) should find the supporting noise data in the EASA Part 21 Light database of declared noise levels.

**GM1 21L.A.164(b) Transferability and re-issuance of noise certificates and restricted noise certificates within Member States**

When applying for aircraft registration, the aircraft owner should declare to the Member State of registry that the configuration of the individual aircraft serial number has not been changed or should provide the Member State of registry with information about any changes that might influence the certified or declared noise level.

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<sup>20</sup> <https://www.easa.europa.eu/en/domains/environment/easa-certification-noise-levels>

## SUBPART J — DECLARED DESIGN ORGANISATIONS

### GM1 21L.A.173(b) Declaration of design capability

#### SUBMISSION OF THE DECLARATION

The EASA form to request the registration of the declaration of design capability is available on the EASA website. The documents to be sent with the request are indicated in the form and include the DECLARATION OF DESIGN CAPABILITY — see AMC1 21L.A.173(c) / EASA Form 204.

### AMC1 21L.A.173(c) Declaration of design capability

#### DECLARATION FORM

The natural or legal person that declares its design capability should provide the information required by point 21L.A173(c) in the declaration form that is available on the EASA Website.

**EASA Form 204**

#### PART 1 – REQUEST FOR REGISTRATION AND DECLARATION OF DESIGN CAPABILITY

1. Design Organisation Details	
1.1 Head of Design Organisation	Title <input type="checkbox"/> Mr <input type="checkbox"/> Ms
	Name
	First name
	Phone
	Email
1.2 Operating Sites where design and testing activities are taking place - may be left blank if same as in 2.1 Declarant Data	Address(es), Phone, Email

2. Intended Scope of Work	
2.1 Product Category	<input type="checkbox"/> Aeroplane with a MTOM of 2 000 kg or less and a max. seating configuration of 4 persons <input type="checkbox"/> Sailplane with a MTOM of 2 000 kg or less <input type="checkbox"/> Powered Sailplane with a MTOM of 2 000 kg or less <input type="checkbox"/> Rotorcraft with a MTOM of 1 200 kg or less and a max. seating configuration of 4 persons

	<input type="checkbox"/> Gyroplanes <input type="checkbox"/> Balloons <input type="checkbox"/> Hot Air Airships <input type="checkbox"/> Passenger gas airships designed for no more than 4 persons <input type="checkbox"/> Piston engines <input type="checkbox"/> Fixed pitch propellers
<b>2.2 Certification Activities</b>	<input type="checkbox"/> Type Certification under Part 21 Light Subpart B <input type="checkbox"/> Supplemental Type Certification (STC) under Part 21 Light Subpart E <input type="checkbox"/> Major Repair approval under Part 21 Light Subpart M

<b>2.3 Detailed Scope of Work Description</b>	<b>For Type Certification activities:</b>																																																																																																													
	<b>Aircraft type(s):</b> - [product 1] - [product 2]  <i>Note: In the case of type-certification activities, all relevant technical areas are included.</i>																																																																																																													
	<b>For STC activities:</b>																																																																																																													
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<p><b>3. Declarant's Statements</b></p>
<p><b>3.1. Declaration of Compliance</b></p>
<p>The Declared Design Organisation (DDO) has established and implemented a management system for design in accordance with point 21L.A.174. This management system will be maintained in compliance with Subpart J of Annex Ib (Part 21 Light) to Regulation (EU) No 748/2012.</p> <p>The references of the elements of the management system for design are included in the Annex to this Declaration.</p> <p>All the personnel of the DDO must adhere to the processes and procedures referred to in the Annex to this Declaration.</p>

I hereby commit to undertake the obligations of a Declared Design Organisation in accordance with point 21L.A.177.

**I confirm that all information contained in this Declaration, including its Annex, is complete and correct.**

Date/Location	Name (Head of Design Organisation)	Signature

**Important Note:** EASA cannot accept Declarations without signature. Please make sure that you sign the Declaration.

**This Declaration should be sent by email to:**

[applicant.services@easa.europa.eu](mailto:applicant.services@easa.europa.eu)

### ANNEX TO THE DECLARATION OF DESIGN CAPABILITY

This Annex includes references to the Declared Design Organisation's (DDO) documentation showing compliance with the requirements of Annex Ib (Part 21 Light) to Regulation (EU) No 748/2012.

No	Part 21 Light	Subject	DDO reference DDOE* reference, as relevant
<b>1. General</b>			
1.1	21L.A.174(d)	Process and procedure documentation issuance, approval or change	
<b>2. Organisation, key personnel and compliance verification staff</b>			
2.1	21L.A.175(e)	Organisational structure documented and kept updated	
2.2	21L.A.175(b)	Identification of key personnel nominated by the head of design organisation to ensure that the organisation is in compliance with the requirements of Part 21 Light Subpart J: — head of airworthiness function, — head of independent monitoring function, — others	
2.3	21L.A.175(c)	Nomination process for key personnel ensuring they have the appropriate knowledge, background and experience to discharge their responsibilities	
2.4	21L.A.174(b)(2)	List of authorised staff to perform compliance verification and the criteria and process for their initial nomination and maintenance of their authorisation	
2.5	21L.A.175(d)	The numbers of staff in all technical departments and their level of experience are sufficient, and staff have been given the appropriate authority to be able to discharge their allocated responsibilities and that there is full and effective coordination within the declared design organisation in respect of airworthiness and environmental compatibility matters	
<b>3. System monitoring</b>			
3.1	21L.A.174(c)	System monitoring procedure	
<b>4. Subcontracting</b>			
4.1	21.A.174(b)(3) 21L.A.174(e)	Subcontracting procedure and a list of subcontractors	
<b>5. Changes to the DDO</b>			
5.1	21L.A.178	Procedure for the notification of organisational changes to EASA according to point 21L.A.178	

No	Part 21 Light	Subject	DDO reference DDOE* reference, as relevant
<b>6. Design and certification processes</b>			
6.1	21L.A.26	Identification and issuance of type design documentation and configuration control	
6.2	21L.A.24	Type-certificate application (including: type-certification basis, environmental-protection requirements and certification plan)	
6.3	21L.A.25	Compliance demonstration (preparation, verification and issuance of compliance documentation)	
6.4	21L.A.25(c)	Testing procedure and conformity of test specimen/prototype	
6.5	21L.A.25(d)	Flight-testing procedure and flight test operations manual (FTOM)	
6.6	21L.A.241	Procedure for requesting the issuance of permits to fly and the approval of associated flight conditions	
6.7	21L.A.25(e) 21L.A.241(c) 21L.B.46 21L.B.242	Preparing and supporting EASA in conducting its investigations <i>(critical design review, pre-flight inspection, first-article inspection)</i>	
6.8	21L.A.241(b) 21L.B.241	Preparing and supporting the competent authority in conducting its inspections	
6.9	21L.A.25(f)	Issuance of compliance declaration	
6.10	21L.A.63	Classification of changes to a type certificate	
6.11	21L.A.67	Approval of minor changes to a type certificate (TC)	
6.12	21L.A.68	Approval of major changes to a type certificate (TC)	
6.13	21L.A.86	Approval of a supplemental type certificate (STC)	
6.14	21L.A.203	Classification of repair designs	
6.15	21L.A.207	Approval of minor repair designs	
6.16	21L.A.208	Approval of major repair designs	
<b>7. Obligations</b>			
7.1	21L.A.3	Reporting system	
7.2	21L.A.4	Airworthiness directives	
7.3	21L.A.5	Collaboration between design and production	
7.4	21L.A.6	Marking	
7.5	21L.A.7	Record-keeping	
7.6	21L.A.8	Manuals	
7.7	21L.A.9	Instructions for continued airworthiness	
*Instructions: If the DDO, for the purpose of compliance with point 21L.A.174(d), has produced a Declared Design Organisation Exposition (DDOE), then the DDOE sections should be referenced in the right-hand column of the form.			

## GM1 21L.A.174(b) Management system for design

### DESIGN ASSURANCE SYSTEM

(a) Purpose

This GM outlines some basic principles and objectives of the design assurance system.

(b) Definitions

(1) 'Design assurance system'

The design assurance system includes the organisational structure, responsibilities, procedures, and resources to ensure the proper functioning of the design organisation.

(2) 'Design assurance' refers to all planned and systematic actions necessary to provide adequate confidence that the organisation has the capability to:

- design products or parts in accordance with the applicable type-certification basis and environmental protection requirements;
- demonstrate and verify compliance with the type-certification basis and environmental protection requirements; and
- demonstrate compliance to EASA.

(3) 'Type investigation' refers to the tasks of the organisation in support of the type certificate (TC), supplemental type certificate (STC), or other design approval processes necessary to demonstrate, verify, and maintain compliance with the applicable type-certification basis and environmental protection requirements.

The complete design process, starting with the type-certification basis, environmental protection requirements and product specifications, and culminating with the issuance of a type certificate (TC), is shown in the diagram in Figure 1. This identifies the relationship between the design, the type investigation and the design assurance processes.

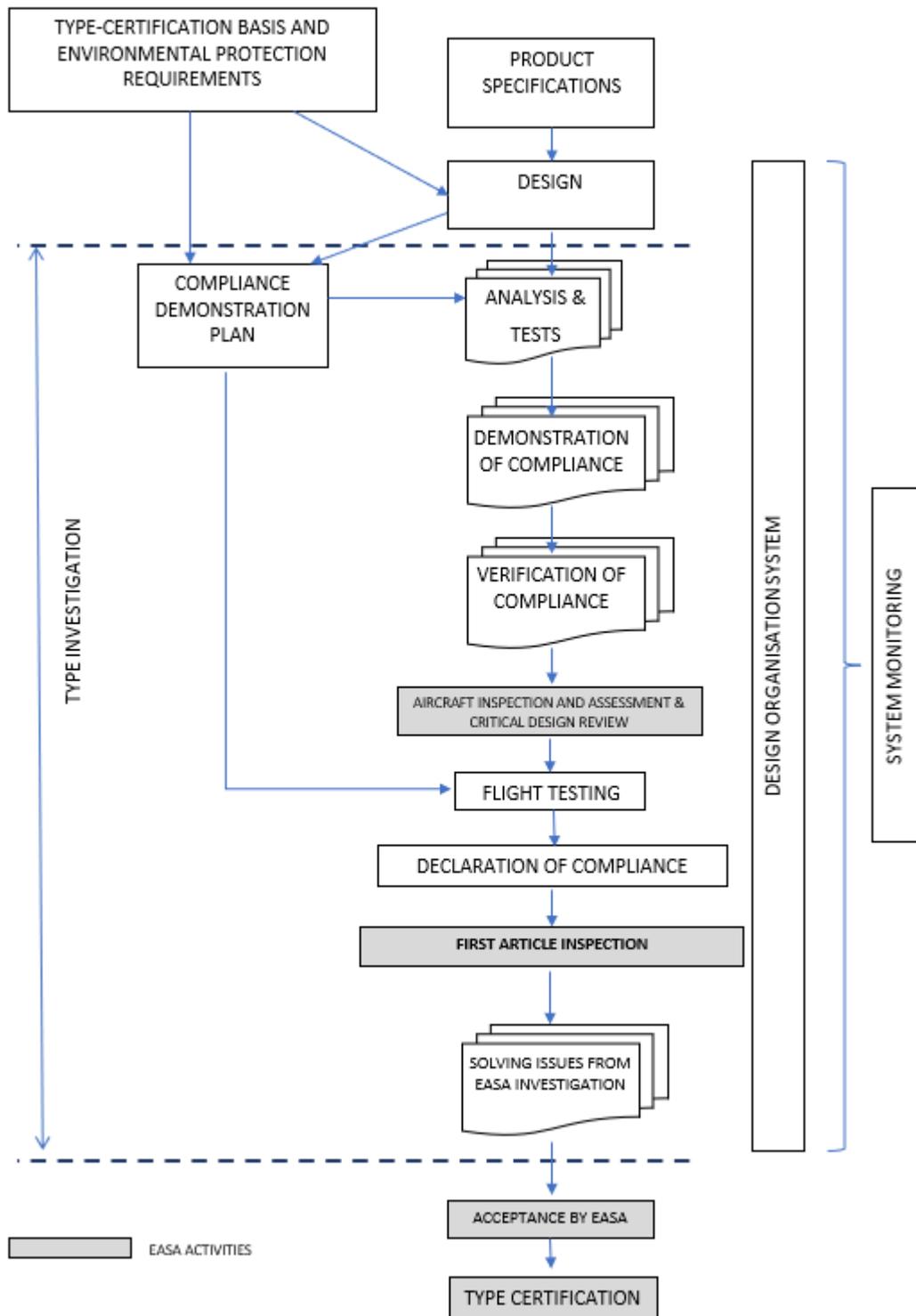


Figure 1 — Relationship between design, design assurance and type investigation

**PLANNED AND SYSTEMATIC TASKS**

For design organisations that carry out the certification process of products, their planned and systematic tasks should cover the following, and the related procedures should be defined accordingly.

**(a) General**

- (1) Issue or, where applicable, supplement, or amend the documentation of the management system for design (or, if it is used, the declared design organisation exposition (DDOE)) in accordance with point 21L.A.174(d).
- (2) Assure that all the procedures are adhered to.
- (3) Conduct the certification process.
- (4) Nominate staff as ‘compliance verification engineers’ that are responsible for approving compliance documents as defined in point (c) below.
- (5) Nominate staff that belong to the airworthiness function and are responsible as defined in GM1 21L.A.174(b)(1).
- (6) In the case of an applicant for an STC, obtain the agreement of the TC holder for the proposed STC to the extent that is defined in point 21L.A.86.
- (7) Ensure that there is full and complete liaison between the design organisation and the related organisations that have responsibility for the products and parts that are manufactured according to the type design.
- (8) Provide assurance to EASA that any prototype models and test specimens adequately conform to the type design (see points 21L.A.25(c), 21L.A.85(c) and 21L.A.206(c)).

**(b) Head of the design organisation (or deputy)**

The head of the design organisation (HDO), or an authorised representative, should sign a declaration of compliance (see points 21L.A.25(f), 21.A.85(f) and 21L.A.206(f)) with the applicable type-certification basis and environmental protection requirements after verifying the satisfactory completion of the certification process. The signature of the HDO on the declaration of compliance confirms that the relevant procedures of the management system for design have been followed.

**(c) Compliance verification**

- (1) Approval through the signing of all the compliance documents, including test programmes and data that are necessary for the verification of compliance with the applicable type-certification basis and environmental protection requirements, as defined in the compliance-demonstration plan.
- (2) Approval of the technical content (completeness, technical accuracy, etc.), including any subsequent revisions, of the manuals to be approved by EASA (aircraft flight manual (AFM), airworthiness limitations section (ALS) of the instructions for continued airworthiness (ICAs)).

**(d) Maintenance and operating instructions**

- (1) Ensuring the preparation and updating of all the maintenance and operating instructions (including ICAs and SBs) that are needed to maintain airworthiness (i.e. continuing airworthiness) in accordance with the relevant certification specifications (CSs).

- (2) In accordance with points 21L.A.8 and 21L.A.9 and, where applicable, point 21.A.609, ensuring that those documents are made available as per point 21.A.9(c).

## **GM1 21L.A.174(b)(1) Management system for design**

### **AIRWORTHINESS FUNCTION**

The following tasks are normally performed by the airworthiness function:

- (a) Liaison between the design organisation and EASA with respect to all aspects of the design certification application.
- (b) Preparation of the compliance-demonstration plan and obtaining its approval by EASA.
- (c) Coordination internally, in the design organisation, of all compliance-demonstration activities according to the compliance-demonstration plan.
- (d) Regular reporting to EASA about the progress of compliance-demonstration activities and coordination of EASA investigations. These include the necessary arrangements for the physical inspection and assessment of the aircraft and the critical design review, in accordance with point 21L.A.241(c)(2), and the first-article inspection, in accordance with point 21L.B.46.
- (e) Establishing the compliance checklist and updating it with any changes, as necessary.
- (f) Checking that all the compliance documents that are necessary to demonstrate compliance with the applicable type-certification basis and the applicable environmental protection requirements, as well as for completeness, are prepared and signing the documents for release.
- (g) Providing verification to the head of the design organisation that all the activities required for a type investigation have been properly completed.
- (h) Endorsing the classification of changes and repairs in accordance with point 21L.A.63 and 21L.A.203 respectively.
- (i) Ensuring the initiation of activities as a response to an occurrence report and providing information to EASA if the airworthiness is impaired.
- (j) Advising EASA on the issuing of airworthiness directives (ADs) in general based on service bulletins (SBs).
- (k) Monitoring significant events on other aeronautical products, as far as they are relevant, to determine their effect on the airworthiness of the products designed by the design organisation.
- (l) Ensuring that there is cooperation in preparing SBs and any subsequent revisions, with special attention being given to the manner in which the contents affect airworthiness and environmental protection aspects.

## GM1 21L.A.174(b)(2) Management system for design

### INDEPENDENT VERIFICATION FUNCTION OF THE DEMONSTRATION OF COMPLIANCE

- (a) The independent verification function of the demonstration of compliance is normally carried out by a person that did not create the compliance data. Such a person may work in conjunction with the individuals that prepare compliance data.
- (b) The verification is normally shown by signing all compliance documents, including test programmes and data that are necessary for the demonstration of compliance with the applicable type-certification basis and the applicable environmental protection requirements as defined in the compliance-demonstration plan.
- (c) For a product, there is normally only one compliance-verification engineer that is nominated for each relevant technical discipline. The relevant procedures would normally describe the way of action in case of non-availability of the nominated persons and their replacement, when necessary.
- (d) For STC cases, when compliance statements and associated documentation are produced by the TC holder, and when this data is approved under the system of the authority of the TC holder, then the STC applicant does not need to provide, within its own DDO, the independent verification function that is required by point 21L.A.124(b)(2) for that data.

## GM1 21L.A.174(b)(3);(e) Management system for design

### PARTNERS AND SUBCONTRACTORS

Examples of elements that the process to control partners and subcontractors should normally address are:

- the identification of the work to be subcontracted (e.g. design of parts, drafting drawings, stress analysis, laboratory testing);
- the selection of a subcontractor based on its capability to perform the identified work (criteria (e.g. facilities, knowledge and experience) and the selection process);
- the working arrangement (e.g. purchase technical specifications, statement of work); this may cover technical requirements (for parts to be design or tasks to be performed) and process requirements (e.g. procedures to be followed by the subcontractor); and
- the control of the work performed by the subcontractor; this control would not only cover the deliverables provided by the partners and subcontractors but also the monitoring function required under point 21L.A.174(c), and, if relevant, the independent function to verify the demonstration of compliance required under 21L.A.174(b)(2).

If a partner or subcontractor holds a design organisation approval (DOA), then the declared design organisation may take this into account for the effective integration of that partner or subcontractor (e.g. simplifying the selection process when the scope of work of the respective subcontractor's DOA is similar with the scope of the subcontracted work).

The declared design organisation maintains a list of all selected partners and subcontractors, including their respective scope of subcontracted work.

If the independent function to verify the demonstration of compliance required under point 21L.A.174(b)(2) is subcontracted, the declared design organisation should normally identify in its own documentation the authorised staff of the partner or subcontractor performing this function.

## **GM1 21L.A.174(c) Management system for design**

### **INDEPENDENT MONITORING FUNCTION**

The scope of the independent monitoring function is to ensure that:

- the management system for design remains compliant with the applicable requirements of the Part 21 Light and with any additional requirements as established by the organisation;
- the staff of the design organisation follow the documented procedures of the management system when performing their tasks; and
- the management system for design is adequate and enables the organisation through the use of its procedures to provide assurance that the designed products, changes and repairs are compliant with the applicable type-certification basis and the applicable environmental protection requirements.

An objective review of the complete set of design-management-related activities is provided through independent monitoring activities, such as audits, inspections, reviews. The independence of the monitoring activities is established by always ensuring that those activities are performed by staff that are not involved in the function, procedure or products they monitor, and that are independent from the operating managers of the function(s) being monitored; however, this should not exclude support by domain experts during monitoring.

The monitoring is usually performed based on a monitoring plan. This plan is established to show when and how often the activities required by Part 21 Light will be audited. This plan normally includes, in a defined period of time, all the elements of the management system, including all subcontractors. The defined period of time for the audit planning typically does not exceed 24 months.

When a non-compliance is found, the root cause(s) and contributing factor(s) should be identified and corrective actions should be defined and followed up. When providing feedback, the compliance-monitoring function should define who is required to address any non-compliance in each particular case, and the procedure to be followed if the corrective action is not completed within the defined time frame.

Also, as required in point 21L.A.174(c), feedback has to be regularly provided to the head of the design organisation on the overall status of the compliance and adequacy of the management system for design, including main issues identified and cases where corrective actions have not been satisfactorily implemented.

Staff that perform an independent monitoring function should have access to all the parts of the design organisation and, as necessary, to any subcontracted organisations.

## GM1 21L.A.174(d) Management system for design

### DOCUMENTATION

Point 21L.A.174(d) requires the declared design organisation to document its processes and procedures.

In order to do so, the declared design organisation may consider to establish a declared design organisation exposition (DDOE). The purpose of a DDOE is to set forth in a concise document format the organisational relationships, responsibilities, terms of reference, and the associated authority, procedures, means and methods of the organisation.

If utilised, the DDOE typically contains the following:

- (a) a statement signed by the head of the design organisation confirming that the DDOE and any associated manuals, procedures and instructions that define the organisation's compliance with this Subpart will be complied with at all times;
- (b) the title(s) and name(s) of the person(s) nominated in accordance with point 21L.A.175(b);
- (c) the duties and responsibilities of the head of the design organisation and the person(s) as specified by point 21L.A.175(b), including matters on which they may deal directly with EASA on behalf of the organisation;
- (d) an organisational chart showing the associated chains of responsibility of the managers as required by point 21L.A.175(e);
- (e) the list of authorised staff that perform the independent function of verifying the demonstration of compliance as referred to in point 21L.A.174(b)(2);
- (f) the nomination procedure for key personnel and authorised staff;
- (g) a general description of manpower;
- (h) a general description of the facilities located at each address specified in the declaration of design capability;
- (i) a general description of the declared design organisation's scope of work as defined in the declaration of design capability (see also point 21L.A.176);
- (j) the procedure for the notification of organisational changes to EASA according to point 21L.A.178;
- (k) the procedure for the amendment of the DDOE;
- (l) the independent system monitoring procedure;
- (m) the subcontracting procedure and the list of partners and subcontractors;
- (n) the procedure for identification and issuance of type design documentation and configuration control;
- (o) the procedure(s) followed and forms used for type certification and supplemental type certification;
- (p) the procedures for design changes;
- (q) the procedure for design of repairs;
- (r) the continued-airworthiness procedures (including reporting system and data in support of the issuance of airworthiness directives);

- (s) the procedures for the collaboration between design and production organisations (including transfer of design data and approval of production concessions or non-conformities);
- (t) the record-keeping procedure;
- (u) the procedure for marking products and parts;
- (v) the procedures for the issuance of manuals and instructions for continued airworthiness (ICAs);
- (w) the procedures for the interface with EASA (supporting EASA investigations and answering to findings and observations).

The DDOE may be produced and distributed in paper or electronic format. If the above information is documented in separate procedures and instructions, the DDOE may include a summary of the information and an appropriate cross reference.

When changes to the organisation occur, the DDOE should be kept up to date. Changes to the organisation shall be notified to EASA as required by point 21L.A.178.

If the organisation holds one or more additional organisation certificates within the scope of Regulation (EU) 2018/1139 and the delegated and implementing acts that are adopted on the basis thereof (DOA, POA, etc.), so that the organisation is required to establish another exposition, the organisation may combine the documents by producing a separate manual or supplement that covers the differences between the DDOE and the other exposition. In that case, the manual or supplement should identify where in the other exposition the remaining information on the declared design organisation is covered. That remaining information then formally becomes part of the exposition.

## **AMC1 21L.A.175(a) Resources of the declared design organisation**

### **HEAD OF THE DESIGN ORGANISATION**

The nominated head of the design organisation should have the direct or functional responsibility for all departments of the organisation that are responsible for the design of products, changes or repairs. If the departments responsible for design are functionally linked, the head of the design organisation still carries the ultimate responsibility for the compliance of the organisation with Subpart J.

The head of the design organisation should:

- (a) have sufficient knowledge and authority to be able to respond to EASA regarding major issues of the declared design organisation and the product design approval, and to implement any necessary improvements;
- (b) have an understanding of this Annex, sufficient to discharge the relevant responsibilities.

## **AMC1 21L.A.175(b);(c) Resources of the declared design organisation**

### **NOMINATED MANAGERS**

The person or group of persons nominated in accordance with point 21L.A.175(b) should represent the management structure of the organisation and be responsible for all the functions as specified in Subpart J. Depending on the size of the design organisation, the functions may be subdivided under individual managers (and, in fact, may be further subdivided) or combined.

At least the following key managers should be nominated:

- the manager responsible for the airworthiness function (chief of the airworthiness function); and
  - the manager responsible for independent monitoring function (chief of the independent monitoring function).
- (a) The responsibilities and tasks of each individual manager should be clearly defined in order to prevent uncertainties about the relations within the organisation. If a manager does not directly report to the head of the design organisation, they should have direct access to the head of the design organisation that is formally established.
- (b) The chief of the airworthiness function should be able to demonstrate relevant knowledge, background and appropriate experience that are related to product certification and continued airworthiness, including knowledge of, and experience in, managing the design assurance system.

The tasks for which the chief of the airworthiness function should be responsible are presented in GM1 21L.A.174(b)(1).

- (c) The chief of the independent monitoring function should be able to demonstrate relevant knowledge, background and appropriate experience that are related to the activities of the organisation, including knowledge of and experience in compliance monitoring. The chief of the independent monitoring function should not be responsible for other design or airworthiness function aspects.

The role of the chief of the independent monitoring function should be to ensure that:

- (1) the activities of the organisation are monitored for compliance with the applicable requirements and any additional requirements as established by the organisation, and that those activities are performed properly under the supervision of the nominated persons that are referred to in point 21L.A.175(b);
- (2) an audit plan is properly implemented, maintained, and continually reviewed and improved; and
- (3) corrective actions are requested, as necessary, and their implementation is followed up.

With due regard to the size of the organisation and the nature and complexity of its activities, the compliance-monitoring-manager function may be exercised by the head of the design organisation.

## **GM1 21L.A.175(d) Resources of the declared design organisation**

### **PERSONNEL, FACILITIES AND ORGANISATION**

- (a) Personnel

The declared design organisation should ensure that the personnel that are made available by the organisation to comply with point 21L.A.175(d) are able, based on their special qualifications and numbers, to provide assurance of the design or modification of a product, as well as of the compilation and verification of all the data that is needed to meet the applicable type-certification basis and the applicable environmental protection requirements, as well as the necessary continued-airworthiness activities to support in-service products.

The organisation should have a system in place to plan the availability of staff to ensure that the organisation has sufficient and appropriately qualified staff to plan, perform, supervise, inspect, and monitor the organisation's activities in accordance with the organisation's scope of work.

(b) Facilities

The declared design organisation should have access to:

- (1) workshops and production facilities that are suitable for manufacturing prototype models and test specimens;
- (2) accommodation and test facilities that are suitable for carrying out tests and measurements needed to demonstrate compliance with the applicable type-certification basis and the applicable environmental protection requirements.

(c) Organisation

The declared design organisation should ensure that:

- (1) an airworthiness function has been established and staffed on a permanent basis to act as the focal point for coordinating airworthiness and environmental compatibility matters;
- (2) responsibilities for all tasks related to type investigations are assigned in such a way as to exclude gaps in authority; the responsibility for several tasks may be assigned to one person especially in the case of simple projects; and
- (3) coordination between the technical departments and the persons in charge of the system monitoring required by point 21L.A.174(c) has been established to:
  - (i) ensure quick and efficient reporting and resolution of difficulties encountered using the handbook and associated procedures;
  - (ii) maintain the design assurance system;
  - (iii) optimise auditing activities.

(d) Competence of staff

The declared design organisation should establish and control the competence of the staff that are involved in the activities of the organisation, as detailed in the organisation's scope of work, in accordance with documented procedures.

Adequate initial and recurrent training should be provided in relation to the job function to ensure that staff remain competent. This training should be adapted based on experience that is gained within the organisation.

## **AMC1 21L.A.175(d) Resources of the declared design organisation**

### **AIRWORTHINESS AND COMPLIANCE-VERIFICATION PERSONNEL**

- (a) The declared design organisation should maintain a list of the personnel authorised to perform airworthiness and compliance-verification functions.
- (b) For these personnel, the organisation should define a system to select, train, maintain and identify them for all the tasks for which they are needed.

- (c) The numbers of these personnel that are needed to sustain the design activities should be identified by the organisation.
- (d) These personnel should be chosen on the basis of their knowledge, background and experience.
- (e) When necessary, complementary training should be established to ensure that personnel have sufficient background and knowledge in the scope of their authorisation. The minimum standards for new personnel to qualify in the functions should be established. The training should lead to a satisfactory level of knowledge of the procedures that are relevant for each particular role. Training policy forms part of the management system for design.
- (f) The organisation should maintain a record of the personnel as defined in AMC 21L.A.7(d).

## **GM1 21L.A.176 Scope of work**

### **SCOPE OF WORK**

The scope of work is stated in the declaration of design capability submitted by the declared design organisation (see AMC1 21L.A.173(c)). This includes the scope of work and the products, changes or repairs to them, with the appropriate limitations for which the design capability is declared. For declared design organisations that cover type-certification activities, the list of product types covered by the design assurance system should be included.

Changes in the scope of work are subject to notification as required by point 21L.A.178.

## **GM1 21L.A.177(e) Obligations of the declared design organisation**

### **APPLICABLE SUBPART A REQUIREMENTS**

The following requirements in Subpart A are applicable to declared design organisations:

- points 21L.A.3(a), (c), (d), (e) and (f) Reporting system
- point 21L.A.4 Airworthiness directives
- point 21L.A.5 Collaboration between design and production
- point 21L.A.6(a) Marking
- points 21L.A.7(a), (c) and (d) Record-keeping
- point 21L.A.8 Manuals
- point 21L.A.9 Instructions for continued airworthiness
- point 21L.A.10 Access and investigation
- point 21L.A.11 Findings and observations
- point 21L.A.12 Means of compliance

## **AMC1 21L.A.178 Notification of changes and cessation of activities**

### **CHANGES AND THEIR TIMELY NOTIFICATION**

The declared design organisation should notify EASA of the following changes:

1. Changes to the information that has been declared in accordance with point (c) of point 21L.A.173 (according to point 21L.A.178(a)):
  - change of the registered name of the organisation;
  - change of the registered address of the organisation's principal place of business and, where applicable, change of the operating sites and/or their addresses;
  - change of the head of the design organisation and/or their contact details;
  - change of the scope of work.

These changes are notified to EASA by submitting a revised declaration of design capability.

2. Significant changes to the management system for design (according to point 21L.A.178(b)):
  - change in the parts of the organisation that contribute directly to the airworthiness or environmental compatibility (independent checking function and airworthiness function);
  - new distribution of responsibilities affecting airworthiness or environmental compatibility aspects;
  - changes in the organisation structure;
  - change to the principles of procedures related to:
    - the type certification (see Subpart B);
    - the approval of changes (see Subpart D);
    - the approval of repair designs (see Subpart M);
    - continued airworthiness (see points 21L.A.3 and 21L.A.4);
    - the configuration control, when airworthiness or environmental compatibility is affected;
    - the acceptability of design tasks undertaken by partners or subcontractors (point 21L.A.174(b)(3));

These changes are notified without revising the declaration of design capability.

Timely notification: The declared design organisation should notify the change(s) as soon as it has taken the decision to introduce the respective change(s) but no later than 10 working days after the change(s) became effective.

**SUBPART K — PARTS****AMC1 21L.A.192(a)(4) Showing of compliance****STANDARD PARTS**

- (a) In this context, a part is considered as a ‘standard part’ where it is designated as such by the design approval holder or declarant responsible for the product or part in which the part is intended to be used. In order to be considered a ‘standard part’, all design, manufacturing, inspection data and marking requirements necessary to demonstrate conformity of that part should be in the public domain and published or established as part of officially recognised standards; or
- (b) For sailplanes and powered sailplanes, where it is a non-required instrument and/or equipment certified under CS 22.1301(b), if that instrument or equipment, when installed, functioning, functioning improperly or not functioning at all, does not in itself, or by its effect upon the sailplane and its operation, constitute a safety hazard.

‘Required’ in the term ‘non-required’ as used in point (b) means required by the applicable certification specifications (CS 22.1303, CS 22.1305 and CS 22.1307) or required by the relevant operating regulations and the applicable rules of the air, or as required by air traffic management (e.g. a transponder in certain controlled airspace).

Examples of equipment which can be considered ‘standard parts’ are electrical variometers, bank/slip indicators ball type, total energy probes, capacity bottles (for variometers), final glide calculators, navigation computers, data logger / barograph / turnpoint camera, bug wipers and anti-collision systems.

Equipment which must be approved in accordance with the applicable certification specifications shall comply with the applicable ETSO or equivalent, and is not considered a ‘standard part’ (e.g. oxygen equipment).

**GM1 21L.A.192(a)(4) Showing of compliance****OFFICIALLY RECOGNISED STANDARDS**

In this context, ‘officially recognised standards’ means:

- (a) those standards established or published by an official body whether having legal personality or not, which are widely recognised by the air transport sector as constituting good practice;
- (b) the standards used by the manufacturer of the equipment as mentioned in point (b) of AMC1 21L.A.192(a)(4).

**AMC1 21L.A.193(b)(3);(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 referred to in point 21L.A.193(b)(3) and (b)(4) that could potentially not conform to its design, the design approval holder (DAH), declarant or EASA may identify in the ICAs (in the case of point 21L.A.193(b)(3)) or in

CS-STAN (in the case of point 21L.A.193(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 Regulation (EU) No 1321/2014.

When assessing the safety effect of a part identified in point 21L.A.193(b)(3) or (b)(4), the DAH, declarant or EASA should assume that the installer has conducted, in accordance with Regulation (EU) No 1321/2014, any specific verification activities on the part or release documentation, as identified in the ICAs or in CS-STAN.

*Example:*

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

### **GM1 21L.A.193(b)(3);(b)(4) Meaning of 'negligible safety effect'**

For the purposes of point 21L.A.193(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 not identified by the installer that conducted the specific verification activities referred to in point 21L.A.193(c) at worst:

- (a) slightly reduces the operational or functional capabilities of the aircraft or its safety margins;
- (b) causes some physical discomfort to its occupants; and
- (c) slightly increases the workload of the flight crew.

### **GM1 21L.A.193(b)(4) Certification specifications referred to in point 21L.A.193(b)(4)**

The corresponding certification specifications issued by EASA and mentioned in point 21L.A.193(b)(4) are the Certification Specifications for Standard Changes and Standard Repairs (CS-STAN)<sup>21</sup>.

### **GM1 21L.A.193(b)(5) Equipment exempted from an airworthiness approval in accordance with Commission Regulation (EU) No 965/2012**

The equipment exempted from an airworthiness approval in accordance with Commission Regulation (EU) No 965/2012<sup>22</sup> that can be installed during maintenance as new equipment on an aircraft under point 21L.A.193(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),

<sup>21</sup> <https://www.easa.europa.eu/en/certification-specifications/cs-stan-standard-changes-and-standard-repairs>

<sup>22</sup> Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R0965&qid=1680007544570>).

- 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 Commission Regulation (EU) No 965/2012.

### **GM1 21L.A.193(b)(6) Part that is part of a higher-level assembly**

An EASA Form 1 is not required for a part when that part is an element of a higher-level assembly for which an EASA Form 1 is not required.

## SUBPART M — DESIGN OF REPAIRS TO TYPE-CERTIFIED PRODUCTS

### GM1 21L.A.201 Scope

Manuals and other instructions for continued airworthiness (such as the manufacturer's structural repair manual, maintenance manuals and engine manuals provided by the type-certificate holder or the supplemental type-certificate holder, as applicable) for operators contain useful information for the development and approval of repairs.

When that data is explicitly identified as approved, it may be used by operators without further approval to cope with anticipated in-service problems arising from normal usage provided that it is used strictly for the purpose for which it has been developed.

Approved data is data which is approved either by EASA or by an appropriately approved design organisation.

### GM1 21L.A.202 Standard repairs

CS-STAN<sup>23</sup> contains the certification specifications referred to in point 21L.A.202(a)(1). Guidance on the implementation of Standard Changes and Standard Repairs may be found in AMC M.A.801 of the AMC to Part-M.

### GM1 21L.A.203(a) Classification of repair designs to a type-certified product

(a) Clarification of the terms 'Major/Minor'

In line with the definitions given in point 21L.A.203, a new repair is classified as 'major' if the result on the approved type design has an appreciable effect on structural performance, weight, balance, systems, operational characteristics, certified noise or emissions levels, or other characteristics affecting the airworthiness or the environmental compatibility of the product or part. In particular, a repair is classified as 'major' if it requires extensive static, fatigue and damage tolerance strength justification and/or testing in its own right, or if it requires methods, techniques or practices that are unusual (i.e. unusual material selection, heat treatment, material processes, jiggling diagrams, etc.).

Repairs that require a reassessment and re-evaluation of the original certification substantiation data to ensure that the aircraft continues to comply with all the relevant requirements should be considered 'major' repairs.

Repairs whose effects are considered minor and require minimal or no assessment of the original certification substantiation data to ensure that the aircraft continues to comply with all the relevant requirements should be considered 'minor'.

It is understood that not all the certification substantiation data will be available to those persons/organisations classifying repairs. A qualitative judgement of the effects of the repair will, therefore, be acceptable for the initial classification. The subsequent review of the design of the repair may lead to it being reclassified, owing to early judgements being no longer valid.

(b) Airworthiness and environmental protection concerns for 'Major/Minor' classification

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<sup>23</sup> <https://www.easa.europa.eu/en/certification-specifications/cs-stan-standard-changes-and-standard-repairs>

The following should be considered for the magnitude of their effect when classifying repairs. Should the effect be considered significant, then the repair should be classified as 'major'. The repair may be classified as 'minor' where the effect is known to be without appreciable consequence.

(1) Structural performance

The structural performance of the product includes static strength, fatigue, damage tolerance, flutter and stiffness characteristics. Repairs to any element of the structure should be assessed for their effect upon the structural performance.

(2) Weight and balance

The weight of the repair may have a greater effect upon smaller aircraft as opposed to larger aircraft. The effects to be considered are related to overall aircraft centre of gravity and aircraft load distribution. Control surfaces are particularly sensitive to the changes due to the effect upon the stiffness, mass distribution and surface profile which may have an effect upon flutter characteristics and controllability.

(3) Systems

Repairs to any elements of a system should be assessed for the effect intended on the operation of the complete system and for the effect on system redundancy. The consequence of a structural repair on an adjacent or remote system should also be considered as above (for example, airframe repair in the area of a static port).

(4) Operational characteristics

Changes may include:

stall characteristics,

handling,

performance and drag,

vibration.

(5) Other characteristics:

changes to load path and load sharing,

fire protection/resistance,

characteristics affecting the environmental compatibility of the product are  
characteristics affecting the compliance of the product with the applicable  
environmental protection requirements

*Note:* Considerations for classifying repairs as 'Major/Minor' should not be limited to those listed above.

(c) Examples of 'major' repairs

(1) A repair that requires a permanent additional inspection to the approved maintenance programme, necessary to ensure the continued airworthiness of the product. Temporary repairs for which specific inspections are required prior to installation of a permanent repair do not necessarily need to be classified as 'major'. Also, inspections and changes to inspection frequencies not required as part of the approval to ensure continued airworthiness do not cause the classification of the associated repair as 'major'.

(2) A repair to life-limited or critical parts.

(3) A repair that introduces a change to the aircraft flight manual (AFM).

## AMC1 21L.A.205(a) Application for the approval of a repair design to a type-certificated product

### FORM AND MANNER

The applicant should file an application using the web-based 'EASA Applicant Portal'<sup>24</sup> or the application forms for the approval of major changes/major repair designs or for the approval of minor changes/minor repair designs, which may be downloaded from the EASA website.

The forms should be completed in accordance with the instructions embedded at the bottom of the application forms, and sent to EASA by fax, email or regular mail following the information provided on the EASA website<sup>25</sup>.

## AMC1 21L.A.205(b) Application for the approval of a repair design to a type-certificated product

### RECORD-KEEPING

- (a) Relevant substantiation data associated with a new major repair design and record-keeping should include:
- (1) the identification of the damage and the reporting source;
  - (2) the major repair design approval sheet identifying the applicable specifications and references of justifications;
  - (3) the repair drawing and/or instructions and scheme identifier;
  - (4) the correspondence with the type-certificate (TC) holder or the supplemental type-certificate (STC) holder if its advice on the design has been sought;
  - (5) the structural justification (static strength, fatigue, damage tolerance, flutter, etc.) or references to this data;
  - (6) if applicable, the effect on the certified noise and emissions levels and the characteristics that may affect the environmental compatibility of the product;
  - (7) the effect on the aircraft, engines and/or systems (performance, flight handling, etc., as appropriate);
  - (8) the effect on the maintenance programme;
  - (9) the effect on airworthiness limitations, the flight manual and the operating manual;
  - (10) any weight and moment changes; and
  - (11) special test requirements.
- (b) 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.).

<sup>24</sup> <https://ap.easa.europa.eu> (accessed: 20 October 2023)

<sup>25</sup> <https://www.easa.europa.eu/document-library/application-forms/certificates-and-approvals>  
<https://ap.easa.europa.eu> (accessed: 20 October 2023)

- (c) 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 point 21L.A.208.
- (d) Repairs to engines would normally only be accepted with the involvement of the TC holder.

## AMC1 21L.A.206 Demonstration of compliance

The description of the repair should include an explanation of the purpose of the repair, the pre-repair and post-repair configuration(s) of the product, schematics/pictures, and any other detailed features and boundaries of the repair (this may be supplemented by drawings or outlines of the design, if this helps to understand the repair), as well as the identification of the affected areas of the product that are functionally affected by the repair, and the identification of any changes to the approved manuals.

The applicant should identify any reinvestigations that are necessary to demonstrate compliance. This is a list of affected items of the applicable certification basis for which a new demonstration is necessary, together with the means (e.g. calculation, test or analysis) by which it is proposed to demonstrate compliance.

For a major repair, AMC1 21L.A.24(b)(4) should be used as applicable to the change for the development of the compliance-demonstration plan.

Compliance documentation for the demonstration of compliance in point 21L.A.206(a) comprises one or more test or inspection programmes/plans, reports, drawings, design data, specifications, calculations, analyses, etc., and provides a record of the means by which compliance with the applicable type-certification basis and environmental protection requirements is demonstrated.

Each compliance document should typically contain:

- the reference of the certification specifications, special conditions or environmental protection requirements addressed by the document;
- substantiation data demonstrating compliance (except test or inspection programmes/plans);
- a statement by the applicant declaring that the document provides the proof of compliance for which it has been created; and
- the appropriate authorised signature.

Each compliance document should be unequivocally identified by its reference and issue date. The various issues of a document should be controlled and comply with point 21L.A.7.

The level of detail of the compliance documentation that is referred to in point 21L.A.206(a) should be the same regardless of whether the repair is approved by EASA or under a design organisation approval (DOA) privilege, to allow the repair to be assessed in the frame of the DOA surveillance.

The compliance-demonstration process always takes into account the specific configuration(s) in the type certificate (TC) to which the major repair under approval is applied. This (these) configuration(s) may be defined by product models/variants or by repairs to the type design. The demonstration of compliance covers this (these) applicable specific configuration(s). Consequently, the approval of the major repair excludes any other configurations, in particular those that already exist but are not considered in the compliance-demonstration process, as well as those that may be certified in the future.

For major repairs approved by a design organisation approval (DOA) holder on the basis of its privilege as per point 21.A.263(c)(5) of Annex I (Part 21), the process described under AMC No 2 to 21.A.263(c)(5), (8) and (9) applies.

## AMC1 21L.A.206(c) Demonstration of compliance

### INSPECTIONS AND TESTS

Proposed type design: this term defines the type design (or the portion of the type design) as it is determined at the time when the testing and inspections are performed.

Verification document (also known as ‘statement of conformity’): before each testing and inspection, the verification document must confirm that the test specimen conforms with the proposed design, the test and measuring equipment is adequate for the test, and the sensors and measuring system are appropriately calibrated.

Conformity of the test specimen: the documented verification is intended to ensure that the manufactured test specimen, even in the presence of non-conformities, adequately represents the proposed type design. Possible types of non-conformity may be the following:

- Non-conformity between the design of the test specimen and the proposed type design at the time of the test. These are typically identified in the early stage of the testing and inspections planning, and should be addressed as early as possible (e.g. in the test plan). There may be several reasons for such a non-conformity: to account for interfaces with the test equipment, to conservatively cover several or future design configurations, etc.
- Non-conformity between the manufactured test specimen and the design of the test specimen. Such a non-conformity may be the result of the manufacturing of the test specimen.

While it is convenient to define any possible non-conformity as early as possible, the applicant does not need to make the distinction between the two types of non-conformity above as long as they are explicitly addressed, justified in the verification document or by cross reference to the test plan or other documents. However, testing for the demonstration of compliance with the applicable environmental protection requirements may be conducted in the final design of the product having incorporated the repair design.

Type certification is typically an iterative process in which the design is under continuous evolution. If the type design evolves after the time of the testing and inspections, then the final type design should be checked against the proposed type design (as it was at the time of the testing and inspections), and the differences (if any) should be analysed to ensure that the testing and inspection results are representative of the final configuration. However, such changes made to the type design may lead to the invalidation of the testing and inspection results, and the need to repeat the testing and inspections. It is recommended that the design organisation should have a thorough configuration management process to track the evolving type design.

Conformity of the test and measuring equipment: the configuration of the test and measuring equipment should be defined in the test plan and include the following:

- definition/design of the test equipment (relevant tools, mechanical parts, electronic components used to execute the test); and
- definition of the measuring equipment:
  - type/model of sensors, together with their technical characteristics;
  - position and orientation of exciters and sensors; and
  - electronic measuring equipment (in some cases, this may also include the acquisition and post-processing of data).

The configuration of the test and measuring equipment should be defined and controlled through certification test plans and supporting documentation, according to the design assurance system, if applicable. The test plan should also include the following elements:

- the test cases, methods, and procedures for test execution;
- the pass–fail criteria; and
- pre-, during- and post-test inspections.

The verification document should confirm that the test and measuring equipment conforms to its purpose, and that the sensors and measuring system are appropriately calibrated. Any non-conformity should be assessed, and it should be justified that it will not compromise the test purpose and results. This may be done either in the verification document or by cross reference to other documents (test minutes of meetings, test notes, etc.).

Use of the term ‘adequate’: the test specimen, as well as the test and measuring equipment, is considered ‘adequate’ as long as the test execution on the manufactured test specimen (including any non-conformity) and the use of the installed test set-up do not compromise the test purpose and results (for example, by providing better performance than the proposed type design, or masking any potential failure mode or behaviour).

Changes that affect the validity of the verification document: if changes need to be introduced to the test specimen or to the test and measurement equipment after the verification is documented (and before the test is undertaken), then the verification document must be updated. The updated verification document must be made available to EASA before the test if EASA has informed the applicant that it will witness or carry out the tests or inspections.

Development versus certification tests: sometimes, tests of specimens that conform to a preliminary design, but are not intended for certification (known as development tests), are performed as part of a risk control strategy and to develop knowledge of a subject. Problems and failures found during development are part of the process of increasing the understanding of the design, including its failure modes and the potential for optimisation. Such development tests do not need to meet the requirements of point 21L.A.206(c).

Any planned test event should be classified in advance as either a development test or a certification test. Tests that support the compliance demonstration should be classified as certification tests.

It is acceptable for a development test to finally form part of the compliance demonstration, and it may be declared afterwards to be a certification test as long as it meets the requirements of point 21L.A.206(c). For this reason, it is important to keep the configuration of such tests under control.

If the test specimen used for a certification test has already undergone a series of previous tests that may affect or ultimately invalidate its acceptance as required by point 21L.A.206(c), this aspect should be considered when documenting the verification, and specific analyses or inspections may be required.

Because of the above aspects, EASA advises applicants to inform EASA if they intend to conduct a campaign of development tests that may eventually be used as certification tests to establish whether EASA would wish to witness the tests.

## **AMC1 21L.A.206(e)(1) Demonstration of compliance**

### **REVIEW OF DATA AND INFORMATION RELATED TO THE DEMONSTRATION OF COMPLIANCE**

Availability of compliance data (see point 21L.A.206(e)): data and information required to be provided by the applicant should be made available to EASA in a reliable and efficient way as agreed with EASA.

## **AMC1 21L.A.206(e)(2) Demonstration of compliance**

### **TESTS AND INSPECTIONS**

The applicant should inform EASA sufficiently in advance about the execution of tests and inspections that:

- are used for compliance-demonstration purposes; and
- have been identified as being of particular interest to EASA during the review and approval of the compliance-demonstration plan

in order to permit EASA the opportunity to witness or carry out these inspections or tests.

The applicant may propose to EASA to witness or carry out flight or other tests of particular aspects of the product during its development and before the type design is fully defined.

However, in case of flight tests, the applicant should perform the tests before EASA witnesses or performs them to ensure that no features of the product preclude the safe conduct of the evaluation requested. EASA may require any such tests to be repeated once the type design is fully defined to ensure that subsequent changes have not adversely affected the conclusions from any earlier evaluation.

A verification document as per point 21L.A.206(c) is required for the above tests.

### **AMC1 21L.A.206(e)(3) Demonstration of compliance**

#### **PHYSICAL INSPECTION OF THE FIRST ARTICLE**

The applicant should be prepared for any additional investigations as notified by EASA according to point 21L.B.203(c).

Refer to AMC1 21L.A.25(e)(3) for an explanation of the activities performed under the first-article inspection.

### **GM1 21L.A.206(f) Demonstration of compliance**

#### **DECLARATION OF COMPLIANCE**

All compliance-demonstration activities in accordance with the compliance-demonstration plan, including all the testing and inspections in accordance with point 21L.A.206(c) and all flight testing in accordance with point 21L.A.206(d), should be completed before the issuance of the final declaration of compliance.

‘No feature or characteristic’ that may make the product with the repair design unsafe in point 21L.A.206(f)(2) means the following: while every effort is made to address in the applicable certification basis all the risks to product safety that may be caused by the product, experience shows that safety-related events may occur with products in service, even though compliance with the certification basis is fully demonstrated. One of the reasons may be that some existing risks are not properly addressed in the certification basis. Therefore, the applicant should declare that it has not identified any such feature or characteristic.

‘No feature or characteristic’ that may make the product with the repair design environmentally incompatible (point 21L.A.206(f)(2):

It is assumed that environmental compatibility is demonstrated when the product with the repair design complies with the applicable environmental protection requirements. Therefore, the applicant, when declaring that the product with the repair design complies with the applicable environmental protection requirements under point 21L.A.206(f)(1), should also declare that it has not identified any such feature or characteristic.

## AMC1 21L.A.207 Requirements for the approval of a minor repair design

(a) Applicability of point 21L.A.207

Point 21L.A.207 should be complied with by applicants for the approval of a minor repair to a type certificate (TC), and by design organisation approval (DOA) holders that approve minor changes under their privileges.

Point 21L.A.207(c), however, only applies to projects for which an application is submitted to EASA. For DOA holders that approve minor repairs under their privileges, the justification of compliance and the declaration of compliance required by point 21L.A.207(b) should be produced but do not need to be submitted to EASA. They should be, however, kept on record and submitted to EASA upon request during its DOA continued surveillance process.

(b) The approval process

The approval process comprises the following steps:

*Note:* Steps 1, 2 and 4 should be followed only by applicants for minor repairs approved by EASA. DOA holders that approve minor repairs under their privileges should refer to AMC No 1 to 21.A.263(c)(2) or AMC No 2 to 21.A.263(c)(2), as applicable to their approval process.

(1) Application

When the minor repair is approved by EASA, an application should be submitted to EASA as described in point 21L.A.205 and in AMC1 21L.A.205(a).

(2) Certification basis

(3) Justification of compliance

(4) Declaration of compliance

(c) Certification basis

The certification basis for a minor repair consists of a subset of the elements of the product's certification basis 'incorporated by reference in the type certificate'.

The certification basis 'incorporated by reference in the type certificate' is the certification basis for the product as recorded in the type certificate data sheet (TCDS) for the product type/model in the applicable configuration(s).

The certification basis contains the applicable airworthiness and environmental protection requirements specified by reference to their amendment level, as complemented by special conditions, equivalent safety findings, deviations, a proposed 'elect to comply', etc., as applicable.

By way of derogation from the above, CSs that became applicable after those incorporated by reference in the TC may be used for the approval of a minor repair (see the guidance below on certification specifications that became applicable after those 'incorporated by reference in the type certificate').

If other changes are required for the embodiment of the minor repair, the certification basis corresponding to the product modified by these other changes should also be considered when determining the certification basis for the minor repair.

(d) Justification of compliance required by point 21L.A.207(c)

The applicant should justify compliance with the certification basis established for the minor repair for all areas that are either physically changed or functionally affected by the minor repair.

- (1) Means of compliance: the applicant should define and record the means (calculation, test or analysis, etc.) by which compliance is demonstrated. Appendix A to AMC1 21L.A.24(b) may be used to describe how compliance is demonstrated.
- (2) Compliance documents: the compliance demonstration should be recorded in compliance documents. For minor repairs, one comprehensive compliance document may be sufficient, provided that it contains evidence of all aspects of the compliance demonstration.

See also the additional guidance in point (e).

- (3) Aircraft manuals: where applicable, supplements to manuals (e.g. aircraft flight manual (AFM), aircraft maintenance manual (AMM), etc.) may be issued.

See also additional guidance below in point (f) on embodiment/installation instructions.

- (e) Definition of the repair design to the type certificate

The repair design to the type certificate should be defined in accordance with the aspects in GM 21L.A.61.

- (f) Embodiment/installation instructions

The instructions for the embodiment/installation of the repair (e.g. service bulletin, modification bulletin, production work order, etc.) should be defined. This may include the installation procedure, the required materials, etc.

- (g) Certification specifications that are applicable to the product on the date of the application for the change

- (1) Minor repairs are those changes to the design that do not affect the airworthiness and the environmental compatibility of the product or the certified noise and emissions levels. This means that the certification basis for the minor repair may consist of the items of the certification basis incorporated by reference in the TCDS of the product type/model, and normally it should not be necessary for a minor repair to use certification specifications that became applicable after those that are incorporated by reference in the type certificate.

- (2) On the other hand, the applicant may elect to use the certification specifications that are applicable to the product on the date of the application for the change for the compliance demonstration. This does not affect the classification of the repair.

- (h) Feature or characteristic affecting the airworthiness or environmental compatibility of the product with the repair design

The term 'no feature or characteristic' applies to a minor repair design to a product, in which case the effect of the repair on the product's safety or environmental compatibility is quite low. Minor repair designs should not be approved if either the design organisation approval (DOA) holder approving minor repairs under its privileges or EASA is aware of a feature or characteristic that may make the product with the repair design unsafe or environmentally incompatible for the uses for which approval is requested.

## GM1 21L.A.207(c) Requirements for the approval of a minor repair design

The level of detail of the justification that is referred to in point 21L.A.207(c) should be the same regardless of whether the repair is approved by EASA or under a design organisation approval (DOA) privilege, to allow the repair to be assessed in the frame of the DOA surveillance.

## AMC1 21L.A.208 Requirements for the approval of a major repair design

- (a) For major repairs approved by EASA, the applicant should use all the AMC and GM to point 21L.A.25.
- (b) For major repairs approved by the design organisation approval (DOA) holder on the basis of its privilege as per point 21.A.263(c)(5) of Annex I (Part 21), the process described under AMC No 2 to 21.A.263(c)(5), (8) and (9) applies.

## AMC1 21L.A.208(c) Requirements for the approval of a major repair design

For the demonstration by the applicant that there are no unresolved issues, see AMC1 21L.A.27(d).

## GM1 21L.A.208 Requirements for the approval of a major repair design

### REPAIR DESIGN APPROVAL BY EASA

EASA's approval is required in cases of major repair designs proposed by design organisation approval (DOA) holders that do not hold the necessary privilege as per point 21.A.263(c)(5) of Annex I (Part 21) to Regulation (EU) No 748/2012 to approve certain major repair designs, as well as in cases of minor repair designs proposed by persons or organisations that have submitted a declaration of design capability (declared design organisation) in accordance with Subpart J of Annex I b (Part 21 Light) to Regulation (EU) No 748/2012 .

## GM1 21L.A.209(b) Approval of a repair design under a privilege

### REPAIR DESIGN APPROVAL BY A DESIGN ORGANISATION APPROVAL (DOA) HOLDER

- (a) Approval by a DOA holder  
The approval of repairs through the use of procedures agreed with EASA implies that the DOA holder issues the approval without EASA's involvement. EASA will monitor the application of this procedure within the surveillance plan for the relevant organisation. When the organisation exercises this privilege, the repair release documentation should clearly show that the approval is issued on the basis of its privilege.
- (b) Previously approved data for other applications  
When it is intended to use previously approved data for other applications, it is expected that an appropriately approved design organisation has checked the applicability and effectiveness of this data. After damage identification, if a repair solution exists in the available approved

data, and if the application of this solution to the identified damage remains justified by the previously approved repair design (structural justifications still valid, possible airworthiness limitations unchanged), the solution may be considered approved and may be used again.

(c) Temporary repairs

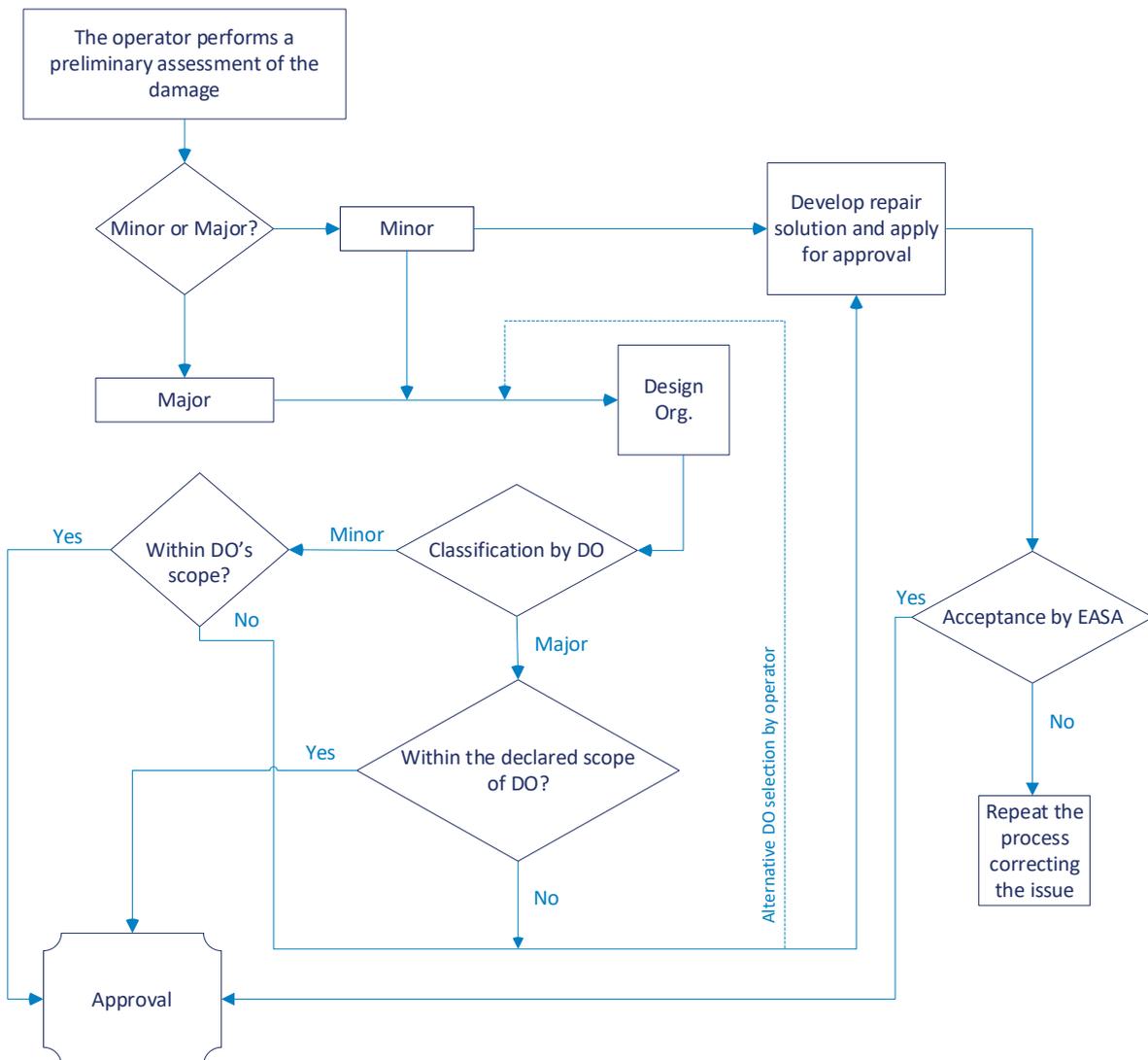
These are life-limited repairs to be removed and replaced by permanent repairs after a limited service period. These repairs should be classified under point 21L.A.203, and the service period should be defined when the temporary repair is approved.

(d) Fatigue and damage tolerance

An approved design issued before the fatigue- and damage-tolerance evaluation has been completed should specify the limited service period.

## GM1 21L.A.211 Unrepaired damage

This process is not intended to supersede the normal maintenance practices defined by the type-certificate holder (e.g. blending out corrosion and re-protection, stop drilling cracks, etc.), but addresses specific cases not covered in the manufacturer’s documentation.



## SUBPART N — DESIGN OF REPAIRS TO AIRCRAFT FOR WHICH DESIGN COMPLIANCE HAS BEEN DECLARED

### GM1 21L.A.221 Scope

Manuals and other instructions for continued airworthiness (such as the manufacturer's structural repair manual, maintenance manuals and engine manuals provided by the declarant for a declaration of design compliance) for operators contain useful information for the development and approval of repairs.

When that data is explicitly identified as being declared applicable for use, it may be used by operators without further actions to cope with anticipated in-service problems arising from normal usage provided that it is used strictly for the purpose for which it has been developed.

Declared design data is data which is declared as being applicable for use by the declarant of a declaration of design compliance.

Approved data is data which is approved by an appropriately approved design organisation.

### GM1 21L.A.222 Standard repairs

#### CERTIFICATION SPECIFICATIONS

CS-STAN<sup>26</sup> contains the certification specifications referred to in point 21L.A.222(a)(1). Guidance on the implementation of Standard Changes and Standard Repairs may be found in AMC M.A.801 of the AMC to Part-M.

### GM1 21L.A.223(a) Classification of repairs designs to an aircraft for which design compliance has been declared

#### (a) Clarification of the terms 'Major/Minor'

In line with the definitions given in point 21L.A.203, a new repair is classified as 'major' if the result on the aircraft, engine or propeller design has an appreciable effect on structural performance, weight, balance, systems, operational characteristics, declared noise or emissions levels or other characteristics affecting the airworthiness or the environmental compatibility of the product or part. In particular, a repair is classified as 'major' if it requires extensive static, fatigue and damage tolerance strength justification and/or testing in its own right, or if it requires methods, techniques or practices that are unusual (i.e. unusual material selection, heat treatment, material processes, jiggling diagrams, etc.).

Repairs that require a reassessment and re-evaluation of the original substantiation data to ensure that the aircraft continues to comply with all the relevant requirements should be considered 'major' repairs.

Repairs whose effects are considered minor and require minimal or no assessment of the original substantiation data to ensure that the aircraft continues to comply with all the relevant requirements should be considered 'minor'.

<sup>26</sup> <https://www.easa.europa.eu/en/certification-specifications/cs-stan-standard-changes-and-standard-repairs>

It is understood that not all the substantiation data will be available to those persons/organisations classifying repairs. A qualitative judgement of the effects of the repair will, therefore, be acceptable for the initial classification. A subsequent review of the design of the repair may lead to it being reclassified, owing to early judgements being no longer valid.

(b) Airworthiness and environmental protection concerns for 'Major/Minor' classification

The following should be considered for the magnitude of their effect when classifying repairs. Should the effect be considered significant, then the repair should be classified as 'major'. The repair may be classified as 'minor' where the effect is known to be without appreciable consequence.

(1) Structural performance

The structural performance of the product includes static strength, fatigue, damage tolerance, flutter and stiffness characteristics. Repairs to any element of the structure should be assessed for their effect upon the structural performance.

(2) Weight and balance

The weight of the repair may have a greater effect upon smaller aircraft as opposed to larger aircraft. The effects to be considered are related to overall aircraft centre of gravity and aircraft load distribution. Control surfaces are particularly sensitive to the changes due to the effect upon the stiffness, mass distribution and surface profile which may have an effect upon flutter characteristics and controllability.

(3) Systems

Repairs to any elements of a system should be assessed for the effect intended on the operation of the complete system and for the effect on system redundancy. The consequence of a structural repair on an adjacent or remote system should also be considered as above (for example, airframe repair in the area of a static port).

(4) Operational characteristics

Changes may include:

stall characteristics,

handling,

performance and drag,

vibration.

(5) Other characteristics:

changes to load path and load sharing,

fire protection/resistance,

characteristics affecting the environmental compatibility of the product are  
characteristics affecting the compliance of the product with the applicable  
environmental protection requirements

*Note:* Considerations for classifying repairs as 'Major/Minor' should not be limited to those listed above.

(c) Examples of 'major' repairs

- (1) A repair that requires a permanent additional inspection to the maintenance programme, necessary to ensure the continued airworthiness of the product. Temporary repairs for which specific inspections are required prior to installation of a permanent repair do not

necessarily need to be classified as 'major'. Also, inspections and changes to inspection frequencies not required to ensure continued airworthiness do not cause the classification of the associated repair as 'major'.

- (2) A repair to life-limited or critical parts.
- (3) A repair that introduces a change to the aircraft flight manual (AFM).

## AMC1 21L.A.225(a) Declaration of design compliance for minor repair designs

### REQUIREMENTS FOR THE DECLARATION OF A MINOR REPAIR

#### (a) Applicability of point 21L.A.225

Point 21L.A.225 should be complied with by declarants for the declaration of compliance of a minor repair, including design organisation approval (DOA) holders that declare compliance of minor changes under their privileges as per point (c)(3) of point 21.A.263 of Annex I (Part 21).

In accordance with point 21L.A.225(c) for declarations of compliance for minor repairs, the substantiating data and the declaration of compliance required by point 21L.A.225(a) should be produced but do not need to be submitted to EASA. They should be, however, kept on record and made available to EASA upon request during any oversight visit.

#### (b) The declaration process

The declaration process comprises the following steps:

- (1) classification of the repair;
- (2) applicable detailed technical specifications;
- (3) determination of compliance;
- (4) declaration of design compliance.

#### (c) Detailed technical specifications

The detailed technical specifications for a minor repair consist of the detailed technical specifications that were incorporated by reference in the declaration of design compliance that was submitted for the particular aircraft under Subpart C unless EASA has determined that these are no longer appropriate and the latest detailed technical specifications should be complied with or the declarant elects to comply with these detailed technical specifications.

#### (d) Determination of compliance required by point 21L.A.103(a)

The declarant should determine compliance with the applicable detailed technical specifications established for the minor change for all areas that are either physically changed or functionally affected by the minor change.

- (1) Means of compliance: the declarant should define and record the means (calculation, test or analysis, etc.) by which compliance is determined. Appendix A to AMC1 21L.A.44(a) may be used for this purpose.
- (2) Compliance documents: the compliance determination should be recorded in compliance documents. For minor changes, one comprehensive compliance document may be sufficient, provided that it contains evidence of all aspects for compliance. AMC1 21L.A.227(b) may also be used, where applicable.

- (3) **Aircraft manuals:** where applicable, supplements to manuals (e.g. aircraft flight manual (AFM), aircraft maintenance manual (AMM), etc.) may be issued.

See also additional guidance below in point (e) on embodiment/installation instructions.

- (e) Embodiment/installation instructions

The instructions for the embodiment/installation of the repair (e.g. service bulletin, modification bulletin, production work order, etc.) should be defined. This may include the installation procedure, the required materials, etc.

## AMC1 21L.A.225(b) Declaration of design compliance for minor repair designs

### FORM AND MANNER

The declarant should complete and file a declaration of compliance for the minor repair using the applicable form below (which can also be downloaded from the EASA website) for the declaration of minor changes/minor repair designs.

If there are any changes to the data (e.g. propeller or engine designation) that was provided in the EASA Part 21 Light database of declared noise levels as a result of the minor repair design, then this data should be added by the declarant.

The justification of the classification of the change should also be recorded.

**EASA Form 201**

### Declaration of design compliance for a Minor Change / Minor Repair Design

<b>1. Designation</b>		
<b>Minor Change</b> <input type="checkbox"/>	<b>Minor Repair</b> <input type="checkbox"/>	
<b>2. Product Identification</b>		
<input type="checkbox"/> Small Aeroplane with a MTOM of 1200Kg or less and a max seating configuration of 2 persons.	<input type="checkbox"/> Sailplane with a MTOM of 1200kg or less <input type="checkbox"/> Powered Sailplane with a MTOM of 1200kg or less <input type="checkbox"/> Balloon designed for no more than 4 persons <input type="checkbox"/> Hot Airship designed for no more than 4 persons.	
<b>2.2 Applicability</b>		
<b>2.2.1 Design details</b>	Registered Declaration Number for the original product	
	Original Declarant	
	Type Name	
	Model(s)	

<b>2.3 Applicable technical specifications</b>	Please specify the applicable airworthiness code, e.g. CS-23 (if these are not the original technical specifications against which compliance was originally declared in accordance with Part 21 Light Subpart C due to the reasons stated in 21L.A.105 (a)(1) or (2) then this should be indicated here).
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<b>3. Description</b>	
<b>3.1 Title</b>	Please limit to 40 characters
<b>3.2 Description</b>	
<b>3.3 Affected Areas</b> (including manuals)	
<b>3.4 Re-Investigations</b>	

<b>4. Declarants' declaration and acceptance of the General Conditions</b>		
<p>I declare that I have the legal capacity to make this declaration and that all information provided in this declaration is correct and complete.</p> <p>I hereby declare that the design of the minor change/repair described in Section 3 is in compliance with the applicable detailed technical specifications detailed in Section 2.3 and the applicable environmental protection requirements.</p> <p>I hereby declare that no features or characteristics have been identified that may make the aircraft after the minor change or repair has been incorporated unsafe or environmentally incompatible for the intended use.</p> <p>I hereby commit to undertake the obligations of a declarant of a declaration of design compliance as detailed in point 21L.A.106 of Annex Ib to Regulation (EU) 748/2012.</p> <p>I declare that I have provided the required information and that it is accurate and complete and indicated where it is not applicable.</p>		
Date/Location	Name	Signature

This Declaration should be retained by the declarant and made available upon request by EASA

## **AMC1 21L.A.225(c) Declaration of design compliance for minor repair designs**

### **REGISTER OF DECLARATIONS FOR MINOR REPAIRS**

The register that is used by the declarant to record the declarations of design compliance for minor repairs should also comply with point 21L.A.7 and be easily accessible in case EASA requests the details of a specific minor change during oversight.

## AMC1 21L.A.226(b) Declaration of design compliance of major repair designs

### FORM AND MANNER

The request for registration should be completed along with the declaration of design compliance and sent to EASA by email or regular mail following the information provided on the EASA website<sup>27</sup>.

If the data sheet for airworthiness needs to be adapted, then an amended version should also be provided.

If there are any changes to the data that was provided in the EASA Part 21 Light database of declared noise levels as a result of the major repair, then this data should be added by the declarant as a new record within the EASA Part 21 Light database identifying that it is applicable after the major repair.

### EASA Form 202

### PART 1 – REQUEST FOR REGISTRATION AND DECLARATION OF DESIGN COMPLIANCE FOR A MAJOR CHANGE/ MAJOR REPAIR

<b>1. Identification of Activity</b>									
Major Change <input type="checkbox"/> Major Repair <input type="checkbox"/>									
<b>2. Product Identification</b>									
<b>2.1 Applicability</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;">Declared Type Name (this must be a unique means to identify the aircraft)</td> <td style="width: 40%;"></td> </tr> <tr> <td style="padding: 5px;">Declared Model Name(s)</td> <td></td> </tr> <tr> <td style="padding: 5px;">Original Declarant</td> <td></td> </tr> <tr> <td style="padding: 5px;">Registered Declaration No</td> <td></td> </tr> </table>	Declared Type Name (this must be a unique means to identify the aircraft)		Declared Model Name(s)		Original Declarant		Registered Declaration No	
Declared Type Name (this must be a unique means to identify the aircraft)									
Declared Model Name(s)									
Original Declarant									
Registered Declaration No									
<b>2.2 Product Category</b>	<input type="checkbox"/> Small Aeroplane with a MTOW of 1 200 kg or less and a max. seating configuration of 2 persons <input type="checkbox"/> Sailplane with a MTOW of 1 200 kg or less <input type="checkbox"/> Powered Sailplane with a MTOW of 1 200 kg or less <input type="checkbox"/> Balloon designed for no more than 4 persons <input type="checkbox"/> Hot Air Airship designed for no more than 4 persons								
<b>2.3 Technical Specifications</b>	Please specify the applicable technical specifications, e.g. CS-23 (if these are not the original technical specifications against which compliance was originally declared in accordance with Part 21 Light Subpart C due to the reasons stated in 21L.A.107 (a)(1) or (2) then this should be indicated here).								

<sup>27</sup> <https://www.easa.europa.eu/document-library/application-forms/certificates-and-approvals>  
<https://ap.easa.europa.eu> (accessed: 20 October 2023).

<b>2.4 Environmental Protection Requirements</b>  (if applicable)	Please specify the environmental protection requirements with which compliance has been determined
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<b>3. Description</b>	
<b>3.1 Title</b>	Please limit to 40 characters
<b>3.2 Description</b>	
<b>3.3 Affected Areas</b> including manuals	
<b>3.4 Re-Investigations</b>	Compliance Demonstration Plan – doc. Ref.:  (Please provide the reference of the Compliance Demonstration Plan required by 21L.A.107(d)(3) or 21L.A.226(d)(3), respectively)  Documentation, if changed, to submit with the Declaration in accordance 21L.A.107 (c): <ul style="list-style-type: none"> <li>• Airworthiness Data Sheet</li> <li>• Aircraft Flight Manual including any limitations</li> <li>• Instructions for Continued Airworthiness</li> <li>• Any other conditions/limitations which the declarant wishes to declare</li> <li>• EASA Noise Record Number</li> </ul>

<b>4. Declarant's Statement</b>	
<b>4.1. Declaration of Compliance</b>	
<p>I declare that I have the legal capacity to submit this Declaration to EASA and that all information provided in this Declaration form is correct and complete.</p> <p>I hereby declare that the design of the major change/repair described in Section 3 is in compliance with the applicable detailed technical specifications detailed in Section 2.3 and the applicable environmental protection requirements (if applicable) in Section 2.4 in accordance with the compliance demonstration plan detailed in Section 3.4.</p> <p>I hereby declare that no features or characteristics have been identified that, after the major change or repair has been incorporated, may make the aircraft unsafe or environmentally incompatible for the intended use.</p>	

I hereby commit to undertake the obligations of a Declarant of a Declaration of Design Compliance as detailed in point 21L.A.47 and for major repairs (if applicable) point 21L.A.228 of Annex Ib to Regulation (EU) 748/2012.

Date/Location	Name	Signature

**Important Note:** EASA cannot accept Declarations without signature. Please make sure that you sign the Declaration.

**This declaration should be sent by email to:**

[applicant.services@easa.europa.eu](mailto:applicant.services@easa.europa.eu)

## GM1 21L.A.226(c) Declaration of design compliance of major repair designs

### INFORMATION TO BE PROVIDED TO EASA

The documents and information that are required to be provided to EASA in point 21L.A.226(c) may be provided to EASA by the declarant in advance of the submission of the declaration of design compliance for the 'major' change. This would be advantageous for the declarant to facilitate EASA's investigations and to determine the need for the first-article inspection under point 21L.B.221(b).

## AMC1 21L.A.226(e) Declaration of design compliance of major repair designs

### SPECIFIC CONFIGURATION(S)

The compliance-demonstration process always takes into account the specific configuration(s) in the declaration of design compliance to which the major repair relates. This (these) configuration(s) may be defined by product models/variants or by design changes to the declaration. The demonstration of compliance applies to this (these) applicable specific configuration(s). Consequently, the declaration of the major change excludes any other configurations, in particular those that already exist but are not considered in the compliance-demonstration process, as well as those that may be declared in the future.

## GM1 21L.A.227 Compliance activities for declaring compliance of a major repair design

### VOLUNTARY INVOLVEMENT OF EASA PRIOR TO THE SUBMISSION OF DECLARATION

The declarant may choose to involve EASA prior to submitting the declaration of design compliance for a major repair design. This would allow EASA to:

- (a) check the scope of the product is still within the scope of Subpart C;
- (b) provide guidance on the completeness of the compliance-demonstration plan and the selection of means of compliance;

- (c) advise on the selection of the applicable detailed technical specifications and applicable noise requirements;
- (d) provide guidance about noise tests (if applicable) and witness them;
- (e) avoid any issues or delays during the first-article inspection (after submission of the declaration of design compliance and if considered necessary under point 21L.B.221(b)).

The initiation of the project may occur before starting the compliance activities or during those activities. The assignment of a dedicated project number would facilitate any subsequent communication with EASA. This will facilitate the provision of compliance documentation required by point 21L.A.226(d) which may be provided by the declarant to EASA at key stages in the compliance demonstration prior to the submission of the declaration of design compliance for the major repair design.

## **AMC1 21L.A.227(a) Compliance activities for declaring compliance of a major repair design**

### **COMPLIANCE-DEMONSTRATION PLAN FOR A MAJOR REPAIR**

The compliance-demonstration plan for a major repair is a document that allows the declarant to manage and control the design of the major repair, as well as the process of compliance demonstration, and that enables EASA to investigate the root cause(s) in the event of a safety issue being discovered.

The description of the repair should include an explanation of the purpose of the repair, the pre-repair and post-repair configuration(s) of the aircraft, schematics/pictures, and any other detailed features and boundaries of the physical change (this may be supplemented by drawings or outlines of the design, if this helps to understand the design change), as well as the identification of the areas of the aircraft that are affected by the repair, and the identification of any changes to the approved manuals.

The items of the declaration of aircraft design compliance made in accordance with Subpart C that are affected by the repair and for which a new demonstration of compliance is necessary should be identified together with the means (e.g. calculation, test or analysis) by which it is proposed to demonstrate compliance.

The compliance demonstration should include the analysis for the classification of the change in accordance with GM1 21L.A.223.

In particular, the following information should typically be expected:

- identification of the relevant personnel that make decisions affecting airworthiness and environmental compatibility, and that will interface with EASA during any physical inspection and assessment of the repaired aircraft if required under point 21L.B.221(b);
- subcontracting arrangements for design, environmental compatibility and/or production (if applicable).

Point 21L.A.226(d)(1) 'Description of the major repair'

An overview of the nature and type of repair that is required should be provided that describes the changes to the previously declared design.

Point 21L.A.226(d)(2) 'Operating characteristics, design features and limitations'

The declarant should consider whether there are any affects to the operating characteristics and limitations as a result of the repair, including:

- operating speed limitations;
- service ceiling, maximum airfield elevation;
- cabin pressure;
- limit load factors;
- number of passengers, minimum crew, payload, range;
- weight and centre-of-gravity (CG) envelope and fuel loading;
- performance;
- environmental envelope;
- runway surface conditions;
- other items, if considered to be more appropriate, which address the specific aeronautical product.

The declarant should provide detailed information about the means of compliance with the applicable requirements identified under point 21L.A.226(a). This should include the following:

- a compliance checklist addressing each requirement, the proposed means of compliance (see Appendix A to AMC1 21L.A.227(a) below for the relevant codes), and the related compliance document(s);
- identification of industry standards, methodology documents, handbooks and any other acceptable means of compliance, specified in the airworthiness or noise data sheet, which have been followed in the demonstration of compliance;
- when the compliance demonstration involves testing, a description of the ground- and flight-test article(s), test method(s), test location(s), test schedule, test house(s), test conditions (e.g. limit load, ultimate load), as well as of the intent/objective(s) of the testing; and
- when the compliance demonstration involves analyses/calculations, a description/identification of the tools (e.g. name and version/release of the software programs) and methods used, the associated assumptions, limitations and/or conditions, as well as of the intended use and purpose.

For every aspect mentioned above, the declarant should clearly identify whether the demonstration of compliance involves different means than those contained in the published AMC to the relevant CSs and any method (analysis or test) which is novel or unusual for the declarant.

For every aspect related to compliance with the applicable environmental protection requirements mentioned above, the declarant should clearly identify whether the demonstration of compliance involves means that are described in ICAO Doc 9501 'Environmental Technical Manual'.

## Appendix A to AMC1 21L.A.227(a) Compliance activities for declaring compliance of a major repair design

### MEANS-OF-COMPLIANCE CODES

Type of compliance	Means of compliance	Associated compliance documents
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Engineering evaluation	MC0: (a) compliance statement (b) reference to design data (c) election of methods, factors, etc. (d) definitions	(a) Design data (b) Recorded statements
	MC1: design review	(c) Descriptions (d) Drawings
	MC2: calculation/analysis	(e) Substantiation reports
	MC3: safety assessment	(f) Safety analyses
Tests	MC4: laboratory tests	(g) Test programmes (h) Test reports (i) Test interpretations
	MC5: ground tests on related product(s)	
	MC6: flight tests	
	MC8: simulation	
Inspection	MC7: design inspection/audit	(j) Inspection or audit reports
Equipment qualification	MC9: equipment qualification	<i>Note:</i> Equipment qualification is a process that may include all previous means of compliance at equipment level.

## AMC1 21L.A.227(b) Compliance activities for declaring compliance of a major repair design

### COMPLIANCE DOCUMENTATION

- (a) Compliance documentation comprises one or more test or inspection programmes/plans, reports, drawings, design data, specifications, calculations, analyses, etc., and provides a record of the means by which compliance with the applicable detailed technical specifications and environmental protection requirements has been demonstrated.
- (b) Each compliance document should typically contain:
- the reference of the detailed technical specifications or environmental protection requirements addressed by the document;
  - substantiation data demonstrating compliance (except test or inspection programmes/plans);
  - a statement by the declarant declaring that the document provides the proof of compliance for which it has been created; and
  - the declarant's signature.
- (c) Each compliance document should be unequivocally identified by its reference and issue date. The various issues of a document should be controlled and comply with point 21L.A.7.

## AMC1 21L.A.227(c);(d);(e) Compliance activities for declaring compliance of a major repair design

### INSPECTIONS AND TESTS

In accordance with point 21L.A.227(d), the declarant must address the conformity of the test specimen, as well as of the test and measuring equipment.

### Conformity of the test specimen

The recorded justification of the conformity of the test articles is intended to ensure that the manufactured test specimen adequately represents the declared applicable design data. Possible types of non-conformity may be the following:

- Non-conformity between the design of the test specimen and the originally intended design data at the time of the test. These are typically identified in the early stage of the test planning, and should be addressed as early as possible (e.g. in the test plan). There may be several reasons for such a non-conformity: to account for interfaces with the test equipment, to conservatively cover several or future design configurations, etc.
- Non-conformity between the manufactured test specimen and the design of the test specimen. Such a non-conformity may be the result of the manufacturing of the test specimen.

While it is convenient to define any possible non-conformity as early as possible, the declarant does not need to make the distinction between the two types of non-conformity above as long as they are explicitly addressed and justified by cross reference to the test plan or other documents. However, testing for the demonstration compliance with the applicable environmental protection requirements may be conducted in the final design of the product having incorporated the repair design.

Compliance demonstration is typically an iterative process in which the design is under continuous evolution. If the aircraft design evolves after the time of the inspection or test, then the final major change design should be checked against the originally intended design (as it was at the time of the inspection or test), and the differences (if any) should be analysed to ensure that the inspection or test results are representative of the final configuration. However, such changes made to the design may lead to the invalidation of the inspection or test results and the need to repeat the inspection or test. It is recommended that the declarant should have a thorough configuration management process to track the evolving design of the major repair.

Conformity of the test and measuring equipment: the configuration of the test and measuring equipment should be defined in the test plan and include the following:

- definition/design of the test equipment (relevant tools, mechanical parts, electronic components used to execute the test); and
- definition of the measuring equipment:
  - type/model of sensors, together with their technical characteristics;
  - position and orientation of exciters and sensors; and
  - electronic measuring equipment (in some cases, this may also include the acquisition and post-processing of data).

The configuration of the test and measuring equipment should be defined and controlled through test plans and supporting documentation. The test plan should also include the following elements:

- the test cases, methods, and procedures for test execution;
- the pass–fail criteria; and
- pre-, during- and post-test inspections.

The declarant should confirm that the test and measuring equipment conform to its definition in the test plan, and that the sensors and measuring system are appropriately calibrated. Any non-conformity should be assessed, and it should be justified that it will not compromise the test purpose and results. This may be done either in the recorded justification of the conformity of the test articles and equipment or by cross reference to other documents (test minutes of meetings, test notes, etc.).

Use of the term ‘adequate’: the test and measuring equipment is considered ‘adequate’ as long as the test execution on the manufactured test specimen (including any non-conformity) and the use of the installed test set-up do not compromise the test purpose and results (for example, by providing better performance than the proposed type design, or by masking any potential failure mode or behaviour).

Changes that affect the validity of the recorded justification of the conformity of the test articles and equipment: if changes need to be introduced to the test specimen or to the test and measurement equipment after the justification has been recorded (and before the test is undertaken), then it must be updated.

Development versus compliance demonstration tests: sometimes, tests of specimens that conform to a preliminary design, but are not intended for demonstration of compliance (known as development tests), are performed as part of a risk control strategy and to develop knowledge of a subject. Problems and failures found during development are part of the process of increasing the understanding of the design, including its failure modes and the potential for optimisation. Such development tests do not need to meet the requirements of point 21L.A.227(d) and (e).

Any planned test event should be classified in advance as either a development test or a compliance demonstration test.

It is acceptable for a development test to finally form part of the compliance demonstration, and it may be declared afterwards to be a compliance demonstration test as long as it meets the requirements of point 21L.A.227(d) and (e). For this reason, it is important to keep the configuration of such tests under control.

If the test specimen used for a compliance-demonstration test has already undergone a series of previous tests that may affect or ultimately invalidate its validity due to potential non-conformity to point 21L.A.227(d) as required by point 21L.A.226(d)(6), this aspect should be considered when justifying the conformity, and specific analyses or inspections may be required to support such a statement.

Because of the above aspects, declarants may wish to inform EASA if they intend to conduct a campaign of development tests that may eventually be used as demonstration-of-compliance tests to establish whether EASA would wish to witness the tests.

## **AMC1 21L.A.227(f) Compliance activities for declaring compliance of a major repair design**

### **PHYSICAL INSPECTION OF THE FIRST ARTICLE**

The declarant should be prepared for any additional investigations as notified by EASA according to point 21L.B.222(b).

Refer to AMC 21L.A.47(a) for an explanation of the activities performed under the first-article inspection.

## **GM1 21L.A.227(f) Compliance activities for declaring compliance of a major repair design**

### **TESTS AND INSPECTIONS PERFORMED BY THE AGENCY**

The declarant should inform EASA sufficiently in advance about the execution of significant inspections and tests that are used for compliance-demonstration purposes in order to permit EASA the

opportunity to perform or witness these inspections or tests in advance of any physical inspection and assessment of the repaired aircraft if required by point 21L.B.221(b).

This would be advantageous for the declarant to avoid any issues or delays if a physical inspection and assessment of the repaired product is required.

Additionally, the declarant may propose to EASA to perform or witness flight or other tests of particular aspects of the product during its development and before the design of the major repair is fully defined. However, before EASA performs or witnesses any flight test, the declarant should perform these tests and should ensure that no features of the product preclude the safe conduct of the evaluation requested.

A recorded justification of the conformity of the test articles and equipment as per point 21L.A.226(d)(6) is required for the above tests.

## **GM1 21L.A.229 Unrepaired damage**

This process is not intended to supersede the normal maintenance practices defined by the declarant (e.g. blending out corrosion and re-protection, stop drilling cracks, etc.), but addresses specific cases not covered in the manufacturer's documentation.

**SUBPART P — PERMIT TO FLY****AMC1 21L.A.241(b)(1);(c)(2) Physical inspection and critical design review****PHYSICAL INSPECTION AND CRITICAL DESIGN REVIEW OF PRODUCTS TO BE CERTIFIED****1. Introduction**

For the purposes of this AMC, ‘physical inspection and critical design review’ includes:

- a. the investigation prior to the issuance of the permit to fly, which consists of a physical conformity inspection of the aircraft by the competent authority; and
- b. the investigation prior to the approval of the flight conditions, which consists of a critical design review of the design at this stage supported by a physical inspection and assessment of the aircraft design by EASA.

*Note:* It is possible that an oversight visit to the applicant may be found to be necessary prior to the submission of the application for the approval of the flight conditions and the issuance of a permit to fly to ensure the conformity of the aircraft for which a permit to fly has been requested. This could be due to difficulties the competent authority could have in establishing the conformity of major subassemblies after final assembly or due to the fact that the competent authority may wish to check the conformity of lower assemblies. The applicant should approach its competent authority to identify this need early on in the production of the prototype.

**2. Purpose**

The purposes of the physical inspection and the critical design review prior to the approval of the flight conditions and the issuance of a permit to fly for a particular aircraft design for which an application for a type certificate has been submitted are:

- a. for EASA to verify<sup>1</sup> that the demonstration-of-compliance activities conducted by the applicant under point 21L.A.25 have reached a sufficient level of maturity to progress to flight testing in order to conclude the demonstration of compliance;
- b. for EASA to ensure that the design configuration for which the flight conditions have been requested is capable of conducting safe flight during flight testing;
- c. in case the applicant is a declared design organisation, for EASA to conduct the first oversight visit in accordance with point 21L.B.183(b) of Subpart J in order to ensure that the applicant is able to discharge its obligations;
- d. for the competent authority to ensure the conformity of the aircraft with the configuration for which the issuance of a permit to fly has been requested;
- e. in case the applicant is a declared production organisation, for the competent authority to conduct the first oversight visit in accordance with point 21L.B.143(b) of Subpart G and point 21L.B.241 of Subpart P in order to ensure that the applicant is able to discharge its obligations and is capable of producing or controlling the production of aircraft, products and parts that conform with the design data.

<sup>1</sup> The verification is limited to the scope of the activities that can be conducted under point 3 and the elements of the design that are selected for review based upon a risk-based approach to compliance.

### 3. Methodology and evidence

The applicant should arrange for the physical inspection and the critical design review to be conducted by EASA and the competent authority at an appropriate location(s) where effective design review and inspection activities can take place.

This (these) location(s) should:

- include the physical location of the aircraft for which the approval of the flight conditions and the issuance of a permit to fly have been requested;
- be in the principal place of business (which in accordance with Article 8(2) of Regulation (EU) No 748/2012 must be in an EU Member State); and
- in case the applicant is a declared production organisation, be in a location that enables the competent authority to conduct the oversight visit stated in point 2(e) above; this (these) location(s) should include the actual production and manufacture of significant elements of the aircraft to enable the competent authority to determine that the declared production organisation is in compliance with the declaration of production capability that was submitted.

*Note:* The principal place of business is defined as follows: ‘The head office or registered office of the organisation within which the principal financial functions and operational control of the activities referred to in this Regulation are exercised.’

The Agency and the competent authority will conduct a physical inspection of the aircraft, engine or propeller for which the approval of the flight conditions and the issuance of a permit to fly have been requested. This inspection, along with any other activity that EASA deems necessary (see point 21L.A.25(e)), should ensure that the objectives mentioned in point 2 are met.

The applicant for the approval of the flight conditions and for the issuance of a permit to fly should make the following arrangements to support the physical inspection and critical design review:

- a. prepare the aircraft, engine, propeller, systems or components for live testing upon the request of EASA or the competent authority;
- b. make available the latest compliance-demonstration plan;
- c. make available the latest versions of supporting compliance documentation and test reports;
- d. provide access to key design and production personnel;
- e. make available any relevant conformity documentation;
- f. make available the relevant design or production processes and procedures used.

### 4. Aircraft condition and configuration

The applicant should ensure that the aircraft presented to EASA and the competent authority is in a condition for first flight and is in the configuration for which the approval of the flight conditions and the issuance of a permit to fly have been requested.

## 5. Findings and resolution

In the process of the activities mentioned in point 3, EASA or the competent authority may raise an appropriate finding against the aircraft or declared design organisation or declared production organisation if a non-compliance is discovered. Depending upon their nature, these findings may need to be resolved by the applicant before the flight conditions are approved or the permit to fly is issued.

## **AMC1 21L.A.241(b)(2);(c)(1) physical inspection and safety review**

### **PHYSICAL INSPECTION AND SAFETY REVIEW OF AIRCRAFT TO BE DECLARED**

#### 1. Introduction

For the purposes of this AMC, 'physical inspection and safety review' includes:

- a. the investigation prior to the issuance of the permit to fly, which consists of a physical conformity inspection of the aircraft by the competent authority; and
- b. the investigation prior to the approval of the flight conditions, which consists of a safety review by conducting a physical inspection and assessment of the aircraft by EASA.

*Note:* It is possible that an oversight visit to the declarant may be found to be necessary prior to the submission of the application for the approval of the flight conditions and the issuance of a permit to fly to ensure the conformity of the aircraft for which a permit to fly has been requested. This could be due to difficulties the competent authority could have in establishing the conformity of major subassemblies after final assembly or the fact that the competent authority would wish to check the conformity of lower assemblies. The declarant should approach its competent authority to identify this need early on in the production of the prototype.

#### 2. Purpose

The purposes of the physical inspection and the safety review prior to the approval of the flight conditions and the issuance of a permit to fly for a particular aircraft design for which the declarant intends to submit a declaration of design compliance are:

- a. for EASA to ensure<sup>1</sup> that the design configuration, for which the flight conditions have been requested for the compliance activities under point 21L.A.44, is capable of conducting safe flight during flight testing and that the design and the related compliance are sufficiently mature so as not to pose an unacceptable level of risk;
- b. in case the declarant is a declared design organisation, for EASA to conduct the first oversight visit in accordance with point 21L.B.183(b) of Subpart J in order to ensure that the declarant is able to discharge its obligations;

*Note:* Under Subpart C of Section A there is no obligation for a declarant to submit a declaration of design capability and become a declared design organisation.

- c. for the competent authority to ensure the conformity of the aircraft with the configuration for which the issuance of a permit to fly has been requested;
- d. for the competent authority to:
  - i. either, in case the declarant is a declared production organisation, conduct the first oversight visit in accordance with point 21L.B.143(b) of Subpart G and point 21L.B.241 of Subpart P in order to ensure that the declarant is able to discharge its obligations

and is capable of producing or controlling the production of aircraft, products and parts that conform with the design data; or

- ii. conduct a first oversight visit of the production organisation that intends to issue statements of conformity for aircraft, which conform to a declaration of design compliance, to ensure that the production organisation is capable of fulfilling its obligations under Subpart R.

<sup>1</sup> This is limited to the scope of the activities that can be conducted under point 3 and the elements of the product that are selected for inspection based upon a risk-based approach to safety and environmental incompatibility.

### 3. Methodology and evidence

The declarant should arrange for the physical inspection and the safety review to be conducted by EASA and the competent authority at an appropriate location(s) where an effective review and inspection activities can take place.

This (these) location(s) should:

- include the physical location of the aircraft for which the approval of the flight conditions and the issuance of a permit to fly have been requested;
- be in the principal place of business (which in accordance with Article 8(2) of Regulation (EU) No 748/2012 must be in an EU Member State); and
- in case the declarant is a declared production organisation or uses Subpart R, be in a location that enables the competent authority to conduct the oversight stated in point (2)(d) above; this location should include the actual production and manufacture of significant elements of the aircraft to enable the competent authority to determine that the declared production organisation or natural or legal person is in compliance with either the declaration of production capability that was submitted or with Subpart R.

*Note:* The principal place of business is defined as follows: ‘The head office or registered office of the organisation within which the principal financial functions and operational control of the activities referred to in this Regulation are exercised.’

The Agency and the competent authority will conduct a physical inspection of the aircraft, engine or propeller for which the approval of the flight conditions and the issuance of a permit to fly have been requested. This inspection, along with any other activity that EASA or the competent authority deems necessary (for example, see point 21L.A.44(f)), should ensure that the objectives mentioned in point 2 are met.

The declarant that applies for the approval of the flight conditions and the issuance of a permit to fly should make the following arrangements to support the physical inspection and safety review:

- a. prepare the aircraft, engine, propeller, systems or components for live testing upon the request of EASA or the competent authority;
- b. make available the compliance-demonstration plan for a particular aircraft;
- c. make available relevant supporting compliance documentation and test reports;
- d. provide access to key design and production personnel;
- e. make available relevant conformity documentation;
- f. make available the relevant design or production processes and procedures used.

#### 4. Aircraft condition and configuration

The declarant should ensure that the aircraft presented to EASA and the competent authority is in a condition for first flight and is in the configuration for which the approval of the flight conditions and the issuance of a permit to fly have been requested.

#### 5. Findings and resolution

In the process of the activities mentioned in point 3, EASA or the competent authority may raise an appropriate finding against the aircraft or the production organisation if a non-compliance is discovered. These findings may need to be resolved by the declarant before the flight conditions are approved or the permit to fly is issued.

## **SUBPART Q — IDENTIFICATION OF PRODUCTS AND PARTS**

### **GM1 21L.A.252(b)(2) Identification of parts**

It is not the intent of point 21L.A.252(b)(2) to introduce an obligation for an approved production organisation, declared production organisation or a natural or legal person who produce under subpart R to mark new parts with information which is not identified by the design approval holder or declarant. Therefore, the physical marking of parts is only required when established by the design approval (TC, STC, repair, change) holder or declarant.

### **GM1 21L.A.252(b)(2)(iii) Identification of critical parts**

#### **PARTS TO BE MARKED**

For the purposes of point 21L.A.252(b)(2)(iii), a part that requires individual traceability for the management of its continued airworthiness, as identified by the design approval holder or declarant, should be permanently marked with a part number and a serial number.

The need for the design approval holder or declarant to identify and mark parts may be related to specific requirements for critical parts included in a certification specification. For instance, according to point (c) of CS-E 110 *Drawings and Marking of Parts — Assembly of Parts*: ‘Certain parts (including Engine Critical Parts; see CS-E 515) as may be required by the Agency must be marked and the constructor must maintain records related to this marking such that it is possible to establish the relevant manufacturing history of the parts.’

Another typical case is for any part subject to an individually specified life limit or inspection requirement when it is also possible for that part to be removed from one serial number of the associated product during maintenance and installed on another serial number of the same product. In this case, the traceability of the part, which is necessary for continued airworthiness management purposes, is not assured through the serial number of the product alone, and it is necessary to maintain records for the part through its serial number.

### **GM1 21L.A.252(c) Identification of parts produced under Subpart R**

The intent of point 21L.A.252(c) is to prevent a part produced for a declared aircraft and produced under Subpart R from being installed on a type-certified aircraft particularly after a part has been maintained and subsequently released on an EASA Form 1.

To achieve this, the letter ‘R’ is added to the part number. The ICAs and parts catalogue should include an ‘R’ at the end of the part number that is assigned to the part.

If a part is similar to a part that is normally installed on a type-certified aircraft, it is expected that the ICAs and parts catalogue for the type-certified aircraft will include a part number that does not contain an ‘R’ at the end. Therefore, an installer would be prevented from installing a part with a part number ending in ‘R’ because the part number would not match the ICAs and parts catalogue for the type-certified aircraft.

## SUBPART R — STATEMENT OF CONFORMITY FOR AIRCRAFT AND AUTHORISED RELEASE CERTIFICATE (EASA FORM 1) FOR ENGINES AND PROPELLERS, OR PARTS THEREOF, WHICH CONFORM TO A DECLARATION OF DESIGN COMPLIANCE

### AMC1 21L.A.272 Eligibility

#### ACCESS TO APPLICABLE DESIGN DATA

- (a) If the declarant of a declaration of design compliance and the natural or legal person that plans to issue the statement of conformity or the authorised release certificate are the same entity, then access to the relevant design data is considered to have been granted without any need for a formal arrangement or contract.
- (b) If the declarant of a declaration of design compliance and the natural or legal person that plans to issue the statement of conformity or the authorised release certificate are different entities, then access to the relevant design data should be formalised. This can be achieved by establishing a contract or arrangement between the two entities in which the declarant of a declaration of design compliance identifies the applicable design data and commits to transfer (or otherwise ensure access to) this data to the natural or legal person that plans to issue the statement of conformity or the authorised release certificate.

*Note 1:* The applicable design data is that identified according to point 21L.A.46 for the respective aircraft, engine, propeller, or part thereof.

*Note 2:* To formalise the access to applicable design data, the two entities may use GM1 21L.A.122(c) as guidance, customised to their specific needs.

### GM1 21L.A.273(a);(f) Production control system

#### MEANS OF CHECKING OF THE PRODUCTION PROCESSES

The production control system should include appropriate means of checking that production processes, whether performed by the natural or legal person that produce under Subpart R or by subcontractors under its control, are performed in accordance with the applicable production data and ensure:

- (a) there is a system for the control and authorised amendment of data provided for the production, inspections and tests to ensure that data is complete and up to date at the point of use;
- (b) the availability of personnel with suitable qualifications, experience, and training for each required production, inspection, and test task (special attention should be paid to tasks that require specialised knowledge and skills, e.g. NDT/NDI, welding, etc.);
- (c) a working area is provided where the working conditions and environment are controlled as appropriate in respect of cleanliness, temperature, humidity, ventilation, lighting, space/access, protection against noise and pollution; and

- (d) the equipment and tools are sufficient to enable all specified tasks to be accomplished in a safe and repeatable manner without any detrimental effects on the items under production; it should be demonstrated that the calibration control of the equipment and tools used complies with, and is traceable to, national or international standards.

## **GM2 21L.A.273(a);(f) Production control system**

### **CONFORMITY OF SUPPLIED ITEMS**

- (a) The natural or legal person that produces under Subpart R is responsible for determining and applying acceptance standards for physical condition, configuration status and conformity of raw materials, subcontracted works, and supplied products or parts, whether to be used in production or delivered to customers as spare parts. This responsibility also includes items of buyer-furnished equipment (BFE).
- (b) The following techniques are examples for the production control:
- first-article inspection of supplied parts, including destruction, if necessary, to verify that the article conforms to the applicable data for the new production line or the new supplier;
  - incoming inspections and tests of supplied parts, materials or equipment that can be satisfactorily inspected on receipt;
  - review of incoming documentation and data relevant to the showing of conformity to be included in the certification documents;
  - any additional work, tests or inspections that may be needed for parts that are to be delivered as spare parts and that are not subject to the checks normally performed during subsequent production or inspection stages.
- (c) The natural or legal person that produces under Subpart R may rely upon an EASA Form 1 issued in accordance with Part 21 or Part 21 Light if provided as evidence of conformity with the applicable design data.
- (d) For suppliers that do not hold an approval under Part 21 Subpart G (POA) or that have not declared their production capability under Subpart G of this Annex, the inspection system of the natural or legal person that produces under Subpart R should include a system for the control of incoming parts which would allow that natural or legal person to inspect and test such items at the supplier's facility, if the item cannot or will not be completely inspected upon receipt.

## **GM3 21L.A.273(a);(f) Production control system**

### **IDENTIFICATION OF INCOMING MATERIALS AND PARTS**

The natural or legal person that produces under Subpart R should inspect all parts and materials supplied from external parties to ascertain that:

- they are identified;
- they have not been damaged during transport or unpacking;

- the incoming parts and materials have the appropriate and correct accompanying documentation; and
- the configuration and condition of the parts and materials are as laid down in the applicable design data.

Only upon completion of these checks and of any incoming further verifications laid down in the procurement specification, the natural or legal person that produces under Subpart R may accept the parts or materials for warehousing and used in production.

This acceptance should be certified by an inspection statement.

A suitable recording system should allow reconstruction at any time of the history of every material or part.

The areas where the incoming checks are carried out and the materials or parts are stored pending completion of the checks should be physically segregated from other departments.

## **GM1 21L.A.273(c) Production control system**

### **TESTS**

If relevant, the natural or legal person that produces under Subpart R should perform functional, ground and flight tests of the manufactured products.

The production ground and flight tests for a new aircraft are specified by the declarant of the declaration of design compliance. These tests typically include:

- a check on the handling qualities;
- a check on flight performance (using normal aircraft instrumentation);
- a check on the proper functioning of all aircraft equipment and systems;
- a determination that all instruments are properly marked, and that all placards and required flight manuals are installed before the flight test;
- a check of the operational characteristics of the aircraft on the ground; and
- a check on any other items peculiar to the aircraft being tested.

For production flight-test activities, the natural or legal person that produces under Subpart R may consider establishing a flight test operations manual (FTOM) (refer to AMC1 21L.A.127(b) and to point 21L.A.177(b)).

If the design compliance of the engine is covered by the declaration of the aircraft design compliance, then the declarant of the aircraft design compliance should also provide the specifications for the functional test required for a new engine. These will normally include at least the following:

- break-in runs that include the determination of fuel and oil consumption and the determination of power characteristics at rated maximum continuous power and, if applicable, at rated take-off power;
- a period of operation at rated maximum continuous power; for engines that have a rated take-off power, part of that period should be at rated take-off power.

The test equipment used for the test run should be capable of an output determination of accuracy sufficient to assure that the engine output delivered complies with the specified rating and operational limitations.

If the design compliance of the propeller is covered by the declaration of the aircraft design compliance, then the declarant of the aircraft design compliance should also provide the specifications for the functional test required for a new propeller. These will normally include several complete cycles of control throughout the propeller pitch and rotational speed ranges. In addition, for feathering and/or reversing propellers, several cycles of feathering operation and reversing operation from the lowest normal pitch to the maximum reverse pitch should normally be required.

After functional testing, each engine or propeller will need to be inspected to determine that the engine or propeller is in condition for safe operation. Such inspections are specified by the declarant of the aircraft design compliance and are normally including internal inspection and examination. The degree of internal inspections should normally be determined on the basis of the positive results of previous inspections conducted on the first-produced engine or propeller, and on the basis of in-service experience.

## **GM1 21L.A.273(e) Production control system**

### **PROCEDURES FOR THE PRODUCTION DATA**

- (a) When a natural or legal person that produces under Subpart R develops its own manufacturing data from the design data package delivered by a declarant of design compliance, the procedures should ensure the correct transcription of the original design data.
- (b) The procedures should define the manner in which applicable design data is used to issue and update the production/inspection data, which determines the conformity of products and parts. These procedures should also define the traceability of such data to each individual product or part for the purpose of stating the condition for safe operation and for issuing a statement of conformity (EASA Form 52B) or an EASA Form 1.
- (c) During execution, all work performed should be accompanied by documentation that gives either directly or by means of appropriate references the description of the work as well as the identification of the personnel in charge of inspection and execution of the tasks for each of the different work phases.

## **GM1 21L.A.273(f) Production control system**

### **INSPECTION OF PARTS IN PROCESS**

The purpose of the production inspection system is to carry out checks at suitable points during production and provide objective evidence that the correct specifications are used, and that processes are carried out strictly in accordance with those specifications.

During the manufacturing process, each part should be inspected in accordance with an inspection plan that identifies the nature of all inspections required and the production stages at which they occur. The inspection plan should also identify any particular skills or qualifications required for personnel that carry out the inspections (e.g. NDT personnel).

If the parts are such that if damaged, they could compromise the safety of the aircraft, additional inspections for such damages should be performed at the completion of each production stage.

## **GM1 21L.A.273(g) Production control system**

### **ARCHIVING SYSTEM**

For guidance regarding archiving systems, please refer to GM1 21.A.7(a) and (b).

## **GM1 21L.A.273(h) Production control system and 21L.A.275(e) Obligations of a natural or legal person issuing a statement of conformity (EASA Form 52B) or an authorised release certificate (EASA Form 1)**

### **MAINTENANCE ACTIVITIES**

Point 21L.A.273(h) requires the natural or legal person that produces under Subpart R to have procedures that cover maintenance activities of new aircraft it has manufactured, as necessary to keep them in an airworthy condition. The natural or legal person that produces under Subpart R should not maintain a newly manufactured aircraft beyond the point at which the applicable operational rules require maintenance to be performed by an approved maintenance organisation (point 21L.A.275(e)). If the production organisation intends to maintain the aircraft beyond that point, it should apply for and obtain an appropriate maintenance approval (see Articles 3 and 4 of Regulation (EU) No 1321/2014).

### **MAINTENANCE OF AIRCRAFT**

Examples of such maintenance activities are the following:

- preservation, periodic inspection visits, etc.;
- embodiment of a service bulletin (SB);
- application of airworthiness directives (ADs);
- repairs;
- maintenance tasks resulting from special flights; and
- maintenance tasks to maintain airworthiness during flight training, demo flights and other non-revenue flights.

Any maintenance activities should be recorded in the aircraft logbook. It should be signed off for attesting the conformity of the work performed with the applicable airworthiness data.

If the aircraft logbook is not available, or if the production organisation prefers to use a separate form (for instance, for a large work package or for delivery of the aircraft to the customer), the production organisation should use EASA Form 53B which should subsequently become part of the aircraft maintenance records.

## **GM1 21L.A.274(b) Issuance of a statement of conformity (EASA Form 52B) or an authorised release certificate (EASA Form 1)**

It is the responsibility of the natural or legal person that produce under Subpart R to ensure that each and every product and part conforms with the applicable design data and is in a condition for safe operation before issuing and signing the relevant statement of conformity (EASA Form 52B) or authorised release certificate (EASA Form 1).

During manufacture, the natural or legal person is expected to use the facilities, systems, processes and procedures it has established for fulfilling its obligations under points 21L.A.273 and 21L.A.275.

The competent authority should then inspect and investigate the records, products or parts that are necessary to be satisfied that the aircraft is in conformity with the design for which the design compliance has been declared (see points 21L.B.143 and 21L.B.144).

To enable timely inspection and investigation by the competent authority, the statement of conformity should be prepared and submitted to the competent authority immediately upon the satisfactory completion of the final production inspection and test.

## **AMC1 21L.A.275(a) Obligations of a natural or legal person issuing a statement of conformity (EASA Form 52B) or an authorised release certificate (EASA Form 1)**

### **INFORMATION TO THE COMPETENT AUTHORITY — FORMAT**

The natural or legal person that issues a statement of conformity (EASA Form 52B) or an authorised release certificate (EASA Form 1) under Subpart R has the obligation to inform the competent authority that it intends to produce an aircraft, engine or propeller, or a part thereof. To comply with this obligation, the form defined below should be used.

### **EASA Form 205**

<b>INFORMATION</b> <b>on the intention to manufacture</b> pursuant to Commission Regulation (EU) No 748/2012 Annex Ib (Part 21 Light) SUBPART R — STATEMENT OF CONFORMITY FOR AIRCRAFT AND AUTHORISED RELEASE CERTIFICATE (EASA FORM 1) FOR ENGINES AND PROPELLERS, OR PARTS THEREOF, THAT CONFORM TO A DECLARATION OF DESIGN COMPLIANCE	
1.	<b>Name of the natural or legal person</b>
2.	<b>Place of business</b> Contact details (registered address, phone, email) of the principal place of business:

3.	<b>Intended scope of work</b>	
	<b>3.1 Category of products</b>	
	<b>Design declared under Part 21 Light Subpart C</b>	
	<input type="checkbox"/>	Aeroplanes with a maximum take-off mass (MTOM) of 1 200 kg or less that are not jet powered, and have a seating configuration of maximum 2 persons
	<input type="checkbox"/>	Sailplanes or powered sailplanes with a MTOM of 1 200 kg or less
	<input type="checkbox"/>	Balloons designed for not more than 4 persons
	<input type="checkbox"/>	Hot-air airships designed for not more than 4 persons
	<b>3.2 Conformity documents (intended to be issued)</b>	
	<input type="checkbox"/>	For complete aircraft, issue EASA Form 52B for new aircraft
	<input type="checkbox"/>	For other products or parts, issue EASA Form 1
	<input type="checkbox"/>	Maintain a new aircraft and issue EASA Form 53B
	<b>3.3 Detailed description of the scope of work</b> (aircraft type ...) (parts for aircraft type ...)	
4.	<b>Date of intended commencement of production:</b>	
5.	<b>Statements</b>  I confirm [I / Name of the organisation] [have/has] been granted access by the declarant of the design compliance to the applicable design data.  I confirm [I / Name of the organisation] [have/has] established and implemented a production control system in accordance with point 21L.A.273.  [I / Name of the organisation] [agree/agrees] to undertake the obligations in accordance with point 21L.A.275.	
6.		
	Date / Location	Signature of the natural person or legal representative of the legal person

## GM1 21L.A.275(g) Obligations of a natural or legal person issuing a statement of conformity (EASA Form 52B) or an authorised release certificate (EASA Form 1)

### APPLICABLE SUBPART A REQUIREMENTS

The following requirements in Subpart A are applicable to a natural or legal person that issues a statement of conformity (EASA Form 52B) or an authorised release certificate (EASA Form 1):

- points 21L.A.3(b), (c), (d), (e) and (f) Reporting system
- point 21L.A.5 Collaboration between design and production
- point 21L.A.6(b) Marking
- point 21L.A.7(b) Record-keeping

- point 21L.A.10 Access and investigation
  - point 21L.A.11 Findings and observations
- point 21L.A.12 Means of compliance

## **SECTION B**

### **PROCEDURES FOR COMPETENT AUTHORITIES**

#### **SUBPART A — GENERAL PROVISIONS**

#### **GM1 21L.B.12 Exchange of information**

##### **COORDINATION WITH OTHER RELATED ACTIVITIES**

The purpose of coordination with other related activities is to:

- (a) harmonise the effects of various approval and certification/oversight teams, especially when dealing with one organisation/applicant/declarant to prevent conflicts of conclusions;
- (b) ensure efficient flow of information among the various approval and certification/oversight teams to facilitate the execution of their duties;
- (c) optimise the use of EASA's and the competent authorities' resources to minimise disruption and cost.

Therefore, for a given organisation/applicant/declarant, the responsible Agency teams or staff or the competent authorities of a Member State should arrange for exchange of information with, and provide necessary assistance, as appropriate, to, the relevant competent authority of a Member State or EASA teams or staff — e.g.:

- (a) the appropriate certification/oversight teams;
- (b) the design organisation oversight team;
- (c) the production organisation oversight team;
- (d) the maintenance organisation approval team; or
- (e) other approval or certification/oversight teams as appropriate.

This is considered vital for activities related to the critical design review / safety review prior to issuing the flight conditions for a permit to fly and also for the activities relating to the first-article inspection.

#### **GM2 21L.B.12 Exchange of information**

##### **COORDINATION**

The exchange of information should be performed in accordance with Article 72 of Regulation (EU) 2018/1139 in particular when:

- (a) the competent authority of a Member State immediately reacts to a safety problem;
- (b) the competent authority of a Member State grants exemptions in accordance with Article 71(1) of Regulation (EU) 2018/1139 (for a period of more than 8 months or when the exemptions become repetitive, and their total duration exceeds 8 months).

## **AMC1 21L.B.13(b) Information to the Agency**

### **EXCHANGE OF SAFETY-SIGNIFICANT INFORMATION WITH THE AGENCY**

Each competent authority should appoint a coordinator to act as the point of contact for the exchange of safety-significant information between the competent authority and EASA.

## **GM1 21L.B.13(b) Information to the Agency**

### **MEANING OF SAFETY-SIGNIFICANT INFORMATION THAT STEMS FROM OCCURRENCE REPORTS**

Safety-significant information that stems from occurrence reports means:

- (a) a conclusive safety analysis which summarises individual occurrence data and provides an in-depth analysis of a safety issue, and which may be relevant for EASA's safety action planning; and
- (b) individual sets or pieces of occurrence data for cases for which EASA is the competent authority and which fulfils the reporting criteria of GM3 21L.B.13(b).

## **GM2 21L.B.13(b) Information to the Agency**

### **RECOMMENDED CONTENT FOR CONCLUSIVE SAFETY ANALYSES**

A conclusive safety analysis should contain the following:

- (a) a detailed description of the safety issue, including the scenario in which the safety issue occurs; and
- (b) an indication of the stakeholders that are affected by the safety issue, including types of operations and organisations;

and, as appropriate:

- (c) a risk assessment establishing the severity and probability of all the possible consequences of the safety issue;
- (d) information about the existing safety barriers that the aviation system has in place to prevent the likely consequences of the safety issue from occurring;
- (e) any mitigating action that is already in place or developed to deal with the safety issue;
- (f) recommendations for future actions to control the risk; and
- (g) any other element the competent authority considers essential for EASA to properly assess the safety issue.

## **GM3 21L.B.13(b) Information to the Agency**

### **OCCURRENCES FOR WHICH THE AGENCY IS THE COMPETENT AUTHORITY**

Occurrences that are related to natural or legal persons, organisations or products, which are certified or overseen by EASA, should be notified to EASA if:

- (a) the occurrence is defined as a reportable occurrence in accordance with the applicable regulations;

- (b) the natural or legal person or organisation responsible for addressing the occurrence is certified or overseen by EASA; and
- (c) the competent authority of the Member State has come to the conclusion that:
  - (1) the natural or legal person or organisation certified or overseen by EASA to which the occurrence relates was not informed of the occurrence; or
  - (2) the occurrence has not been properly addressed or has been left unattended by the natural or legal person or organisation certified or overseen by EASA.

Such occurrence data should be reported in a format compatible with the European Co-ordination Centre for Accident and Incident Reporting Systems (ECCAIRS) and should provide all relevant information for its assessment and analysis, including necessary additional files in the form of attachments.

## **AMC1 21L.B.16 Management system**

### **GENERAL**

- (a) In deciding upon the required airworthiness organisational structure, the competent authority should review:
  - (1) the number of certificates, approvals and their scope, declarations and authorisations to be issued;
  - (2) the number, complexity and size of the organisations under its oversight obligations;
  - (3) the possible use of qualified entities and of the resources of the competent authorities of other Member States to fulfil the continuing oversight obligations;
  - (4) the complexity of the aviation industry, taking into consideration the diversity of the products and parts; and
  - (5) the potential growth of activities in the field of civil aviation.
- (b) The competent authority should retain effective control of the important surveillance functions and not delegate them in such a way that organisations, in effect, regulate themselves in airworthiness matters.
- (c) The set-up of the organisational structure should ensure that the various tasks and obligations of the competent authority do not solely rely on individuals. The continuous and undisturbed fulfilment of these tasks and obligations of the competent authority should also be guaranteed in cases of illness, accidents or leave of individual employees.

## **AMC2 21L.B.16 Management system**

### **GENERAL**

- (a) The competent authority should be organised in such a way that:
  - (1) there is specific and effective management authority in the conduct of all the relevant activities;

- (2) the functions and processes described in the applicable requirements of Regulation (EU) 2018/1139 and its delegated and implementing acts, acceptable means of compliance (AMC), certification specifications (CSs), detailed technical specifications and guidance material (GM) may be properly implemented;
  - (3) the competent authority policies, organisation and operating procedures for the implementation of the applicable requirements of Regulation (EU) 2018/1139 and its delegated and implementing acts, AMC, CSs and GM are properly documented and applied;
  - (4) all the personnel of the competent authority involved in the related activities are provided with training where necessary;
  - (5) specific and effective provision is made for the communication and interface as necessary with EASA and other competent authorities; and
  - (6) all the functions related to implementing the applicable requirements are adequately described.
- (b) A general policy in respect to the activities related to the applicable requirements of Regulation (EU) 2018/1139 and the delegated and implementing acts adopted on its basis should be developed, promoted and implemented by the manager at the highest appropriate level — for example, the manager at the top of the functional area of the competent authority that is responsible for such activities.
- (c) Appropriate steps should be taken to ensure that the policy is known and understood by all the personnel involved, and all the necessary steps should be taken to implement and maintain the policy.
- (d) The general policy should, in particular, take into account:
- (1) the provisions of Regulation (EU) 2018/1139;
  - (2) the provisions of the applicable delegated and implementing acts and also the associated AMC, CSs and GM;
  - (3) the needs of industry; and
  - (4) the needs of EASA and of the other competent authorities.
- (e) The policy should define specific objectives for the key elements of the competent authority's organisation and processes for implementing the related activities, including the corresponding control procedures and the measurement of the achieved standard.

## **GM1 21L.B.16 Management system**

### **OVERSIGHT OF DECLARED ORGANISATIONS**

The following are the activities which should be covered by the competent authority management system for the oversight of declared organisations (declared production organisations under Section A Subpart G, and declared design organisations under Section A Subpart J of Annex Ib (Part 21 Light)):

- (a) appointment of the declared organisation team leader and the team;
- (b) verification of the declaration received;
- (c) registration of the declaration;
- (d) establishment of an oversight programme;
- (e) performance of oversight activities;
- (f) follow-up of corrective actions;
- (g) recommendation on the continuation of the activities conducted by the declared organisation;
- (h) registration of the changes notified by the declared organisations under point 21L.A.128 or point 21L.A.178 respectively; and
- (i) enforcement measures under point 21L.B.22.

## **AMC1 21L.B.16(a)(1) Management system**

### **DOCUMENTED POLICIES AND PROCEDURES**

- (a) The various elements of the organisation for the activities related to Regulation (EU) 2018/1139 and its delegated and implementing acts should be documented in order to establish a reference source for the establishment and maintenance of such organisation.
- (b) The documented procedures should be established in a way that facilitates their use. They should be clearly identified, kept up to date and made readily available to all the personnel involved in the related activities.
- (c) The documented procedures should cover, as a minimum, all the following aspects:
  - (1) policies and objectives;
  - (2) the organisational structure;
  - (3) responsibilities and the associated authority;
  - (4) processes and procedures;
  - (5) internal and external interfaces;
  - (6) internal control procedures;
  - (7) the training of personnel;
  - (8) cross references to associated documents; and
  - (9) assistance from other competent authorities or EASA (where required).
- (d) It is likely that the information may be held in more than one document or series of documents, and suitable cross-referencing should be provided. For example, the organisational structure and the job descriptions are not usually in the same documentation as the detailed working procedures. In such cases, it is recommended that the documented procedures should include an index of cross references to all such other related information, and the related documentation should be readily available when required.

## GM1 21L.B.16(a)(2) Management system

### SUFFICIENT PERSONNEL

- (a) This GM on the determination of the required personnel is limited to the performance of certification and oversight tasks, excluding any personnel that are required to perform tasks subject to any national regulatory requirements.
- (b) The elements to be considered when determining the required personnel and planning their availability may be divided into quantitative and qualitative elements, and there should be, at least:
  - (1) quantitative elements in accordance with AMC1 21L.B.16; and
  - (2) the following qualitative elements:
    - (i) the size, nature and complexity of the activities of overseen organisations, taking into account:
      - (A) the privileges of the organisation (if applicable);
      - (B) the type of the approval (if applicable) and the scope of the approval/declaration;
      - (C) possible certification to industry standards;
      - (D) the number of personnel; and
      - (E) the organisational structure and the existence of subcontractors;
    - (ii) the safety priorities identified;
    - (iii) the results of past oversight activities, including audits, inspections and reviews, in terms of risks and regulatory compliance, taking into account:
      - (A) the number and the levels of findings;
      - (B) the time frame for the implementation of corrective actions; and
      - (C) the maturity of the management systems implemented by the organisation, and their ability to effectively manage safety risks; and
    - (iv) the size and complexity of the Member States' aviation industry, and the potential growth of activities in the field of civil aviation, which may be an indication of the number of new applications, and of changes to existing certificates, approvals, declarations, and authorisations to be expected.
- (c) Based on existing data from previous oversight planning cycles, and taking into account the situation within the Member States' aviation industry, the competent authority may estimate:
  - (1) the standard working time required for processing applications for new certificates, approvals and authorisations, or registration of declarations;
  - (2) the number of new certificates and approvals to be issued, or registrations of declarations for each oversight planning period; and

- (3) the number of changes to existing certificates, approvals, authorisations and declarations to be processed for each oversight planning period.
- (d) In line with the competent authority's oversight policy, the following planning data should be determined:
  - (1) the standard number of audits to be performed per oversight planning cycle;
  - (2) the standard duration of each audit;
  - (3) the standard working time for audit preparation, on-site auditing, reporting, and follow-up, per inspector;
  - (4) the standard number of unannounced inspections to be performed;
  - (5) the standard duration of inspections, including the preparation, reporting, and follow-up, per inspector; and
  - (6) the minimum number and required qualifications of inspectors for each audit/inspection.
- (e) Standard working time could be expressed either in working hours per inspector, or in working days per inspector. All planning calculations should, then, be based on the same units (hours or working days).
- (f) It is recommended to use a spreadsheet application to process the data defined under points (c) and (d) to assist in determining the total number of working hours/days per oversight planning cycle required for certification, oversight and enforcement activities. This application could also serve as a basis for implementing a system for planning the availability of personnel.
- (g) The number of working hours/days per planning period for each qualified inspector that may be allocated for certification, oversight and enforcement activities should be determined, taking into account:
  - (1) purely administrative tasks not directly related to certification and oversight;
  - (2) training;
  - (3) participation in other projects;
  - (4) planned absences; and
  - (5) the need to include a reserve for unplanned tasks or unforeseeable events.
- (h) The determination of working time available for certification, oversight and enforcement activities should also consider, if applicable:
  - (1) the use of qualified entities;
  - (2) cooperation with other competent authorities for approvals that involve more than one Member State; and
  - (3) oversight activities under a bilateral aviation safety agreement.
- (i) Based on the elements listed above, the competent authority should be able to:
  - (1) monitor the dates when audits and inspections are due, and when they were carried out;
  - (2) implement a system to plan the availability of personnel; and

- (3) identify possible gaps between the number and the qualifications of personnel and the required volume of certification and oversight.

Care should be taken to keep planning data up to date in line with changes in the underlying planning assumptions, with a particular focus on risk-based oversight principles.

### **AMC1 21L.B.16(a)(3) Management system**

#### **QUALIFICATIONS AND TRAINING — GENERAL**

- (a) It is essential for the competent authority to have the full capability to adequately assess the compliance and performance of an organisation by ensuring that the whole range of activities is assessed by appropriately qualified personnel.
- (b) For each inspector, the competent authority should:
  - (1) define the competencies required to perform the allocated certification and oversight tasks;
  - (2) define the associated minimum qualifications that are required;
  - (3) establish initial and recurrent training programmes in order to maintain and to enhance the competency of inspectors at the level that is necessary to perform the allocated tasks; and
  - (4) ensure that the training provided meets the established standards and is regularly reviewed and updated as necessary.
- (c) The competent authority should ensure that training is provided by qualified trainers with appropriate training skills.

### **AMC2 21L.B.16(a)(3) Management system**

#### **QUALIFICATIONS AND TRAINING — INSPECTORS**

- (a) Competent authority inspectors should have:
  - (1) practical experience and expertise in the application of aviation safety standards and safe operating practices;
  - (2) comprehensive knowledge of:
    - (i) the relevant parts of Regulation (EU) 2018/1139 and its delegated and implement acts and the related AMC, CSs and GM;
    - (ii) the competent authority's procedures;
    - (iii) their rights and obligations of an inspector;
    - (iv) systems based on the EU management system requirements (including compliance monitoring) and on ICAO Annex 19;
    - (v) design or production standards, as applicable; and

- (vi) design- or production- (as applicable) related human-factors and human-performance principles;
  - (3) training in auditing techniques and assessing and evaluating management systems and safety-related processes and procedures;
  - (4) relevant work experience to be allowed to work without supervision as an inspector; this may include experience gained during training to obtain the qualifications described in following point (5); and
  - (5) a relevant engineering degree with additional education; ‘relevant engineering degree’ means an engineering degree from aeronautical, mechanical, electrical, electronic, avionics or other studies relevant to the design and production of aircraft / aircraft components.
- (b) In addition to their technical competency, inspectors should have a high degree of integrity, be impartial in carrying out their tasks, be tactful, and have a good understanding of human nature.
- (c) A programme for recurrent training should be developed to ensure that inspectors remain competent to perform their allocated tasks; as a general policy, it is not desirable for inspectors to obtain technical qualifications from those entities that are under their direct regulatory oversight.

### **AMC3 21L.B.16(a)(3) Management system**

#### **INITIAL AND RECURRENT TRAINING FOR INSPECTORS**

- (a) Initial training programme

The initial training programme for inspectors should include, to an extent appropriate to their role, current knowledge, experience and skills, at least all the following:

- (1) aviation legislation, organisation, and structure;
- (2) the Chicago Convention, the relevant ICAO annexes and documents;
- (3) Regulation (EU) No 376/2014 on the reporting, analysis and follow-up of occurrences in civil aviation;
- (4) an overview of Regulation (EU) 2018/1139 and the delegated and implementing acts adopted on its basis, and the related AMC, CSs and GM;
- (5) specific knowledge of Regulation (EU) No 748/2012 as well as of any other applicable requirements;
- (6) management systems, including the assessment of the effectiveness of a management system, in particular hazard identification and risk assessment, and non-punitive reporting techniques in the context of the implementation of a just culture;
- (7) auditing techniques;
- (8) procedures of the competent authority that are relevant to the inspector’s tasks;
- (9) human-factors principles;

- (10) the rights and obligations of inspecting personnel of the competent authority;
- (11) on-the-job training relevant to the inspector's tasks; and
- (12) technical training appropriate to the role and tasks of the inspector, in particular for those areas that require approvals.

*Note:* The duration of the on-the-job training should take into account the scope and complexity of the inspector's tasks. The competent authority should assess whether the required level of competence has been achieved before an inspector is authorised to perform a task without supervision.

(b) Recurrent training programme

Once qualified, the inspector should receive training periodically, as well as whenever it is deemed necessary by the competent authority, in order to remain competent to perform their allocated tasks. The recurrent training programme for inspectors should include, as appropriate to their role, at least the following topics:

- (1) changes in aviation legislation, the operational environment and technologies;
- (2) procedures of the competent authority that are relevant to the inspector's tasks;
- (3) technical training that is appropriate to the role and tasks of the inspector; and
- (4) results from past oversight activities.

(c) Assessments of an inspector's competency should take place at regular intervals that do not exceed 3 years. The results of these assessments, as well as any actions taken following these assessments, should be recorded.

## **AMC1 21L.B.16(a)(5) Management system**

### **SAFETY RISK MANAGEMENT PROCESS**

- (a) The safety risk management process required by point 21L.B.16 should be documented. The following should be defined in the related documentation:
- (1) the means used for hazard identification and the related data sources, taking into account data that comes from other competent authorities with which the competent authority interfaces in the State or from the competent authorities of other Member States;
  - (2) risk management steps including:
    - (i) analysis (in terms of the probability and severity of the consequences of hazards and occurrences);
    - (ii) assessment (in terms of the tolerability); and
    - (iii) control (in terms of the mitigation) of risks to an acceptable level;
  - (3) who has the responsibility for hazard identification and risk management;
  - (4) who has the responsibility for the follow-up of risk-mitigation actions;

- (5) the levels of management that have the authority to make decisions regarding the tolerability of risks;
  - (6) the means to assess the effectiveness of risk-mitigation actions; and
  - (7) the link with the compliance-monitoring function.
- (b) To demonstrate that the safety risk management process is operational, competent authorities should be able to provide evidence that:
- (1) the persons involved in internal safety risk management activities are properly trained;
  - (2) hazards that could impact on the authority's capabilities to perform its tasks and discharge its responsibilities have been identified, and the related risk assessment is documented;
  - (3) regular meetings take place at appropriate levels of management of the competent authority to discuss the risks identified and to decide on the risk tolerability and possible risk-mitigation actions;
  - (4) in addition to the initial hazard identification exercise, the risk management process is triggered as a minimum whenever changes occur that may affect the competent authority's capability to perform any of the tasks required by Part 21 Light;
  - (5) a record of the actions taken to mitigate risks is maintained, showing the status of each action and the owner of the action;
  - (6) there is follow-up on the implementation of all risk-mitigation actions;
  - (7) risk-mitigation actions are assessed for their effectiveness;
  - (8) the results of risk assessments are periodically reviewed to check whether they remain relevant.

## **GM1 21L.B.16(a)(5) Management system**

### **SAFETY RISK MANAGEMENT PROCESS**

The purpose of safety risk management, as part of the management system framework for competent authorities, is to ensure the effectiveness of the management system. As for any organisation, hazard identification and risk management are expected to contribute to effective decision-making, to guide resource allocation and contribute to organisational success.

The safety risk management process required by point 21L.B.16 is intended to address safety risks that are directly related to the competent authority's organisation and processes, and which may affect its capability to perform its tasks and discharge its responsibilities. This process is not intended to be a substitute for the State safety risk management Standards and Recommended Practices (SARPs) defined in ICAO Annex 19 Chapter 3. This does not mean, however, that the competent authority may not use information and data obtained through its State Safety Programme (SSP), including oversight data and information, for the purpose of safety risk management as part of its management system.

The safety risk management process is also to be applied to the management of changes (point 21L.B.18), which is intended to ensure that the management system remains effective whenever changes occur.

## **AMC1 21L.B.16(d) Management system**

### **PROCEDURES AVAILABLE TO THE AGENCY**

- (a) Copies of the procedures related to the competent authority's management system, and their amendments, which should be made available to EASA for the purpose of standardisation, should provide at least the following information:
- (1) The competent authority's organisational structure for the continuing oversight functions that it undertakes, with a description of the main processes. This information should demonstrate the allocation of responsibilities within the competent authority, and that the competent authority is capable of carrying out the full range of tasks regarding the size and complexity of a particular Member State's aviation industry. It should also consider the overall proficiency and the scope of authorisation of the competent authority's personnel;
  - (2) For personnel that are involved in oversight activities, the minimum required professional qualification and level of experience, and the principles that guide their appointment (e.g. assessment);
  - (3) How the following are carried out: assessments of applications and evaluations of compliance; the issuance of certificates, approvals, and authorisations; continuing oversight activities; the follow-up of findings; enforcement measures; and the resolution of safety concerns;
  - (4) The principles used to manage exemptions and derogations;
  - (5) The processes that are in place to distribute applicable safety information for timely reaction to a safety problem;
  - (6) The criteria for planning continuing oversight activities (i.e. an oversight programme), including the management of interfaces when conducting continuing oversight activities; and
  - (7) An outline of the initial training of newly recruited oversight personnel (taking future activities into account), and the basic framework for the recurrent training of oversight personnel.
- (b) As part of the continuous monitoring of a competent authority, EASA may request details of the working methods used, in addition to a copy of the procedures of the competent authority's management system (and of any amendments to it). These additional details are the procedures and related guidance material that describe the working methods for the personnel of the competent authority that conduct oversight activities.
- (c) Information related to the competent authority's management system may be submitted in an electronic format.

## GM1 21L.B.17 Allocation of tasks to qualified entities

### CERTIFICATION TASKS

The tasks that may be performed by a qualified entity on behalf of the competent authority include those that are related to the initial certification and the continuing oversight of persons and organisations as defined in Regulation (EU) No 748/2012.

## GM1 21L.B.19 Resolution of disputes

### PRINCIPLES FOR THE RESOLUTION OF DISPUTES

It is essential for the efficient accomplishment of the activities related to Part 21 Light of the competent authority of the Member State that all decisions regarding the resolution of disputes be taken at as low a level as possible. In addition, the documented procedures for the resolution of disputes should clearly identify the chain of escalation.

## AMC1 21L.B.20(a) Record-keeping

### GENERAL

- (a) The record-keeping system should ensure that all records are accessible within a reasonable time whenever they are needed. Those records should be organised in a manner that ensures their traceability and retrievability throughout the required retention period.
- (b) All records that contain sensitive data on applicants, declarants or organisations should be stored in a secure manner with controlled access, to ensure their confidentiality.
- (c) The records should be kept in paper form, or in an electronic format, or a combination of both. Records that are stored on microfilm or optical discs are also acceptable. The records should remain legible and accessible throughout the required retention period. The retention period starts when the record is created.
- (d) Paper record systems should use robust material that can withstand normal handling and filing. Computer record systems should have at least one backup system that should be updated within 24 hours of any new entry. Computer record systems should include safeguards to prevent unauthorised personnel from altering the data.
- (e) All the computer hardware that is used to ensure the backup of data should be stored in a different location from the one that contains the working data and in an environment that ensures that the data remains in a good condition. When hardware or software changes take place, special care should be taken that all the necessary data continues to be accessible throughout at least the full period that is specified in point 21L.B.20(d).

## AMC1 21L.B.20(a)(1);(a)(2) Record-keeping

### COMPETENT AUTHORITY MANAGEMENT SYSTEM

The records that are related to the competent authority's management system should include, as a minimum and as applicable:

- (a) the documented policies and procedures;
- (b) the files of the competent authority's personnel, with the supporting documents related to their training and qualifications;
- (c) the results of the competent authority's internal audits and safety risk management processes, including audit findings, as well as any corrective, preventive, and risk-mitigation action; and
- (d) the contracts that are established with the qualified entities that perform certification or oversight tasks on behalf of the competent authority.

## **AMC1 21L.B.21(c) Findings and corrective actions**

### **NOTIFICATION OF FINDINGS**

In the case of a level 1 finding, confirmation should be obtained in a timely manner that the accountable manager has taken note of the finding and its details.

Level 1 and level 2 findings require timely and effective oversight by the competent authority to ensure the completion of the corrective action. That oversight may include intermediate communication, such as letters, as necessary, to remind the natural or legal person to verify that the corrective action plan is followed.

## **GM1 21L.B.21(f) Findings and observations**

### **DIFFERENCE BETWEEN A 'LEVEL 2 FINDING' AND AN 'OBSERVATION'**

'Findings' are issued for a non-compliance with the applicable regulation, whereas 'observations' may be issued to a natural or legal person ('organisation') that remains compliant with the applicable regulation while additional input to the organisation may be considered for continuous improvement (see points (1), (2) and (3) of point 21L.B.21(f)).

However, the competent authority may decide to issue a 'level 2' finding when the 'observations' process is not managed correctly or is overlooked.

## **GM1 21L.B.22 Enforcement measures**

### **LINK BETWEEN FINDINGS AND LIMITATION OR SUSPENSION**

It is expected that any natural or legal person will move quickly to re-establish compliance with Part 21 Light and will not risk the possibility of their approval or the registration of their declaration of design compliance or declaration of design or production capability being suspended.

Level 1 findings are those which may lead, if not properly addressed, to limitation, suspension or revocation of the approval. If appropriate, these negative decisions on the approval may be taken immediately or after the organisation fails to comply within the time period agreed by the competent authority.

The type of the negative decision (i.e. limitation, suspension or revocation) should depend upon the contents and the extent of the level 1 finding. Normally, a limitation or a suspension should be considered first.

## GM1 21L.B.22 Enforcement measures

### (a) GENERAL

Decisions on the suspension or revocation of a certificate, approval, and registration and deregistration of a declaration of design compliance or declaration of design or production capability will always be actioned in such a way as to comply with any applicable national laws or regulations related to appeal rights and the conduct of appeals.

In case of Agency decisions, as competent authority, the rules for appeal are included in Regulation (EU) 2018/1139.

### (b) LIMITATION

A limitation is an amendment to a certificate, approval, or to a registration of a declaration of design compliance or declaration of design or production capability that partially limits the activities of the organisation.

### (c) SUSPENSION OF CERTIFICATES AND APPROVALS

A suspension is a temporary withdrawal of a natural or legal person's ('organisation's') ability to conduct their activities under a certificate or an approval. No activities that invoke the certificate or approval may take place while the suspension is in force. The normal activities of the natural or legal person may be reinstated when the circumstances that caused the suspension are corrected and the natural or legal person can once again demonstrate full compliance with the applicable requirements.

### (d) DEREGISTRATION OF DECLARATIONS

In the case of declarations, point 21L.B.22 provides that a declaration may be temporarily or permanently deregistered. No activities that invoke the declaration may take place while the declaration is deregistered. The normal activities of the natural or legal person may be reinstated when the circumstances that caused the deregistration are corrected and the natural or legal person can once again demonstrate full compliance with the applicable requirements.

## AMC1 21L.B.23(b) Airworthiness directives

### UNSAFE CONDITION

An unsafe condition exists if there is factual evidence (from in-service experience, analysis or tests) that:

- (a) an event may occur that would result in fatalities, usually with the loss of the aircraft, or reduce the capability of the aircraft or the ability of the crew to cope with adverse operating conditions to the extent that there would be:

- (i) a large reduction in safety margins or functional capabilities; or
- (ii) physical distress or excessive workload such that the flight crew cannot be relied upon to perform their tasks accurately or completely; or
- (iii) serious or fatal injury to one or more occupants,

unless it is shown that the probability of such an event is within the limit defined by the applicable certification specifications; or

- (b) there is an unacceptable risk of serious or fatal injury to persons other than occupants; or
- (c) design features intended to minimise the effects of survivable accidents do not perform their intended function.

*Note 1:* Non-compliance with the applicable certification specifications or technical specifications is generally considered as an unsafe condition, unless it is shown that possible events resulting from this non-compliance do not constitute an unsafe condition as defined under points (a), (b) and (c).

*Note 2:* An unsafe condition may exist even though applicable airworthiness requirements are complied with.

*Note 3:* The definition in points (a), (b) and (c) covers the majority of cases where EASA considers there is an unsafe condition. There may be other cases where overriding safety considerations may lead EASA to issue an airworthiness directive.

*Note 4:* There may be cases where events can be considered as an unsafe condition if they occur too frequently (significantly beyond the applicable safety objectives) and could eventually lead to the consequences listed in point (a) in specific operating environments. Although having less severe immediate consequences than those listed in point (a), the referenced events may reduce the capability of the aircraft or the ability of the crew to cope with adverse operating conditions to the extent that there would be, for example, a significant reduction in safety margins or functional capabilities, a significant increase in crew workload, or in conditions impairing crew efficiency, or discomfort to occupants, possibly including injuries.

## **GM1 21L.B.23(b) Airworthiness directives**

### **DETERMINATION OF AN UNSAFE CONDITION**

It is important to note that these guidelines are not exhaustive. However, this material is intended to provide guidelines and examples that will cover most cases, taking into account the applicable certification requirements or technical specifications.

#### **1. INTRODUCTION**

The certification, approval or declaration of a product is a demonstration of compliance with the applicable requirements which are intended to ensure an acceptable level of safety. This demonstration, however, includes certain accepted assumptions and predicted behaviours, such as:

- fatigue behaviour is based on analysis supported by test;
- modelling techniques are used for aircraft flight manual (AFM) performance calculations;
- the systems' safety analyses give predictions of what the systems' failure modes, effects and probabilities may be;
- the system components' reliability figures are predicted values derived from general experience, tests or analyses;
- the crew is expected to have the skills to apply the procedures correctly; and
- the aircraft is assumed to be maintained in accordance with the prescribed instructions for continued airworthiness (ICAs) (or maintenance programme).

In-service experience, additional testing, further analysis, etc., may show that certain initially accepted assumptions are not correct. Thus, certain conditions initially demonstrated as safe, are revealed by experience as unsafe. In this case, it is necessary to mandate corrective actions

in order to restore a level of safety consistent with the applicable certification requirements or technical specifications.

To support the determination of an unsafe condition, the investigation may need to include examinations of worn, damaged and time-expired parts / analysis / demonstrations / tests / statistical analysis, and comparison with the design assumptions.

See AMC1 21L.B.23(b) for the definition of 'unsafe condition' used in point 21L.A.3(a)(3) and (b)(3).

## 2. GUIDELINES FOR ESTABLISHING WHETHER A CONDITION IS UNSAFE

The following points give general guidelines for analysing the reported events and determining whether an unsafe condition exists, and are provided for each type of product subject to a specific airworthiness approval (type certificates (TCs) or supplemental type certificates (STCs)) for aircraft, engines or propellers or a declaration of design compliance for an aircraft.

This analysis may be qualitative or quantitative, i.e. formal and quantitative safety analyses may not be available. In such cases, the level of analysis should be consistent with that required by the certification specifications or technical specifications and may be based on engineering judgement supported by in-service experience data.

### 2.1 Analysis method for aircraft

#### 2.1.1 Accidents or incidents without any aircraft, engine, system, propeller or part malfunction or failure

When an accident/incident does not involve any component malfunction or failure but when a human factor of the crew has been a contributing factor, this should be assessed from a man-machine interface standpoint to determine whether the design is adequate or not. Point 2.5 gives further details on this aspect.

#### 2.1.2 Events involving an aircraft, engine, system, propeller or part failure, malfunction or defect

The general approach for analysis of in-service events caused by malfunctions, failures or defects will be to analyse the actual failure effects, taking into account previously unforeseen failure modes or improper or unforeseen operating conditions revealed by in-service experience.

These events may have occurred in service, or have been identified during maintenance, or have been identified as a result of subsequent tests, analyses or quality control.

They may result from a design or production deficiency (non-conformity with the applicable design data), or from improper maintenance. In this case, it should be determined whether improper maintenance is limited to one aircraft, in which case an airworthiness directive may not be issued, or if it is likely to be a general problem due to improper design and/or maintenance procedures, as detailed in point 2.5.

##### 2.1.2.1 Flight

An unsafe condition exists if:

- there is a significant shortfall of the actual performance compared to the approved or declared performance (taking into account the accuracy of the performance calculation method); or

- the handling qualities, although having been found to comply with the applicable certification specifications at the time of initial approval or declared as being compliant with the applicable technical specifications, are subsequently shown by in-service experience not to comply.

#### 2.1.2.2 Structural or mechanical systems

An unsafe condition exists if the deficiency may lead to a structural or mechanical failure which could exist in a principal structural element. Principal structural elements are those which contribute significantly to carrying flight, ground, and pressurisation loads, and whose failure could result in a catastrophic failure of the aircraft.

They could reduce the structural stiffness to such an extent that the required flutter, divergence or control reversal margins are no longer achieved.

They could result in the loss of a structural piece that could damage vital parts of the aircraft, cause serious or fatal injuries to persons other than occupants.

They could, under ultimate load conditions, result in the liberation of items of mass that may injure the aircraft occupants.

They could jeopardise the proper operation of systems and may lead to hazardous or catastrophic consequences, if this effect has not been taken adequately into account in the initial certification safety assessment.

#### 2.1.2.3 Systems

The consequences of reported system components' malfunctions, failures or defects should be analysed.

For this analysis, the certification or design data may be used as supporting material, in particular systems' safety analyses (if applicable).

The general approach for analysis of in-service events caused by systems' malfunctions, failures or defects will be to analyse the actual failure effects.

As a result of this analysis, an unsafe condition will be assumed if it cannot be shown that the safety objectives for hazardous and catastrophic failure conditions are still achieved, taking into account the actual failure modes and rates of the components affected by the reported deficiency.

The failure probability of a system component may be affected by:

- a design deficiency (the design does not meet the specified reliability or performance);
- a production deficiency (non-conformity with the certified type design or declared design data) that affects either all components, or a certain batch of components;
- improper installation (for instance, insufficient clearance of pipes to surrounding structure);
- susceptibility to adverse environment (corrosion, moisture, temperature, vibrations etc.);

- ageing effects (component failure rate increases when the component ages);
- improper maintenance.

When the failure of a component is not immediately detectable (hidden or latent failures), it is often difficult to have a reasonably accurate estimation of the component failure rate since the only data available are usually results of maintenance or flight crew checks. This failure probability should, therefore, be conservatively assessed.

As it is difficult to justify that the safety objectives for the following systems are still met, a deficiency that affect these types of systems may often lead to a mandatory corrective action:

- backup emergency systems; or
- fire detection and protection systems (including shut-off means).

Deficiencies that affect the systems used during an emergency evacuation (emergency exits, evacuation assist means, emergency lighting system, etc.) and to locate the site of a crash (emergency locator transmitter (ELT)) will also often lead to mandatory corrective action.

#### 2.1.2.4 Others

In addition to the above, the following conditions are considered unsafe:

- There is a deficiency in certain components which are involved in fire protection or which are intended to minimise/retard the effects of fire/smoke in a survivable crash, preventing them to perform their intended function (for instance, deficiency in cargo liners or cabin material leading to non-compliance with the applicable flammability requirements).
- There is a deficiency in the lightning or the high-intensity radiated field (HIRF) protection of a system which may lead to hazardous or catastrophic failure conditions.
- There is a deficiency which could lead to a total loss of power or thrust due to common mode failure.

## 2.2 Engines

The consequences and probabilities of engine failures should be assessed at the aircraft level in accordance with point 2.1, and also at the engine level for those failures considered as 'hazardous' in CS E-510, CS E-210, CS-22 Subpart H or the applicable technical specifications.

The latter will be assumed to constitute unsafe conditions, unless it can be shown that the consequences at the aircraft level do not constitute an unsafe condition for a particular aircraft installation.

## 2.3 Propellers

The consequences and probabilities of propeller failures should be assessed at the aircraft level in accordance with point 2.1, and also at the propeller level for those failures considered as 'hazardous' in CS P-150, CS-22 Subpart J or the applicable technical specifications.

The latter will be assumed to constitute unsafe conditions, unless it can be shown that the consequences at the aircraft level do not constitute an unsafe condition for a particular aircraft installation.

#### 2.4 Parts

The consequences and probabilities of equipment failures should be assessed at the aircraft level in accordance with point 2.1.

#### 2.5 Human-factors aspects in establishing and correcting unsafe conditions

This point provides guidance on the way to treat an unsafe condition that results from a maintenance or crew error observed in service.

It is recognised that human-factors techniques are under development. However, the following is a preliminary guidance on the subject.

Systematic review should be used to assess whether the crew or maintenance error raises issues that require regulatory action (whether in design or other areas) or should be noted as an isolated event without intervention. This may need the establishment of a multidisciplinary team (designers, crews, human-factors experts, maintenance experts, aircraft operators, etc.).

The assessment should include at least the following:

- Characteristics of the design intended to prevent or discourage incorrect assembly or operation.
- Characteristics of the design that allow or facilitate incorrect operation.
- Unique characteristics of a design feature differing from established design practices.
- The presence of indications or feedback that alerts the operator to an erroneous condition.
- The existence of similar previous events, and whether or not they resulted (on those occasions) in unsafe conditions.
- Complexity of the system, associated procedures and training (has the crew a good understanding of the system and its logic after a standard crew qualification programme?).
- Clarity/accuracy/availability/currency and practical applicability of manuals and procedures.
- Any issues arising from interactions among personnel, such as shift changeover, dual inspections, team operations, supervision (or lack of it), or fatigue.

Apart from a design change, the corrective actions, if found necessary, may consist of modifications of the manuals, inspections, training programmes, and/or information to the operators about particular design features. The Agency may decide to make mandatory such corrective action if necessary.

## **GM1 21L.B.24 Means of compliance**

### **ALTERNATIVE MEANS OF COMPLIANCE — GENERAL**

- (a) A competent authority may establish alternative means to comply with the Regulation, which are different from the AMC that are established by EASA.

In that case, the competent authority is responsible for demonstrating how those alternative means of compliance (AltMoC) establish compliance with the Regulation.

- (b) AltMoC that are used by a competent authority, or by an organisation under its oversight, may be used by other competent authorities, or another organisation, only if they are processed by those authorities in accordance with point 21L.B.24, and by that organisation in accordance with point 21L.A.12.
- (c) AltMoC that are issued by the competent authority may cover the following cases:
  - (1) AltMoC to be used by organisations under the oversight of the competent authority and which are made available to those organisations; and
  - (2) AltMoC to be used by the authority itself to discharge its responsibilities.

## **AMC1 21L.B.24(a);(b) Means of compliance**

### **PROCESSING THE ALTERNATIVE MEANS OF COMPLIANCE**

To meet the objectives of points (b) and (c) of point 21L.B.24:

- (a) the competent authority should establish the means to consistently evaluate over time that all the AltMoC that are used by itself or by organisations under its oversight allow for the establishment of compliance with the Regulation;
- (b) if the competent authority issues AltMoC for itself or for the organisations under its oversight, it should:
  - (1) make them available to all relevant organisations; and
  - (2) notify EASA of the AltMoC as soon as they are issued, including the information that is described in point (d) of this AMC;
- (c) the competent authority should evaluate the AltMoC that are proposed by an organisation by analysing the documentation provided and, if considered necessary, by inspecting the organisation; when the competent authority finds that the AltMoC are in accordance with the Regulation, it should:
  - (1) notify the applicant that the AltMoC are approved;
  - (2) indicate that those AltMoC may be implemented, and agree when the organisation's processes and procedures are to be amended accordingly; and
  - (3) notify EASA of the AltMoC approval as soon as they are approved, including the information that is described in point (d) of this AMC; and
- (d) the competent authority should provide EASA with the following information:
  - (1) a summary of the AltMoC;
  - (2) the content of the AltMoC;
  - (3) a statement that compliance with the Regulation is achieved; and

- (4) in support of that statement, an assessment that demonstrates that the AltMoC reach an acceptable level of safety, taking into account the level of safety that is achieved by the corresponding Agency's AMC.
- (e) All these elements that describe the AltMoC are an integral part of the records to be kept, which are managed in accordance with point 21L.B.20.

## **GM1 21L.B.24(b);(c) Means of compliance**

### **CASES IN WHICH THERE IS NO CORRESPONDING AGENCY AMC**

When there is no Agency AMC to a certain requirement in the Regulation, the competent authority may choose to develop national guides or other types of documents to assist the organisations under its oversight in compliance demonstration. The competent authority may inform EASA so that such guides or other types of documents may be later considered for incorporation into an AMC that is published by EASA using the EASA rulemaking process.

**SUBPART B — TYPE CERTIFICATES****GM1 21L.B.43(a) Type-certification basis for a type certificate****1. INTRODUCTION**

This GM addresses the type-certification basis for a type certificate (TC).

**2. APPLICABLE CERTIFICATION SPECIFICATIONS (CSs) (see point 21L.B.43(a)(1))**

The type-certification basis for a TC consists of the airworthiness CSs that were effective on the date of application and were applicable for the particular certificate.

**3. ELECT TO COMPLY (see point [21L.B.43\(a\)\(1\)\(i\)](#))**

It is also possible for an applicant to elect to comply with a CS that became applicable after the date on which the applicant has submitted the application.

The Agency should assess whether the proposed certification basis is appropriate to ensure that the 'elect to comply' proposal includes any other CSs that are 'directly related' to one or several of the CSs in it. Directly related CSs are those that are deemed to contribute to the same safety objective by building on each other's requirements, addressing complementary aspects of the same safety concern, etc. Typically, they are adopted simultaneously with, or prior to, the CSs with which the applicant has elected to comply.

**4. EQUIVALENT LEVEL OF SAFETY (see point [21L.B.43\(a\)\(1\)\(ii\)](#))**

In cases in which the applicable CSs cannot be literally complied with, either fully or in part, EASA may accept a suitable alternative which provides an equivalent level of safety through the use of appropriate compensating factors.

In cases in which the requirements contain not only objectives but also prescriptive parts, an equivalent level of safety may be accepted if:

- the objectives are met by designs or features other than those required in the CSs; or
- suitable compensating factors are proposed.

**5. ALTERNATIVE MEANS OF COMPLIANCE (see point [21L.B.43\(a\)\(1\)\(iii\)](#))**

If the intent of the CSs defined in point [21L.B.43\(a\)\(1\)](#) cannot be met, EASA may accept mitigating factors to the CSs, provided that the safety objective is met.

In the case of a TC, the alternative means should provide a demonstration of compliance with the essential requirements for airworthiness laid down in Annex II to Regulation (EU) 2018/1139.

*Note:* 'Alternative means of compliance' should not be confused with 'AMC'.

**6. SPECIAL CONDITIONS (see point [21L.B.43\(a\)\(2\)](#))**

The Agency may also prescribe special conditions in accordance with point 21L.B.44. Guidance on special conditions is provided in [GM1 21L.B.44](#).

## GM1 21L.B.44 Special conditions

### GENERAL

The term ‘novel or unusual design features’ should be judged in view of the applicable certification basis for a particular product. A design feature, in particular, should be judged to be a ‘novel or unusual design feature’ when the certification basis does not sufficiently cover it.

The term ‘unsafe condition’ is used with the same meaning as described in AMC1 21L.B.23(b) ‘Airworthiness directives’.

The term ‘newly identified hazards’ is intended to address new risks that may be recognised in the design (e.g. questionable features) or its operational characteristics (e.g. volcanic ash) for which there is not yet enough in-service experience.

## AMC1 21L.B.46(c) Investigation

### PHYSICAL INSPECTION AND CRITICAL DESIGN REVIEW

Prior to the approval of the flight conditions to support the issuance of a permit to fly, a physical inspection and a critical design review is conducted with the applicant and the competent authority for conformity (production) under point 21L.B.242(a). The experience and outcome of this activity should be used by EASA to determine the scope and particular aspects of the design that should be the focus of the physical inspection and assessment of the first article of that product (first-article inspection) that is conducted under point 21L.B.46(c) prior to the issuance of the type certificate for a particular product.

## AMC2 21L.B.46(c) Investigation

### PHYSICAL INSPECTION AND ASSESSMENT OF THE FIRST ARTICLE OF A PRODUCT (FIRST-ARTICLE INSPECTION)

#### 1. Purpose

The purposes of the first-article inspection (of the article that is in conformance with the proposed type design for certification) prior to the issuance of the type certificate for a particular aircraft, propeller or engine design are:

- a. for EASA to verify the completion of the demonstration-of-compliance activities conducted by the applicant under point 21L.A.25 and in accordance with the approved compliance-demonstration plan;
- b. for EASA to verify<sup>1</sup> with a risk-based approach that the type design complies with the type-certification basis and the applicable environmental protection requirements;
- c. in case the applicant is a declared design organisation, for EASA to conduct a further oversight visit in accordance with point 21L.B.183(b) of Subpart J in order to ensure that the applicant is able to discharge its obligations.

<sup>1</sup> *The verification of compliance is limited to the scope of the activities that can be conducted under point 2 and the elements of the design that are selected for review based upon a risk-based approach to compliance.*

#### 2. Methodology and evidence

The first-article inspection should be conducted by EASA at an appropriate location(s) selected by the applicant for a type certificate. This (these) location(s) should include the physical location of the

aircraft, engine or propeller for which the type certificate has been requested and should be in the principal place of business (which in accordance with Article 8(2) of Regulation (EU) No 748/2012 must be in an EU Member State).

The Agency should conduct a physical inspection of the aircraft, engine or propeller for which the type certificate has been requested. This inspection, along any other activity that is considered necessary should ensure that the objectives mentioned in point 1 are met. Evidence to support compliance will be gathered by EASA prior to and during the first-article inspection. The physical inspection of the aircraft and, if applicable, of the engine and the propeller will provide substantial evidence that the design is in compliance with the type-certification basis and that the applicant (if a declared design organisation) is able to discharge its obligations.

Additional sources of evidence to support the determination of compliance of the design that are available to EASA prior to and during the first-article inspection include:

- a. witnessing or participating in live testing (including flight testing) of the aircraft, engine, propeller, systems or components;
- b. evaluation of the final compliance-demonstration plan produced by the applicant and how it relates to the final design;
- c. evaluation of the completeness of the declaration of compliance submitted by the applicant;
- d. evaluation of supporting compliance documentation and test reports;
- e. discussions with key design and production personnel;
- f. review of design processes and procedures (for non-approved organisations).

If the applicant selects to use flight testing to demonstrate compliance (see MC6 in Appendix A to AMC1 21L.A.24(b)), EASA may decide to conduct flight testing to verify compliance for applications for an aircraft type certificate. An appropriate flight-test plan should be developed and proposed by the applicant prior to the first-article inspection and agreed by EASA in order to ensure that there are no adverse flight characteristics.

Flight testing could be a combination of:

- a. a predefined flight-test plan that is not specific to the particular aircraft type;
- b. specific flight testing to focus on targeted aspects after a review of the applicant's flight-testing data/reports.

The above list of additional sources of evidence is not exhaustive.

It is possible that during the first-article inspection EASA may discover evidence that:

- a. the design is not in compliance with the type-certification basis or the applicable environmental protection requirements (this could be due to the applicant misinterpreting or misunderstanding the applicable design requirements);
- b. the applicant has not fulfilled its design obligations as a declared design organisation;
- c. there are shortfalls in the applicant's design management system (in accordance with point 21.A.239 or 21L.A.174) that result in a non-compliance or a loss of control of the design.

If such evidence is discovered, EASA may require a more in-depth investigation into the compliance documentation and/or the design practices of the design organisation. The purpose of this in-depth investigation should be to determine whether or not compliance was demonstrated, the root cause(s) and to establish corrective actions. This investigation should also serve to prevent a reoccurrence of the issue.

### 3. Aircraft condition and configuration

The aircraft, engine or propeller presented to EASA should be in the final configuration for which a type certificate has been requested and the compliance demonstration has been declared.

The applicant could arrange visits with EASA prior to the declaration of compliance (in accordance with point 21L.A.25(f)) (for example, for noise testing).

Any differences between the configuration presented to EASA for the first-article inspection and the final configuration in the declaration of compliance (in accordance with point 21L.A.25(f)) should be justified by the applicant and should be subject to detailed scrutiny during the first-article inspection.

### 4. Availability of supporting documentation and key personnel

The supporting documentation and compliance data should be available at the time EASA visits the applicant's facilities or at any other time upon request by EASA. Key design personnel will be made available to EASA in case of need. If this is not the case, EASA might not be in a position to issue the type certificate.

### 5. Findings and resolution

If a non-compliance is discovered by EASA in the process of the activities mentioned in point 2, an appropriate finding or observation should be raised against the aircraft, engine or propeller or declared design organisation in accordance with point 21L.B.21, which may result in the enforcement measures contained in point 21L.B.22. Findings of non-compliance should be resolved before the type certificate is issued. Depending upon their nature, findings against the declared design organisation may need to be resolved before the type certificate is issued.

## **SUBPART C — DECLARATIONS OF DESIGN COMPLIANCE**

### **GM1 21L.B.61(b) Detailed technical specifications for declarations of design compliance**

The acceptable detailed technical specifications that should be used by a declarant to design an aircraft (including engine and propeller, if applicable), and then declare compliance with are published on the EASA website. The declarant should regularly check that the acceptable detailed technical specifications have not changed, and the declarant is encouraged to contact EASA to establish whether a change to the acceptable detailed technical specifications is pending or forthcoming to avoid any issues at the time of submission of the declaration of design compliance.

### **GM1 21L.B.61(c)(1) Detailed technical specifications and applicable environmental protection requirements for declarations of design compliance**

#### **APPLICABLE ENVIRONMENTAL PROTECTION REQUIREMENTS**

The applicable environmental protection requirements are the Standards and Recommended Practices (SARPs) in Volume I 'Aircraft Noise', Volume II 'Aircraft Engine Emissions' and Volume III 'Aeroplane CO<sub>2</sub> Emissions' of Annex 16 to the Chicago Convention for products for which the first subparagraph of Article 9(2) of Regulation (EU) 2018/1139 applies. The applicable levels of amendments to Annex 16 to the Chicago Convention are those adopted in the first subparagraph of Article 9(2) of Regulation (EU) 2018/1139.

Related guidance material is provided in the attachments to these Annex 16 volumes and in ICAO Doc 9501 'Environmental Technical Manual', Volume I 'Procedures for the Noise Certification of Aircraft', Volume II 'Procedures for the Emissions Certification of Aircraft Engines' and Volume III 'Procedures for the CO<sub>2</sub> Emissions Certification of Aeroplanes'.

However, these SARPs apply only to certain categories of products and as such do not necessarily apply to all products that are within the scope of Subpart C. The applicability of the SARPs is provided in the administration chapters and in the specific applicability sections of the chapters of Annex 16 Volumes I, II and III.

### **AMC 21L.B.62(b) Physical inspection and assessment of the first article of a given aircraft in the final configuration (first-article inspection) prior to the registration of a declaration of design compliance**

#### **1. Purpose**

The purposes of the first-article inspection (of the article that is in conformance with the proposed type design for certification) prior to the registration of a declaration of design compliance for a particular aircraft design are:

- a. for EASA to ensure the completion of the demonstration-of-compliance activities conducted by the declarant under point 21L.A.44 in accordance with the information

provided in accordance with point 21L.A.43 and in particular the compliance-demonstration plan;

- b. for EASA to ensure<sup>1</sup> that the designed aircraft is capable of conducting safe flight during in-service operations and does not have any environmental incompatibilities;
- c. in case the declarant is a declared design organisation, for EASA to conduct further oversight in accordance with point 21L.B.183(b) of Subpart J in order to ensure that the declarant is able to discharge its obligations;

*Note:* Under Subpart C of Section A there is no obligation for a declarant of an aircraft declaration of design compliance to submit a declaration of design capability.

<sup>1</sup> This is limited to the scope of the activities that can be conducted under point 2 and the elements of the design that are selected for review based upon a risk-based approach to safety and environmental incompatibility.

## 2. Methodology and evidence

The first-article inspection should be conducted by EASA at an appropriate location(s) selected by the declarant. This (these) location(s) should include the physical location of the aircraft for which the declaration of design compliance has been submitted under point 21L.A.43 and should be in the principal place of business (which in accordance with Article 8(2) of Regulation (EU) No 748/2012 must be in an EU Member State).

The Agency should conduct a physical inspection of the aircraft, engine or propeller for which the registration of a declaration of design compliance has been requested. This inspection, along with any other activity that EASA deems necessary (see point 21L.A.44(f)), should ensure that the objectives mentioned in point 1 are met. Evidence to support compliance should be gathered by EASA prior to and during the first-article inspection. The physical inspection of the aircraft and, if applicable, of the engine and propeller will provide substantial evidence that the aircraft is capable of conducting a safe flight and is environmentally compatible during in-service operations and that the declarant (if a declared design organisation) is able to discharge its obligations.

Additional sources of evidence during the visit at the declarant's facilities may include:

- a. witnessing or participating to live testing (including flight testing) of the aircraft, engine, propeller, systems or components;
- b. review of the completeness of the compliance-demonstration plan produced by the declarant and how it relates to the final design;
- c. determination of the completeness of supporting compliance documentation and test reports and how they relate to the first article under inspection;
- d. discussions with key design and production personnel;
- e. in case of need and if relevant, a review of the design processes and procedures in order to determine root causes of any issues that are discovered.

It will be necessary for EASA to conduct flight testing of the final configuration of the aircraft. The flight testing will be performed according to a plan proposed by the declarant prior to the first-article inspection and agreed by EASA.

Flight testing could be a combination of:

- a. a predefined flight-test plan that is not specific to the particular aircraft type;

- b. specific flight testing to focus on targeted aspects after a review of the declarant's flight-testing data/reports.

The above list of additional sources of evidence is not exhaustive.

It is possible that during the first-article inspection EASA may discover evidence that indicates that the declarant has:

- a. misunderstood, misinterpreted or not demonstrated compliance with the applicable technical specifications or the applicable environmental protection requirements, which could lead to an unsafe or an environmentally incompatible design;
- b. not fulfilled its design obligations as a declared design organisation (if applicable);
- c. not utilised good design management principles to ensure compliance or control of the design.

If such evidence is discovered, EASA may wish to conduct a more in-depth investigation into the compliance documentation and/or the design practices of the declarant. This in-depth investigation should determine whether or not compliance was demonstrated, the root cause(s) and the corrective actions. This investigation should also aim to prevent a reoccurrence of the issue.

### 3. Aircraft condition and configuration

The aircraft presented to EASA should be in the final configuration for which the declarant has submitted a declaration of design compliance.

It is possible that the declarant could arrange visits with EASA prior to the declaration of the compliance demonstration being submitted (for example, for noise testing).

Any differences between the configuration presented to EASA for the first-article inspection and the final configuration in the declaration of compliance demonstration should be justified by the declarant and should, therefore, be subject to detailed scrutiny during the first-article inspection.

### 5. Findings and resolution

If a non-compliance is discovered by EASA in the process of the activities mentioned in point 2, an appropriate finding or observation should be raised by EASA against the given aircraft or, if applicable, the declared design organisation in accordance with point 21L.B.21 which, may result in the enforcement measures contained in point 21L.B.22. These findings should be resolved before the declaration of design compliance is registered.

## **GM1 21L.B.63(b) Registration of a declaration of design compliance**

### **COMPLETENESS OF COMPLIANCE DOCUMENTATION AND DATA PROVIDED TO THE AGENCY**

Prior to the registration of the declaration of design compliance, EASA should ensure that:

- (a) its document management system contains the compliance documentation required by point 21L.A.43(c);
- (b) the declarant has provided the data for the data sheet for noise required by point 21L.A.43(b)11 using EASA's Part 21 Light database of declared noise levels and that the data provided is reasonable and consistent prior to publication.

## SUBPART D — CHANGES TO TYPE CERTIFICATES

### AMC1 21L.B.83(c) Investigation of a major change to a type certificate

#### PHYSICAL INSPECTION AND CRITICAL DESIGN REVIEW

Depending upon the nature of the design change, prior to the approval of the flight conditions to support the issuance of a permit to fly, a physical inspection and a critical design review should be conducted with the applicant and the competent authority for conformity (production) under point 21L.B.242(a). The experience and outcome of this activity should be used by EASA to determine the need for a physical inspection and assessment of the first article of that changed product (first-article inspection) that may be conducted under point 21L.B.83(d) prior to the issuance of the supplemental type certificate for the change.

### AMC1 21L.B.83(d) Investigation of a major change to a type certificate

#### PHYSICAL INSPECTION AND ASSESSMENT OF THE FIRST ARTICLE OF THE CHANGED PRODUCT (FIRST-ARTICLE INSPECTION)

If EASA determines that there is a need to conduct a first-article inspection of the changed product under point 21L.B.83(c), then AMC2 21L.B.46(c) provides the description of this activity for EASA.

## **SUBPART E — SUPPLEMENTAL TYPE CERTIFICATES**

### **AMC1 21L.B.102(c) Investigation**

#### **PHYSICAL INSPECTION AND CRITICAL DESIGN REVIEW**

Depending upon the nature of the design change, prior to the approval of the flight conditions to support the issuance of a permit to fly, a physical inspection and a critical design review should be conducted with the applicant and the competent authority for conformity (production) under point 21L.B.242(a). The experience and outcome of this activity should be used by EASA to determine the need for a physical inspection and assessment of the first article of that changed product (first-article inspection) that may be conducted under point 21L.B.102(d) prior to the issuance of the supplemental type certificate for the change.

### **AMC1 21L.B.102(d) Investigation**

#### **PHYSICAL INSPECTION AND ASSESSMENT OF THE FIRST ARTICLE OF THE CHANGED PRODUCT (FIRST-ARTICLE INSPECTION)**

If EASA determines that there is a need to conduct a first-article inspection of the changed product under point 21L.B.102(c), then AMC2 21L.B.46(c) provides the description of this activity for EASA.

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**SUBPART F — CHANGES TO AIRCRAFT FOR WHICH DESIGN COMPLIANCE HAS  
BEEN DECLARED****AMC1 21L.B.121 Initial oversight investigation of a declaration of  
design compliance of a major change to the design of an aircraft for  
which design compliance has been declared****PHYSICAL INSPECTION AND ASSESSMENT OF THE FIRST ARTICLE OF THE CHANGED PRODUCT (FIRST-  
ARTICLE INSPECTION)**

If EASA determines that there is a need to conduct a first-article inspection of the changed product under point 21L.B.121(b), then AMC 21L.B.62(b) provides the description of this activity for EASA.

## SUBPART G — DECLARED PRODUCTION ORGANISATIONS

### AMC1 21L.B.141 Initial oversight investigation

Upon receiving a declaration from an organisation that declares its production capability, the competent authority should appoint a suitable member of its technical staff as the team leader (i.e. focal point) to be in charge of the verification and registration of the declaration and, subsequently, the oversight of the organisation. If needed, the team leader should be supported by one or more team members.

The competent authority should perform sufficient verification activities to be satisfied that the declarant is compliant with the requirements of Subpart G of Section A of this Annex.

### AMC1 21L.B.142 Registration of a declaration of production capability

#### REGISTRATION NUMBER

The competent authority should assign a unique and consecutive declared production organisation (DPO) reference number to the declarant.

The reference number should have the following format: commencing with the UN country code of the State of the competent authority to which the declaration is submitted, followed by the term ‘.DPO.’ and a consecutive numbering (example: ‘AT.DPO.001’).

### AMC1 21L.B.143(b) Oversight

#### FIRST-ARTICLE INSPECTION FOR A NEW AIRCRAFT, ENGINE, PROPELLER OR PART PRODUCED FOR THE FIRST TIME

##### (a) Purpose

The purpose of first-article inspection (of the article that is in conformance with the proposed type design for certification) when a new aircraft, engine, propeller or part is produced and released for the first time is for the competent authority to:

- ensure the conformity of the aircraft, engine, propeller or part with the applicable design data;
- conduct an oversight visit to the declared production organisation in order to ensure that the declared production organisation is capable of consistently producing, or controlling the production of, aircraft, products and parts that conform with the applicable design data;
- ensure that the declared production organisation is able to discharge its obligations and responsibilities as regards production.

##### (b) Methodology and evidence

The first-article inspection should be conducted by the competent authority at an appropriate location(s) selected by the declared production organisation. This (these) location(s) should include the physical location of the aircraft, engine, propeller or part under inspection and

should be in the principal place of business (which in accordance with Article 9(2) of Regulation (EU) No 748/2012 must be in an EU Member State).

The main focus of the activities to gather evidence to ensure the objectives mentioned in point (a) are satisfied should be through a physical inspection of the aircraft, engine, propeller or part that has been produced in accordance with the approved design data.

Additional sources of evidence during the visit to the declared production organisation's facilities may include:

- (1) the review of supporting conformity documentation and test reports;
- (2) the review of applicable design data and how it is used;
- (3) discussions with key production personnel;
- (4) the review of production processes and procedures.

The above list of additional sources of evidence is not exhaustive.

It is possible that during the first-article inspection the competent authority may discover 'evidence' that indicates that the declared production organisation has:

- (1) misunderstood, misinterpreted or not achieved conformity with the applicable design data;
- (2) not discharged its production obligations as a declared production organisation;
- (3) not followed good production practices to ensure conformity or control of a product or a part it has produced.

If such 'evidence' is discovered, the competent authority may perform a more in-depth investigation into the production practices of the production organisation to determine the root cause(s) and to establish corrective actions to prevent a reoccurrence of the issue.

- (c) Condition and conformity of the aircraft, engine, propeller or part to be inspected

The aircraft, engine, propeller or part presented to the competent authority for inspection should be in the final condition for release and in conformity with the applicable design data.

- (d) Availability of supporting documentation and key personnel

The supporting documentation and conformity data should be made available by the declared production organisation at the time of the visit by the competent authority to the facilities of the declared production organisation. Key production personnel should be made available to the competent authority by the declared production organisation in case of need.

- (e) Findings and resolution

If a non-compliance is discovered by the competent authority in the process of the activities mentioned in point (b), an appropriate finding may be raised against the declared production organisation in accordance with point 21L.B.21 and enforcement actions implemented in accordance with point 21L.B.22. Depending upon its nature, such finding may need to be resolved before the initial and subsequent aircraft, engine(s), propeller(s) or part(s) can be released or the first certificate of airworthiness (or restricted certificate of airworthiness in the case of a declared aircraft) is issued.

- (f) Duration and schedule

*First-article inspection relating to the initial type certificate of a product*

The declared production organisation should coordinate with the competent authority so that, as far as practicable, the first-article-inspection activities to be conducted under point 21L.B.143(b) are conducted at the same time as the first-article inspection activities conducted under point 21L.B.46(c) or point 21L.B.62(b). If this is not appropriate or practicable (for example, because a partial first-article inspection would be beneficial at an earlier stage of production (e.g. for major assemblies)), then the applicant may arrange this with the competent authority.

*Note:* For a modified or repaired product, when determined under points 21L.B.83(c), 21L.102(c) or 21L.B.203(c) respectively, EASA may require and coordinate with the competent authority on the need for a first-article inspection.

*First-article inspection relating to a part that is produced for the first time by the production organisation*

For the first-article inspection of every part that is produced for the first time by the declared production organisation, it is possible that this is arranged without the need for coordination with EASA.

If such a part relates to a major change/repair for which EASA has determined the need for a first-article inspection under points 21L.B.83(c), 21L.102(c) or 21L.B.203(c), then EASA may require and coordinate with the competent authority on the need for a first-article inspection.

## **AMC1 21L.B.144 and 21L.B.184 Oversight programme**

### **ANNUAL REVIEW**

The oversight planning cycle and the related oversight programme for each organisation should be reviewed annually to ensure they remain adequate regarding any changes in the nature, complexity or performance of the organisation.

When reviewing the oversight programme, the competent authority should also consider any relevant information collected in accordance with points 21L.A.3 and 21L.B.12.

## **AMC1 21L.B.144(a) and 21L.B.184(a) Oversight programme**

### **SPECIFIC NATURE AND COMPLEXITY OF THE ORGANISATION — RESULTS OF PAST OVERSIGHT ACTIVITIES**

When determining the oversight programme, including for product audits, the relevant sample of products and parts that are within the scope of the organisation, the competent authority should consider in particular the following elements, as applicable:

- (a) the effectiveness of the organisation's management system in identifying and addressing non-compliances;
- (b) the implementation by the organisation of any industry standards that are directly relevant to the organisation's activities subject to Part 21 Light;
- (c) any specific procedures implemented by the organisation that are related to any alternative means of compliance used (see point 21L.B.24(b));
- (d) the number of locations and the activities performed at each location;
- (e) the number and type of any subcontractors which perform production or design tasks as appropriate;

- (f) the volume of activity for each product or part; and
- (g) the number and nature of significant changes notified under points 21L.A.128 or 21L.A.178, as relevant.

## **AMC2 21L.B.144(a) and 21L.B.184(a) Oversight programme**

### **SUBCONTRACTED ACTIVITIES**

If a declared production or design organisation subcontracts some of its tasks, the competent authority should determine whether the subcontracted organisations need to be audited and included in the oversight programme, taking into account the specific nature and complexity of the subcontracted activities, the results of previous oversight activities of the declared production or design organisation, and based on the assessment of the associated risks.

For such an audit, the competent authority inspector should ensure that they are accompanied throughout the audit by a representative of the declared production or design organisation.

## **GM1 21L.B.144(a) Oversight programme**

### **CONTENTS**

An oversight programme typically consists of the elements detailed in this GM.

#### **(a) Planned continued surveillance**

In the planned continued surveillance, the total surveillance actions are split into several audits that are carried out at planned intervals during the oversight cycle. One aspect may be audited once or several times, depending on its importance. All relevant aspects are audited at least once within an oversight cycle.

#### **(b) Planned inspections of produced aircraft, engines, propellers and parts**

For the first-article inspection (of a new product or part produced for the first time), refer to AMC1 21L.B.143(b).

For serial production, in order to perform the inspections effectively and efficiently, the competent authority should integrate a sampling plan, as part of the planning of the continued surveillance activities, which is appropriate to the scope and size of the declared production organisation. A flexible sampling plan allows to accommodate changes in the production rate and consider the results obtained from other samples or investigation activities.

#### **(c) Unplanned reviews**

Unplanned reviews are specific additional investigations of a declared production organisation related to surveillance findings or external needs. The competent authority is responsible for deciding when a review is necessary, taking into account any changes in the scope of work, changes in personnel, reports on the organisation's performance submitted by other EASA or competent authorities' teams, and reports on the in-service products.

**AMC1 21L.B.144(d);(e) and 21L.B.184(d);(e) Oversight programme****EXTENSION OF THE OVERSIGHT PLANNING CYCLE BEYOND 24 MONTHS**

- (a) Part 21 Light Subparts G and J do not require the implementation of a safety management system by the respective declared organisations. However, a declared production organisation or a declared design organisation may decide to introduce certain elements of a safety management system as defined in Part 21 points 21.A.139 and 21.A.239 (e.g. safety risk management, safety performance monitoring and measurement). When such elements are voluntarily introduced, the competent authority may consider them to substantiate an extension of the oversight planning cycle beyond 24 months, as specified in points 21L.B.144(d) and (e) and in points 21L.B.184(d) and (e).
- (b) If the competent authority applies an extended oversight planning cycle (i.e. that exceeds 24 months), it should perform, at a minimum, one annual review (see AMC1 21L.B.144 and point 21L.B.184 'Oversight programme') to validate the oversight programme.
- (c) If the results of the annual review indicate a decrease in the safety performance of the organisation, the competent authority should revert to a 24-month (or shorter) oversight planning cycle and review the oversight programme accordingly.

## **SUBPART H — CERTIFICATES OF AIRWORTHINESS AND RESTRICTED CERTIFICATES OF AIRWORTHINESS**

### **GM1 21L.B.161(a)(6) Investigation**

#### **CONDITIONS, RESTRICTIONS OR LIMITATIONS TO THE CERTIFICATE**

The competent authority of the Member State of registry may issue under its own legislation a document to list and identify all necessary conditions, restrictions and limitations to a certificate that result from the investigation by EASA and/or from the legislation of the competent authority of the Member State of registry. This document could take the form of an addendum to the approved flight manual or operating instructions or comparable document, and should be referenced in Block 5 (limitations/remarks) of the appropriate certificate of airworthiness.

### **GM1 21L.B.161(c) Investigation**

#### **INVESTIGATIONS**

In the case that the applicant for a certificate of airworthiness or restricted certificate of airworthiness issues an EASA Form 52 or an EASA Form 52B under the privileges granted as an approved production organisation under points (b) and (d) respectively of point 21.A.163 of Annex I to Regulation (EU) No 748/2012, then no further action (i.e. no further showing) to investigate the conformity of a particular aircraft is required before issuing the certificate.

#### **EVALUATION OF THE NEED TO CONDUCT A PHYSICAL INSPECTION OF THE AIRCRAFT TO ENSURE THE CONFORMITY AND SAFETY OF FLIGHT OF THE AIRCRAFT**

In the case where the production organisation has not been granted the privileges under points (b) and (d) of point 21.A.163 of Annex I (Part 21) to Regulation (EU) No 748/2012, the evaluation of the need to conduct a physical inspection of the aircraft prior to issuing a certificate of airworthiness or restricted certificate of airworthiness will depend on the factors detailed in points (1) to (4) of point 21L.B.161(c). Further explanations on how these factors will influence the need to conduct a physical inspection are provided below:

- (a) Results of the physical inspection of the first-article inspection by the competent authority of the Member State of manufacture

Under points 21L.B.143(b) and 21L.B.251(b) the competent authority of the Member State of manufacture is required to conduct a first-article inspection of an aircraft that has been produced for the first time by the production organisation or the natural or legal person that has issued an EASA Form 52B. This first-article inspection should be considered to provide sufficient investigation to issue the first certificate of airworthiness or restricted certificate of airworthiness by the competent authority of the Member State of registry provided there are no findings raised during the first-article inspection. If findings are raised, then the competent authority of the Member State of registry, in direct coordination with the competent authority of the Member State of manufacture, should determine whether there is a need to conduct a further physical inspection to ensure that the findings have been resolved to enable the issuance of the first certificate of airworthiness or restricted certificate of airworthiness by the competent authority. It is foreseen that any findings that affect the airworthiness or safety of

flight of the aircraft that was inspected should be resolved to the satisfaction of the competent authority of the Member State of registry in direct coordination with the competent authority of the Member State of manufacture before the first certificate of airworthiness or restricted certificate of airworthiness can be issued.

The results of the first-article inspection should be shared by the competent authority of the Member State of manufacture with any other competent authority that has been requested to issue a certificate of airworthiness or restricted certificate of airworthiness in order for them to determine whether there is a need to conduct a physical inspection prior to issuing the certificate.

(b) Time period since the last physical inspection conducted by the competent authority of the Member State of registry

If the production organisation or the natural or legal person that has issued an EASA Form 52B has a low annual production rate (and, therefore, does not often request a certificate of airworthiness or a restricted certificate of airworthiness), then the competent authority of the Member State of registry may wish to conduct a larger number of physical inspections of the aircraft that are produced (e.g. higher sample rate) prior to issuing the certificate.

Conversely, if the production organisation or the natural or legal person that has issued an EASA Form 52B has a high production rate and frequently issues EASA Forms 52B (and, therefore, requests a certificate of airworthiness or a restricted certificate of airworthiness more often from the competent authority of the Member State of registry), and provided there are no issues, then the competent authority of the Member State of registry may decide to conduct a smaller number of physical inspections of the aircraft that are produced (e.g. lower sample rate) prior to issuing the certificate.

If the production organisation or the natural or legal person that has issued an EASA Form 52B has not produced an aircraft and has not issued an EASA Form 52B for a long time or has been dormant (and, therefore, has not requested a certificate of airworthiness or a restricted certificate of airworthiness for a long time), then the competent authority of the Member State of registry may wish to conduct a physical inspection more frequently (e.g. higher sample rate) until sufficient trust can be restored in the production organisation or the natural or legal person.

The exchange of information among the competent authorities of the Member States of registry on the outcome and results of physical inspections that have been conducted prior to issuing a certificate of airworthiness or a restricted certificate of airworthiness will help to facilitate the decision to conduct a physical inspection or not. If the competent authority of a Member State of registry has recently conducted (or is frequently conducting) a physical inspection, then the results may be shared with other competent authorities to avoid duplication or a larger than necessary number of physical inspections (e.g. the overall sample rate among all competent authorities is too high).

(c) Results of oversight activities conducted by the competent authority of the Member State of manufacture

During the evaluation of the need to conduct a physical inspection of an aircraft, the outcome of oversight activities of the production organisation or the natural or legal person that has issued an EASA Form 52B by the competent authority of the Member State of manufacture should be taken into consideration. For example, if level 1 findings or multiple level 2 findings have been raised by the competent authority of the Member State of manufacture in the past, then it is logical that the competent authority of the Member State of registry will want to conduct a physical inspection more frequently (possibility focusing more on the identified

weaknesses that resulted in the findings being raised). Likewise, if the production organisation or the natural or legal person that has issued an EASA Form 52B is performing well and no issues have been discovered during oversight by the competent authority of the Member State of manufacture, then this will have an influence and the competent authority of the Member State of registry will decide to conduct physical inspections less frequently (e.g. lower sample rate) prior to issuing a certificate of airworthiness or a restricted certificate of airworthiness.

The competent authority of the Member State of manufacture should provide, upon request, the outcome, results and any findings as a result of oversight activities of the production organisation or the natural or legal person that has issued an EASA Form 52B to the competent authority of the Member State of registry to enable it to determine the need to conduct a physical inspection of an aircraft prior to issuing a certificate of airworthiness or a restricted certificate of airworthiness. This information exchange will help the competent authority of the Member State of registry to avoid a larger than necessary number of physical inspection of manufacturers that perform well during oversight.

(d) Time period since the last oversight visit conducted by the competent authority of the Member State for manufacture

If the competent authority of the Member State of manufacture has recently conducted an oversight of the production organisation or the natural or legal person, and provided no issues have been discovered, then there would be a reduced need for the competent authority of the Member State of registry to conduct a physical inspection of an aircraft shortly afterwards. Conversely, if it has been a while since the last oversight visit conducted by the competent authority of the Member State of manufacture, then there may be a greater need for the competent authority of the Member State of registry to conduct a physical inspection of the aircraft prior to issuing a certificate of airworthiness or a restricted certificate of airworthiness.

The competent authority of the Member State of manufacture should, upon request, provide the time period (and any other relevant information) since the last oversight visit of the production organisation or the natural or legal person that has issued an EASA Form 52B to the competent authority of the Member State of registry in order to allow it to determine the need to conduct a physical inspection prior to issuing a certificate of airworthiness or a restricted certificate of airworthiness. This information exchange will help avoid unnecessary physical inspections of aircraft (e.g. physical inspections conducted of aircraft that have been produced by a production organisation or a natural or legal person that has recently had an oversight visit).

## **GM1 21L.B.162(b) Issuance or amendment of a certificate of airworthiness or a restricted certificate of airworthiness**

In accordance with Article 18(2)(a) of Regulation (EU) 2018/1139, a restricted certificate of airworthiness is issued for individual aircraft that conform to a design that has been subject to a declaration of design compliance in accordance with Subpart C of Annex Ib (Part 21 Light). This should not be confused with a restricted certificate of airworthiness issued under Annex I (Part 21) to Regulation (EU) No 748/2012.

The term ‘registered by the Agency in accordance with point 21L.B.63 at the time of application’ means that the declaration of design compliance is registered and published on the EASA website, or registered in a repository for declarations of design compliance at the time of the application.

The competent authority should ensure that the relevant declaration of design compliance is still registered by EASA prior to issuing a restricted certificate of airworthiness. It is possible that EASA has either temporarily or permanently deregistered the declaration of design compliance in the event of discovering an issue that affects safety in accordance with point 21L.B.22(a)(9).

Following the joint first-article inspection conducted by EASA in accordance with point 21L.B.62(b) and the competent authority of the Member State of manufacture in accordance with either point 21L.B.143(b) or point 21L.B.251(b), it is possible that there could be a short delay in EASA conducting the necessary administrative actions to register the declaration of design compliance. In the interim, and to avoid any delays in issuing the first restricted certificate of airworthiness, the competent authority of the Member State of registry may directly contact EASA to confirm that there are no outstanding actions preventing the registration of the declaration of design compliance thereby enabling the competent authority of the Member State of registry to issue the first restricted certificate of airworthiness.

## **GM1 21L.B.162(d) Issuance or amendment of a certificate of airworthiness or a restricted certificate of airworthiness**

### **INITIAL AIRWORTHINESS REVIEW CERTIFICATE**

In accordance with the applicable continuing airworthiness requirements, a certificate referred to in point 21L.B.162(a) and (b) is valid only if a valid airworthiness review certificate is attached to it. For new aircraft, the competent authority should issue the airworthiness review certificate when issuing the certificate referred to in point 21L.B.162(a) and (b).

**SUBPART I — NOISE CERTIFICATES AND RESTRICTED NOISE CERTIFICATES****GM1 21L.B.171(c) Investigation****INVESTIGATION**

In the case that the applicant for a noise certificate or a restricted noise certificate issues an EASA Form 52 or an EASA Form 52B under the privileges granted as an approved production organisation under point 21.A.163(b) of Annex I (Part 21) to Regulation (EU) No 748/2012, then no further action (i.e. no further showing) during the investigation of the aircraft is required before issuing the relevant certificate.

**AMC1 21L.B.172(a) Issuance or amendment of noise certificates****COMPLETION OF EASA FORM 45B**

In order to complete and issue a restricted noise certificate, the competent authority should consult the EASA Part 21 Light database of declared noise levels, which contains all the noise data that has been provided and declared by the declarant of the declaration of design compliance under Subpart C of Annex Ib (Part 21 Light). The competent authority should frequently review the EASA Part 21 Light database of declared noise levels to ensure that the declared noise data is still valid and has not changed.

This AMC provides recommendations to the competent authority of the Member State of registry that issues restricted noise certificates.

**Block 1: Member State of registry**

The competent authority should state its name and country, which should be the same as on the certificate of registration and restricted certificate of airworthiness.

**Block 2: Restricted noise certificate (declared)**

The title of the EASA Form 45B is 'RESTRICTED NOISE CERTIFICATE (DECLARED)'

**Block 3: Document No**

The competent authority should enter a unique number that identifies each restricted noise certificate in its administration. Such a number facilitates any enquiries with respect to the document.

**Block 4: Registration marks**

The nationality and registration marks that are the same as on the certificate of registration and restricted certificate of airworthiness should be entered.

**Block 5: Manufacturer and designation of aircraft**

The type and model of the particular aircraft that are the same as on the certificate of registration and restricted certificate of airworthiness should be entered.

**Block 6: Aircraft serial No**

The aircraft serial number as given by the manufacturer of the aircraft and that is the same as on the certificate of registration and restricted certificate of airworthiness should be entered.

**Block 7: Designation of engine**

For the identification and verification of the aircraft configuration, the designation (including type and model) of the installed engine(s) in accordance with the applicable design data should be entered.

**Block 8: Designation of propeller**

For the identification and verification of the aircraft configuration in case of propeller-driven aeroplanes, the designation (including type and model) of the installed propeller(s) in accordance with the applicable design data should be entered.

**Block 9: Maximum take-off mass (kg)**

The maximum take-off mass (in kilograms) associated with the declared noise levels of the aircraft should be entered. The unit (kg) should be specified explicitly to avoid any misunderstanding. If the primary unit of mass for the Member State of manufacture of the aircraft is different from kilograms, the maximum take-off mass should be converted in kilograms in accordance with Annex 5 to the Chicago Convention.

**Block 10: Additional modifications incorporated for the purpose of compliance with the applicable noise certification standards**

This item should contain as a minimum all additional modifications to the basic aircraft as defined by Blocks 5, 7 and 8 that are essential in order to ensure that the declared noise levels comply with the noise requirements established and made available by EASA in accordance with point 21L.B.61(c) for the declaration of design compliance. Other modifications that are not essential to ensure compliance with the applicable noise requirements but are needed to attain the declared noise levels as given may also be included at the discretion of the certifying authority. The additional modifications should be given using unambiguous references, such as unique part numbers or type/model designators given by the manufacturer of the modification.

**Block 11: Noise certification standard**

For the purposes of this form, 'noise certification standard' means the noise requirements established and made available by EASA in accordance with point 21L.B.61(c) for the declaration of design compliance of the aircraft. This block should specify the applicable noise requirement(s) and the related noise limit(s) (e.g. 'ICAO Annex 16, Chapter 10 (10.4b)').

**Block 12: Take-off noise level**

The take-off noise level determined in accordance with the applicable noise requirements should be entered to the nearest tenth of a dB(A). The unit should be specified.

**Block 13: Statement of compliance**

**Block 14: Date of issue**

The date on which the document is issued should be entered.

Block 15: Signature

The officer that issues the restricted noise certificate should sign it. Other items may be added, such as seal, stamp, etc.

Additional information:

1. Logo and name of the issuing authority

To improve its identification, the competent authority may add its logo or symbol and its name in the box 'For use by the Member State of registry'.

2. Language

If the competent authority issues a restricted noise certificate in a language other than English, it should provide an English translation of that certificate.

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## **SUBPART J — DECLARED DESIGN ORGANISATIONS**

### **AMC1 21L.B.181 Initial oversight investigation**

Upon receiving a declaration from an organisation that declares its design capability, EASA should appoint a suitable member of its technical staff as the team leader (i.e. focal point) to be in charge of the verification and registration of the declaration and, subsequently, the oversight of the organisation.

If needed, the team leader should be supported by one or more team members.

EASA should perform sufficient verification activities to be satisfied that the declarant is compliant with the requirements of Subpart J Section A of this Annex.

### **AMC1 21L.B.182 Registration of a declaration of production capability**

#### **REGISTRATION NUMBER**

EASA should assign a unique and consecutive declared design organisation ('DDO') reference number to the declarant.

EASA should publish an up-to-date list of the registered declarations of design capability. This list should include the declared scope of work of those declared design organisations.

### **GM1 21L.B.183(b) Oversight**

#### **CRITICAL DESIGN REVIEW, PHYSICAL INSPECTION AND FIRST-ARTICLE INSPECTION**

The oversight of a declared design organisation should be built around the product design and the investigations performed by EASA during the certification or the registration of a declaration of design compliance.

These investigations are performed as follows:

- (a) for the certification of design compliance:
  - (1) a critical design review is performed, as applicable, before the approval of the flight conditions (see point 21L.B.242(a)(1) and (a)(3));
  - (2) a physical inspection is performed, as applicable, before the approval of the flight conditions (see point 21L.B.242(a)(1) and (a)(3)); and
  - (3) a physical inspection of the first article (first-article inspection) is performed, as applicable, after receiving the declaration of compliance and before the issuance of the respective product design certificate or approval (see points 21L.B.46(c), 21L.B.83(c), 21L.B.102(c) and 21L.B.203(c));
- (b) for a declaration of design compliance:
  - (1) a physical inspection is performed, as applicable, before the approval of the flight conditions (see point 21L.B.242(a)(2) and (a)(4)); and

- (2) a physical inspection of the first article (first-article inspection) is performed, as applicable, after receiving the declaration of design compliance and before the registration of the respective declaration (see points 21.B.62(b), 21.B.121(b) and 21L.B.221(b)).

*Note:* The physical inspections mentioned above are:

- for a certified product: compliance inspections during which EASA verifies that the product is compliant with the applicable type-certification basis and the applicable environmental protection requirements;
- for a declared aircraft: safety inspections during which EASA ensures that the aircraft is capable of safe flight and environmentally compatible; these physical inspections may include ground, functional and flight tests, as relevant.

For the contents and methodology to perform critical design reviews, physical inspections and first-article inspections, refer to AMC2 21L.B.46(c), AMC1 21L.B.62(b), AMC1 21L.B.241(a)(1) and point 21L.B.242(a)(1), and AMC 21L.B.241(a)(2) and point 21L.B.242(a)(2).

## **AMC1 21L.B.144 and 21L.B.184 Oversight programme**

### **ANNUAL REVIEW**

The oversight planning cycle and the related oversight programme for each organisation should be reviewed annually to ensure they remain adequate regarding any changes in the nature, complexity or performance of each organisation.

When reviewing the oversight programme and the oversight planning cycle, the competent authority should also consider any relevant information collected in accordance with points 21L.A.3 and 21L.B.12.

## **AMC1 21L.B.144(a) and 21L.B.184(a) Oversight programme**

### **SPECIFIC NATURE AND COMPLEXITY OF THE ORGANISATION — RESULTS OF PAST OVERSIGHT ACTIVITIES**

When determining the oversight programme, including for product audits, the relevant sample of products and parts within the scope of the organisation the competent authority should consider in particular the following elements, as applicable:

- (a) the effectiveness of the organisation's management system in identifying and addressing non-compliances;
- (b) the implementation by the organisation of any industry standards that are directly relevant to the organisation's activities subject to Part 21 Light;
- (c) any specific procedures implemented by the organisation that are related to any alternative means of compliance used (see point 21L.B.24(b));
- (d) the number of locations and the activities performed at each location;
- (e) the number and type of any subcontractors which perform production or design tasks as appropriate; and
- (f) the volume of activity for each product or part.
- (g) the number and nature of significant changes notified under point 21L.A.128 or 21L.A.178, as relevant.

## AMC2 21L.B.144(a) and 21L.B.184(a) Oversight programme

### SUBCONTRACTED ACTIVITIES

If a declared production or design organisation subcontracts some of tasks, the competent authority should determine whether the subcontracted organisations need to be audited and included in the oversight programme, taking into account the specific nature and complexity of the subcontracted activities, the results of previous oversight activities of the declared organisation, and based on the assessment of the associated risks.

For such an audit, the competent authority inspector should ensure that they are accompanied throughout the audit by a representative of the declared production or design organisation.

## GM1 21L.B.184(a) Oversight programme

### CONTENTS

The oversight programme typically consists of the elements detailed in this GM.

(a) Planned continued surveillance

In the planned continued surveillance, the total surveillance actions are split into several audits that are carried out at planned intervals during the oversight cycle. One aspect may be audited once or several times, depending on its importance. All relevant aspects are audited at least once within an oversight cycle.

(b) Planned critical design reviews, physical inspections and first-article inspections as defined for each new product design.

(c) Unplanned reviews

Unplanned reviews are specific additional investigations of a declared design organisation related to surveillance findings or external needs. EASA is responsible for deciding when a review is necessary, taking into account any changes in the scope of work, changes in personnel, reports on the organisation's performance submitted by other EASA or competent authorities' teams, and reports on the in-service products.

## AMC1 21L.B.144(d);(e) and 21L.B.184(d);(e) Oversight programme

### EXTENSION OF THE OVERSIGHT PLANNING CYCLE BEYOND 24 MONTHS

- (a) Part 21 Light Subparts G and J do not include requirements for the implementation of a safety management system. However, a declared production organisation or a declared design organisation may decide to introduce certain elements of a safety management system as defined in Part 21 points 21.A.139 and 21.A.239 (e.g. safety risk management, safety performance monitoring and measurement). When such elements are voluntarily introduced, the competent authority may consider them to substantiate an extension of the oversight planning cycle beyond 24 months, as specified in points 21L.B.144(d) and (e) and in points 21L.B.184(d) and (e).

- (b) If the competent authority applies an extended oversight planning cycle (i.e. that exceeds 24 months), it should perform, at a minimum, one annual review (see AMC1 21L.B.144 and point 21L.B.184 'Oversight programme') to validate the oversight programme.
- (c) If the results of the annual review indicate a decrease in the safety performance of the organisation, the competent authority should revert to a 24-month (or shorter) oversight planning cycle and review the oversight programme accordingly.

**SUBPART M — DESIGN OF REPAIRS TO TYPE-CERTIFIED PRODUCTS****AMC1 21L.B.203(d) Investigation of an application for the approval  
of a major repair design****PHYSICAL INSPECTION AND ASSESSMENT OF THE FIRST ARTICLE OF THE CHANGED PRODUCT (FIRST-  
ARTICLE INSPECTION)**

If EASA determines that there is a need to conduct a first-article inspection of the changed product under point 21L.B.203(c), then AMC2 21L.B.46(c) provides the description of this activity for EASA.

## **SUBPART N — DESIGN OF REPAIRS TO AIRCRAFT FOR WHICH DESIGN COMPLIANCE HAS BEEN DECLARED**

### **AMC1 21L.B.221 Initial oversight investigation of a declaration of design compliance of a major repair design to an aircraft for which design compliance has been declared**

#### **PHYSICAL INSPECTION AND ASSESSMENT OF THE FIRST ARTICLE OF THE REPAIRED PRODUCT (FIRST- ARTICLE INSPECTION)**

If EASA determines that there is a need to conduct a first-article inspection of the repaired product under point 21L.B.221(b), then AMC 21L.B.62(b) provides the description of this activity for EASA.

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## SUBPART P — PERMIT TO FLY

### AMC 21L.B.241(a)(1) and 21L.B.242(a)(1) Critical design review of the design and physical inspection and assessment of the aircraft

#### PHYSICAL INSPECTION AND CRITICAL DESIGN REVIEW OF PRODUCTS TO BE CERTIFIED

##### 1. Introduction

For the purposes of this AMC, 'physical inspection and critical design review' includes:

- a. the investigation prior to the issuance of a permit to fly, which consists of a physical inspection of the aircraft by the competent authority; and
- b. the investigation prior to the approval of the flight conditions, which consists of a critical design review of the design and a physical inspection and assessment of the aircraft by the Agency.

*Note:* The competent authority may determine that it is necessary to conduct an oversight visit at the applicant's facilities prior to the submission of the application for the approval of the flight conditions and the issuance of a permit to fly to ensure the conformity of the aircraft for which a permit to fly has been requested. For example, this could be due to the need to conduct a conformity check of subassemblies prior to their incorporation into the final prototype.

##### 2. Purpose

The purposes of the physical inspection and the critical design review prior to the approval of the flight conditions and the issuance of a permit to fly for a particular aircraft design for which an application for a type certificate has been submitted are:

- a. for EASA to verify<sup>1</sup> that the demonstration-of-compliance activities conducted by the applicant under point 21L.A.25 have reached a sufficient level of maturity to progress to flight testing in order to conclude the demonstration of compliance;
- b. for EASA to ensure that the design configuration for which the flight conditions have been requested is capable of conducting safe flight during flight testing;
- c. in case the applicant is a declared design organisation, for EASA to conduct the first oversight visit in accordance with point 21L.B.183(b) of Subpart J in order to ensure that the applicant is able to discharge its obligations;
- d. for the competent authority to ensure the conformity of the aircraft with the configuration for which the issuance of a permit to fly has been requested;
- e. in case the applicant is a declared production organisation, for the competent authority to conduct the first oversight visit in accordance with point 21L.B.143(b) of Subpart G and point 21L.B.241 of Subpart P in order to ensure that the applicant is able to discharge its obligations and is capable of producing or controlling the production of aircraft, products and parts that conform with the design data.

<sup>1</sup> The verification is limited to the scope of the activities that can be conducted under point 3 and the elements of the design that are selected for review based upon a risk-based approach to compliance.

### 3. Methodology and evidence

The physical inspection and the critical design review should be conducted by EASA and the competent authority at an appropriate location(s) selected by the applicant for the type certificate. This (these) location(s) should include the physical location of the aircraft for which the approval of the flight conditions and the issuance of a permit to fly have been requested and should be in the principal place of business (which in accordance with Article 8(2) of Regulation (EU) No 748/2012 must be in an EU Member State).

The Agency and the competent authority should conduct a physical inspection of the aircraft, engine or propeller for which the approval of the flight conditions and the issuance of a permit to fly have been requested. This inspection, along with any other activity that EASA or the competent authority deems necessary (for example, see point 21L.A.25(e)), should ensure that the objectives mentioned in point 2 are met.

Additional sources of evidence during the visit at the applicant's facilities may include:

- a. witnessing or participating to live testing of the aircraft, engine, propeller, systems or components;
- b. evaluation of the compliance-demonstration plan produced by the applicant;
- c. evaluation of supporting compliance documentation and test reports;
- d. discussions with key design and production personnel;
- e. review of conformity documentation;
- f. review of the relevant design or production processes and procedures (for non-approved organisations).

The above list of additional sources of evidence is not exhaustive.

### 4. Aircraft condition and configuration

The aircraft presented to EASA and the competent authority should be in a condition for first flight and be in the configuration for which the approval of the flight conditions and the issuance of a permit to fly have been requested. If this is not the case, then a judgement should be made whether the critical design review and physical inspection can be conducted or not based upon any differences between the 'as presented' configuration and condition and the configuration that will be used for flight testing.

### 5. Availability of supporting documentation and key personnel

The applicant is required to make available supporting documentation as well as compliance and conformity data at the time of the visit by EASA and the competent authority at the applicant's facilities. Key design and production personnel should be made available by the applicant to EASA and the competent authority in case of need. The Agency and the competent authority may wish to withhold the approval of the flight conditions and the issuance of the permit to fly if this is not the case.

### 6. Findings and resolution

If a non-compliance is discovered by EASA or the competent authority in the process of the activities mentioned in point 2, an appropriate finding may be raised against the particular aircraft or declared

design organisation or declared production organisation. Depending upon their nature, these findings may need to be resolved before the flight conditions are approved or the permit to fly is issued.

## 7. Duration and schedule

The physical inspection and the critical design review may be a single visit or, if necessary, multiple visits depending on the complexity of the design, the maturity of the design and any unique characteristics that are identified in the compliance-demonstration plan. It should not solely be viewed as a single one-day event.

# **AMC 21L.B.241(a)(2) and 21L.B.242(a)(2) Physical inspection and assessment of the aircraft in order to ensure that the aircraft is capable of safe flight, and that flight testing can be conducted safely (physical inspection and safety review)**

## **PHYSICAL INSPECTION AND SAFETY REVIEW OF AIRCRAFT TO BE DECLARED**

### 1. Introduction

For the purposes of this AMC, 'physical inspection and safety review' includes:

- a. the investigation prior to the issuance of a permit to fly, which consists of a physical inspection of the aircraft by the competent authority; and
- b. the investigation prior to the approval of the flight conditions, which consists of a physical inspection and assessment of the aircraft by EASA.

### 2. Purpose

The purposes of the physical inspection and the safety review prior to the approval of the flight conditions and the issuance of a permit to fly for a particular aircraft design for which the declarant intends to submit a declaration of design compliance are:

- a. for EASA to ensure<sup>1</sup> that the design configuration, for which the flight conditions have been requested for the compliance-demonstration activities under point 21L.A.44, is capable of conducting safe flight during flight testing and that the design is sufficiently mature so as not to pose an unacceptable level of risk;
- b. in case the declarant is a declared design organisation, for EASA to conduct the first oversight visit in accordance with point 21L.B.183(b) of Subpart J in order to ensure that the declarant is able to discharge its obligations;

*Note:* Under Subpart C of Section A there is no obligation for a declarant to submit a declaration of design capability and become a declared design organisation.

- c. for the competent authority to ensure the conformity of the aircraft with the configuration for which the issue of a permit to fly has been requested.
- d. for the competent authority to:
  - i. either, in case the declarant is a declared production organisation, conduct the first oversight visit in accordance with point 21L.B.143(b) of Subpart G and point 21L.B.241 of Subpart P in order to ensure that the declarant is able to discharge its

obligations and is capable of producing or controlling the production of aircraft, products and parts that conform with the design data;

- ii. or conduct a first oversight visit of the production organisation that intends to issue statements of conformity for aircraft, which conform to a declaration of design compliance, to ensure that the production organisation is capable of discharging its obligations under Subpart R.

<sup>1</sup> *This is limited to the scope of the activities that can be conducted under point 3 and the elements of the product that are selected for inspection based upon a risk-based approach to safety and environmental incompatibility.*

### 3. Methodology and evidence

The physical inspection and the safety review should be conducted by EASA and the competent authority at an appropriate location(s) selected by the declarant. This (these) location(s) should include the physical location of the aircraft for which the approval of the flight conditions and the issuance of a permit to fly have been requested and should be in the principal place of business (which in accordance with Article 8(2) of Regulation (EU) No 748/2012 must be in an EU Member State).

The Agency and the competent authority should conduct a physical inspection of the aircraft, engine or propeller for which the approval of the flight conditions and the issuance of a permit to fly have been requested. This inspection, along with any other activity that EASA or the competent authority deems necessary (for example, see point 21L.A.44(f)), should ensure that the objectives mentioned in point 2 are met.

Additional sources of evidence during the visit at the declarant's facilities may include:

- a. witnessing or participating to live testing of the aircraft, engine, propeller, systems or components;
- b. review of the completeness of the compliance-demonstration plan produced by the declarant;
- c. review of the maturity of the supporting compliance documentation and test reports;
- d. discussions with key design and production personnel;
- e. review of conformity documentation;
- f. review of the relevant design or production processes and procedures (for non-approved organisations).

The above list of additional sources of evidence is not exhaustive.

### 4. Aircraft condition and configuration

The aircraft presented to EASA and the competent authority should be in a condition for first flight and be in the configuration for which the approval of the flight conditions and the issuance of a permit to fly have been requested.

If this is not the case, then a judgement should be made whether the safety review and physical inspection can be conducted or not based upon any differences between the 'as presented' configuration and condition and the configuration that will be used for flight testing.

### 5. Availability of supporting documentation and key personnel

The declarant is required to make available supporting documentation and conformity data at the time of the visit by EASA and the competent authority at the declarant's facilities. Key design and

production personnel should be made available by the declarant to EASA and the competent authority in case of need. The Agency and the competent authority may wish to withhold the approval of the flight conditions and the issue of a permit to fly if this is not the case.

#### 6. Findings and resolution

If a non-compliance is discovered by EASA or the competent authority in the process of the activities mentioned in point 2, an appropriate finding may be raised against the particular aircraft or, if applicable, the declared design organisation or declared production organisation. Depending upon their nature, these findings may need to be resolved before the flight conditions are approved or the permit to fly is issued.

#### 7. Duration and schedule

The physical inspection and safety review may be a single visit or multiple visits depending on the complexity and the maturity of the design. It should not solely be viewed as a single one-day event.

## SUBPART R — STATEMENT OF CONFORMITY FOR AIRCRAFT AND AUTHORISED RELEASE CERTIFICATES (EASA FORM 1) FOR ENGINES AND PROPELLERS, OR PARTS THEREOF, WHICH CONFORM TO A DECLARATION OF DESIGN COMPLIANCE

### AMC1 21L.B.251(b) Oversight

#### FIRST-ARTICLE INSPECTION FOR A NEW AIRCRAFT, ENGINE, PROPELLER OR PART PRODUCED FOR THE FIRST TIME

(a) Purpose

The purpose of first-article inspection when a new aircraft, engine, propeller or part is produced and released for the first time is for the competent authority to:

- (1) ensure the conformity of the aircraft, engine, propeller or part with the applicable design data;
- (2) conduct an oversight visit to the natural or legal person that uses Subpart R in order to ensure that the natural or legal is capable of consistently producing, or controlling the production of, aircraft, products and parts that conform with the declared design data;
- (3) ensure that the natural or legal person that uses Subpart R is able to discharge its obligations and responsibilities for production.

(b) Methodology and evidence

The first-article inspection should be conducted by the competent authority at an appropriate location(s) selected by the natural or legal person that uses Subpart R. This (these) location(s) should:

- (1) be at the physical location of the aircraft, engine, propeller or part under inspection;
- (2) be in the principal place of business (which in accordance with Article 8(2) of Regulation (EU) No 748/2012 must be in an EU Member State); and
- (3) be in a location that enables the competent authority to conduct the oversight stated in points (a)(2) and (3) above; this location should include the actual production and manufacture of new aircraft, engine, propeller or parts of the aircraft to enable the competent authority to determine that the legal or natural person is in compliance with Subpart R.

*Note:* The principal place of business is defined as follows: ‘The head office or registered office of the organisation within which the principal financial functions and operational control of the activities referred to in this Regulation are exercised.’

The main focus of the activities to gather evidence to ensure the objectives mentioned in point (a) are satisfied should be through a physical inspection of the aircraft for which a statement of conformity has been issued or the engine, propeller or part for which an authorised release certificate has been issued.

Additional sources of evidence during the visit to the production organisation's facilities may include:

- (1) the review of supporting conformity documentation and test reports;
- (2) the review of applicable design data and how it is used;
- (3) discussions with key production personnel;
- (4) the review of production processes and procedures.

The above list of additional sources of evidence is not exhaustive.

It is possible that during the first-article inspection the competent authority may discover 'evidence' that indicates that the production organisation has:

- (1) misunderstood, misinterpreted or not achieved conformity with the applicable design data;
- (2) not discharged its production obligations;
- (3) not followed good production practices to ensure conformity or control of a product or part it has produced.

If such 'evidence' is discovered, the competent authority may perform a more in-depth investigation into the production practices of the production organisation to determine the root cause(s) and to establish corrective actions to prevent a reoccurrence of the issue.

- (c) Condition and conformity of the aircraft, engine, propeller or part to be inspected

The aircraft, engine, propeller or part presented to the competent authority for inspection should be in the final condition for release and in conformity with the applicable design data.

- (d) Availability of supporting documentation and key personnel

The supporting documentation and conformity data should be made available by the natural or legal person that uses Subpart R at the time of the visit by the competent authority to the facilities of the production organisation. Key production personnel should be made available to the competent authority in case of need.

- (e) Findings and resolution

If a non-compliance is discovered by the competent authority in the process of the activities mentioned in point (a), an appropriate finding may be raised. Depending upon its nature, such finding may need to be resolved before the initial and subsequent aircraft, engine(s), propeller(s) or part(s) can be released.

- (f) Duration and schedule

*First-article inspection relating to the initial declaration of design compliance for an aircraft (including engines and propellers).*

The natural or legal person that uses Subpart R should coordinate with the competent authority so that the first-article-inspection activities to be conducted under point 21L.B.251(b) are conducted at the same time as the first-article-inspection activities conducted under point 21L.B.62(b). If this is not appropriate (due to the fact that a partial first-article inspection would be beneficial at an earlier stage of production), then it is possible that the declarant arrange this with the competent authority.

*Note:* For a modified or repaired product, when determined under points 21L.B.121(b) or 21L.B.221(b) respectively, EASA may require and coordinate with the competent authority on the need for a first-article inspection.

*First-article inspection relating to a part that is produced for the first time by the production organisation*

For the first-article inspection of every part that is produced for the first time by the natural or legal person that uses Subpart R, it is possible that this is arranged without the need for coordination with EASA.

If such a part relates to a major change/repair for which EASA has determined the need for a first-article inspection under points 21L.B.121(b) or 21L.B.221(b), then EASA may require and coordinate with the competent authority on the need for a first-article inspection.

## AMC1 21L.B.252 Oversight programme

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The oversight programme should be built around conformity inspections of products and parts (performed during manufacture and on the final product).

The oversight programme should consist of:

- (a) planned inspections of each new aircraft produced for the first time and for which a permit to fly has been requested (see point 21L.B.241(a));
- (b) planned first-article inspections of every new aircraft, engine, propeller or part that is produced for the first time for which the natural or legal person has issued a statement of conformity (EASA Form 52B) or authorised release certificates (EASA Form 1) (see point 21L.B.251(b));
- (c) inspections of further aircraft, engines, propellers and parts produced by that natural or legal person; for this to be performed effectively and efficiently, the competent authority should integrate a sampling plan, as part of the planning of the continued surveillance activities, which is appropriate to the scope and size of the activities of the natural or legal person; this sampling plan should be flexible to accommodate changes in the production rate, and consider the results from other samples or investigation activities; and
- (d) specific assessments and audits; these might be triggered by the results of the above inspections of products and parts, and the feedback on in-service products received from other competent authorities' and EASA teams.

*Note:* For the planned inspections of a new aircraft, engine and propeller produced for the first time (see points (a) and (b) above), the competent authority should coordinate as much as possible the related activities with the EASA team(s) involved in the investigation of the respective aircraft's declaration of design compliance.

## **GM1 21L.B.252(d);(e) Oversight programme**

### **EXTENSION OF THE OVERSIGHT PROGRAMME PLANNING CYCLE**

Compliance with the conditions for the extension of the oversight programme planning cycle in point 21L.B.252(d) and (e) would normally be demonstrated using a safety management system. However, it is not expected that the natural or legal person that produces under Subpart R would implement such a system. Consequently, that natural or legal person is not expected to meet the conditions for the extension of the oversight programme planning cycle